A SURVEY ON BUSINESS EVALUATION METHODS USED IN MERGERS

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In mergers, a subject that arouses controversies between the leaders of the companies involved in the transaction is the determination of the exchange ratio. The basis of its determination is represented by the application of business evaluation methods that are completed by a negotiation process. In order to better understand the major aspects regarding this issue, this article presents a literature review of the main business evaluation methods used to determine the exchange ratio in merger transactions. We concluded by showing the context of use and the application conditions of the most used methods.

Keywords: business evaluation methods, mergers, exchange ratio

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1. Introduction

For the investors in companies that seek to merge is very important to determine whether the merger will be efficient for them or not. So, they must ask themselves if the acquired company is really worth. Naturally, both sides of a merger will have different ideas about the value of a target company: the seller will tend to establish a value as high as possible while the buyer will try to pay the lowest price possible.

In mergers, the essential point, which is the subject of the negotiation between the leaders of companies involved in the transaction, is the determination of the exchange ratio between the shares of the acquiring firm and the acquired firm. This ratio results from a comparison as complete as possible between the companies to merge, a comparison that is preceded by a gathering of information on the market, competition, legislation, and especially the company. Here is the role of evaluation.

Business evaluation does not suffer from the lack of methods, but rather from the coexistence of a large number of methods, among which practitioners may feel lost. The different business evaluation methods that exist can overlap to better estimate the price of a company and minimize the risk of error. But we must be aware that "there is no unique value of a company".

2. Research methodology

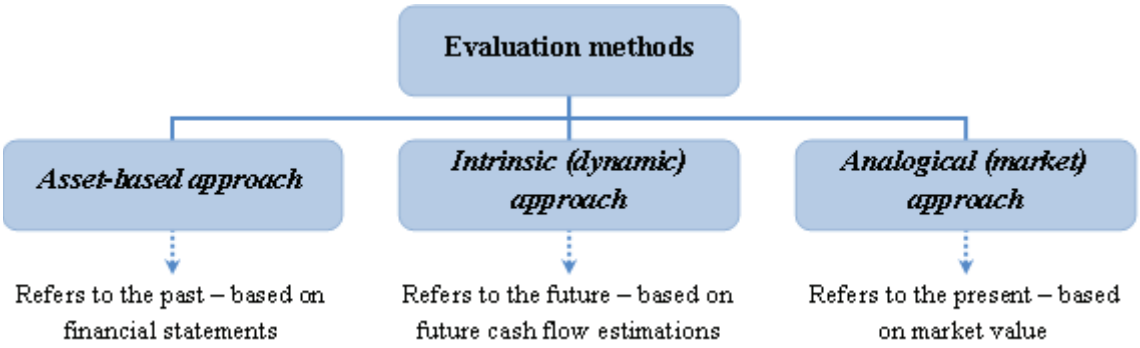
This paper is a theoretical study and its purpose is to present the different methods of evaluation used to determine the exchange ratio in merger transactions. We based our study on the information gathered from the existing literature at international level, using as a research method the qualitative approach.

This study is a fundamental research, the utility of such research, although it does not identify a problem with the purpose of solving it, being reflected in its contribution to the future developments of this research, by ensuring premises for forthcoming studies.

3. Evaluation methods – the base for exchange ratio determination

There are over a dozen methods of evaluation, these methods being structured differently from one author to another. As we can see in figure 1 Ceddaha (2005) groups the evaluation methods into three approaches.

Figure 1. Structure of evaluation methods



Source: adapted from Ceddaha (2005)

Asset-based approach

The theory underlying the asset-based approach to business valuation considers the value of a business as being equal to the sum of its parts. The asset-based approach estimates the selling value of the assets based on the financial statements. Using this method the objective is to estimate the accumulated wealth and not to determine the potential future value (Meier, 2009). In this context, the two methods used, approximates the net asset value or the adjusted net asset value.

The **net asset value method** consists in calculating the net worth of the company, namely the difference between the value of the assets adjusted for non-values and the amount of debt of a company (Meier, 2009). Even in a context of liquidation, the net assets are often penalized by the historical cost principle which involves recognition of an asset at its acquisition value and not at its resale value (Meier, 2009). Purely accounting, this approach is only a first approximation, very concise and promptly, of the value of a company (La Chapelle, 2002), which does not reflect its true value (Iselin, 2007).

The **adjusted net asset value method** aims to overcome the inherent limitations of historical cost and prudence accounting principles. The method consists in the reevaluation of the various types of assets and liabilities according to their replacement value, their use value or resale value, showing plusses or minuses of value. It is justified especially when the target company owns non-operating assets that can generate considerable gains (Meier, 2009).

This asset-based approach can be used in evaluating the exchange ratio for a merger by exchange of shares, if both of the companies are evaluated on the same principle. However, this approach has serious limitations. It is a static method that does not include the future perspectives of the company, the intangible assets (brand, corporate culture, customers), that form the competitive advantage of a company and are not included in the financial statements (Schatt & Roy, 2002).

The calculated value is a photograph at a time T, used by entrepreneurs to evaluate their assets but less relevant to a purchaser who justifies his investment by the expected profit, which is a bet on the future.

However, this approach finds its application in some cases, in real estate companies, investments companies or industrial holdings. In contrast, it is not at all adapted to rapidly changing companies: startups, business that grow quickly, where the latest balance sheet gives only a truncated picture of the business and its potential (La Chapelle, 2002). In all cases, the asset-

based approach provides only a first reference value that should always be complemented by other methods that take into account the expected trends, criteria more relevant to the investor (Iselin, 2007).

Intrinsic (dynamic) approach

The intrinsic or dynamic approach is the queen of the financial evaluation. Over the years, researchers have observed an increasing use of models based on discounted cash flows generated by the company in taking various decisions. A more recent evidence of this trend is provided by Trahan and Gitman (1995), Bruner et al. (1998) and Graham and Harvey (2001). Also, Mukherjee Kiymaz and Baker (2004) found that almost 83% of buyers use the method based on discounted cash flows to determine the value of the target company.

Evaluation using a dynamic approach aims to determine the capacity of the company to create future value (Meier, 2009), value related to future cash flows generated by the company. Iselin (2007) considers that the philosophy behind this approach is based on the idea that the purchaser does not buy the historical flows of the company (the accumulated wealth), but the future cash flows (or the future wealth).

If the principle of the dynamic approach is simple, its application is rather complex. This method very used is based on the discounted future cash flows of the company at a rate representing the average remuneration required by the investors of the company given its risk (Ceddaha, 2005).

The enterprise value is the sum of discounted cash flow over an explicit horizon and the terminal value at the end of that horizon, when the cash flows are difficult to estimate (Salustro, 2009).

$$V = \sum_{i=1}^{n} \frac{CF_i}{(1+k)^i} + TV$$

CF_i - cash flow of year i;
k - discount rate;
TV - terminal value;
n - number of years of the forecast period.

The method of discounted cash flows is divided into three steps, each of these steps posing different problems. According to Ceddaha (2005) the steps refer to: **1.** *establishing free cash flows over an* ***explicit horizon****;* **2.** *choosing a* ***terminal value*** *at the end of the explicit horizon;* **3.** *discounting the cash flow and the final value at a* ***rate*** *given the risk.*

The implementation of each of these steps is problematic: the duration of the explicit horizon, the determination of the terminal value and the discount rate are the main challenges facing the evaluator.

Regarding the **explicit horizon**, the evaluator should avoid it being too short not to give undue importance to the final value, or too long, so that the forecasts of cash flows remains only theoretical (Ceddaha, 2005). The problem of the duration of the forecast period has been often discussed by researchers: some argue that the forecast must be made for at least 10-15 years (Koller, Goedhart, Wessels, 2005) while others claim that an average of seven years is desirable (Ceddaha, 2005). There are also opinions that argued that the horizon must be long enough in order for the company to reach a stable state at the end of this period (Copeland, Koller, Murrin, 2000).

The choice of the explicit forecast period depends essentially on the number of years it is considered necessary before obtaining a stable business with constant rates of return and growth (Meier, 2009) and, in consequence, it coincides with the end of a period of extra profitability for the company (Cassia, Plati, Vismara, 2007). The explicit horizon, which coincides with the period when the company beneficiate of the competitive advantage (Cassia, Plati, Vismara, 2007)

is also determined by the business sector and the stage of business development (Ceddaha, 2005, Sherman & Hart, 2006).
In DCF method the analysis of the **terminal value** has often a considerable weight in the calculation, but its determination is often ad hoc or requires assumptions regarding free cash flows beyond the horizon (Penman & Sougiannis, 1998). The estimation of the terminal value is frequently at the heart of debate because it is often an important part of the value obtained by the DCF method (Cassia, Plati, Vismara, 2007), especially when the explicit horizon is short (Ceddaha, 2005).
Perhaps the most crucial concept of the DCF method is the **discount rate**. As the future cash flows occur in the future and the target company is valued today, it is necessary to adjust future capital inflows in today's money. The discount rate reflects the idea that the same amount of money is worth more today than in the future (Sherman & Hart, 2006). Economic and finance theory proposes the use of the corporate cost of capital as a discount rate. This value is the weighted average cost of the funds available to a company, including equity (common stock), debt (after tax rate), and preferred shares.
Even the value approach by the DCF method suppose a delicate matter, requiring a real know-how, it is the most capable of reflecting the global nature of the business and its ability to deliver performance in the future.

Analogical (market) approach
The market valuation approach, known also as the multiple valuation method or the method of comparables, is among the approaches the most used by practitioners for the evaluation of unlisted companies. For example, Asquith, Mikhail and Au (2005) reported that 99% of analysts use multiple method for evaluating companies and Roosenboom (2007) finds that underwriters typically use this method when evaluating initials public offerings (IPOs).
This method consist on transposing (by using ratios called multiples) the market capitalization of a company listed on a stock exchange to the company that we want to evaluate. It is based on the application on historical or anticipated balances of the company to evaluate, of the calculated multiples based on a sample of comparable listed companies (Ceddaha, 2005) or the "peer group".
The method proceeds in three stages: ***1.*** *defining a sample of comparable companies*; ***2.*** *calculating the multiples*; ***3.*** *applying the multiples to the target firm.*
Even the method is apparently simple and fast, it still involves some problems, especially in defining the sample and the choice of the multiples.
Concerning the "peer group", the companies selected to be part of it must belong to the same industry, be of similar size and have a similar stage of development and an economic model as close as possible (Pansard, 2007). But this is not enough; in order for the companies to be similar, they must have a comparable dynamic of value creation in terms of growth and economic profitability perspectives (Ceddaha, 2005). The value of a business is an increasing function of future payoffs and a decreasing function of risk (Liu, Nissim, Thomas 2000); therefore, the companies in the sample should be comparable with the evaluated company not only in terms of growth ratios but also in terms of risk.
As for the number of companies in the sample, Ceddaha (2005) considers that it is better to have a small but reliable sample rather than having fifteen companies with disparate characteristics whose value creation differs too much from the company to evaluate. Based on an empirical study, Cooper&Cordeiro (2008) demonstrated that using about five comparables is optimal when the comparable firms used are those from the same industry with expected growth rates closest to the target firm, and if their average growth rate is within 1% of the target firm's growth rate.
The problem of the "peer group" was also studied by Henschke & Homburg (2009) which considers that is not sufficient to reduce the sample to the most similar firms, because differences

remain, and correcting for them leads to the most accurate value estimates. So, to have a value of the company closer to reality, it is necessary that the sample is homogeneous.
The multiples utilized in the market approach represent the ratios between the observed market values and the measured values of the indicators for firms in the sample. When defining the multiples various indicators are utilized such as operating income (EBIT), profitability (EBITDA), price earnings ratio (PER), cash flow per share or even book value of equity per share.
The average of the ratios calculated for firms in the sample is the multiple used for determining the value of the company to evaluate. For the average be meaningful, it is important that the value of the ratios we calculate for each company in the sample be relatively close. If they are greatly different, which implies that the dispersion around the average is substantial, the average (a measure of central tendency) will not be very meaningful (Weston & Weaver, 2001).
The most utilized multiple is PER that establishes the value of the equity of a company from its historical or estimated net income. Taking into account that the market price reflects the real value of all future benefits of a company (Barker, 2002), PER represents the value of future benefits related to the current ones that is the rate at which profits are discounted.
Even if it has its limits, the market approach, which is based on the assumption of market efficiency (Ceddaha, 2005), is preferred by the evaluators because allows them to predict what the publicly traded price of a company is likely to be (Weston&Weaver, 2001).

4. Conclusions

The different evaluation methods that we have presented have each its advantages and limitations. Finally, the evaluation methods are only a measurement tool that should be adapted according to circumstances. As we can see in table 1 each method of evaluation is relevant in a certain context and taking into account specific conditions.

Table 1. Context of use and application conditions of evaluation methods

Evaluation methods	Context of use and application conditions
Net asset value	Rarely relevant in mergers
Adjusted net asset value	Relevant for holding companies (investment companies)
Discounted Cash Flow	Relevant in any context, less for holding companies, if the values used (cash flow projections, terminal value and discount rate) are correctly estimated
Multiples	Relevant for non listed firms if there are enough similar listed companies able to form the peer group

Source: adapted from Meier (2009)

Using these or other methods we obtain a value, but not a price. The value is derived from a calculation and can be adjusted while the price is the result of a negotiation between the parties and involves factors like the supply and demand, market share, synergies for the buyer, liquidity needs of the seller etc. (Salustro, 2009).
The evaluation methods are useful because they provide a starting point and a range of reasonable values based on reasonable assumptions and actual events (Sherman & Hart, 2006). However, the price of a company depends also on the real determinants objectives of stakeholders. The variety of evaluation methods led to a variety of values of a company, so we

can say that there is no single value or "fair" value. The value taken into account in a merger to determine exchange ratio of the shares is also the result of calculations, estimations, but mainly the result of negotiations.

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