Company valuation in terms of Slovak republic environment and the impact of innovation on the value of a company

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Abstract

The primary goal of this article is to adjust methods of company valuation to the market environment of Slovak republic. This article defines several problematic factors and tries to suggest relevant solutions to them. The author has focused on developing a model which would be applicable in terms of the Slovak republic. The model should not only be able to provide a relevant valuation of a specific company, but it should be able to establish the value of a whole spectrum of private companies operating on the Slovak market, which need for whatever reasons to be evaluated. The used methodology first looks at available foreign valuation methods and indicators used in valuation process and then tries to state, whether it is possible to use local input data, especially local values of used market indicators, or whether it is more appropriate to use general European or global values of these indicators.
An additional goal is to define various indicators and measurable factors that determine changes of company value on the ground of innovation, research and development.

Key words: Company value, DCF, Free cash flow (FCF), WACC, innovation.

JEL Classification: G34, G39, R39

1 Introduction

In the Slovak Republic only a small number of companies, mostly large foreign consulting firms and experts who meet the statutory requirements, deal with company valuation. They generally evaluate larger-scale enterprises and do so upon their own practices and methods. Mainly these are methods commonly used in the "western world". This work is therefore devoted to the issue of company valuation in terms of the Slovak Republic and seeks to adapt widely used methods to the Slovak market environment and create a general tool for valuing companies.

2 Legal regulation of company valuation in SR

Official company valuation methodology in Slovak Republic is defined by the ***Decree No. 492/2004 of the Ministry of Justice of the Slovak Republic*** determining the overall value of company property.
The decree specifies these following company valuation methods:

1. Assets valuation method
2. Entrepreneurship method
3. Combined method
4. Liquidating method
5. Comparison method

3 Company valuation methods

In practice, different methods are used for determining the value of a company. They vary in methodology, complexity, and possibilities of use. To describe all the possible approaches would be ineffective, complex, and at least very time consuming. Moreover, it would not fulfill its objective, since the work is focused mainly on the practical aspects of valuation. For the purposes of this work, however, at least the most common used methods are stated.
It is important to say that although some of the following methods are named differently, their nature is clearly very much similar to the methods defined in Decree No. 492/2004 of the Ministry of Justice of the Slovak Republic determining the overall value of company property.

For a better illustration, the methods are divided into several groups:

1. Valuation of individual assets
2. Comparable Company Analysis (CCA)
3. Comparable Transaction Analysis (CTA)
4. Discounted Cash Flow (DCF)

The ideal type are companies publicly traded on organized and advanced capital markets, such as the stock market. In case of such companies, a strong information efficiency of the market is assumed. And therefore, the stock price of a publicly traded company contains all available information about the company and this information is already reflected in the price of company's shares. Market value of a company (MVC) is then easily calculated as:

$$MVC = share\ price * number\ of\ shares\ outstanding$$

It is very complicated to perform this kind of valuation in SR. Only a few of Slovak companies are public traded on the Bratislava Stock Exchange and this particular stock market is not effective enough for the purpose of company valuation (insufficient liquidity, low number of participants, low number of traded companies, etc.)
In case of this paper, the used methodology involves the discounted cash flow method, estimation of free cash flows to firm and discount rate in form of weighted average cost of capital.

4 Outline of company valuation process

1. Input of basic indicators
2. Input of accounting data
3. Estimation of future performance data
4. Construction of modified Cash-flow statement
5. Calculation of Free Cash Flow to firm for planned accounting periods
6. WACC calculation
7. Company valuation using the DCF method

5 Basic indicators

Input data necessary for the performance of company valuation is divided into two groups.
The first set of input data is entitled "Basic data". This group involves information such as date of evaluation (required for precise adjustment of company value based on the time value of money),

currency unit of input and output data, risk-free rate, beta coefficient, terminal value growth rate, corporate tax rate, and certain other additional information.
The second group of input data consists of annual accounting data of the company for the period of 5 consecutive historical financial years, with emphasis on the timeliness of the accounting data. The last accounting period of input data should be the latest available.

6 Estimation of future performance data and free cash flows to company

The main reason for planning of future data in the process of company valuation is their subsequent use in calculating the value of the company based on the method of discounted cash flow. To be able to perform the DCF method, first the accounting data has to be planned and free cash flows to firm have to be estimated. The estimation of FCF is based on Formal Projection Method.
It is a quantification of FCF for each future planned period using selected accounting data from planned balance sheets and profit and loss statements. Using a modified cash flow statement, the principle is described later, cash flows for each future period are determined. Therefore, the planning becomes dynamic, linked not only to the resulting static values of past free cash flows to firm, but it takes into account the origin of these FCF.

Stages of planning of the future data using the formal projection method:

1. Planning of the income statement
2. Planning of balance sheet items (active and passive)
3. Establishment of a modified cash flow statement (FCF quantification).

General procedure for the determination of free cash flow using the modified cash flow statement:

Nett Income + Interest expenses after tax + Non-monetary transactions (depreciation and amortization) +/– Change in working capital – Investments = ***FCF***

7 Calculation of the discount rate – WACC

The weighted average cost of capital (WACC) is the rate that a company is expected to pay on average to all its security holders to finance its assets. WACC is the minimum return that a company must earn on existing asset base to satisfy its creditors, owners, and other providers of capital, or they will invest elsewhere.
The calculation of WACC is based on the following formula:

$$WACC = w_d * c_d * (1-t_c) + w_e * c_y$$

where: w_d - debt portion of value of corporation
t_c - corporate tax rate
c_d - cost of debt (rate)
w_e - equity portion of value of corporation
c_y - cost of internal equity (rate)

8 Discounted cash flow method (DCF)

The DCF method is based on estimation of free cash flows (FCF) flowing into the company and their subsequent discounting to the present date, through a selected discount rate, often represented by the variable WACC. The amount of discounted free cash flows reduced by the market value of company's debt is then the company value to the date of the end of the last historical accounting period. To be able to determine the present value of the company, it has to be adjusted to the date of company valuation using the time value of money principle.

Terminal Value

Company valuation is carried out based on the Going Concern Principle. It is therefore necessary to establish the value of the terminal annuity.

Terminal (or perpetual) annuity, also referred to as "continuing value", is the value of the company following after the individually planned accounting periods, considering an unlimited lifetime of the company. Value of the terminal annuity is based on the Gordon Growth Model (GGM).

9 Impact of Slovak republic environment

The impact of Slovak market environment conditions on the business valuation process is particularly in the input data. As already mentioned, changes in the process of evaluation are needed especially when the input data is linked to capital markets. These data are such as a risk premium, market return and risk-free rate.

It is necessary to take into consideration, whether it is possible to maintain the consistency of the valuation process by using foreign capital market input data, or whether it is necessary to find values of input data from the Slovak market environment. The problem occurs when trying to obtain these data for Slovakia. Slovak capital market is characterized by low liquidity, low number of subjects and a low number of publicly traded securities. Capital market in Slovakia is more or less based on the bond market. This ensures at least the possibility to use the return rate of Slovak government bonds as the risk-free rate of return. Other indicators are, however, based on the stock market. It is therefore necessary to look for these indicators at foreign capital markets.

Risk free rate of return

The value of risk-free rate is determined by the analysis of available government bonds. Since the valuation is based on the *Going concern* principle, considering an unlimited lifetime of a company, it is important to choose from the available range of government bonds those with the longest maturity. Different authors and theories vary on the maturity length, but most of these theories would find its intersection with an interval of 20-30 years.

In practice, the commonest values taken into account are government bonds with a 10 years maturity. It is because of their high liquidity, a relatively constant yield curve, and because of the fact, that from the spectrum of all available bonds are 10 year bonds the most common type.

But in the SR, the value of risk-free rate is equal to the fixed-rate bonds of the Slovak Republic. Specifically, the government bond No. 206. His return is fixed at 4.5% per annum. A 20 year maturity of bond No. 206 guarantees a long-term tenure, which is consistent with the used going concern principle, and thus to some extent eliminates the reinvestment risk, fixed income, and the

fixed return eliminates risks associated with the yield curve. Questionable is the liquidity of the bonds. Suppose, however, that since the entire capital market in Slovakia is actually based on trading of bonds, the liquidity of the bond may be comparable to the liquidity of bonds with a 10 year maturity, and so can be regarded as sufficient.

Market rate of return

The value of market performance is determined reciprocally. It is used in calculation of the WACC variable, particularly when determining the cost of equity based on the *Capital Asset Pricing Model* (CAPM). The difference between market performance and risk-free rate of return represents the market risk premium. When multiplied by the beta coefficient of a company it becomes the equity risk premium.

As seen from the following figure, the long-term equity risk premium average is somewhere between 4.5% and 5.5%.

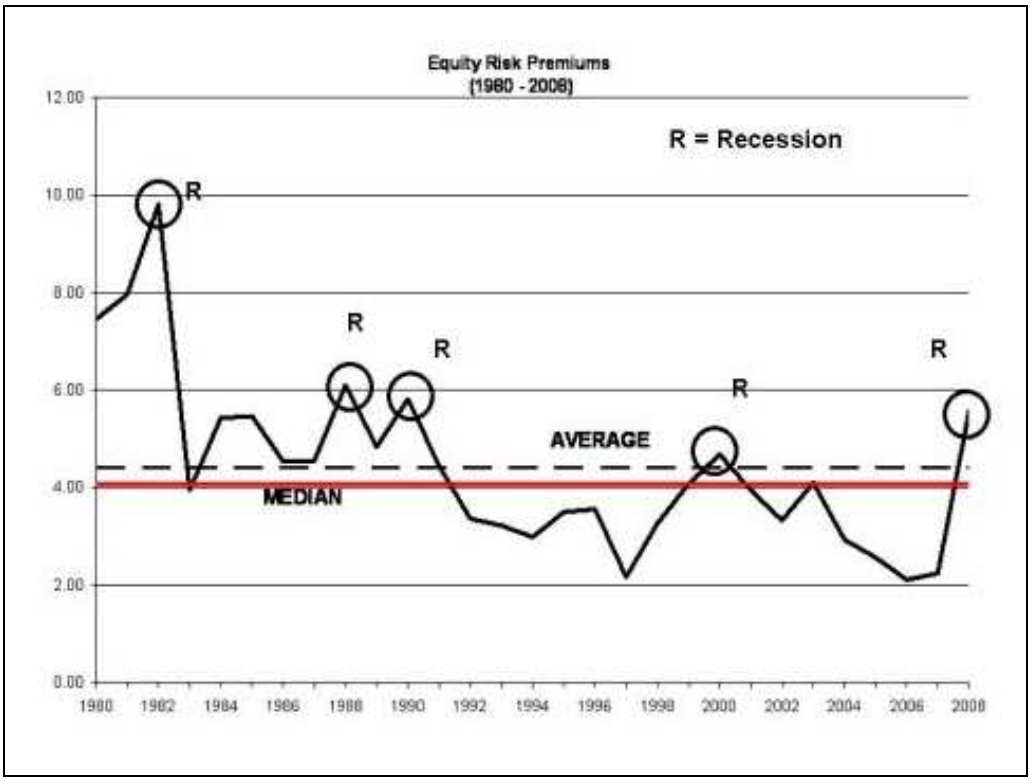

Figure 1: Long-term equity premiums (1980-2008)
Source: Value Expectations

Then, by using the formula for calculating the equity risk premium in the CAPM model, we re-establish what must be the theoretical performance of the market to maintain the average long-term equity risk premium. Thus the calculated value of reciprocal market performance is 9.17%.

Beta coefficient

As already mentioned, it is very difficult very difficult to obtain this indicator is for Slovak firms or sectors.

Therefore, the value of this variable takes the value stated by *professor Aswath Damodaran* of the Stern School of Business, University of New York. For the purposes of this valuation, the current value of beta coefficient for companies in the European IT sector was used.
In the process of selecting values for the beta variable, also the possibility to use a value of 1 was considered. This would mean that the company's shares exactly replicate the market changes. This fact was based on the assumption that a firm's performance is directly dependent on market conditions in Slovakia, as the company itself can not directly influence market conditions. It was assumed that its behavior will be largely equivalent to the behavior of the entire market.
But since the difference between the chosen value of *professor Damodaran* and the considered value of 1 is almost negligible, and the view *professor Damodaran* can be taken as the opinion of an experienced specialist in this area, the value of beta coefficient is 1.07.

10 Case study

This case study should illustrate the process of company valuation using methods described in this paper and modified for the specifications of the Slovak republic environment.

Model company

Company used as a model example of the valuation process is a Slovak IT company with a long tradition on the IT market. The company is called *Novitech, a.s.*, it is headquartered in Košice and a strong reason for choosing this particular company was the availability of complete accounting data for the historic period needed in the valuation process.

10.1 Market value of debt

The market value of debt is the last component used in the process of company valuation. It is deducted from the sum of all discounted free cash flows. By deducting the market value of debt, the process states calculating the value of the company mails the book value of debt (Eng. Book value of debt).

10.2 Calculation of discount rate (WACC)

Risk-free rate of return	4.50	%
Market risk premium	4.67	%
Beta coefficient	1.07	
Cost of Equity	9.50	%
Tax rate	19.00	%
Cost of debt (after tax)	5.34	%
WACC	***9.31***	***%***

10.3 Company Valuation

This chapter consists of the actual valuation of the selected model company. By utilization of methods described earlier in this paper, the accounting data needed for establishment of future free cash flows to company was planned, a necessary discount rate in form of WACC was calculated and the estimated cash flows were discounted according to the present value of cash flows principle.

Consequently, by deducting the market value of debt from the sum of all discounted future free cash flows to company, the theoretical value of the selected model company was established.

The following table shows planned items needed for estimation of future free cash flows to company, the discount rate, discounted FCF, market value of debt and the final company value to the evaluation date.

Table 1: Company valuation

Planned FCF and estimated company value (000 EUR)						
	2008	**2009**	**2010**	**2011**	**2012**	***TV***
Nett Income	539	539	477	404	611	623
Amortization and depreciation	107	107	107	107	107	109
Change in working capital	-160	15	265	56	-229	-43
Investments	3 230	3 230	3 230	3 230	3 230	3 295
Nett increase/decrease in cash and cash equivalents	**17 875**	**23 154**	**28 822**	**20 314**	**17 958**	**24 067**
Initial amount of cash	1 679	1 552	1 552	1 862	2 049	2 192
FCF	**19 554**	**24 706**	**30 374**	**22 176**	**20 006**	**26 259**
WACC	**9,31%**					
Discount factor	0,9149	0,8370	0,7657	0,7005	0,6409	8,7701
Discounted FCF	594	686	772	516	426	7 644
Σ DCF	**10 638**					
Market value of debt	*411*					
Market value of equity	*10 227*					
Company value (to the evaluation date)	**13 448**					

Source: own.

As can be seen from the table, by taking into consideration of all used methods and all Slovak republic environment specifications, the final value of the company to the date of the valuation is 13 448 000 EUR.

11 Impact of innovation on company value

In the end, I would like to state some topics for future research. All can be included in an aggregate group under a joint theme of "*impact of innovations on company value*".
There are many studies today considering this topic. Again, these studies are mainly oriented on "western" world and on companies traded on advanced capital markets. Such markets and companies provided all the necessary information needed for the evaluation of the company and the evaluation of impact of their innovation on the company value.
The purpose of next research should therefore be, to adapt widely used methods to the conditions and specification of Slovak Republic. It should study the relationship between innovation and the performance of the company in form of sales and efficiency.
The necessary assumption that has to be made is, that it is crucial to take only final innovation into consideration, only innovation actually and fully implemented in the company and innovation with effect on the company.

11 Conclusions

The first conclusion is the actual value of the company calculated by using the developed methodology. As mentioned before, the estimated value of the company is 13.448.000 EUR.

Other conclusions are related to the input data of the valuation process. In the process of valuation it was necessary to make several adjustments, so that the valuation process could be implemented in Slovak market environment. At the beginning, as many as possible indicators and input data wanted to be used only from Slovak environment. But the research showed that by choosing only Slovak data, the valuation would not be consistent and the value of the company would not be comparable and clear to foreign investors. Therefore, established "western" methods had to be chosen and input data had to be searched in wider than only Slovak context. Especially, indicators tied to capital markets. It was necessary to look for these indicators so to speak "abroad", because the capital market in Slovakia is to sufficiently liquid or big enough to provide the valuation process with adequate data.

By conducting a wide research, I came to the conclusion, that a wide range of public and privately held companies can be evaluated by the methodology as used in this paper. Slovakia is part of the European Union and European monetary system, and so allows the evaluation to be in a way "international". Because the Slovak economy is a small economy in the context of a greater union, the evaluation does not need to be strongly adjusted to fit the Slovak market environment. By using a Slovak company and its historical performance data, but using input data from international market space, we can properly evaluate a company and make the valuation process understandable to foreign investors.

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