

# Using Financial Metrics to Forecast Debt in a Company

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## Abstract

A company's debt burden is a cardinal component of its financial equilibrium. The aim of this paper is to highlight the importance of indebtedness indicators and their relationship to selected financial metrics in the manufacturing of telecommunications equipment. To accomplish this, the application of deterministic methods to quantify debt metrics and the implementation of mathematical and statistical methods to forecast the development of gross debt and leverage are employed.

**Key words:** *Debt. Business. Profitability. Financial leverage.*

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## INTRODUCTION

One of the primary goals of financial management is to achieve optimal debt. The financial analysis suggests a variety of methods to assess the health of the company when selected indicators of financial analysis often creates a part of the company's evaluation in getting bank loans and other financial resources to ensure the company's functioning. Financial analysis is interesting in that it allows own judgment to any situation that occurs in the business economy, "(Malega, Bjalončíková 2012). (Dluhošová 2008) emphasizes the role of financial management which is to ensure sufficient financial resources and place them so that they are used effectively and at the same time to achieve financial balance whose elements are solvency (liquidity), capital structure (debt) and financial performance (rentability).

## DEBTS ANALYSIS AS A COMPONENT OF COMPANY'S FINANCIAL EQUILIBRIUM

The debt of the company is quantified by application of various financial metrics that can be monitored in the short or long term. According to (Kabáta 2013), the company which has a high net asset value is considered as stable business. High debt growth is a financial risk that is associated with the inability to meet its obligations towards its creditors. In business, faster revenue growth determines the cost of capital that is interest represents the company expense and the company uses less expensive equity capital. Equity ratio that is leverage quantified as a proportion of total capital attributable to one euro of equity, it is one of the main factors of Du Pont model through which the impact is quantified as an

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indicator of debt on return on equity. The indicator is particularly important from the perspective of business owners.

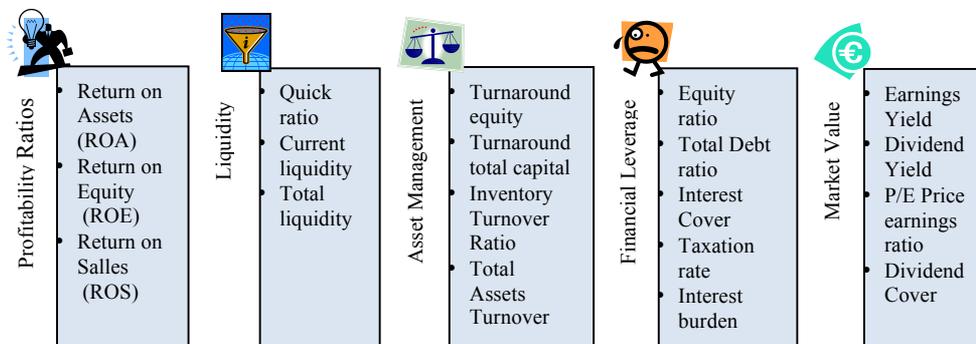


Figure 1: Metrics of financial analysis  
(Source: Růčková, Roubíčková 2012)

Direct analysis of financial debt metrics (Figure 2, Table 1) quantifies the facts that analyzed company uses foreign capital to finance current and non-current assets. When the company is insolvent, measured by the ratio of total liabilities to total loans and advances during the period, it is a positive development. The cardinal indicator that expresses the ratio analysis debt is the total debt of the company. In the total debt assets, it is the company's effort to decrease the indicator. The total debt indicator receives the company low in regard to the company's character. The indicator of self-financing qualified by share of own funds to total capital quantifies the condition in which one euro of the total invested capital accounts for 82 cents of equity. If the creditors' risk indicator is high, then financial stability of the business entity is low. The share of foreign capital in the equity is quantified measure of debt or debt to equity. The share of EBIT, operating profit before interest and taxes for one euro of interest expense, interest coverage metrics to quantify. Indicator of financial leverage should be, in accordance with the recommended values, maximal number 3. In the insolvency of the company, measured by the ratio of total liabilities to total loans and advances during the period it is a positive development.

Table 1: Debt indicators in years 2009-2013

| Ratios                  | 2009   | 2010   | 2011    | 2012    | 2013    |
|-------------------------|--------|--------|---------|---------|---------|
| Times-Interest-Earnet   | 14,345 | 97,742 | 137,543 | 172,889 | 1094,98 |
| Insolvency              | 0,913  | 0,855  | 0,613   | 0,540   | 0,525   |
| Financial Leverage (FL) | 1,278  | 1,317  | 1,292   | 1,214   | 1,197   |

(Source: Own Processing)

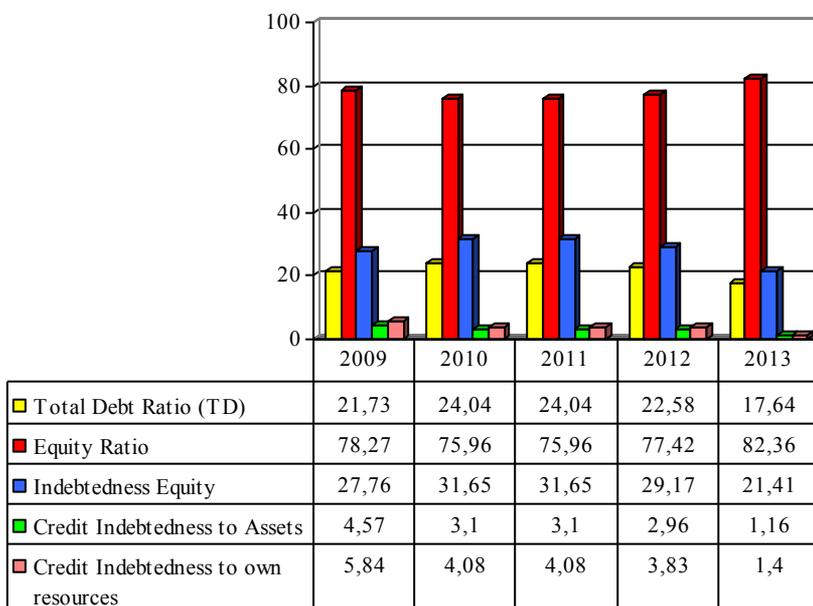


Figure 2: Trend of debt indicators in years 2009-2013 in %  
(Source: Own Processing)

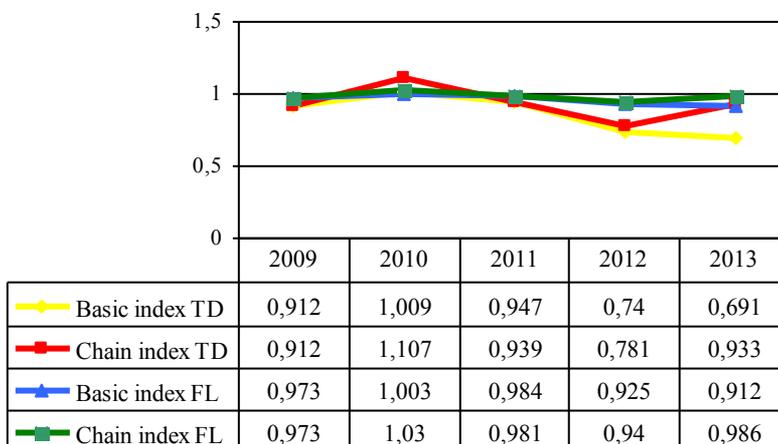


Figure 3: Trend of debt indexes  
(Source: Own Processing)

## FORECAST FOR FINANCIAL LEVERAGE DEVELOPMENT, DEBT RATIO, DEGREE OF FINANCIAL INDEPENDENCE IN THE MANUFACTURING COMPANY

In the manufacturing company, based on monthly data for January 2009 to December 2013 on own resources, external resources, current and fixed assets, there are regression equations proposed. Based on the analysis of time series, there is the linear model assuming a constant evaluation of temporal evolution of seasonal phenomenon.

Based on monthly costs ( $n=36$ ), there is estimated linear prediction model of financial leverage, which estimates selective regression coefficient  $b_1$  ( $b_{YX}$ ), who is also a directive of the regression line  $y=b_0+b_1t$ , that is  $y=f(t)=FL=1.268-(0.0033 \times t)$ . Statistical model is appropriate, as  $p=4.34.10^{-5}$ - value is significantly smaller than  $\alpha$ , ( $\alpha=0.05$ ). Determination coefficient  $R^2$  achieved value of 0.392 - which means that 39.253% are changes in the dependent variable explained by independent variable. The correlation coefficient R has the value of 0,392, (Table 2, Figure 4).

Table 2: Regression statistics

|                   |             |
|-------------------|-------------|
| Multiple R        | 0,626568568 |
| R Square          | 0,392588171 |
| Adjusted R Square | 0,374723117 |
| Standard Error    | 0,044853493 |
| Observations      | 36          |

| ANOVA      |           |           |           |          |                       |  |
|------------|-----------|-----------|-----------|----------|-----------------------|--|
|            | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |  |
| Regression | 1         | 0,04421   | 0,04421   | 21,9752  | 4,34695E-05           |  |
| Residual   | 34        | 0,068402  | 0,002012  |          |                       |  |
| Total      | 35        | 0,112613  |           |          |                       |  |

|            | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> |
|------------|---------------------|-----------------------|---------------|----------------|------------------|------------------|
| Intercept  | 1,268649002         | 0,015268185           | 83,09101      | 7,38E-41       | 1,237620316      | 1,299677688      |
| X Variable | -0,0033733          | 0,000719616           | -4,68777      | 4,35E-05       | -0,00483583      | -0,00191096      |

(Source: Own Processing)

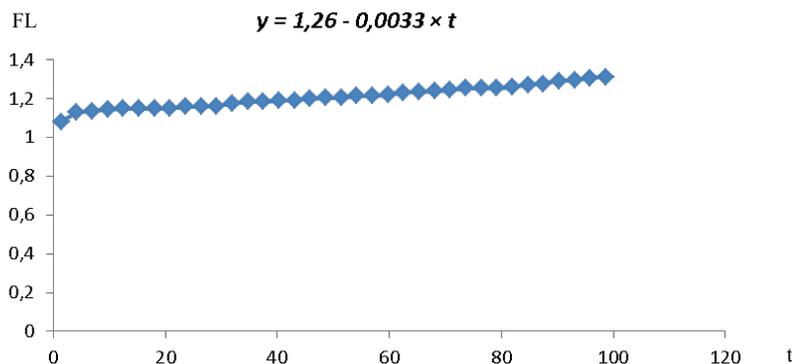


Figure 4: Graph of normal probability  
(Source: Own Processing)

Total debt forecast (TD) based on the regression output is given by a simple linear model in following form:  $y = a + (b \times t)$ , where  $y$  interprets the value of the time series at time  $t$ , the time to explain changes in the overall debt. The change of values of the time series shown for each period is given by absolute change in slope, which is the coefficient  $b$ . Forecast of leverage ratio to total capital is given in following equation  $y = f(t) = TD = 0.22 - (0.002 \times t)$ , where  $R^2 = 69.78\%$ , the correlation coefficient  $R = 83.53\%$  and the value of  $p = 1.31 \cdot 10^{-27}$ , (Table 3). Degree forecast of financial independence (MFS), the proportion of equity to borrowed funds is given in following linear model equation  $y = f(t) = MFS = 3.22 + (0.098 \times t)$ ,  $R^2 = 64.71\%$ ; correlation coefficient  $R = 0.5$  and  $p$ -value  $< \alpha$ .

Table 3: Results of regression and correlation analysis

| Multiple R        | 0,835364863         |                       |               |                |                       |                  |
|-------------------|---------------------|-----------------------|---------------|----------------|-----------------------|------------------|
| R Square          | 0,697834454         |                       |               |                |                       |                  |
| Adjusted R Square | 0,688947232         |                       |               |                |                       |                  |
| Standard Error    | 0,019691247         |                       |               |                |                       |                  |
| Observations      | 36                  |                       |               |                |                       |                  |
| ANOVA             | <i>df</i>           | <i>SS</i>             | <i>MS</i>     | <i>F</i>       | <i>Significance F</i> |                  |
| Regression        | 1                   | 0,030446              | 0,030446      | 78,5211        | 2,34537E-10           |                  |
| Residual          | 34                  | 0,013183              | 0,000388      |                |                       |                  |
| Total             | 35                  | 0,04363               |               |                |                       |                  |
|                   | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i>      | <i>Upper 95%</i> |
| Intercept         | 0,224292626         | 0,006703              | 33,4619       | 1,31E-27       | 0,210670643           | 0,237915         |
| X Variable 1      | -0,002799438        | 0,000316              | -8,86121      | 2,35E-10       | -0,003441466          | -0,00216         |

(Source: Own Processing)

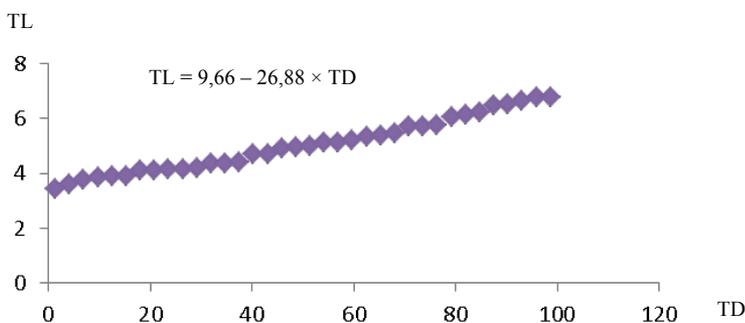


Figure 6: Relation of liquidity and debt  
(Source: Own Processing)

Table 4: Regression statistics

| Multiple R        | 0,95802859         |                       |               |                |                       |                  |
|-------------------|--------------------|-----------------------|---------------|----------------|-----------------------|------------------|
| R Square          | 0,91781879         |                       |               |                |                       |                  |
| Adjusted R Square | 0,91540169         |                       |               |                |                       |                  |
| Standard Error    | 0,28816790         |                       |               |                |                       |                  |
| Observations      | 36                 |                       |               |                |                       |                  |
| ANOVA             | <i>df</i>          | <i>SS</i>             | <i>MS</i>     | <i>F</i>       | <i>Significance F</i> |                  |
| Regression        | 1                  | 31,53221958           | 31,532219     | 379,71987      | 5,03139E-20           |                  |
| Residual          | 34                 | 2,823385155           | 0,0830407     |                |                       |                  |
| Total             | 35                 | 34,35560474           |               |                |                       |                  |
|                   | <i>Coefficient</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i>      | <i>Upper 95%</i> |
| Intercept         | 9,66810160         | 0,242784275           | 39,82177      | 4,0906E-30     | 9,17470459            | 10,1614          |
| X Variable 1      | -26,883578         | 1,379607053           | -19,48640     | 5,039E-20      | -29,687277            | -24,0798         |

(Source: Own Processing)

Total liquidity connection (TL) from the total debt of the company can be expected in the following function  $TL = 9.66 - (26.88 \times t)$ ; the coefficient of determination explains 91.78% of the variation and the coefficient of correlation is 98.8%,  $p = 0.000$ , (Table 4).

## Conclusion

Financial and economic decisions go along business throughout its existence. In the present time, necessity of each entity is to be aware of its management, which generally carries out financial analysis that shows respect to the economic environment of a particular corporate strategy. Overall state of the economy determines the ability of businesses to achieve desired profitability. The aim of businesses is to grow company value, which is based on the company's ability to generate future revenues; that is funding sources will be cheaper than the revenue from realized investments. The company should focus on value-oriented management, as well as quantification tools and concepts of selected indicators of value-based management, the advanced models of the value of businesses. In the present of financial management as a subsystem of the overall system of corporate management system, there are used financial indicator systems.

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