

## EMPIRICAL EXAMINATION OF THE ROLE OF FACTORS AFFECTING THE VALUE OF FIRMS, IN RESPECT OF 8 YEARS

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**Abstract:** *The goal of writing this article is to continue my previous empirical research (Kiss 2015). In the article written in 2015, I dealt with the question, what factors affect the value of the firm? Looking at the entire period (2004 through 2011) I found that all value creators had a significant impact on the dependent variable, on the value of the firm. Earnings before interest and taxes (EBIT), reinvestment, invested capital, return on invested capital, profit margin, sales growth rate had a positive impact on the value of the firm, while tax rate and return on assets at market value (MROA), had a negative impact. In this research I am seeking an answer if any changes occurred, when analysing the role of factors affecting the value of a business, in these factors and their importance, in the period under review. In my paper I present the primary objective of a firm, its possible approaches, while I shall also deal with the concept of dual value creation. Then I outline the dimensions of value, by reviewing the relationship of consumers' value and shareholder value. Shareholder value is a relevant value category concerning the article, therefore I address its detailed characterization and firm theory background. The structure of the study is the following. First I review the value creation process based on literature from the most prominent academic authors. In the next part I describe the primary objective of a firm, then the various dimensions of value and the firm theory background of shareholder value. Then I move to the value creators, which I am going to use in the empirical study. Finally I introduce the research, and in the last part I formulate my conclusions.*

**Keywords:** *value creation; value chain; firm valuation; global financial crisis.*

**JEL Classification:** G32.

### 1. Value creation of the firm

“The process of value creation is the procurement, management and use of resources with the purpose of creating value for the consumer.” (Chikán – Demeter 2006: 3.) This definition embraces the concept of value creation from the side of management literature, principally the aspects of production management, marketing and business economics, that is, defines the firm as an organisation, which generates value during its operation, and the primary objective of this operation is to satisfy customer demand. For the approach of this study, this has to be realised in a way that in the same time the shareholder value of the firm also increases, that is, besides customer value, shareholder value has to be created as well. This perception of value creation is well reflected, among others, in his work on dual value creation of Chikán (2003).

The value chain theory of Porter (1998) focusses on value creation. In his opinion all firms carry out activities in order to create value. The individual activities each create value themselves, but their contact points are also important. Porter (1998) emphasizes that competitive advantage often comes from the connections between activities, and not only from the activities alone. Firms using the value chain as a tool for analysis, can be able to establish a competitive advantage by mapping and developing their activities.

In order to realise a return over the cost of capital, the firm has to establish a competitive advantage, and must be able to maintain it. Basic capabilities provide the competitive advantage of the firm. A basic capability is a firm resource, which can be moved by the management at any time. (Prahalad – Hamel 1990: 83-84.)

Once the firm generates a value through value creation processes, it is important to clarify the manifestation, concept, and the closely related dimension of this value. Just like value creation, the concept of value also appears in several disciplines, focussing on different projections of the value. This is why I consider it important to deal with the dimension of value.

Chikán (2003) considers the condition of successful operation of a firm is the realisation of dual value creation. During dual value creation, value is generated for the customers, and value is generated for the shareholders of the firm, thus satisfying demand and being profitable, that is, customers' and shareholders' dimension, is achieved simultaneously.

By the concept of shareholder value, the primary objective of a firm is to maximize shareholder return, while obeying laws. This does not mean maximising profit in short-term, but maximising value in the long run. Rappaport (1998) further emphasises, that shareholder value does not exist without customers' value.

Value is primarily affected by objective factors, but also impacted by subjective elements. The assessing person, the external circumstances, the economic climate, the decision situations. Pratt (1992: 11-17.), Bélyácz (1995), (2011), Bélyácz – Kovács (2010), Ulbert (1997) differentiate between value categories and therewith, value perception. From the aspect of this article, for the firm value, the shareholder value category can be considered relevant.

## **2. Firm theory background of maximising shareholder value**

Firm theory background of maximising shareholder value goes back to traditional economics, then re-appears in neoclassic economics, whose firm theory has been dominant in economics for a long time. In standard microeconomics the firm is a legal entity, the owner and manager is the same person, the ownership and management functions are combined in one decision-making person. The next milestone is the work of Coase (1937), whose study can be considered as the basis for contracting firms' theories. Coase (1937) says the price mechanism, considered as the only coordination mechanism in neo-classic economics, has to be supplemented, it is not sufficient by itself, for decision-making. The studies published in the field of firm finances, in the fifties and sixties, serving as the financial basis for the theory, have had a significant impact on the evolution of the shareholder value perspective. These were the portfolio theory of Markowitz (1952), the theory of

Modigliani and Miller (1958), (1961), (1963) on capital structure and dividend policy, the capital asset pricing model of Sharpe (1964) and Lintner (1965).

The next theory in time was the principal-agent problem, which particularly supports maximising shareholder value. The principal-agent problem is not new in economics, since the experts of the subject Jensen and Meckling (1976) start their study with a 200 year old quotation from Adam Smith, which describes this relationship.

Review of the theoretical background of maximising shareholder value, is followed by presenting another opinion, the stakeholder theory.

The concept of shareholder value states, that the primary objective of a firm is to maximize shareholder return, while obeying laws. In management literature, an alternative to this theory was born, the stakeholder theory, which sets higher moral standards than laws, and guarantees reaching a higher social performance. The primary objective of a firm is defined as creation of value, which is realised by taking into account the cooperation and interests of stakeholders.

In respect of examination the theory of shareholder value and stakeholder theory, we will remark by the way, that these are not two opposite trends. Theory of shareholder value does not deny existence of other stakeholders, and their consideration during economic decisions, but thinks the highest return can be reached if we maximise shareholder value.

Among reasons of these theories being enforced in practice, Copeland et al (1999) mention different ownership structure of countries, shareholders manner of control, legal form of companies, and concentration of capital resources. In the USA the open joint stock companies, and their fully fragmented ownership is characteristic, while in Europe the ownership is in the hands of several large companies, banks, families, the companies operate privately, and cross-shareholdings are not uncommon.

We have to differentiate between the Anglo-Saxon and continental understanding of value. The differences are primarily a result of the different financial system. (Black et al. 1999, Sulyok-Pap 1998, Vigvári 2011)

### 3. Identification of value creators

Summarizing the lessons learned from the above parts, it can be concluded that starting from the value chain theory of Porter (1998) – that is, the objective of the operation of the firm is to create value, thus the source of corporate value creation is the operation –, through the shareholder value network and maximising shareholder value of Rappaport (1998) – which makes identification of value creators possible –, over the key value creator of Copeland et al (1999) – which are value determining elements closely related to the cash-flow generating capability of the firm –, to the valuation model of Damodaran (2006) – which are the discounted cash flow based, relative and optional valuation based, and asset-based valuation models –, a logical relation between processes exists. Based on this theoretical knowledge, I determine the value creators of the firm as follows:

- I. **FCFF** (Free Cash Flow to Firm): the free cash flow of the firm, which is the sum of cash flows shown for the investor of the firm. Since this is a complex value creator, I break it down to the following factors:

$$FCFF = EBIT * (1 - T) - \text{Net Capital Expenditures} \\ - \text{Change in non cash Working Capital}$$

1. **EBIT** (Earnings Before Interest and Taxes): earnings before paying interests and profit taxes.
  2. **Tax Rate**: marginal tax rate of corporate tax
  3. **Reinvestment**: the additional investment, which is the sum of net capital expenditures and changes of non-cash working capital.
- II. Invested Capital**
4. **Invested Capital**: capital invested in the core business.
- III. Return on Invested Capital**
5. **ROIC** (Return on Invested Capital): return proportional to the capital invested,

$$ROIC = \frac{EBIT(1 - t)}{\text{Invested Capital}}$$

**IV. Net Margin**

6. **Net Margin**: net profit (profit after tax) divided by revenues

$$\text{Net Margin} = \text{Net Income} / \text{Sales}$$

**V. Cost of Capital**

7. **Market ROA**: return on assets at market value, which I am using as a substitute concerning WACC

$$MROA = \frac{\text{Net Income}}{\text{Market Values of Equity} + \text{Market Value of Debt}}$$

**VI. Growth Rate**

8. **dlnRev**: growth rate of revenues

After the theoretical review and earlier empirical research, I conducted independent statistical tests in order to get answers for my outlined research questions. To this end I examine the database of 1553 firms from 18 European countries, representing 10 industries, in the period between 2004 and 2011, which can be considered as a highly balanced panel, containing very few missing observations. I downloaded the database from the homepage of Aswath Damodaran, and made several adjustments on it.

For the firm value I used the firm value category, which is the sum of market capitalization – the best estimate for the market value of the equity capital – and market value of debt.

From the factors influencing firm value – as the dependent variable – I select those explanatory variables, which are most determinants of the firm value. The selection of variables was based on the relation that the value creation capability of a firm is determined by its cash flow generating capability. The works of Rappaport (1998), Copeland et al (1999), and Damodaran (2006) agree that during identification of value creating factors, the firms have to focus on cash flow, net margin, growth rate, invested capital, increasing the return on invested capital, and decreasing the tax burden and cost of capital. The model I used was defined by using a reduced number of value creators, since for identification of each value creator, several indicators can be selected. In my model I strived to have every explanatory variable in significant relation with firm value, the dependent variable.

In the case of firm value, EBIT, reinvestment and invested capital, I used the natural logarithm of variables, for the growth rate I used the variation of the natural logarithm of revenues, since this way the distribution of variables became close to normal distribution.

The empirical research was followed by definition of the panel model. The panel model is the most sophisticated method of using time series and cross-sectional data together, also called as the analysis of longitudinal data. By using the panel model, it is possible to monitor development over time (time series) of characteristics (cross-sectional data) of the same firms, since the panel data base contains data for several time periods and several entities (firm, industry, country), tabulated. (Ramanathan 2003: 498-501.)

After the completion of tests, I defined the following multi-variable regression model:

$$\begin{aligned} \ln FV_{i,t} = & \alpha + \beta_{\ln EBIT} \ln EBIT_{i,t} + \beta_{tax} tax_{i,t} + \beta_{\ln Reinv} \ln Reinv_{i,t} + \beta_{\ln InvC} \ln InvC_{i,t} \\ & + \beta_{ROIC} ROIC_{i,t} + \beta_{NetM} NetM_{i,t} + \beta_{MROA} MROA_{i,t} + \beta_{dlnRev} dlnRev_{i,t} \\ & + u_{i,t} + \varepsilon_i \end{aligned}$$

#### 4. Empirical examination of factors affecting the value of firms

In this article I aim for getting an answer if any changes occurred, when analysing the role of factors affecting the value of firms, in these factors and their importance, in the period under review.

**Table 1:** Values of the estimated coefficients for the entire time period, and for the first and second period, concerning all sectors

	2004-2011	2004-2007	2008-2011
	InFirm_V	InFirm_V	InFirm_V
	Coef.	Coef.	Coef.
InEBIT	0.5504***	0.3579***	0.6123***
Tax_r	-0.2267***	<b>-0.0469 ns</b>	-0.5958***
InReinv	0.0392***	0.0115**	0.1021***
InInv_C	0.3208***	0.5331***	0.2004***
ROIC	0.0376***	0.1177***	0.0280***
Net_M	0.4924***	0.5036***	<b>0.1890 ns</b>
MROA	-3.5142***	-3.6069**	-2.9758***
dlnRev	0.0473***	<b>-0.0904***</b>	0.0264***
cons.	2.7067***	2.4098***	2.8599***
R <sup>2</sup> overall	0.9209	0.9424	0.9236
R <sup>2</sup> within	0.6349	0.2479	0.5958
R <sup>2</sup> between	0.9427	0.9450	0.9300
Wald (chi <sup>2</sup> )	15728.09***	14410.98***	12988.11***
Number of observations	5504	2450	3054

Source: own calculation

Note: At the levels of significances \*\*\* 1 %, \*\* 5 %, \* a 10% respectively

Thus if I separate the whole time period to two sub-periods along the year of the crisis, to pre-crisis and post-crisis periods, and then evaluate them individually, are there any factors, which were significant, and then they lost their importance, or the other way around, they were marginal, and then became important.

Analysis was carried out using the STATA 11 statistical program, which is capable of performing statistical, econometric calculations and their graphic visualisation.

Results of the calculations are shown cumulatively for the entire period (2004-2011), for the period before the global financial crisis (2004-2007), the period after the global financial crisis (2008-2011), for all economic sectors (10 industries).

In all three models, variance of the firm value, as the dependent variable, can be significantly explained by the variance of the independent variables. The Wald test confirms the foregoing, since the probability of  $\chi^2$  (chi<sup>2</sup>) is below 1% in all three cases. The explanatory power of the models can also be considered permanent, since the coefficient of determination (total R<sup>2</sup>) is above 90%. In the same time there is a difference between the strength of impact of the independent variables.

In the model inspecting the entire period, all independent variables have a significant impact on the dependent variable. In the first period, the tax rate did have a marginal impact, it was not significant. It was interesting though, that the increase of revenues had a negative impact on the dependent variable. In the second period the net margin had a significant impact on the firm value, there were no changes in the impact direction of other variables.

## 5. Conclusions

Based on the empirical examination of factors affecting firm value, the following conclusions were formulated: Comparing the first period of the panel analysis, the period before the global financial crisis (2004-2007) with the second period of the panel analysis, the period after the global financial crisis (2008-2011), the following differences can be observed: in the first period the tax rate did not have an influence on the firm value, and the increase of revenues had a negative impact on firm value, while in the second period the net margin did not have any impact on firm value.

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