COMPANY VALUATION.
HOW TO DEAL WITH A RANGE OF VALUES?

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Abstract

Company valuation is not done after having generated a few values being a result of applying different valuation methods. In many cases institutions ordering the valuation request a value which can be an equivalent of a market, transactional value. Often the one method (and the valuation resulting from the method) can be indicated, since the valuer claims that it gives the most precise value of the company. However, it is safer to consider the range of values and then try to determine the final value which is the result of a combination of several methods. However, the question is how to consistently deal with a range of values. One of the solutions are so-called mixed methods of company valuation. They are criticized in this paper as they are too subjective. Instead we suggest considering a portfolio approach – PATEV (Portfolio Approach to Equity Valuation). In addition to having to choose a method of defining one value, the value is subject to further corrections: liquidity and control discounts.

Introduction

There are many classification methods of company valuation in the literature. Each of them applies different criteria, but mostly these classifications reflect the determinants of company value: the ability to generate cash, the role of fixed and intangible assets of the company, industry development, and hidden resources of the company. Thus, the four company valuation methods specified in almost all standards include:

1) income-based methods,
2) asset-based methods,
3) comparative methods,
4) real options.

The market based approach (comparative method) is the way of determining the value of the company using a method which compares the subject of valuation with a similar asset, which has recently been a subject of transaction. The income based approach converts the future expected benefits into value (using an appropriate discount rate and procedures relating to the time value of money concept). The asset-based approach is a method of determining the value of the company, the company shares, financial instruments or intangible assets using techniques which determine net asset value by adjusted book values to market ones. Finally, the real options approach is an attempt to valuate hidden resources and the potential of the company that might materialize at certain points of time in the future. These methods require

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different input data, a different set of assumptions and a different approach for the forecast period.

The classifications results from economic practice. It is worth emphasizing, that almost the same classification is used in Poland for privatization processes. Regulation implementing the Law on Commercialization and Privatization – regulation of the Council of Ministers of February 17, 2009 on the analysis of the company carried out prior to offering shares belonging to the State Treasury for sale – determines the way of its commissioning, elaborating, acceptance and funding rules and conditions. The legislator states that estimation of value of the company should be made using at least two methods, in particular from the following:

1) discounted cash flow method,
2) replacement value method,
3) adjusted net asset value method,
4) liquidation value method,
5) comparative method.

As a result of using several valuation methods on one hand, one must deal with a certain range of values and on the other hand, there is a need to make a decision considering the final value of the valuated company. Existing valuation standards contain only suggestions considering the way of proceeding. Here is an overview of suggestions which are included in American standards developed by NACVA (National Association of Certified Valuation Analysts), ASA (American Society of Appraisers), and IBA (Institute of Business Appraisers).

The ASA standards suggest: "the valuation methods which are used should come from a professional appraisal of the valuer. The choice should be done by taking into consideration which method is conceptually the most appropriate and which data is most available and reliable". It is also mentioned that the asset-based approach should never be used as the only method. The decision considering the choice of the method on which is based the final result should be the result of the valuer assessment, but not the predefined formula. In case of using a few methods, the valuer is obliged to give the justification of the weights used while calculating the weighted average. For example, the valuer should rely on: the valuation standards which are used, the purpose of the valuation, company's specificity (for example, the company owns the non-operating assets of substantial value), the quality of data used in the valuation.

IBA standards say that the valuer should state which methods were considered and should give the bases of rejecting or choosing them. It is, however, allowed to give the range of values, especially in case of using several methods.

According to the AICPA standards, three methods should be considered - the valuer should use appropriate valuation methods depending on the subject of the valuation. The valuer should correlate the results obtained using different methods, to assess the reliability of the results considering the quality and availability of the information. It is also necessary to decide whether the final value will be the result of one method or a combination of several methods.

In NACVA standards there are also mentioned three categories of methods or their combination. The valuer should use his professional judgment to select the method/methods which will best show the company's value. At the same time it should be stated whether the combination of results obtained from two methods is necessary to estimate the value.

As it can be seen it is often the case that providing the whole range of values is a solution (scheme 1). The valuation methods themselves generate a few of them, the other ones may result from using a scenario approach.

Scheme 1: A range of scenarios
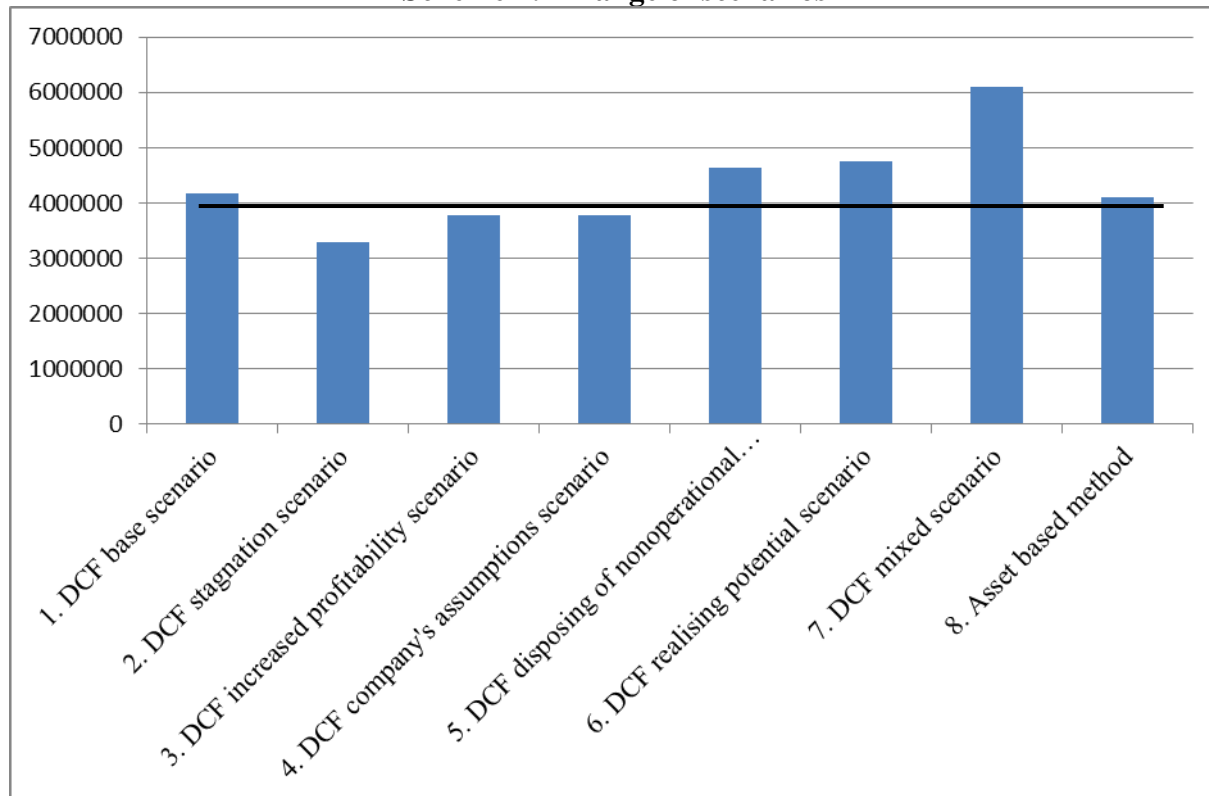
Source: Own work

However in many cases institutions ordering the valuation request a value which can be an equivalent of a market, transactional value. As indicated by some of the mentioned standards in some cases the one method (and the valuation resulting from the method) can be indicated, since the valuer claims that it gives the most precise value of the company. However, it is safer to consider the range of values and then try to determine the final value which is the result of combination of several methods. However, the question is how to consistently deal with a range of values. One of the solutions are so-called mixed methods of company valuation.

Mixed methods

Mixed methods are used to select the final value from the range of values (Fierla, 2006; Damodaran, 2002; Fernandez, 2002) . In most cases, despite their suggestive names (Berlin, U.E.C., Stuttgart), they are nothing more than a weighted average of several values generated by previously listed methods and they do not bring anything new to standard classification of methods, nor do they facilitate the process of determining the final value. The typical example is the Berlin method (E_B), which determines the value of the company as a sum of its net asset values (E_M) and the half of excess of the value (using an income-based method) (E_D)

above the asset value. Mathematically speaking, this approach is boiled down to calculating the simple average of these two methods (the formula below).

$$E_B = E_M + \frac{E_D - E_M}{2} = \frac{E_M + E_D}{2},$$

(1)

where:

E_D – the value of equity estimated with the use of income-based method,
E_M – the value of equity estimated with the use of asset-based method.

The Stuttgart (E_S) and U.E.C.[2] (E_{UEC}) methods (formulas below) are based on the similar concept as in the case of the Berlin method.

(2)

$$E_S = \frac{E_M + 2 \times E_D}{3}$$

$$E_{UEC} = E_M + \left[1 - \left(\frac{1}{1+k_T}\right)^n\right] \times (E_D - E_M)$$

(3)

Generally speaking, the formula of the mixed method can be written as follows (Fierla, 2006):

(4)

$$E_X = a \times E_D + (1-a) \times E_M,$$

where:
E_X – equity value of the company calculated using the mixed method,
a – the weight (number from the 0:1 interval)

The transformation of the basic mixed method formula has led to emergence of many "new" methods. A. Fierla (Fierla, 2006, p. 28) lists and provides formulae for major mixed methods (so called complex methods):
1) the Stuttgart method,
2) the method of annual purchase,
3) the simplified UEC method,
4) the extended UEC method,
5) the Gref method.

The most significant fact is that in most of the cases the weights are settled arbitrarily. In the extreme case one can resort to any of the above mentioned methods (by choosing appropriate weights) to justify almost any value from the range which is determined by results coming from two valuation methods. In complex methods determining of the extra profit period is

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[2] The name of the method comes from the commission called by Union Europeene des Experts Comptables Economiques et Financiers.

problematic and arbitrary. However, those methods are often used. The same effect could be achieved by using a weighted average supplemented by a justification of the used weights.

PATEV method

Referring to mixed methods mentioned above, we propose to consider a certain strategy of using a weighted average to obtain the result which could be a definite recommendation for one of the parties interested in valuation. Let us consider the situation in which we have results of the valuation obtained from the income-based and the asset-based methods. Typically, the valuation with the income-based method reflects the value of the company in the best way, nevertheless the result of the valuation with the asset-based method could also be useful.

Let us imagine that the analyzed company is a service enterprise and the main determinants of its market success are: human capital, customer base, the management quality and its unique technology. Indisputably it can be concluded that the source of the actual company's value is its future income. It is an amount resulting from expected income, which can be achieved by the company in the future only through the continuation of the activity, as no one is considering the liquidation nor the sale of the part of the company's assets – the company has clear development perspectives, good market position, strong fundamentals and sustained capacity to generate profits. Moreover, the cash flows, which are the bases of the valuation, were generated mainly by the company's current assets and its operating activity. It is an important argument for using income value as a key value in the valuation. Taking into consideration the above conditions it should be stated that the value generated by the income method should be the bases of the company's valuation.

It also happens *vice versa*. The value of the assets is greater than the value generated by the income-based method. The resulting difference between asset and income value can be influenced for example by the fact of possessing many properties, whose market value has appeared to be significant with time. It seems possible to sell some of the assets without damaging the operational activity of the company or having to relocate. It may also be the case of an industry in which the value of the company is directly dependent on its assets. Then it would be reasonable to consider the obtained value (with a use of an asset-based method) as a significant one.

In both analyzed cases, both methods are appropriate and capture the value of the company, but each in a different aspect. To find an appropriate resultant value of both methods and at the same time solve the problem of choosing weights, there can be applied a portfolio-based approach (weights are based on valuation results). We assume, that the value of the company is *de facto* a value of the portfolio resulting from different valuations, and each of methods reflects the company's value with the probability (weight) which is the relation of the generated value (generated by the given method) to the sum of values. The main condition used for that kind of approach is the assumption that the company manages its value for example through the EVA[3] concept – it maximizes the profit and at the same time optimizes the size of invested capital. The bigger the value generated with a given method, the greater the weight. One can test the method by considering extreme cases – companies with a high

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[3] EVA^{TM} (Economic Value Added) is a well known (since 1989) financial indicator introduced by Stern Stewart & Co.

income value and marginal asset value and *vice versa*. In a rational way the approach (we will use the name PATEV – Portfolio Approach to Equity Valuation) ignores the asset value not lowering the company's value in the first case, and in the second case *de facto* it suggests to abandon the operational activity and sell assets or relocate (scheme 2). Both approaches are rational and confirm the validity of using the PATEV approach. Nevertheless, it is worth mentioning that PATEV approach needs to be used with caution and involves checking whether the higher value (the one given greater weight) is representative.

Scheme 2: PATEV values – extreme cases

E_M much bigger than E_D E_M similar to E_D

E_D E_M PATEV E_M E_D PATEV
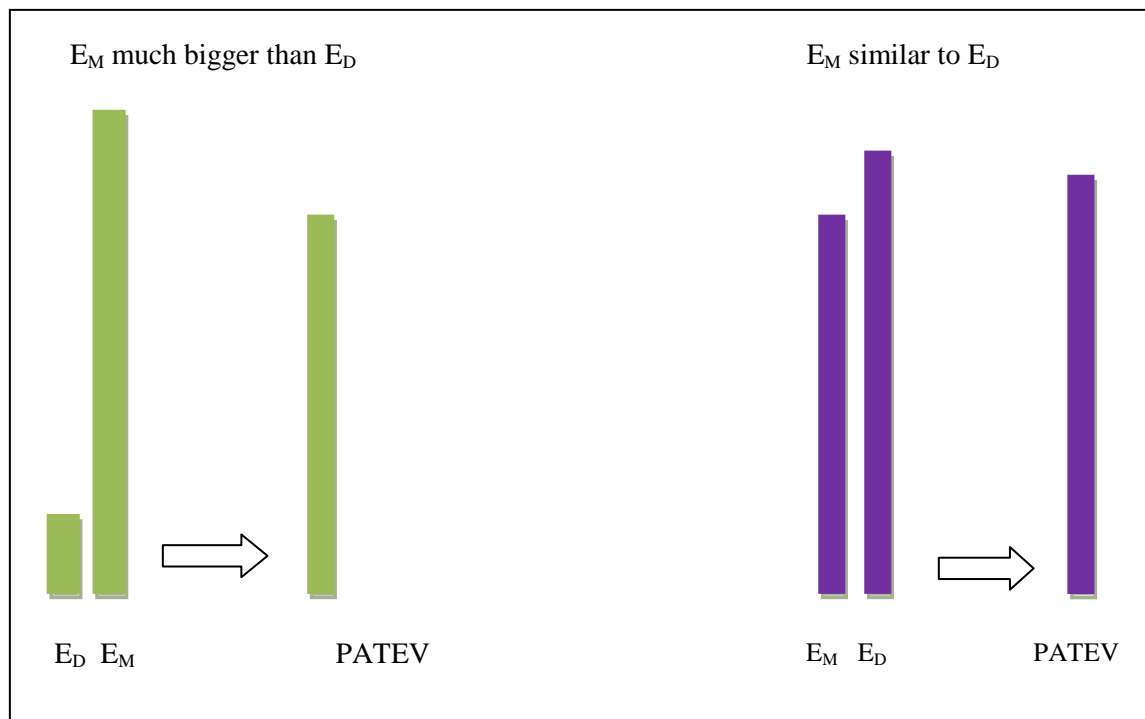
Source: Own work

The PATEV approach is presented by the following formula:

(5)

$$PATEV = w_D \times E_D + w_M \times E_M$$

where:
- the weight (w_D) of the income method is given by ($E_D/(E_D+E_M)$)
- E is a value (equity capital) of the company determined properly with the help of the income-based method (E_D) or asset-based method (E_M).

For the case presented in Scheme 3 the PATEV approach results in the following calculations:

$$PATEV = w_D \times E_D + w_M \times E_M = 51.1\% \times 4268828 + 48.9\% \times 4078000 = 41759595$$

where the weight (w_D) of the income method (51.1%) is given by ($E_D/(E_D+E_M)$).

The advantage of the proposed method (PATEV) is an automatic (removing the subjectivity) choice of weights while calculating a weighted average, the disadvantage is the need of predetermining if the difference between valuations is reasonable, and if the company is implementing the variant of continuation or liquidation of its operational activity.

Scheme 3: PATEV values – typical case
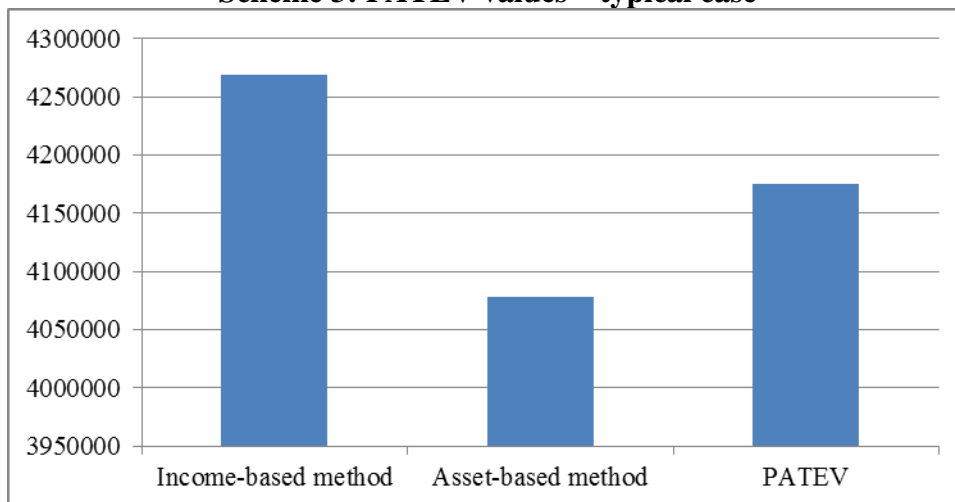
Source: Own work

Consideration of the premium for the liquidity and for the control

The value of the company, for example the one received in the result of using PATEV method, is usually a subject of further corrections. They involve liquidity discount and control premium/discount. We should consider a matrix of possible situations and applicable discounts (scheme 4).

Scheme 4: Liquidity and control discounts matrix
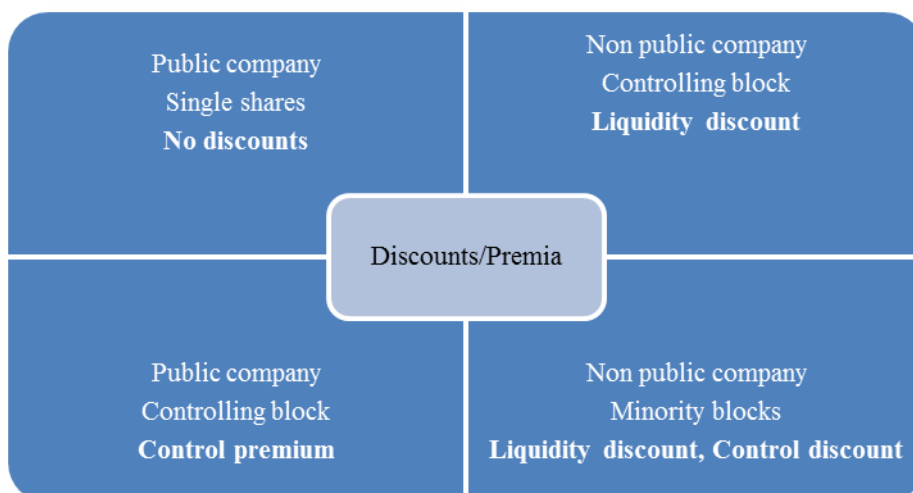
Source: Own work

Liquidity discount is resulting from the fact that shares of the company may not be considered a liquid investment, as compared to the kind of assets which are traded at the regulated capital market. Shares traded at the stock exchange are liquid investments, which can be converted into cash at any time at the current rate without incurring any additional costs. Applying liquidity discount is reasonable if the subject company is not listed on a public market. It is obvious that a purchase of such a company has a lower level of liquidity than for example an investment in shares of listed companies. In the case of companies that can easily become public, the liquidity discount is often assumed to be equivalent to the costs of going public. For example, in 2009 the costs of public offers in Poland were evolving from 2,43% to 23,42% (after rejecting outliers) with a median of 5.55% (Source: Raport IPO 2009). These numbers may be treated as the lower threshold of the liquidity discount. The further the distance to the moment of becoming listed on the stock exchange, the greater the discount.

In the other case (companies that are not susceptible of becoming public in the short to medium time), one should rely on transactional data based on actual discounts realized during the trade process of certain entities. This kind of data is not readily available in Poland, and there is no relevant research and statistical data. However, in U.S.A. there are databases which ensure the access to the information about such transactions. The most popular and used (depending on the kind of transactions that one is looking for) are: Mergerstat / BVR Control Premium Study™, FMV Restricted Stock Study™, DealsDone™, BIZCOMPS®, Public Stats™, Pratt's Stats™. Furthermore, a number of empirical studies were carried out (Sarin 2000, Damodaran 2005) with regard to the size of liquidity discount. They indicate that the liquidity discount on the American market ranges from 20% to 25%. In addition to the base discount, many practitioners apply the scheme worked out by Aswath Damodaran (http://pages.stern.nyu.edu/~adamodar). The parameters of this model are: income, the majority shareholding purchased, positive or negative profits. When used in Poland the income parameter must be converted into the local currency with the use of purchasing power parity implied exchange rate. Sample calculations are presented in table 5.

Table 5: Liquidity discount calculations

Inputs	
Base Discount for firm with $ 10 million revenue =	25%
Actual revenues (in milions) =	35
Size of block as % of stock outstanding =	100%
Positive or Negative Earnings =	1
Output	
Illiquidity Discount	22,64%

Source: Obtained from: http://pages.stern.nyu.edu/~adamodar

Another issue is the control discount/premium. Here are two situations to consider.

1) If we are dealing with a publicly traded company then the control premium concept should be used. For purchasing the majority shareholding an investor should pay more than for purchasing individual shares, or small shareholding.

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2) If we are dealing with a company which is not publicly traded then we use the control discount term.

The size of the discount is an individual question. One must consider all the benefits related to control including the chances of changing the management and the value of the company before and after the board changing. It is also worth mentioning that (with regard to point 1 above) E. Nath (Nath, 1990) demonstrated that control premiums are rare in public companies. He hypothesized that the existence of liquidity tends to eliminate control premiums in public companies, if they are well managed, and management communicates effectively with investors.

Conclusions

The valuation of the company is not finished at the moment of generating three or two values due to the use of a few valuation methods. These values can differ very much, which can be a result of the fact that the market is not effective, differences in methodologies, differences in assumptions made and even errors in valuation. Moreover, the definition of the value provided by the range set by these values may not correspond with expectations of the one who is requesting the valuation. A common requirement is to estimate a market price equivalent to transactional price at which share can be purchased and sold. Then comes decisional time – which method or which combination of methods reflects the value of the company in the best way, whether they can be applied and what size of the lack of control discount and lack of liquidity discount is. Only then the valuation of the company can be acknowledged as finished.

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