

## DRIVERS OF FIRMS' DEBT RATIOS: EVIDENCE FROM TAIWANESE AND TURKISH FIRMS

Selim Aren<sup>1</sup>, Lutfihak Alpkán<sup>2</sup>, Bulent Sezen<sup>3</sup>, Ziya Alper Guncu<sup>4</sup>

*Department of Business Administration, Gebze Institute of Technology, Turkey*

*E-mails: <sup>1</sup>aren@gyte.edu.tr; <sup>2</sup>alpkán@gyte.edu.tr;*

*<sup>3</sup>bsezen@gyte.edu.tr (corresponding author); <sup>4</sup>alperguncu@gmail.com*

*Received 27 January 2011; accepted 17 July 2011*

**Abstract.** This study investigates the drivers of debt ratios of the firms listed on the stock markets of two different countries, namely Turkey, a developing country and Taiwan, a newly developed country. The factors impacting short-term, long-term, and total debts are selected as EBIT (Earnings before Interest and Tax), ROE (Return on Equity), sales, total assets, fixed assets-total assets ratio, and depreciation- total assets ratio. The findings indicate that there are differences between Turkish and Taiwanese firms in terms of the drivers' impacts on the debt structures of the firms. The proposed regression models work better on the data collected from Taiwan as compared to the data from Turkey. Possible reasons are discussed in the final section.

**Keywords:** debt ratios, capital structure, leverage, Turkey, Taiwan.

**Reference** to this paper should be made as follows: Aren, S.; Alpkán, L.; Sezen, B.; Guncu, Z. A. 2012. Drivers of firms' debt ratios: evidence from Taiwanese and Turkish firms, *Journal of Business Economics and Management* 13(1): 53–70.

**JEL Classification:** G32.

### 1. Introduction

Firms frequently use external monetary sources to meet their fund needs. They need funds sometimes because of their limited amount of cash for daily operations and sometimes because of their investments for fixed assets. Especially long term debts contribute to the equity and earnings of the firms. As Dalmazzo and Marini (2000) mention, increase in the usage of external monetary sources can increase earnings of the investors. The critical point here is the necessity for the earnings to be greater than the costs of the external funds. Thus, because of leverage effect, the firm's earnings go up as the debts increase. However, as McKenzie (2002) warns the decision makers of the firms listed on stock markets, that investors may refrain from buying the stocks of those firms whose debt / equity ratios are very high because of the over usage of this leverage effect. Moreover, the collapses are much more rapid and harsher than the recoveries in the stock exchange markets (Choudhry 2001; Alexander, Dimitriu 2005).

The literature on corporate financial management of the firms listed on the stock markets begin to give special importance to the management of debt ratios which is a very critical issue for the owners, top managers and investors. In this concern, Singh and Nejadmalayeri (2004) have already developed a comprehensive indebtedness model consisting of the factors that possibly affect the variance in the debt ratios of the firms and tested it in the context of already developed countries' firms.

The main motivation in this study is to develop and test an extended model to explain the factors affecting the capital structure of the firms. Inspired by the Singh and Nejadmalayeri's (2004) study, we use in our research a revised and extended version of this indebtedness model by including some additional drivers namely ROE, total assets, and the depreciation / total assets ratio. Therefore, in this study, we try to test an original indebtedness model consisting of the following independent variables: EBIT, ROE, sales, total assets, fixed assets-total assets ratio, depreciation- total assets ratio.

In addition to the extension of the model, another originality of this study is to test the indebtedness model on two different country settings at the same time to produce comparative implications for the firms operating in a developing (Turkey) and a newly developed (Taiwan) country. Briefly, we desire to test the effects of the indebtedness drivers on the debt ratios in the context of a developing country and a newly developed country, and to make a comparison between them concerning not only these drivers but also the general capital structures of their firms.

The paper proceeds in the following manner. In the second section next to the introduction, the indebtedness literature is reviewed. In the third section, the financial differences between the firms in Turkish and Taiwanese firms and the relations among the model's variables as the drivers of indebtedness are tested via ANOVA and regression analyses; and the final section is devoted to the discussion of the results.

## **2. Theoretical framework and hypotheses development**

### **2.1. Literature review**

Modigliani and Miller (M & M) are highly referred researchers in the literature for their studies on the firms' capital structures, i.e. the combination of the long term debts and equity of the firms (Yukcu *et al.* 1999). M & M (1958) indicate that managers of those firms where internal monetary funds are not adequate may easily apply for external funds especially when we assume that markets function perfectly and taxes do not exist (Firatoglu 2005). Tough in the real markets, various types of tax exist. Therefore, M&M emphasize that firms can increase their earnings per share by emitting new bonds and accordingly paying less taxes (Yukcu *et al.* 1999). After M & M's remarks on the impact of tax concerns on the capital structure and debt ratios, the trend in the literature has turned towards determining the optimum combination or balance between the sizes of external and internal monetary funds.

It is obvious that the leverage effect and the tax shield -obtained via increasing amount of debts- are also risky. Over-indebtedness may cause bankruptcy, attachment, and agency costs that constitute the limits of rational indebtedness (Kraus, Litzenberger

1973; Jensen, Meckling 1976; Hovakimian *et al.* 2004). Because of these limits, every firm should consider the risks of their debt ratios, and pay attention to try to establish a healthy capital structure (Firatoglu 2005).

Researchers in the recent literature concentrate on the ways of developing an optimal capital structure for those companies that face severe pressures and problems that occur in the marketplace. Agency problem leading to agency costs is among the most important ones of these problems. Campello (2006) includes all the related costs -such as manipulations of earnings, loss of profitable investment opportunities, excessive and inefficient investments done because of the conflicts of interests between owners and managers, etc. - in the context of this agency problem.

The fundamental source of these conflicts of interests is the incongruity between the earnings expectations of the owners and the individual benefit or utility expectations of the managers. To balance these conflicting expectations, firms need to establish an optimum capital structure. Revenue / cost theories in the sphere of corporate finance are already based on the target capital structure to balance the various advantages and costs of both debts and equity (Cadenillas *et al.* 2004).

According to the Agency Theory hypothesis which is related to the borrowing strategies and capital structure, those firms whose leverage ratios are high and equity / assets ratios are low, can decrease their agency costs and increase their market value by increasing their indebtedness (Berger, Di Patti 2006). The accelerating effect of the financial leverage does not only decrease the agency costs but also rationalize the decisions of the managers thanks to the increasing amount of audit and control done by the lenders. The financial leverage is thus positively associated to the market value of the firms (Harris, Raviv 1991). Still however, beyond the optimum level of borrowing, the leverage effect may lead to fatal consequences such as attachment, bankruptcy, and liquidation (Berger, Di Patti 2006). According to the Myers and Majluf's (1984) Pecking Order Model managers do not care about the partial capital structure, and they do not treat the debt structure independent from the equity structure (Howakimian *et al.* 2004). They rather consider the general variance in the total cost of the capital and its consequences. Determination of a target indebtedness ratio in advance may constitute a precaution for the harmful effects of over-indebtedness; until the pre-determined ceiling for borrowing, the leverage effect will bring extra returns (Yukcu *et al.* 1999; Nieh *et al.* 2008).

Agency problem is also related to information asymmetry which is among the important problems present within the interactions among different actors, such as owners, stockholders, managers, lenders, etc. As Schieg (2008) points out asymmetric distribution of information among different parties is one of the critical factors to deal with especially during the design phase of contractual relations. Asymmetric information is the ability of some parties to access and possess a greater amount of naturally tacit knowledge, experience and information than the others, thereby, creating an information asymmetry problem. Accordingly, those who control this asymmetric information may exploit it by producing a risk premium to serve only their individual interests at the expense of the others. Even the efforts to share some knowledge with the stakeholders, such as announcements or declarations of the financial reports to the public about the activities

and financial situation of the firm done by the firms themselves and / or by the audit firms, are not sufficient to uncover the detailed tacit knowledge beyond the information asymmetry (Karataş, Aren 2008). Therefore, the creditors prefer to implement higher risk premium for those firms which are considered to be very uncertain and accordingly risky; leading to unexpected credit-debt cost for the firms.

Another important problem present in the marketplace is the globalization of the markets which not only increases the amount of threats coming from international competitors but also provides diverse borrowing sources and opportunities for especially those developing country firms that used to operate in their smaller but also safer national markets. Since 1980s, developing countries' governments and private firms have tried to access to the international markets to secure more external funds to finance their offensive and defensive strategies to tackle with both the opportunities and threats of the globalization process.

The ability of the private firms of the developing nations to borrow in the international markets proved to be highly related to the indicators of their national economy, such as the value of the national currency, inflation rate, interest rate, maturity terms, etc. (Ozgen 1998). The decisions pertaining to the cost of borrowing and risk of lending are especially affected by the differences of these economic indicators between borrowing developing countries and lending developed countries. All these global concerns intervene in the determination of an optimum firm-level debt and equity structure (Schmukler, Vesperoni 2006). Moreover country-specific factors influence the roles of firm-specific determinants of leverage (De Jong *et al.* 2008). For instance, long-term debt decreases in economies with a large banking sector and developed domestic financial systems (e.g. Demirgüç-Kunt, Maksimovic 1999; Schmukler, Vesperoni 2006). While firm leverage at an aggregate level is fairly similar across the G-7 countries (Rajan, Zingales 1995), there are persistent differences among capital structures of firms from different developing countries (Booth *et al.* 2001).

An important opportunity present in the global markets is the possibility of reducing financial risks by diversifying sources of foreign indebtedness. Diversification of debts is an appropriate strategy, on the one hand, to cope with the currency fluctuations which are typical in the globalization process (Reeb *et al.* 2001; Singh, Nejadmalayeri 2004). However, on the other hand, the mismanagement of diversification strategies may also lead to the utilization of numerous external monetary sources and to end up with over-indebtedness. Moreover, short-term capital movements and the under-developed legal and fiscal infrastructure within the developing nations have already limited the rational decision making at the firm level, especially at the first years of globalization (Kaminsky, Reinhart 1998).

Local and international financial crises that occurred after 1980s indicated that the inability of the decision makers at the firm level was also the result of the inability of the nation level decision makers, i.e. governmental and / or autonomous institutions for economic regulations in the internal markets, especially in the fields of fiscal control and audit mechanisms, early warning systems, transparency of the financial markets, etc. (e.g. Diao *et al.* 1999; Yenturk 1999). Mismanagement of these issues complicated

also the formation of an optimum level of indebtedness in the companies of the developing economies (Egilmez, Kumcu 2004). The opposite may also be true; in other words developed nations with stronger banking systems, experienced fiscal audit and control institutions and more stable and attractive national markets will provide suitable conditions to their national firms to establish healthier capital structures. Thus the national level of development (being whether a developed nation's or a developing nation's firm) may be a critical concern for borrowing limits and / or opportunities that shape the capital structure, debt ratios and their drivers.

## **2.2. The hypotheses and the models**

Our empirical study's hypotheses developed based on the related literature about the drivers of debt ratios are discussed below. First, we group these drivers according to their common characteristics, namely profitability, firm size, tangibility, and depreciation. Then, these hypotheses all together form the relationship models to be tested.

### **2.2.1. Impact of profitability on debt ratios**

Empirical investigations through relationship models on the factors that affect the debt ratios concentrate especially on the developed nations' financial markets (e.g. Singh, Nejadmalayeri 2004). In these models in the recent literature the amount of earnings is among the mostly used drivers of indebtedness. According to the Pecking Order Model, firms utilize first their retained earnings as an internal source of finance; then step by step they find other sources, namely borrowing debts and issuing stocks (Hovakimian *et al.* 2004).

In their studies on Turkish firms, Arslan and Karan (2009) found a negative relation between the likelihood of corporate default and profit margins. In this respect, as the earnings and accordingly retained earnings increase internal sources of finance will be adequate and there will be no need to borrow. Thus, there should be a negative relationship between earnings and indebtedness. Moreover, beside the nominal value of the earnings, the earnings ratios should also be considered in this association. Therefore we also purport that a similar negative relationship should also exist between the returns-equity ratio and indebtedness. Accordingly we develop the following hypotheses:

**H1:** Earnings before interest and tax payments (EBIT) decrease the debt ratios.

**H2:** Returns on equity ratio (ROE) decreases the debt ratios.

### **2.2.2. Impact of firm size on debt ratios**

Another driver of the indebtedness is the amount of sales which constitutes the primary source of cash in / outflows for the firms. As the sales and / or orders for sales increase, the need for funds to spend for the operations and investments increases. Recent empirical literature confirms this logic (e.g. Harford *et al.* 2009; Bauguess *et al.* 2009). Accordingly we develop the following hypothesis:

**H3:** Sales increase the debt ratios.

The amount of the assets is another factor that affects the debt ratios. Literature on the indebtedness indicates that there is a positive relationship between the leverage effect

and assets' size. Titman and Wessels (1988) mention that as the firm size increases, its operations will be more diversified and balanced; and the fluctuations in the cash flows will be decreased. The firm will become safer and free from the destructive effects of cash bottlenecks. Accordingly, the firm size reduces the possibility of bankruptcy due to the fluctuations of cash in / outflows (Firatoglu 2005) which would increase the courage and credibility to borrow more. This positive association between the total assets and debt ratios is also confirmed by the recent literature (e.g. Cadenillas *et al.* 2004; Fattouh *et al.* 2005). Accordingly we develop the following hypothesis:

**H4:** Assets increase the debt ratios.

### **2.2.3. Impact of tangibility on debt ratios**

The value of the tangible fixed assets constitutes another driver for indebtedness. The fixed assets are both accepted by the creditors as a guarantee for debts and also as a valuable physical item to sell in case of insolvency (Firatoglu 2005). According to Fattouh *et al.* (2005) larger firm size and larger amount of fixed assets increase the credibility and bargaining power of the firms in the relations with the creditors leading to the betterment of the credit terms. Moreover, managers of those firms with larger amount of fixed assets may feel freer and safer to increase their indebtedness believing that their larger firm size and institutionalized and transparent structure will contribute to their ability to develop a healthier capital structure even with larger amounts of debts. The recent literature supports in general the positive relationship between the size of leverage and the amount of assets which are acceptable by the creditors to be collateralized (e.g. Huang, Song 2006). Therefore, an increase in the tangible fixed assets / total assets ratio -or tangibility- may lead to an increase in the debt ratios. Accordingly we develop the following hypothesis:

**H5:** Tangibility increases the debt ratios.

### **2.2.4. Impact of depreciation on debt ratios**

Depreciation- total assets ratio as a kind of non-debt tax shields is another determinant in the indebtedness decisions. Depreciation expenses are tax deductible like debt related tax shields and can be used for the same purpose (DeAngelo, Masulis 1980); and they are even more preferable because they do not involve the use of cash. Thus, firms with significant depreciation expenses (usually those that had made discretionary investments in property, plant and equipment recently) will not want or need to issue debt because they are already receiving tax benefits from depreciation (Dalbor, Upneja 2004). Previous research's findings support this logic (e.g. MacKie-Mason 1990; Chiarella *et al.* 1992; Wald 1999; Upneja, Dalbor 2001; Huang, Song 2006) by confirming a negative relationship between depreciation tax shields and the use of debt. Accordingly we develop the following hypothesis:

**H6:** Depreciation- total assets ratio decreases the debt ratios.

### **2.2.5. The models of debt ratios' drivers**

Based on the above developed six hypotheses we test the following models of indebtedness relations. The debt ratios to represent the indebtedness of the firms are categorized

as short-term, long-term, and total debt ratios. These three debt ratios are the dependent variables and the six hypothesized drivers of indebtedness are the independent variables of our three research models. In every model, the independent variables are the same, but the dependent ones are different:

**Model 1:**  $\text{Total Debts / Total Assets} = -\beta_1 \text{ EBIT} - \beta_2 \text{ ROE} + \beta_3 \text{ Log (Sales)} + \beta_4 \text{ Log (Total Assets)} + \beta_5 \text{ Tangibility} - \beta_6 \text{ Depreciation / Total assets}$

**Model 2:**  $\text{Long-term Debts / Total Assets} = -\beta_1 \text{ EBIT} - \beta_2 \text{ ROE} + \beta_3 \text{ Log (Sales)} + \beta_4 \text{ Log (Total Assets)} + \beta_5 \text{ Tangibility} - \beta_6 \text{ Depreciation / Total assets}$

**Model 3:**  $\text{Short-term Debts / Total Assets} = -\beta_1 \text{ EBIT} - \beta_2 \text{ ROE} + \beta_3 \text{ Log (Sales)} + \beta_4 \text{ Log (Total Assets)} + \beta_5 \text{ Tangibility} - \beta_6 \text{ Depreciation / Total assets}$

### 3. Research methodology

#### 3.1. Measurement of the variables

Variables of our research model and the explanations for the calculation of their measures are depicted on Table 1.

**Table 1.** The measures

| Variable                        | Calculation  |
|---------------------------------|--|
| Total Debts / Total Assets      | Division of total debts to total assets                      |
| Long-term Debts / Total Assets  | Division of long-term debts to total assets                  |
| Short-term Debts / Total Assets | Division of short-term debts to total assets                 |
| EBIT                            | Division of earnings before interest and tax to total assets |
| ROE                             | Division of net income to equity (return on equity)          |
| Log (Sales)                     | Net sales' logarithm to the base 10                          |
| Log (Total Assets)              | Total Assets' logarithm to the base 10                       |
| Tangibility                     | Division of tangible fixed assets to total assets            |
| Depreciation / Total assets     | Division of accumulated depreciations to total assets        |

#### 3.2. Data collection

Data on the dependent and independent variables of our study model are collected from Turkish and Taiwanese stock markets. The motivation behind collecting data on two different countries and to test the model on both of them was to compare the drivers of indebtedness in the newly developed and developing economies. Selection of the Turkish and Taiwanese national stock markets as the sources of data was based firstly to their different economical status- one is a developing economy, Turkey<sup>1</sup>; and the other one, a

<sup>1</sup> Turkish GDP (nominal) per capita is 10.472 US\$ and Turkey is classified within the Emerging and Developing Economies Group (World Economic Outlook Database-April 2009, International Monetary Fund).

newly developed economy, Taiwan<sup>2</sup>. Another reason for their selection is the eligibility to the longitudinal firm data from the publicized official web sources of their financial markets. Data collection is done by downloading online data, from the official web pages of the Turkish and Taiwanese stock markets, on the balance sheets and income statements of the firms listed on these stock markets, for the period of 1999–2005.

## 4. Analyses and findings

### 4.1. Descriptive statistics and ANOVA

Firstly, we report the descriptive statistics of the variables measured by data collected from both countries' stock markets, and secondly, the ANOVA results for the country comparisons. Table 2 depicts the means and standard deviations of the Turkish and Taiwanese companies separately, and also the ANOVA results on the differences between these two company categories.

Table 2. Descriptive statistics and ANOVA results

| Variables                       | Markets | Mean           | Std Dev | ANOVA Significance level |
|---------------------------------|---------|----------------|---------|--------------------------|
| EBIT                            | TSEC*   | 0.0515         | 0.1105  | <b>0.000</b>             |
|                                 | IMKB**  | <b>0.1491</b>  | 0.1811  |                          |
| ROE                             | TSEC    | 0.0504         | 0.3597  | 0.213                    |
|                                 | IMKB    | 0.0033         | 1.9727  |                          |
| Log (Sales)                     | TSEC    | <b>11.4728</b> | 4.3191  | <b>0.000</b>             |
|                                 | IMKB    | 0.5708         | 0.5760  |                          |
| Log (Total Assets)              | TSEC    | <b>6.7386</b>  | 0.5301  | <b>0.000</b>             |
|                                 | IMKB    | 0.4216         | 0.5007  |                          |
| Tangibility                     | TSEC    | 0.2810         | 0.1856  | <b>0.000</b>             |
|                                 | IMKB    | <b>0.3370</b>  | 0.1957  |                          |
| Depreciation / Total Assets     | TSEC    | <b>0.1735</b>  | 0.1861  | <b>0.000</b>             |
|                                 | IMKB    | 0.1182         | 0.6134  |                          |
| Total Debts / Total Assets      | TSEC    | 0.3985         | 0.1581  | 0.232                    |
|                                 | IMKB    | 0.3846         | 0.4596  |                          |
| Long-term Debts / Total Assets  | TSEC    | 0.0804         | 0.0948  | <b>0.000</b>             |
|                                 | IMKB    | <b>0.7374</b>  | 1.4311  |                          |
| Short-term Debts / Total Assets | TSEC    | 0.2706         | 0.1469  | <b>0.000</b>             |
|                                 | IMKB    | <b>0.3612</b>  | 0.5964  |                          |

Note: \*Taiwanese Stock Market; \*\*Turkish Stock Market

<sup>2</sup> Taiwanese GDP (nominal) per capita is 17,040 US\$ and Taiwan is classified within the Advanced Economies and Newly Industrialized Asian Economies Groups (World Economic Outlook Database-April 2009, International Monetary Fund). Moreover, Taiwanese Stock Exchange became the largest trading value among the five Pacific-Basin emerging markets in 1993 (Chui, Wei 1998) and then the 12th largest financial market in 1999 (Barber *et al.* 2007; Wu *et al.* 2009).



Means of the Taiwanese firms indicate the financial strength and balanced capital structure of them when compared to the Turkish firms considering especially the means of Log (Sales), Log (Total Assets), and Long-term Debts / Total Assets ratio. Descriptive statistics reveal also that Turkish firms listed on the stock exchange are heterogeneous concerning the large standard deviations of the variables especially that of ROE and Depreciation / Total Assets ratio. As for the Taiwanese firms, on the contrary, homogeneity among their indicators is a typical finding, especially for the following variables, Log (Sales), Log (Total Assets), and Total Debts / Total Assets ratio since their standard deviations are very low when compared to their means.

ANOVA results on Table 1 indicate that the descriptive statistics of all the indebtedness drivers except ROE and all the debt ratios except Total Debts / Total Assets are significantly different when we compare the Turkish and Taiwanese companies. In Turkey, EBIT, Tangibility, Long-term and Short-term Debts ratios are significantly higher than in Taiwan; whereas in Taiwan, Sales, Total Assets, and Depreciation ratio are significantly higher than in Turkey. Thereby, we can infer that the capital structure of the Turkish firms in general is not only less healthy and significantly different than the Taiwanese firms but also heterogeneous within each other.

#### 4.2. Regression analyses

Relationship models to test the effects of the indebtedness drivers on the debt ratios are tested using data from both Turkish and Taiwanese stock markets by six regression analyses, where the independent variables - EBIT, ROE, Log (Sales), Log (Total Assets), fixed assets-total assets ratio, depreciation- total assets ratio- are the same, and the dependent variables are different, namely Total Debts / Total Assets, Long-term Debts / Total Assets, Short-term Debts / Total Assets.

Table 3 shows the results of the first two regression analyses about the effects of the independent variables on the Total Debts / Total Assets ratio on both markets. The regression analysis for the drivers of the Total Debts / Total Assets ratio on the Taiwanese

**Table 3.** Effects on the Total Debts / Total Assets ratio (TD / TA)

| Variables                      | Taiwanese     |              | Turkish      |              |
|--------------------------------|---------------|--------------|--------------|--------------|
|                                | <i>B</i>      | <i>p</i> *   | $\beta$      | <i>p</i> *   |
| EBIT                           | <b>-0.145</b> | <b>0.000</b> | 0.039        | 0.504        |
| ROE                            | <b>-0.018</b> | <b>0.017</b> | -0.011       | 0.802        |
| Log (Sales)                    | <b>0.079</b>  | <b>0.000</b> | <b>0.592</b> | <b>0.000</b> |
| Log (Total Assets)             | <b>0.936</b>  | <b>0.000</b> | 0.156        | 0.186        |
| Tangibility                    | <b>0.061</b>  | <b>0.000</b> | -0.067       | 0.435        |
| Depreciation / Total Assets    | <b>-0.098</b> | <b>0.000</b> | 0.119        | 0.211        |
| <i>Adjusted R</i> <sup>2</sup> | <i>0.890</i>  | <i>0.000</i> | <i>0.399</i> | <i>0.000</i> |

**Note:** \*level of significance

firms produces the following model of relations, where all the six hypotheses of this study are confirmed:

$$TD / TA = - 0.145 EBIT - 0.018 ROE + 0.079 \text{ Log (Sales) } + 0.936 \text{ Log (Total Assets) } + 0.061 \text{ Tangibility } - 0.098 \text{ Depreciation / Total Assets}$$

The regression analysis for the drivers of the Total Debts / Total Assets ratio on the Turkish firms produces the following model of relations, where only one (the positive impact of Log (Sales) on the Total Debts / Total Assets ratio) of the six hypotheses is confirmed:

$$TD / TA = + 0.039 EBIT - 0.011 ROE + 0.592 \text{ Log (Sales) } + 0.156 \text{ Log (Total Assets) } - 0.067 \text{ Tangibility } + 0.119 \text{ Depreciation / Total Assets}$$

Table 4 shows the results of the second two regression analyses about the effects of the independent variables on the Long-term Debts / Total Assets ratio on both markets. The regression analysis for the drivers of the Long-term Debts / Total Assets ratio on the Taiwanese firms produces the following model of relations, where only one (the negative impact of ROE on the Long-term Debts / Total Assets ratio) of the six hypotheses of this study is not confirmed:

$$LD / TA = - 0.185 EBIT + 0.056 ROE + 0.074 \text{ Log (Sales) } + 0.425 \text{ Log (Total Assets) } + 0.358 \text{ Tangibility } - 0.087 \text{ Depreciation / Total Assets}$$

The regression analysis for the drivers of the Long-term Debts / Total Assets ratio on the Turkish firms produces the following model of relations, where only three (the negative impact of EBIT, the positive impact of Log (Assets), and the positive impact of Tangibility on the Total Debts / Total Assets ratio) of the six hypothesis are not confirmed:

$$LD / TA = - 0.070 EBIT - 0.221 ROE + 0.906 \text{ Log (Sales) } - 0.558 \text{ Log (Total Assets) } - 0.135 \text{ Tangibility } - 0.413 \text{ Depreciation / Total Assets}$$

Table 5 shows the results of the last two regression analyses about the effects of the independent variables on the Short-term Debts / Total Assets ratio on both markets. The regression analysis for the drivers of the Short-term Debts / Total Assets ratio on the Taiwanese firms produces the following model of relations, where only two (the positive impact of Log (Sales) and the positive impact of Tangibility on the Short-term Debts / Total Assets ratio) of the six hypotheses of this study are not confirmed:

$$SD / TA = - 0.108 EBIT - 0.043 ROE + 0.029 \text{ Log (Sales) } + 1.102 \text{ Log (Total Assets) } - 0.148 \text{ Tangibility } - 0.120 \text{ Depreciation / Total Assets}$$

The regression analysis for the drivers of the Short-term Debts / Total Assets ratio on the Turkish firms produces the following model of relations, where only one (the positive impact of Log (Sales) on the Short-term Debts / Total Assets ratio) of the six hypotheses is confirmed:

$$SD / TA = + 0.009 EBIT - 0.022 ROE + 0.551 \text{ Log (Sales) } + 0.091 \text{ Log (Total Assets) } - 0.097 \text{ Tangibility } + 0.293 \text{ Depreciation / Total Assets}$$

Table 6 summarizes the findings of the regression analyses. It is shown that the model of relations between the debt ratios and its proposed drivers works in general in the

**Table 4.** Effects on the Long-term Debts / Total Assets ratio (LD / TA)

| Variables                   | Taiwanese     |              | Turkish       |              |
|-----------------------------|---------------|--------------|---------------|--------------|
|                             | $\beta$       | $p^*$        | $\beta$       | $p^*$        |
| EBIT                        | <b>-0.185</b> | <b>0.000</b> | -0.070        | 0.288        |
| ROE                         | 0.056         | <b>0.001</b> | <b>-0.221</b> | <b>0.000</b> |
| Log (Sales)                 | <b>0.074</b>  | <b>0.033</b> | <b>0.906</b>  | <b>0.000</b> |
| Log (Total Assets)          | <b>0.425</b>  | <b>0.000</b> | -0.588        | <b>0.000</b> |
| Tangibility                 | <b>0.358</b>  | <b>0.000</b> | -0.135        | 0.140        |
| Depreciation / Total Assets | <b>-0.087</b> | <b>0.000</b> | <b>-0.413</b> | <b>0.000</b> |
| Adjusted $R^2$              | 0.500         | 0.000        | 0.297         | 0.000        |

Note: \*level of significance

**Table 5.** Effects on the Short-term Debts / Total Assets ratio (SD / TA)

| Variables                   | Taiwanese     |              | Turkish      |              |
|-----------------------------|---------------|--------------|--------------|--------------|
|                             | $B$           | $p^*$        | $\beta$      | $p^*$        |
| EBIT                        | <b>-0.108</b> | <b>0.000</b> | 0.009        | 0.887        |
| ROE                         | <b>-0.043</b> | <b>0.009</b> | -0.022       | 0.649        |
| Log (Sales)                 | 0.029         | 0.193        | <b>0.551</b> | <b>0.000</b> |
| Log (Total Assets)          | <b>1.102</b>  | <b>0.000</b> | 0.091        | 0.490        |
| Tangibility                 | -0.148        | <b>0.000</b> | -0.097       | 0.312        |
| Depreciation / Total Assets | <b>-0.120</b> | <b>0.000</b> | 0.111        | 0.293        |
| Adjusted $R^2$              | <b>0.793</b>  | <b>0.000</b> | <b>0.253</b> | <b>0.000</b> |

Note: \*level of significance

**Table 6.** Results of the hypotheses tests

| Dependent Variables<br>(Debt ratios)*                                     | Taiwanese Firms |           |           | Turkish Firms |           |           |
|---|-----------------|-----------|-----------|---------------|-----------|-----------|
|   | TD/TA           | LD/TA     | SD/TA     | TD/TA         | LD/TA     | SD/TA     |
| <b>H1:</b> Earnings before interest & tax (EBIT) decrease the debt ratios | <b>S**</b>      | <b>S</b>  | <b>S</b>  | <b>NS***</b>  | <b>NS</b> | <b>NS</b> |
| <b>H2:</b> Returns on equity (ROE) decreases the debt ratios              | <b>S</b>        | <b>NS</b> | <b>S</b>  | <b>NS</b>     | <b>S</b>  | <b>NS</b> |
| <b>H3:</b> Sales increase the debt ratios                                 | <b>S</b>        | <b>S</b>  | <b>NS</b> | <b>S</b>      | <b>S</b>  | <b>S</b>  |
| <b>H4:</b> Assets increase the debt ratios                                | <b>S</b>        | <b>S</b>  | <b>S</b>  | <b>NS</b>     | <b>NS</b> | <b>NS</b> |
| <b>H5:</b> Tangibility increases the debt ratios                          | <b>S</b>        | <b>S</b>  | <b>NS</b> | <b>NS</b>     | <b>NS</b> | <b>NS</b> |
| <b>H6:</b> Depreciation- total assets ratio decreases the debt ratios     | <b>S</b>        | <b>S</b>  | <b>S</b>  | <b>NS</b>     | <b>S</b>  | <b>NS</b> |

Notes: \*Debt ratios: TD / TA: Total Debts / Total Assets; LD / TA: Long-term Debts / Total Assets; SD / TA: Short-term Debts / Total Assets; \*\*S: supported; \*\*\*NS: not supported

Taiwanese firms, except for the ROE – Long-term Debts / Total Assets ratio and Sales – Short-term Debts / Total Assets ratio relations. As for the Turkish firms, it is found that Sales increase all the debt ratios, and that only ROE, Sales, and Tangibility increase Long-term Debts / Total Assets ratio. Thus, in general, the proposed model does not work for the Turkish data.

## **5. Results and conclusion**

### **5.1. Results and discussion**

Our empirical tests on the financial indicators of the firms indexed in the Taiwanese and Turkish stock markets reveal some significant variances between these two countries' firms concerning their financial indicators. Firstly, while Taiwanese firms, representing the newly developed country context, are more homogenous within each other especially concerning for their total sales, assets, and debts, Turkish firms, representing the developing country context, are rather heterogeneous especially concerning for their ROE and depreciations. Secondly, Turkish firms' EBIT, tangibility, and both long and short term debt ratios are significantly higher than Taiwanese firms; while Taiwanese firms' Sales, Total Assets, and Depreciation ratio are significantly higher. This implies that the relative size of indebtedness and profitability before interest payments is higher in Turkish firms, while the relative size of cash and liquid sources, total sales, total assets, and accumulated depreciations is larger in Taiwanese firms.

Beside these financial variances, significant differences also exist concerning the test results of the hypothesized relations. Our model of the drivers of indebtedness that we develop based on the original model of Singh and Nejadmalayeri (2004) is generally confirmed in the newly developed country context -but not in the developing country context. Especially, all the six hypothesized drivers of the total debt ratios prove to be effective in the Taiwanese firms. However, a few exceptions of non-confirmed relations still exist for long and short term debt ratios. For instance, ROE -as one of the negative drivers of long-term debts, and Sales and Tangibility – as for the drivers of short-term debts- are found to be ineffective. The results of the tests on the Turkish firms, on the other hand, indicate that only a few hypothesized relationships are confirmed. For instance, Sales, ROE and depreciations are effective on the long-term debts, and again Sales on both total and short-term debts. This implies that the concept of sales is the most outstanding -if not the only one- driver of indebtedness for our study's developing country, Turkey; whereas in Taiwan all the six drivers are effective, but especially the size of the assets, depreciations, and earnings are significantly influential on all of the three types of debt ratios. These results can be interpreted as the existence of a clear distinction between developing and developed nations' firms considering the health of their financial structures, debt ratios, and their drivers. In brief, newly developed countries' firms are much healthier in financial concerns, and the model works much better in this context.

Provision of plausible explanations for the non-confirmed hypotheses in the developed country context needs further consideration. As for the long-term debt ratios of the

Taiwanese firms, the ratio of profits to the equity (ROE) is found to be positively effective – contradictory to the negatively hypothesized relation, while it is negatively effective on both short and total debt ratios. Thus, the time horizon of the debts intervenes in the utilization of the leverage, and turns this still significant effect from a negative sign to a positive one. In other words, the expectation of a relationship between increasing profits – contributing to the formation of an internal cash reserve alternative to indebtedment- and decreasing need for debts is not confirmed for long-term debts, and just the opposite is found. We can explain this positive effect which is similar to that of sales or assets, and dissimilar to that of EBIT, by assuming that the expectation both in the minds of the borrowers and lenders that higher ROE will increase the accumulation of cash reserves, increases also the courage, ability, and credibility to borrow more long-term debts, but it still decreases the need for short-term debts. Moreover, the provision of long-term debts in developed nations is much more abundant and convenient when compared not only to the provision of short-term debts, but also to the conditions in the developing economies. Therefore, we can deduce that in newly developed and still stably growing financial systems, either profitable company decision makers are confident for their profitability to grow continuously in the long run to repay their increased long-term debts, or the lenders located in these markets are richer and more able to provide long-term debts with convenient conditions, or both.

Another contradictory finding related to time horizon is the negative effect of tangibility on short-term debts. The logic behind the hypothesis that purports a positive relation between tangible fixed assets and the ability to collect long-term debts seems to be more related to the need for long-term investments and to existence of some valuable fixed assets for collateralization. But, if this long term external support for investments is already provided in a developed financial system, the need for short term and less convenient debts should be decreased. Moreover, in those richer firms both the nominal value of internal cash reserves and tangible fixed assets may be large at the same time. Thus, considering both the strategies of lenders and borrowers in the advanced economies, any further increase in the tangibility should not be leading necessarily to an increase in the short run need for external funds.

Another finding again in the Taiwanese context, not-supporting the related indebtedness hypothesis is the ineffectiveness of sales – which is indeed positively effective on long-term and total debt ratios- on the short-term debts. A plausible explanation for this finding may be the existence of a time lag between the cash inflow to be provided by sales and the need for short-term cash outflow to pay the short term debts. Moreover, in the short run, the companies of the developed countries which have been already found to be much stronger in the size of sales and assets generally do neither rely on the short run debts to produce and sell the fluctuating orders of the customers, nor rely on the sales to pay their short term debts. Rather, they make long term mass production and sales plans not based on the daily and uncertain orders coming from the customers. Thus their need and/or ability to secure short term debts is not related to their size of total sales; as the sales and / or orders for sales increase, the need for funds to spend

more for the operations and investments may be easily found from other sources i.e. already reserved internal cash sources or long-term external sources.

Briefly, the test results for the developed country context show that the model works best for the explanation of the drivers of the total and long-term debt ratios. For the short-term indebtedness, although our tests confirm only four of the six proposed drivers further research may discover some other drivers.

Provision of some plausible explanations for the non-confirmed hypotheses in the developing country context seems to be much more difficult since only the size of the sales affect all the three types of debt ratios. The amount of sales is also the sole driver -among the six drivers that we test- that affect significantly total and short-term debts. In addition to sales, only ROE and depreciations affect the long-term debts ratio positively as hypothesized. However, the size of the total assets exerts a negative effect on long term debts ratio as opposed to the related hypothesis. Moreover, fixed assets and EBIT are not related to any one of the debt ratios. These findings indicate that the decision makers in the developing country context mostly rely on debt financing if their amount of sales increases; but on the other hand, if their size of the assets and accordingly equity is larger they prefer to utilize equity financing instead of long-term borrowing probably because of the non-availability convenient long-term borrowing costs and conditions. In this concern, ROE that will contribute to the retained earnings and accumulated depreciations, come together and create an alternative inner fund to indebtedness in the long-term by enhancing the equity financing approach.

## **5.2. Further research implications**

Limitations of this study may open new avenues for the further studies on similar research questions. In this study, we tried to deduce specific consequences pertaining to the comparison of newly developed and developing country contexts. However, due to the difficulties of accessing to relevant financial data, we preferred to analyze only one country, Turkey, representing the developing country context and again only one country, Taiwan, representing the newly developed country context, which were convenient for us to collect and analyze data. In future studies, number of financial markets may be increased to make generalizations. Another research may be related to collect data to retest indebtedness models in the specific periods of crises that the companies face frequently during the globalization process after 1980s. Finally, in order to discover other significant drivers of indebtedness especially in the developing country context, other financial indicators may be added to the model.

## **5.3. Conclusions**

This study trying to develop and test an original indebtedness model on the drivers of indebtedness – namely EBIT, ROE, sales, total assets, fixed assets-total assets ratio, depreciation- total assets ratio- and conducted in the stock markets of two different countries, namely Turkey, a developing country and Taiwan, a newly developed country reveal that there are great differences between Turkish and Taiwanese firms in terms

of their capital structure and the drivers' impacts on their debt ratios. The size of the sales is the outstanding factor that leads firms to borrow more in the developing country context. On the contrary, sales, profitability, size of the assets, and depreciations only in the long run encourage firms to utilize equity financing, again in the same context. Briefly, we can conclude that the proposed model which is prepared based on the recent literature, works better in Taiwan. As in Turkey, it works to some extent, only for the long term debt ratios.

## References

- Alexander, C.; Dimitriu, A. 2005. Indexing, cointegration and equity market regimes, *International Journal of Finance and Economics* 10: 213–231. doi:10.1002/ijfe.261
- Arslan, Ö.; Karan, M. B. 2009. Credit risks and internationalization of SMEs, *Journal of Business Economics and Management* 10: 361–368. doi:10.3846/1611-1699.2009.10.361-368
- Barber, B.; Lee, Y. T.; Liu, Y. J.; Odean, T. 2007. Is the aggregate investor reluctant to realize losses? Evidence from Taiwan, *European Financial Management* 13(3): 423–447. doi:10.1111/j.1468-036X.2007.00367.x
- Bauguess, S. W.; Moeller, S. B.; Schlingemann, F. P.; Zutter, C. J. 2009. Ownership structure and target returns, *Journal of Corporate Finance* 15(1): 48–65. doi:10.1016/j.jcorpfin.2008.09.002
- Berger, A. N.; Di Patti, E. B. 2006. Capital structure and firm performance: a new approach to testing agency theory and an application to the banking industry, *Journal of Banking and Finance* 30: 1065–1102. doi:10.1016/j.jbankfin.2005.05.015
- Booth, L.; Aivazian, V.; Demirguc-Kunt, A.; Maksimovic, V. 2001. Capital structure in developing countries, *Journal of Finance* 56: 87–130. doi:10.1111/0022-1082.00320
- Cadenillas, A.; Cvitanic, J.; Zapatero, F. 2004. Leverage decision and manager compensation with choice of effort and volatility, *Journal of Financial Economics* 73: 71–92. doi:10.1016/j.jfineco.2003.06.003
- Campello, M. 2006. Debt financing: does it boost or hurt firm performance in product markets?, *Journal of Financial Economics* 82: 135–172. doi:10.1016/j.jfineco.2005.04.001
- Chiarella, C.; Pham, T.; Sim, A. B.; Tan, M. 1992. Determinants of corporate capital structure – Australian evidence, *Pacific-Basin Capital Markets Research* 3: 139–158.
- Choudhry, T. 2001. Month of the year effect and January effect in Pre-WWI stock returns: evidence from a non-linear garch model, *International Journal of Finance and Economics* 6: 1–11. doi:10.1002/ijfe.142
- Chui, A.; Wei, K. C. 1998. Book-to-market, firm size, and the turn-of-the-year effect: evidence from pacific-basin emerging markets, *Pacific-Basin Finance Journal* 6(3): 275–293. doi:10.1016/S0927-538X(98)00013-4
- Dalbor, M. C.; Upneja, A. 2004. The investment opportunity set and the long-term debt decision of U.S. lodging firms, *Journal of Hospitality and Tourism Research* 28: 346–355. doi:10.1177/1096348004265024
- Dalmazzo, A.; Marini, G. 2000. Foreign debt, sanctions and investment: a model with politically unstable less developed countries, *International Journal of Finance and Economics* 5: 141–153. doi:10.1002/(SICI)1099-1158(200004)5:2<141::AID-IJFE119>3.0.CO;2-A
- De Jong, A.; Kabir, R.; Nguyen, T. 2008. Capital structure around the world: the roles of firm- and country-specific determinants, *Journal of Banking and Finance* 32: 1954–1969. doi:10.1016/j.jbankfin.2007.12.034

- DeAngelo, H.; Masulis, R. W. 1980. Optimal capital structure under corporate and personal taxation, *Journal of Financial Economics* 8(1): 3–29. doi:10.1016/0304-405X(80)90019-7
- Demirgüç-Kunt, A.; Maksimovic, V. 1999. Institutions, financial markets, and firm debt maturity, *Journal of Financial Economics* 54: 295–336. doi:10.1016/S0304-405X(99)00039-2
- Diao, X.; Roe, T.; Yeldan, E. 1999. How fiscal mismanagement may impede trade reform: lessons from an intertemporal, multi-sector general equilibrium model for Turkey, *The Developing Economies* 37(1): 59–88. doi:10.1111/j.1746-1049.1999.tb00865.x
- Egilmez, M.; Kumcu, E. 2004. *Ekonomi Politikası Teori ve Türkiye Uygulaması*. Remzi Kitabevi, Turkey.
- Fattouh, B.; Scaramozzino, P.; Harris, L. 2005. Capital structure in South Korea: a quantile regression approach, *Journal of Development Economics* 76: 231–250. doi:10.1016/j.jdeveco.2003.12.014
- Firatoglu, B. 2005. *Şirketlerin Sermaye Yapılarını Etkileyen Faktörler ve Kriz Dönemlerinde Şirket Davranışlarında Meydana Gelen Değişiklikler*. Sermaye Piyasası Kurulu Araştırma Raporu. Turkey.
- Harford, J.; Klasa, S.; Walcott, N. 2009. Do firms have leverage targets? Evidence from acquisitions, *Journal of Financial Economics* 93(1): 1–14. doi:10.1016/j.jfineco.2008.07.006
- Harris, M.; Raviv, A. 1991. The theory of capital structure, *The Journal of Finance* 46: 297–355. doi:10.2307/2328697
- Hovakimian, A.; Hovakimian, G.; Tehranian, H. 2004. Determinants of target capital structure: the case of dural debt and equity issues, *Journal of Financial Economics* 71: 517–540. doi:10.1016/S0304-405X(03)00181-8
- Huang, G.; Song, F. M. 2006. The determinants of capital structure: evidence from China, *China Economic Review* 17: 14–36. doi:10.1016/j.chieco.2005.02.007
- Jensen, M. C.; Meckling, W. H. 1976. Theory of the firm: managerial behavior, agency costs and ownership structure, *Journal of Financial Economics* 3(4): 305–360. doi:10.1016/0304-405X(76)90026-X
- Kaminsky, G. L.; Reinhart, C. M. 1998. Financial crises in Asia and Latin America: then and now, *The American Economic Review* 88: 444–448.
- Karataş, A.; Aren, S. 2008. Vekalet teorisi ve bilgi asimetrisi problemi, in Özyılmaz, A.; Ölçer, F. (Eds.). *Güncel Yönetim ve Organizasyon Yaklaşımları*. Seçkin Yayıncılık, Ankara.
- Kraus, A.; Litzenberger, R. H. 1973. A state preference model of optimal financial leverage, *Journal of Finance* (September): 911–922. doi:10.2307/2978343
- MacKie-Mason, J. 1990. Do taxes affect corporate financing decisions?, *Journal of Finance* 45: 1471–1493. doi:10.2307/2328746
- Mckenzie, M. 2002. The economics of exchange rate volatility asymmetry, *International Journal of Finance and Economics* 7: 247–260. doi:10.1002/ijfe.189
- Myers, S.; Majluf, N. 1984. Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* 13: 187–221. doi:10.1016/0304-405X(84)90023-0
- Nieh, C. C.; Yau, H. Y.; Liu, W. C. 2008. Investigation of target capital structure for electronic listed firms in Taiwan, *Emerging Markets Finance and Trade* 44(4): 75–87. doi:10.2753/REE1540-496X440406
- Ozgen, F. B. 1998. Globalleşme Sürecinde Gelişmekte Olan Ülkelerde Finans Piyasaları, in *Globalleşme Sürecinde Türkiye'de Piyasaların Gelişimi Ege Maliye Bölmeleri Araştırma Görevlileri Sempozyumu*, Dokuz Eylül Üniv. Yayını, 47–49.



- Rajan, R.; Zingales, L. 1995. What do we know about capital structure – some evidence from international data, *Journal of Finance* 50(5): 1421–1460. doi:10.2307/2329322
- Reeb, D. M.; Mansi, S. A.; Allee, J. M. 2001. Firm internationalization and the cost of debt financing: evidence from non-provisional publicly traded debt, *Journal of Financial and Quantitative Analysis* 36(3): 395–414. doi:10.2307/2676289
- Schieg, M. 2008. Strategies for avoiding asymmetric information in construction project management, *Journal of Business Economics and Management* 9: 47–51. doi:10.3846/1611-1699.2008.9.47-51
- Schmukler, S.; Vesperoni, E. 2006. Financial globalization and debt maturity in emerging economies, *Journal of Development Economics* 79: 183–207. doi:10.1016/j.jdeveco.2004.12.006
- Singh, M.; Nejadmalayeri, A. 2004. Internationalization, capital structure and cost of capital: evidence from French corporations, *Journal of Multinational Financial Management* 14: 153–169. doi:10.1016/j.mulfin.2003.07.003
- Stiglitz, J. E. 2004. 90'ların Yükselişi Dünyanın en Parlak 10 Yılı'nın Hikayesi, *CSA Global Yayın Ajansı* 1: 202–240.
- Titman, S.; Wessels, R. 1988. The determinants of capital structure choice, *Journal of Finance* 43: 1–19. doi:10.2307/2328319
- Upneja, A.; Dalbor, M. 2001. The choice of long-term debt in the U.S. lodging industry, *Journal of Hospitality, Tourism, Leisure Science* 1(1): 1–19. Available from Internet: <www.unlv.edu/Tourism/HTLScience>.
- Wald, J. 1999. How firm characteristics affect capital structure: an international comparison, *Journal of Financial Research* 22(2): 161–187.
- World Economic Outlook Database. International Monetary Fund, April 2009. Available from Internet: <http://www.imf.org/external/pubs/ft/weo/2009/01/weodata/index.aspx>.
- Wu, C. H.; Wu, C. S.; Liu, V. W. 2009. The conservatism bias in an emerging stock market: evidence from Taiwan, *Pacific-Basin Finance Journal* 17(4): 494–505. doi:10.1016/j.pacfin.2008.12.002
- Yenturk, N. 1999. Short-term capital inflows and their impact on macroeconomic order: Turkey in the 1990s, *Developing Economies* 37: 89–113. doi:10.1111/j.1746-1049.1999.tb00866.x
- Yukcu, S.; Durukan, M.; Banu, Ö.; Erdal, Y.; Tulay, B.; Hasan, F.; Evrim, P.; Kutay, N.; Özkan, S.; Susmuş, T.; Tükenmez, M. 1999. Muhasebe Sistemi Uygulama Genel Tebliği'ne Göre, in *Finansal Yönetim*. Vizyon Yayınları, Turkey, 393–397.

## **ĮMONIŲ SKOLOS SANTYKIO NUSTATYMAS: TAIVANO IR TURKIJOS ĮMONIŲ PAVYZDŽIU**

**S. Aren, L. Alphan, B. Sezen, Z. A. Guncu**

Santrauka

Šis tyrimas apima dviejų skirtingų, tačiau stipriai besivystančių šalių, t. y. Taivano ir Turkijos rinkose veikiančių kompanijų skolos santykio nustatymą. Pagrindiniais veiksniais, turinčiais įtakos trumpalaikėms, ilgalaikėms ir bendrosioms skoloms, buvo pasirinktas pelnas prieš sumokant palūkanas ir mokestčius (EBIT), nuosavo kapitalo grąža (ROE), pardavimo, bendrojo turto, ilgalaikio turto ir bendrojo turto santykis bei bendrojo turto nusidėvėjimo santykis. Autorių gauti rezultatai rodo, kad vis dėlto yra skirtumų tarp Turkijos ir Taivano įmonių bei tų įmonių skolų struktūros. Straipsnio autoriai taikė regresijos metodus, kurie Taivano situaciją atspindėjo geriau nei Turkijos, o kodėl taip nutiko, autoriai argumentuoja paskutiniame straipsnio skyriuje.

**Reikšminiai žodžiai:** skola, santykis, kapitalo struktūra, vertinimo svertai, Turkija, Taivas.

**Selim AREN** is an Assoc. Prof. of Accounting and Finance at Gebze Institute of Technology. He obtained his PhD in Accounting and Finance from Gebze Institute of Technology in 2003. His research interests focus on earnings management, stock exchange markets and behavioral finance. His research studies have been published in several national and international journals.

**Lutfihak ALPKAN** is a Professor of Management at Gebze Institute of Technology. He obtained his PhD in Strategic Management from Gebze Institute of Technology in 2000. His research interests focus on entrepreneurship, innovation, business ethics, and performance management. His research studies have been published in several international journals including Journal of Business Research, International Small Business Journal, Journal of Business Ethics, Management Decision, and in numerous Turkish-language scholarly journals.

**Bulent SEZEN** is a Professor of Operations Management at Gebze Institute of Technology. He obtained his PhD in Operations Management from Gebze Institute of Technology in 2001. His research interests focus on lean production, logistics, inventory management and supply chain management. His research studies have been published in several international journals including Journal of Business Research, Industrial Marketing Management, Production Planning and Control, Total Quality Management, International Journal of Business and Industrial Marketing, Expert Systems with Application, Supply Chain Management, and in numerous Turkish-language scholarly journals.

**Ziya ALPER GUNCU** is a graduate from MBA programme at Gebze Institute of Technology in 2008. He works in a private bank in Turkey.