Ewa Maćkowiak

Uniwersytet Ekonomiczny w Katowicach

METHODS FOR ESTIMATING THE GROWTH IN COMPANY VALUE AND SHAREHOLDER VALUE RESULTING FROM BUSINESS COMBINATIONS

Introduction

The paper aims to present the measures which can be applied to estimate the company value creation and shareholder value creation resulting from a merger or an acquisition of a company. The selection of an appropriate method allows to determine whether the merger or acquisition has really contributed to an increase in the owners' wealth.

1. Company value, shareholder value

The aim of every enterprise is to increase its owners' wealth. In order to achieve this goal, an enterprise has to be managed effectively. The management areas in an enterprise may be classified in the following way:
- the management of operational activity,
- the management of investment activity,
- the management of financial activity[1].

Company value can be increased by creating added value or by maximizing earned profits and positive cash flow. The use of maximized profits and cash flow to build company value involves maximizing revenues and minimizing expenses. On the other hand, creating added value means building strong elements which will allow to generate and increase revenues and profits in the future.

---

[1] Cf. K. Machała: *Zarządzanie finansami i wycena firmy*. UNIMEX, Wrocław 2011, s. 18.

Consequently, added value causes that even an enterprise which generates little or no profit or cash flow may have a considerable market value for a potential investor or buyer.

The main assumption of the owners of an enterprise is achieving capital gains from their investment. Shareholder value increases when the rate of return on the invested capital is higher than a minimum relating to the risk involved. Accordingly, the higher the risk, the higher rate of return expected by an investor. The benchmark value used to assess shareholder value is a risk-free investment. It is assumed that a risk-free investment is a government bond.

2. Mergers and acquisitions – legal provisions

Mergers and acquisitions fall under this category of concepts which systematically evolve. This is the result of changes in the way the transactions of mergers and acquisitions are conducted. These changes result from the behaviour on the financial market.

English literature offers two basic concepts – "mergers and acquisitions". Additionally, it uses the term "takeover", which means a friendly or hostile transfer of control over an enterprise from the original owner to the new investor.

In Poland, the uniform terminology covering business combinations does not exist. Moreover, Polish legislation does not apply standardized definitions in this field, either. Literature differentiates between mergers and acquisitions. Mergers comprise consolidations and amalgamations, while acquisitions may involve: stock acquisition, the purchase of an enterprise or part of its assets, taking up new shares created by increasing the initial capital, redeeming a portion of shares, the purchase of an enterprise's liabilities and their conversion into equity, proxy, privatization, joint venture.

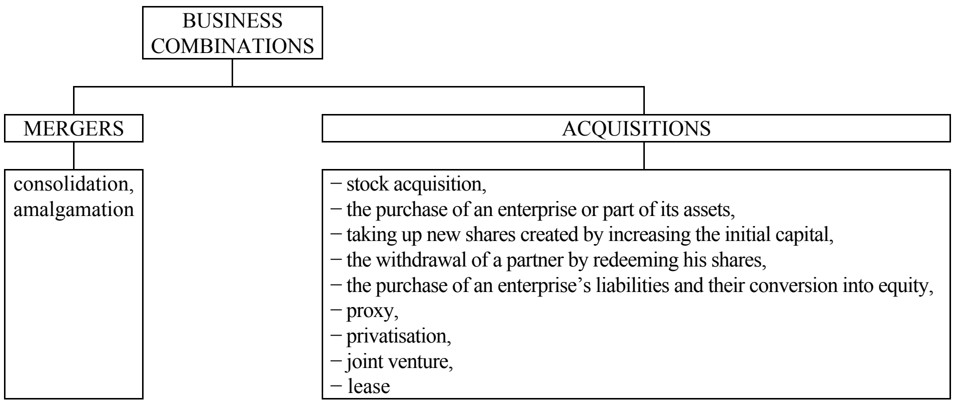

Fig. 1. Classification of business combinations

Pursuant to Art. 492 § 1 of the Code of Commercial partnerships and Companies, a merger may be effected through:

1. The transfer of all assets of a company or partnership to another company in exchange for the shares that this company issues to the shareholders or partners of the target company or partnership; this form of a business combination is a merger by takeover.
2. The formation of a company to which the assets of all merging companies or partnerships devolve in exchange for shares of the new company; this is a merger by formation of a new company.

Legal provisions on business combinations from the accounting perspective are included in national and international regulations. The most relevant international regulations are the International Financial Reporting Standards, where Art. 4 stipulates that a business combination involves "(…) the bringing together of separate entities or businesses into one reporting entity. The result of nearly all business combinations is that one entity, the acquirer, obtains control of one or more other businesses, the acquiree". Art. 5 states that a business combination "(…) may involve the purchase of all the net assets of another entity, the assumption of the liabilities of another entity, or the purchase of some of the net assets of another entity that together form one or more businesses. It may be effected by the issue of equity instruments, the transfer of cash, cash equivalents or other assets, or a combination thereof". IFRS 3 also defines the concept of control in the following manner: "Control is the power to govern the financial and operating policies of an entity or business so as to obtain benefits from its activities. A combining entity shall be presumed to have obtained control of another combining entity when it acquires more than one-half of that other entity's voting rights, unless it can be demonstrated that such ownership does not constitute control".

The entity may assume control if, as a result of the combination, it obtains:

- power over more than one-half of the voting rights of the other entity by virtue of an agreement with other investors; or
- power to govern the financial and operating policies of the other entity under a statute or an agreement; or
- power to appoint or remove the majority of the members of the board of directors; or
- power to cast the majority of votes at meetings of the board of directors or equivalent governing body of the other entity.

In Polish legislation on mergers and acquisitions, this issue is regulated in Chapter 4a of the Accounting Act. The Act, however, does not provide the definition of a merger or an acquisition. Art. 44a stipulates that the business combination may be effected either by the pooling of interests method or by the acquisition method. It also indicates that the new company or partnership may be formed as a result of the combination.

3. Methods for evaluating the growth in company value

The estimation of the growth in company value can be conducted using two kinds of methods. The simplified methods are based on:
- present value of synergies,
- the growth in present earnings per share,
- the theoretical model of “the sustainable growth”.

In addition to simplified methods, it is also possible to use the method based on detailed projections.

Present value of synergies

The method is the simplest way to estimate the value of combined enterprises. It involves estimating the values of particular synergies and discounting them in order to calculate the present value, which is reduced by the premium paid to the owners of the target enterprise. The premium is the difference of the acquisition price over the market value of equity. This method should be discouraged due to its excessive simplification. It ignores a number of factors such as inflation, time value of money, potential changes in taxation.

A growth in present earnings per share

This method is also classified as a simplified one. It examines the impact of a merger on the present net earnings per share.

Example 1

It was assumed that Company A took over Company B estimating that annual net profits defined as a growth in net profit value above the total net profit of both companies would amount to 10.000.000. The premium expected by the owners of Company B was 40% more than the current market price of Company B.

Table 1

Data on Companies A and B

Companies	A	B
earnings per share	20	30
share price	70	50
price/earnings ratio	3.5	1.6
number of shares	1.000.000	500.000
market value of equity	70.000.000	25.000.000
total net profit	20.000.000	15.000.000

Source: Own elaboration.

The premium required by the owners of Company B is 40% higher than the current market price of Company B. Accordingly, the price of one share used for evaluation purposes is PLN 70.

$$40\% \times 25.000.000 = 10.000.000$$
$$25.000.000 + 10.000.000 = 35.000.000$$
$$35.000.000 : 500.000 = \text{PLN } 70$$

This means that a shareholder will receive one share of Company A in exchange for one share of Company B, because the share price of Company A is also PLN 70. The share swap ratio is 1:1.

Table 2

Assumptions for the combined enterprise

Net benefits resulting from the merger	10.000.000
Premium	40%
Acquisition price	35.000.000
Acquisition price per share	PLN 70
Share swap ratio	1.0
Net profit of the combined enterprise	45.000.000
Number of shares of the combined enterprise	1.500.000
- original number of shares of Company A	1.000.000
- number of shares in Company A for shares in Company B	500.000
Profit per share	PLN 30

Source: Own elaboration.

The calculations above show that the net profit of the combined enterprises will amount to 45.000.000. The number of shares will not change, because the share swap ratio is 1:1.

The simulation was conducted for three scenarios. First, the price-to-earnings ratio stays the same as in Company A. Second, the price-to-earnings ratio stays the same as in Company B. Finally, the price-to-earnings ratio is calculated as a weighted average.

Table 3

The analysis of company value after the merger

	scenario 1	scenario 2	scenario 3
value of shares	3.5 × 30 = **105**	1.6 × 30 = **48**	2.8 × 30 = **84**
market value of the company	105 × 1.500.000 = **157.500.000**	48 × 1.500.000 = **72.000.000**	84 × 1,500.000 = **126.000.000**
growth in value	70.000.000 + 35.000.000 − 157.500.000 = **52.500.000**	70.000.000 + 35.000.000 − 72.000.000 = **- 33.000.000**	70.000.000 + 35.000.000 − 126.000.000 = **21.000.000**

Source: Own elaboration.

The calculations in Table 3 indicate that in two scenarios the merger of Companies A and B causes the growth in company value and shareholder value. The condition, however, is that the price-to-earnings ratio has to remain the same as in Company A or at the level of a weighted average. If the price-to-earnings ratio stays the same as in Company B, company value will fall. While analyzing this example, it is important to remember that the method is very simple. It is based on a number of simplifications, which involve ignoring many factors which have an impact on the value of an enterprise.

Its primary drawback is the use of net profit to estimate the value of an enterprise. First of all, net profit should be replaced with cash flow. Another weakness involves ignoring generated cash flow.

The theoretical model of "the sustainable growth"

This model is a response to the weaknesses of the model based on the growth in present earnings per share. It uses discounted cash flow, while assuming the sustainable development of each company in a certain period of time.

The starting point is the estimation of own capitals of the two companies involved in a merger. These calculations allow to estimate the own capital of the combined companies.

The surplus of the equity of the combined companies over the sum of their separate equities and the premium paid to the owners of the target company over the intrinsic value of its equity is the present value of synergies and the growth in company value resulting from the merger. The present intrinsic value of equity can be calculated using the Modigliani-Miller model:

$$V = \frac{NOI_0 \left(1-T\right)}{WACC}\left(1\,\frac{b\left(r+WACC\right)}{g-WACC}\left(\frac{1+g}{1+WACC}\right)^t -1\right)\left(1+g\right),$$

where:
NOI – net operating income,
T – tax rate,
b – re-investment rate,
r – rate of return,
g – NOI growth rate (b x r),
WACC – weighted average cost of capital,
t – a number of time periods with the g rate.

The above formula allows to calculate company value based on the assumption that NOI flows are increasing at the g rate for t periods and after that NOI flows are generated on the constant level to perpetuity[2]. Consequently, primary factor which have an impact on company value are:

- the rate of return on investment r, which has to be higher that the cost of capital WACC,
- the rate of investment b,
- the tax rate T,
- the weighted average cost of capital WACC.

It can be assumed that the company value is the sum of own and borrowed capitals, so in order to calculate the values of own capital, liabilities have to be deducted from the company value.

The element which is crucial while using this method to estimate the value of a combined enterprise is the correctly estimated cost of own capital. Literature provides a number of methods which allow to determine its value:

- the dividend growth model (Gordon model)
- the capital asset pricing model (CAMP),
- the arbitrage pricing model (APM)[3].

The dividend growth model assumes that the dividend growth remains unchanged in time and increases at the constant annual rate g.

$$Kka = \frac{D_1}{Po} + g,$$

[2] Cf. R. Machała: Op. cit., s. 573.
[3] Cf. E. Maćkowiak: *Ekonomiczna wartość dodana*. PWE, Warszawa 2009, s. 58.

where:
Kka – cost of shares,
D1 – value of the first year's dividend,
Po – present market share price,
g – dividend growth rate.

The capital asset pricing model (CAMP) is based on the assumptions which account for both investment risk and expected inflation. The primary thesis of the model is that the costs of lost benefits of own capital correspond with the rate of return on risk-free securities increased by an average market risk premium multiplied by its beta coefficient.

$$R_j = rf + \beta rm,$$

where:
Rj – rate of return on securities,
rf – rate of return on a risk-free security,
βrm – systematic risk involved in the investment in a particular.

The currently used risk-related premium is about 5%, while in 2008 it was almost 9% (8.8%).

While selecting the method for evaluating own capital, the CAMP method should be chosen, because it allows to asses parameters objectively and with a minimum of arbitrary decisions.

The use of the constant dividend growth method in the process of evaluating the value of the combined enterprises involves the following stages:
1. The determination of the average cost of capital (WACC) of the companies involved.
2. The determination of the intrinsic values of the enterprises, intrinsic values of own capitals and intrinsic values of shares.
3. The calculation of the share swap ratios.
4. The calculation of the number of shares after the merger.
5. The compilation of benefits resulting from the merger (e.g. increased revenues, reduces expenses).
6. The estimation of the weighted average cost of capital of the combined companies.
7. The estimation of the growth in the value of the combined companies.

The only advantage of this method is the simplicity of its application. On the other hand, this is also the reason why the method does not take into account a great number of factors creating company value, such as future changes in financing, changes in the expenses relating to particular assets, or deviations of the effective tax rate against the nominal rate which may result, for example, from generated losses[4].

The method based on detailed projections

The method provides the best estimation of the growth in company value resulting from a merger. This is due to the fact that it takes into account discounted cash flow (DCF). Operational and investment flows are discounted based on the average cost of own capital (WACC). The methodology of calculations is the same as in the theoretical constant growth model.

One of the most significant advantages of this method is the application of a number of elements such as a variable interest rate, costs of particular assets – changing in time and different for each company, financing − changing in time and different for each company, seasonal demand for external financing, differences between the effective and nominal tax rates. Taking all these elements into account, however, causes that the method is much more time-consuming than the simplified methods discussed earlier.

4. Methods for estimating shareholder value resulting from a merger

Company valuation conducted for the purpose of a merger or acquisition is not fundamentally different from company valuation in the general sense. The nature of creating the value of enterprise which is the outcome of a merger or acquisition requires that future operational, investment and financial cash flows of the integrated enterprise are taken into account. It is important, however, that if the aim of the merger or acquisition is creating shareholder value, integration costs and future expenses should be lower than possibilities of realising benefits from the transaction[5]. Creating shareholder value requires that the most important factors contributing to expenses in the transactions of mergers and acquisitions.

Growth factors relating the market value of a company after a merger present Fig. 2.

[4] Cf. R. Machała: Op. cit., s. 578.
[5] Cf. S. Jovonovic, Braguinsky: *Bidder Discounts and Target Premia in Takeovers*. „American Economic Review" 2004, 94 (1), s. 45-46.

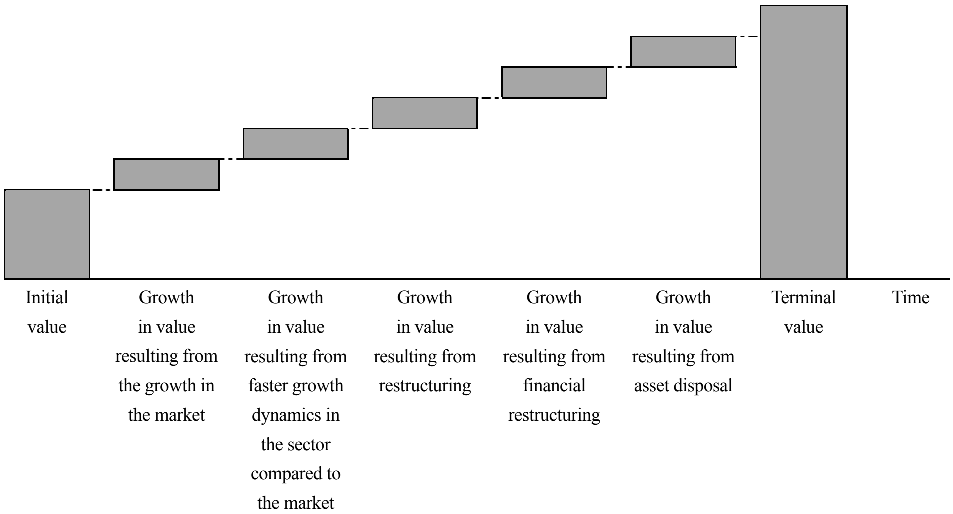

Fig. 2. Growth factors relating the market value of a company after a merger

Source: M. Lewandowski, J. Strysik: *Zjawisko synergii w przypadku fuzji i przejęć przedsiębiorstw*. W: M. Lewandowski et al.: *Fuzje i przejęcia w Polsce na tle tendencji światowych*. WIG-Press, Warszawa 2001, s. 223.

While estimating shareholder value, it is crucial to select an appropriate measure which will allow to examine whether a merger or an acquisition created added value for shareholders.

Table 4

Breakdown of measures of performance according to the criterion of an entire enterprise

goal as maximizing profit	goal as survival	goal as creating shareholder value	goal as creating stakeholder value	goal as maximising intellectual capital
Financial performance, budgets, profitability indices, DuPont pyramid	Altman's concept and discriminatory models	Residual profit, SHV, EVA, CFROI, TSR, CVA	Performance pyramid, performance prism	Intangible asset monitor, intellectual capital monitor

Source: Z. Korzeb: *Teoria kreowania wartości dla akcjonariuszy w procesach fuzji i przejęć w polskim sektorze bankowym*. Difin, Warszawa 2010, s. 186.

Accordingly, if the aim of a merger or an acquisition is to create shareholder value, measures such as SVA, EVA, CFROI, TSR, VCI should be selected.

Table 6

Measures allowing to estimate shareholder value

Measure	Level of difficulty	Advantages	Usefulness for evaluating mergers and acquisitions
TSR Total shareholder return	simple	It can be calculated for a particular period of time, it is not dependent on balance sheet regulations	It best reflects the concept of shareholder wealth, it is not dependent on the size of an enterprise
CVA Cash value added	moderately difficult	It is a combination of a measure based on residual profit and a cash-based measure	It can be used as a retrospective measure. Annual values of CVA may be inflated compared to the actual value
EVA Economic value added	moderately complicated	It accounts for the most important factors which have an impact on value such as return on capital, risk, cost of capital, operational profit	It does not allow the comparative analysis of enterprises of different sizes. It is not the best measure to compare enterprises
SHV Shareholder value	complicated	It accounts for residual value and cash flow	It allows to estimate value creation in each year of the period under examination. Future cash flow is of great significance for the estimates of company value, but analysed historically it may be misleading as information on its level and quality
CFROI Cash flow return on investment	complicated	Based on IRR, it can reflect different periods	It shows the surplus of company value as a percentage. It is correlated with the return for shareholders

Source: Own elaboration based on: Ibidem, s.190-192.

The above analysis shows that none of the measures is perfect and they should be used in combination, as they are not free of drawbacks. Undoubtedly, the choice depends on who is interested in estimating company value and shareholder value creation.

Conclusion

Nowadays, every enterprise aims to maximise its value and, consequently, increase value for owners and shareholders. Company value can be increased in a number of ways. One is a merger or an acquisition. It is important to remember, however, that each consolidation involves both potential benefits and costs. Many business combinations did not yield expected effects and did not contribute to increased shareholder value. Many mergers and acquistions were difficult to justify economically or even might have been perceived as irrational initiatives, which did not only create value, but, on the contrary, they backfired. The best example here is the first attempt at a hostile takeover in Poland aimed at the Kruk company.

METHODS FOR ESTIMATING THE GROWTH IN COMPANY VALUE AND SHAREHOLDER VALUE RESULTING FROM BUSINESS COMBINATIONS

Summary

The paper aims to present the measures which can be applied to estimate the company value creation and shareholder value creation resulting from a merger or an acquisition of a company. The selection of an appropriate method allows to determine whether the merger or acquisition has really contributed to an increase in the owners' wealth.

Company value can be increased by creating added value or by maximizing earned profits and positive cash flow. The use of maximized profits and cash flow to build company value involves maximizing revenues and minimizing expenses. On the other hand, creating added value means building strong elements which will allow to generate and increase revenues and profits in the future. Consequently, added value causes that even an enterprise which generates little or no profit or cash flow may have a considerable market value for a potential investor or buyer.