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# La cooperación y nuevos enfoques estratégicos ante la complejidad del entorno empresarial globalizado

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Hecho en México / *Made in Mexico*

# Companies evaluation methods: a review analysis

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**Abstract**

Companies' evaluation has been a constant concern of managers, shareholders and other stakeholders, and can meet several objectives.

In the present work we intend to describe some of the methods of evaluating companies, with the purpose of indicating the most appropriate to find the "true" value of a company.

After a careful review of the literature, which is particularly suited for Companies valuation, we believe that the CVA - Cash Value Added method is the one that reflects the most "fair" value of the company being assessed.

**Key words:** Business valuation, EVA, CVA, MVA, Goodwill.

## 1. INTRODUCTION

Nowadays everything is valuated, and companies are no exception. Among others, investors, managers, customers, suppliers, policies, employees and the entire environment of the organization are evaluated. Risk and uncertainty accompany all dayto-day decisions of managers. To minimize these risks, a detailed assessment of the entire company activity is required. The performance of this work is justified, since the evaluation of the companies is fundamental so that listed and unlisted companies can know their value in an increasingly competitive market.

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Thus, this work focuses on the valuation of companies, focusing more on the valuation methods of non-listed companies. The choice of this group of companies is related to the fact that the unlisted companies constitute the greater part of the Portuguese business fabric. Given the importance of this group of companies, in the business fabric, the need arises to equip these companies with tools that allow them to know their value in order to guarantee better information for investors. In addition, a topic that is not much discussed in the academic world. This theme is also justified in view of the idea that Copeland, Koller e Murrin, (2002) consider that companies are valued for the purpose of sustaining administrative or investment decisions, be they acquisition, alienation or adoption Strategic measures.

It should also be noted that company valuation allows managers to be evaluated when comparing the value of the company when they start their functions and when they cease to function. This is in line with the idea of Fernandez (2015) when considering that the process of evaluating a company helps identify sources of creation and destruction of economic value within the company. Largani, Kaviani, e Abdollahpour (2012) point out that in today's competitive world value and wealth creation for shareholders are among the most important corporate goals.

In this way, the main objective of the work is to make a theoretical review and analysis of various methods of company evaluation, which are most suitable for the evaluation of companies not listed on the stock market. The present work is structured in seven sections. In section two, discusses the information necessary for the entire process of company valuation. On section three and four, presents some companies' evaluation methods considered static. The dynamic methods are considered on section five. In section six, refer to the risk implicit in the entire company valuation process. Finally, in section seven and last, make some considerations to the previously analysed methods.

## 2. DUE DILIGENCE, BUSINESS VALUATION

The valuation of companies and businesses is very important in that it allows evaluating the company as a whole, providing to the shareholders and investors information so that they can make strategic decisions in order to contribute to the sustained development of the company. Angwin (2001) considers that business valuation usually relies essentially on non-cultural factors in the wrong way, since management and corporate performance styles cannot be separated from national or regional cultural influence. Cultural values often guide the way companies around the world make decisions, leading to decisions that can deviate from optimal practice in a systematic and geographically predictable way (Li, Griffin, Yue, & Zhao, 2013). According to Xie, Reddy e Liang (2016) the analysis to evaluate a company should fall into 7 aspects: macroeconomic and financial markets environment, institutional and regulatory environment, political environment and corruption, tax and the taxation environment, accounting standards and valuation guidelines, cultural environment, and geographical environment.

It is clear from the outset that corporate valuation is not an easy task, since, regardless of the valuation method chosen, it is necessary to estimate several variables, namely variables associated with the determination of capital cost risk, as well as all variables affecting the company's activity. Fundamentally, it is necessary to devise an appropriate strategy to allow a correct evaluation. As the world waits for no one, let alone the business world, to locate and evaluate a target will always have the continuing pressure between pure opportunism and meticulous pursuit. In this process, advisors such as investment banks, consultants and accounting firms can play a very significant role in helping to shape the strategy, find targets and advise on

the presentation of a value proposition (Angwin, 2001). The estimated value of a company is to form a specialized and impartial opinion on the value of the company as a whole, its individual organizational units, resources, equity and debt (Trunk & Stubelj, 2013).

For the success of an acquisition, Angwin (2001) considers that these reasons, which lead to acquisition, are not only controversial, but that they contain a clear strategic objective, not only for the benefit of investors and markets, but also internally For the coherence and well-being of employees. That behaviour helps reduce the corrosiveness of uncertainty and may help you to have a better understand of the critical issues that exist.

Sometimes when the buyer has a company in the sights he ends up creating an emotional enthusiasm in the pursuit of that company. However, the acquirer should not blind with this acquisition and it is fundamental to reach a clear appreciation of the target company, as well as the environment that surrounds it, being the due diligence process focussed for this evaluation (Angwin, 2001). The author defined due diligence as an objective and independent analysis of the acquisition objective. In particular, it focuses on financial issues, tax issues, asset valuation, operations, evaluating a company and providing collateral to lenders and consultants in the transaction as well as the acquirer's management team. A similar view has Barrios (2013) when considering that, in order to evaluate a company, it is necessary to combine the knowledge of several areas of knowledge, financial engineering, accounting, financial management, economics, law, business strategy, Markets and certainly knowledge of other business sciences. For Barros (1999), it goes further and considers that the evaluation of companies depends on the ability to understand the sector, the business and the economic environment as a whole, always bearing in mind the predictive capacity. This author also mentions that the determination of the value of a company, in a perspective of continuity, is obtained through the use of different methods. The different methods certainly lead to different evaluations, considering Fernandez (2015) that the value of the company cannot be confused with its price, this being the monetary amount agreed between the seller and the buyer, in the act of selling / buying a company. The value of the company, found by different methods, can be a starting point for a negotiation for determining the price of the company.

Thus, in the due diligence phase one must make a comprehensive analysis of the company's business targets its strengths and weaknesses its strategic and competitive position within the sector in which it operates. The types of problems that may be discovered include pending litigation, inaccurate inventory valuation, insufficient financial accounts, poor cash flows, poor financial controls, tax contingencies, unrealizable investments, the need for significant future investments, related party transactions, and unethical practices (Angwin, 2001). These types of problems can compromise the apparent competitive strength of such a business and the viability of its long-term strategic position.

Managers in different countries have different perceptions of the external environment because they have different cultural values. Management efforts will likely reflect to what extent the environment is perceived as uncertain and as far as companies can control it. Even in increasingly globalized market economies with high-level professional managers, intangible factors such as culture are important in making high-risk business decisions (Li et al., 2013).

Angwin (2001) concluded in his work that national cultural differences are present in the way companies view the pre-acquisition phase, particularly as regards the use of consultants and the perceived areas of due diligence.

Evaluation plays a central role in financing, investment, and business decisions, and many methods are used to approximate the true value of a firm (Perek & Perek, 2012). Boularhmane e Aboulaich (2016) argue that even if the company's valuation techniques evolved by developing increasingly sophisticated methods, there is still a dilemma in the investment world to price a business. For Gheorghe e Cantemir (2013), the methods used to evaluate the company can be divided into three groups: methods based on capital, methods based on financial performance and methods based on equity and financial performance.

In the present work, three groups of methods of valuation of companies are also considered: equity accounting methods, methods based on cash flows and dynamic methods. A description of the different methods of company valuation is given below.

## 3. METHODS BASED ON PATRIMONIAL / INCOME PERSPECTIVE

These methods are based on accounting documents only providing information on the Company's equity situation, which shows a static equity situation, although there is Santandreu Martínez (1998) who consider that these methods are a starting point for any evaluation.

The equity method is defined by the principle that the value of the company is equal to the value of all its assets (Gheorghe & Cantemir, 2013). This method of evaluating companies includes, among others, the working capital investment method, the goodwill method and the multiples method.

### 3.1 - Working capital investment method

Although firms traditionally focus on long-term capital management and capital structure, the recent trend is that many companies in different industries are concerned about the efficiency of working capital (Ganesan, 2007). Mota et al. (2006:19) consider working capital as the "excess of financial needs of exploitation against financial resources of exploitation". The investment made by the companies, in working capital, has the purpose of maintaining the company's day-to-day operations, so that it has a standardized short-term management (Ganesan, 2007). In other words, this investment considers the invested capital, in all current assets, subtracted from all current liabilities, being the difference found, financed by permanent capital (Owolabi & Alu, 2012; Song, Liu, & Chen, 2012).

This type of investment, made by companies, varies greatly from company to company, depending on their short-term policies (Ganesan, 2007). However, the companies within the same sector of activity have, among them, the same proportion of this type of investment. In this sense, Song, Liu, e Chen (2012) consider the investment in working capital fundamental for the survival, and development, of the companies. In addition to the aforementioned importance, this investment becomes essential in order to obtain an adequate profitability and a level of risk that is also appropriate, naturally influencing the company's value (de Almeida & Eid, 2014; Owolabi & Alu, 2012).

Thus, the value of working capital has an impact on the market valuation of a company as efficient management of working capital becomes an essential element in the creation of strategic value for the shareholders (Afza & Nazir, 2007; Ganesan, 2007). Binti Mohamad e Binti Mohd Saad (2010) consider, as other authors (Raheman & Nasr, 2007), that the management of working capital has a significant influence on the performance of the company, concluding in the study that they developed the negative association between the variables that

Composes working capital with the profitability and the market value of the companies. However, firms can have an optimal level of working capital that maximizes their value (Deloof, 2003).

### 3.2 - Goodwill method

Another method, belonging to equity/ income perspective is the method of goodwill or also called "Big Profit". Goodwill is part of this group, because when referring to methods based on an equity perspective, the assets are considered not only from a historical perspective, but also from a social perspective. This method is considered by Wen e Moehrle (2016) in the context of accounting to be the amounts paid in excess of the fair value of the identifiable net assets of an activity or concentration of business activities. In this way, "goodwill corresponds to the intangible asset that results from: name, reputation, customer loyalty, location, products and other factors that value the company and are not separable from it" (Neves, 2002:6). For Fernandez ( 2015), goodwill is the value that a company has above its adjusted book value. The author adds that goodwill represents the value of the company's intangible assets. This value often does not appear on the balance sheet but is a very important competitive advantage compared to other companies. Because it does not appear on the balance sheet, in practice, firm valuations rarely take into account human capital in its assessment (Strack & Villis, 2002).

Other authors such as Seetharaman, Helmi Bin Zaini Sooria e Saravanan (2002) denominate this intangible value by intellectual capital being, at bottom, its core of the companies. These authors consider that there are four types of intellectual capital:

- Human Capital considered as the basic potential of an organization;

- Organizational Capital described as the ability to transfer human capital to potential products and services;

- Capital Market, or the competence to manage, integrating external interfaces with the organization's stakeholders;

- And Innovation Capital as being the ability to continually improve and develop all the potentials and variables of the environment.

A research, referenced by Seetharaman et al. (2002), and by John Kendrick (1999), concludes that the ratio of intangible and tangible capital in 1929 was 30% and 70%, respectively, being changed to 63% and 37% in 1990. Investment in the most strategic areas such as research and development, the internet and information technology, this investment being made with the expectation of creating future profitable investment opportunities (Miller & Park, 2002).

Goodwill can also be understood as the potential economic value responsible for the excess of future profits of the companies, that is, the forecast of the profitability of a company that exceeds the profitability of the so-called normal assets (Xiao & Li, 2015). Authors also believe that goodwill can be formed by good customer reputation, excellent business management, high operating efficiency of the business, monopoly product technology, as well as the natural advantages of the geographical position.

Although goodwill brings greater economic benefits to a company, when compared to another similar company with lower goodwill, its valuation is accompanied by high uncertainty and may change with the change of the business environment internal or external to the company. This uncertainty causes greater difficulty in evaluating companies with a high intangible value, since a small variation in assets may lead to uncertain future growth opportunities (Fernandes, 2002). The author believes that these assets are difficult to

assess because traditional accounting and financial tools have been developed for the "world" of tangible assets and are not adequately prepared for intangibles. However, forecasts for future profits, based on past performance, may already consider the intellectual capital of the company (Fernandes, 2002). It should be noted that goodwill has no legal validity, and may last forever, but it may also lose the ability to make a profit in excess in a short period of time (Xiao & Li, 2015).

### 3.3 - Multiple method

Among several approaches available to evaluators, the multiples method is often used by evaluators as it has some advantages, especially its simplicity (Astolfi, Chastenet, Marion, & Thauvron, 2014). For the authors, the method consists first of all in providing a sample of companies comparable to the company to analyse and calculate for each of them a multiple or more representative of their value. Multiples constitute an important basis for investment and transaction decisions of various types of investors including corporate executives (Milicevic, 2009). From the author's point of view, the multiple valuation method represents an indirect market-based approach to valuation.

For Fernandez (2015b), multiples almost always have great dispersion, and it is for this reason that the evaluations carried out, using multiples, can be highly debatable. The author states that the multiples are useful in a second evaluation phase, after performing the evaluation using another method. Milicevic (2009) reinforces this idea by pointing out that even in cases where the value of a firm depends on discounted cash flow, the multiple method is very important in that it provides a second opinion. A comparison with the multiples of comparable companies allows to evaluate the evaluation made and to identify the differences between the valued companies and the companies with which it is compared (Fernandez, 2015b). The first important step in a deep assessment of multiples is the selection of appropriate measures and another vital aspect is the identification of comparable groups (Milicevic, 2009).

## 4. METHODS BASED ON CASH FLOWS

The methods that we are going to analyse next are characterized by the fact that all have the same objective, that is, to boost the payment of the performance of the managers and collaborators. However, the measures used for this purpose are different since they are based on different methodologies and sources of information (Fernandes, Armada, & Rodrigues, 2005a).

The value of a company, as well as its increase in value, determined from the cash flows point of view, over a certain period, may suffer changes caused by changes in expectations regarding the cash flows growth. However do not take into account changes in the company's risk accompanied by the consequent changes in the respective discount rate (Fernández, 2015). Cash flows are typically projected, normally for the next five years and then discounted to their current values using market-based rates that reflect the risk associated with these expected cash flows (Kaplan & Ruback, 1996). For the authors, the most used DCF approach is to discount the relevant cash flows by the weighted average cost of capital (WACC). To evaluate a company through cash flow discount, we can use different expected cash flows, which will have different risks and therefore require different discount rates (Fernandez, 2005).

Fernandez (2007) shows that all the most common methods used to evaluate companies by discounted cash flow or residual income discounts always give the same value. For him this result is logical, since all the

methods analyse the same reality under the same hypotheses. They differ only in the cash flow or in the residual income measure taken as the starting point for the valuation. Here are some of these methods.

### 4.1 - Free Cash Flow Method

The Discounted Cash Flow (DCF) method, or free cash flow to firm method (FCFF), which is described by Vieito e Maquieira (2010) as the method that assumes that the company generates Financial flows in the future, these values being used to remunerate the origins of funds, that is, the financiers of the company's own capital and capital. The authors define free cash flow as the availability, with which the company remains, after remunerating all its own and other shareholders' equity over the previously defined time horizon, updated to the current moment.

The most common method to evaluate companies is the free cash flow method. In this method, interest tax values are excluded from cash flows and interest tax deductibility is treated as a decrease in the weighted average cost of capital (WACC) (Pablo Fernandez, 2005).

The value of free cash flows may be negative, which is not desirable since the company is not generating cash flow. In this situation, the company needs to make a capital injection using the loans or capital of the shareholders / shareholders or the two sources together in order to support the investments made and the existing loss (Vieito & Maquieira, 2010). It should be noted that this method considers a company taking into account what it can produce in the future, in terms of free cash flows (Fernandez, 2015a; Vieito & Maquieira, 2010).

For this reason, some authors like Moreira (2001) and Stankeviciene (2012) add that, cash flow is one of the indicators most used in the financial area for the valuation of companies. Mota et al. (2006) state that the discounted cash flow model, or current value of future cash flows, may determine the firm's value, in a dynamic perspective, when accompanied by a sensitivity analysis. Steiger (2010) states that the DCF method is based on prospective data and therefore requires many predictions for the future business situation of the company and the economy in general. The author also indicates that small changes in the underlying assumptions may result in large differences in the value of the company. Thus, for the author, it is very important to know what are the assumptions used and how they influence the result of the analysis.

### 4.2 - Capital Cash Flow Method (CCF)

Ruback (2002) states that the capital cash flow method is algebraically equivalent to the free cash flow method. For the author, the capital cash flow method is a different way of evaluating cash flows using the same assumptions and approach of the free cash flow method. The advantage of the Capital Cash Flow method is its simplicity, taking into account that the discount rate for Capital Cash Flows does not need to be calculated for each period, as is done by the FCF method, with the weighted average cost of capital (WACC), after taxes, calculated for each period (Ruback, 2002). The CCF method is especially useful in the valuation of highly leveraged firms whose expected debt is normally expressed and whose capital structure changes substantially over time.

Capital cash flows can be seen as post-income cash flows that accrue to all capital, preference and capital investors (Kaplan & Ruback, 1996).

Both the cash flow method of capital, and the free cash flow method, assume that the debt is proportional to the value of the company. The higher the value of the company, the greater the amount of debt that the

company uses in its financial structure, the greater the tax benefits of interest taxes. Therefore, the risk of tax benefits on interest taxes depends on debt risk as well as changes in capital structure (Ruback, 2002).

### 4.3 - Residual Income Model (RIM)

The value of a business can also be determined based on setting a perpetual income. Heinrichs, Hess, Homburg, Lorenz, e Sievers (2013) consider that the question of how to evaluate companies, which receive future rewards, has a long tradition in business finance and accounting. For the authors, the standard approaches are the dividend discount model (DDM), the discounted cash flow model (DCF) and the residual income model (RIM). These models are formulated for optimal valuation conditions that require, in particular, the accounting for net surpluses and the availability of rewards to infinity. However, these ideal conditions are almost never found in reality (Heinrichs et al., 2013). From the standpoint of Dechow, Hutton, e Sloan (1999), although the model provides a unifying framework for earnings-based valuation research, efforts to implement the model provide only modest improvements in the explanatory power of the values obtained.

Dechow et al. (1999) add that the model is an updated and restricted version of the standard dividend discount model. For the authors, the existing empirical applications of the residual income assessment model are generally similar to previous applications of traditional profit capitalization models.

The idea of Kuo (2016) follows the same logic, pointing out that the residual income evaluation model (RIM) was proposed by Ohlson in 1995, due to the existence of huge prediction errors. The author points out that current evidence on RIM's forecasting capability is closer to reality since some studies confirm that RIM is more accurate in predicting stock prices than the traditional model. However, other studies indicate the existence of large deviations in the application of the predictions in the RIM. Previous studies, based on the theory of residual income assessment (RIM), have focused more on value relevance, for example, on the relationship between stock prices, accounting values and earnings, few studies discuss Actions (Kuo, 2016).

This model is based on budgeting techniques and the net present value rule. It assumes that a project has value only if it has a positive net present value, meaning that the return on invested capital should exceed the cost of capital invested (Perek & Perek, 2012). In general, excess return models use this principle and indicate the value of a firm in two components: the book value of invested capital and the present value of surplus returns on invested capital.

Residual income is expressed as net income less the capital rate for each year. By discounting residual income at the cost of equity and adding it to the book value of current net worth, the value of net worth is obtained according to the residual income model (Perek & Perek, 2012).

Fernandez (2002) showed that the three residual income models always have the same value as the discounted cash flow models. The author uses three different measures of residual income: - economic profit (EVA), economic value added (to be discussed below) and cash value added (CVA), to show that:

> a) the current value of the discounted Economic Profit (EP) to the income required for equity, plus the equity value corresponding to the value of the equity capital (the present value of the discounted cash flow of shares to the income required for equity);

b) the present value of the EVA discounted in the WACC plus the book value of the company (equity plus debt) is equal to the market value of the company (the present value of Free Cash Flow discounted in the WACC);

c) the present value of the CVA discounted in the WACC plus the book value of the company (equity plus debt) is equal to the market value of the company (the present value of the Free Cash Flow discounted in the WACC).

### 4.4 - Shareholder Value Added (SVA)

Rappaport (1999) considers that, since the publication of shareholder value creation in 1986, the widespread view in the United States arises that the primary responsibility of an organization's management is to increase its value. This idea became stronger with globalization, coupled with a wave of privatizations, increasing attention to the concept of value for shareholders and executives Rappaport (1999). The author exposes that in the 1980s, there were few companies with an unequivocal commitment to shareholder value. While many companies used piecemeal applications of the shareholder value approach, such as discounted cash flow analysis, capital decisions, and the pricing of mergers and acquisitions, management thinking was largely driven by an orientation of short-term gains. Firms' financial performance, measured in accounting-based metrics, has been viewed as inadequate, as companies began to focus on shareholder value as the organization's long-term goal (Venanzi, 2010). Shareholder value should be viewed as a long-term concept, relating to long-term value creation for firms (Kiliç, Çağlar, Güngör, & Çaglar, 2011). Today, in the competitive world in which we live the value, as well as wealth creation, for shareholders are among the most important goals of companies (Largani et al., 2012). To achieve its objectives, the investor needs some instruments to measure the potential value of each investment opportunity (Largani et al., 2012). The authors consider Shareholder Value Added (SVA) as an appropriate criterion for assessing the performance of value-based management. The main determinant for a shareholder to invest in a company is defined by the company's ability to manage profitable investment opportunities (Kiliç et al., 2011). The authors argue that managing profitable investment opportunities provides value creation for shareholders by increasing the company's market value. The authors add that, the shareholder value is created when the market value of the shares exceeds their book value. The main idea of the VAS is that the return of capital invested by the shareholders should be higher than could be obtained by investing in other assets with the same level of risk. (Largani et al., 2012) state that shareholder return is value added for the shareholder in a given year divided by the market value of the shares at the beginning of that year. Authors consider the existence of 5 steps to calculate the AVS:

Step 1: Calculate NOPAT;

Step 2: Estimate capital employed;

Step 3: Estimate the appropriate WACC;

Step 4: Calculate the capital charge;

Step 5: Calculate SVA.

Authors adds that, NOPAT is an operational performance measure, taking into account taxation, but before any financing costs. Interest is totally excluded from NOPAT, as appears implicitly in the capital ratio. NOPAT also requires additional adjustments equivalent to shares (Largani et al., 2012).

The SVA analysis can also be determined using free cash flow discounts dividing the value of the company in 2 moments:

1) Calculate the residual value through the end of each year cash flow before investment in new capitalizing;

2) Discounted cash flow and residual value with cost of capital.

In this view, (SVA) is defined as the difference between the present value of the incremental cash flow before new investments and the present value of investment in fixed and working capital. Thus, in this view the SVA is calculated as follows:

SVA = (Present Value of cash flow from operations during the forecast period + residual value +) - Debt.

A shareholder is deemed to create value when:

Creation of value = Market value of shares x (Profitability obtained - Expenditure on equity)

or

Shareholder value created = SVA - (Equity market value x Ke)

Largani et al. (2012) considers that the shareholder value added is determined by the increase of equity market value plus dividends paid during the year plus other payments made to shareholders (discounts on par value, share buybacks…) subtracted outlays for capital increases, exercise of options and warrants subtracted conversion of convertible debentures.

**4.5 - Economic Value Added (EVA)**

EVA is a management tool, believed by Stern Stewart & Co in 1991, considered to be very important in that it assesses the impact of managers' decisions on return on investment, taking into account the cost (Poornima, Narayan, & Reddy, 2015). According to Lee e Gon ( 2009), the concept of added value (EVA) became a topic of great interest in the 1990s, resulting from the broad literature on economic and financial research. The authors consider that adopting the EVA method in a company develops a closer relationship between the manager and the shareholders, since the manager thinks and acts as if the company belonged to him. In this way, the EVA financial management system is used to encourage managers to manage more as owners, helping managers to make the best operational, financing and investment decisions (Biddle, Bowen, & Wallace, 1997; Nagarajan, 2015). According to Shil (2009), EVA is the measure of financial performance that most closely matches the true economic profit of a company. The author adds that it is the measure of performance that is most directly linked to the creation of wealth for shareholders in the long run. Nagarajan (2015) considers that with the data obtained by conventional accounting, most companies appear profitable, but many, in fact, are not.

The concept of EVA is based on the assumption of added value when the return of an investment exceeds the investor's initial expectations (Fernández, 2015; Poornima et al., 2015). However, Poornima et al. (2015) considers that there are differences between the concept of "added value" and "economic value added ". First, EVA is considered as the surplus created by an entity after remunerating equity, while value added is the wealth that a company creates through the collective effort of management, labour, and capital. Second, EVA assists managers and acts as a management tool in decision making, which increases wealth for shareholders. Added value, on the other hand, provides a useful measure of assistance in analysing the entity's

performance. Third, the EVA focuses on the company's ability to create surplus above shareholder expectations, while the value-added concept focuses on the company's performance in contributing to various groups. Fourthly, the EVA concept recognizes the time value of money that is absent in the case of the added value concept. Fifth, EVA reports market information, company beta estimates, cost of capital, risk-free interest rate, etc. On the other hand, value added reporting is based purely on information on the determination of profit and loss which is mainly internal and accounting data.

Its calculation method is based on net operating income tax deducted from the multiplication of WACC by invested capital (Poornima et al., 2015).

$$EVA = NOPAT - (Employed\ Capital * WACC)$$

Thus, for the company to present a positive EVA and to be able to affirm that the managers are creating value for the company is not enough to present profits, it is necessary to ensure that the operational activity is also enough to remunerate the capital holders in view of the profitability that they would expect Of an investment with a similar "profile" (Davidson, 1999; Nagarajan, 2015). That is, the great goal of EVA is to make the company maximize profit by minimizing the capital needed.

EVA, in addition to being considered a measure of economic value creation, can also be associated with a company's compensation system, so that managers are paid based on their ability to combine the efficient use of assets with results (Nagarajan, 2015).

Compared with traditional methods of evaluation, EVA presents values different from those presented by traditional methods, namely ROE, ROI and EPS (Poornima et al., 2015; Stankeviciene, 2012). (Anderson, Bey, & Weaver, 2004) consider that the greatest consideration in applying EVA is the adjustment that this tool allows to make of a large number of accounting variables.

This model of evaluation Nagarajan (2015) points to some criticisms, namely: be a measure of short-term performance; does not suit companies with profitable investments only in the long run; periodic EVA cannot estimate shareholder value added due to inflation and other factors; both the capital invested and the capital structure is made on the basis of accounting documents. Some of these limitations are overcome by the following method.

To overcome the limitation of the use of accounting documents Bacidore, Boquist, Milbourn, e Thakor (1999) proposed REVA - Refine EVA. The authors propose, in order to estimate EVA, the use of market values of the company instead of accounting values. That is, the market value of the company's equity is added up to the book value of the company's total debt and the current non-interest bearing liability is subtracted.

### 4.6 - Marked Value Added (MVA)

MVA is the market value added, derived from the concept of the EVA model (S. Lee & Gon, 2009). In this way, the MVA is a current value of all the EVA's predicted for a certain company in the future. That is, the MVA is the difference between the market value of the company and the book value of the shares (Nakhaei, 2016). The result obtained reflects to what extent a company presented added value to its capital, which was financed by shareholders and creditors (S. Lee & Gon, 2009; Nakhaei, 2016; Poornima et al., 2015). The authors add that when a company maximizes EVA in return it is also maximizing the MVA. For this reason, it is considered that EVA aligns the interests of shareholders with those of management.

In the developed work, Lee e Gon (2009) concluded that REVA and MVA significantly explain the adjusted return to the market with positive coefficients. A Z test to identify statistical differences in terms of the explanatory power between EVAR and MVA does not reveal differences. Therefore, both REVA and AVM can be used as good performance measures for hotel companies. They also verified that traditional measures of CFO, ROI and ROE performance do not explain much of the market-adjusted return after being considered REVA and MVA.

### 4.7 - Cash Value Added (CVA)

Management should be able to consistently evaluate the firm from the investor's point of view, separating strategic investments from non-strategic investments (Ottosson & Weissenrieder, 1996). The distinction between strategic and non-strategic investments by Ottosson e Weissenrieder (1996) is central to capital holders as only strategic investments create added value. The distinction between these two investments will make managers more concerned with strategic investments, giving less importance to non-strategic ones.

The valuation of the various strategic investments, within the company, can be made, in isolation or jointly, through the CVA Cash Value Added method (Bukvic, 2016; Ottosson & Weissenrieder, 1996). This method was a measure developed by BCG (Boston Consulting Group) which includes only cash values. Ottosson e Weissenrieder (1996) propose, for their calculation, the determination of the OCF corresponding to the sum of the three headings: operating profit before depreciation and taxes; Working capital movements; Non-strategic investments. The value found in OCF is compared to the value of OCFD deemed necessary to meet the financial needs of the invested in strategic investments of the company.

$$NPV(Investment) = \frac{OCF_1 - OCFD_1}{(1+r)} + \ldots + \frac{OCF_n - OCFD_n}{(1+r)^n} = \frac{CVA_1}{(1+r)} + \ldots + \frac{CVA_n}{(1+r)^n} = PV(CVA_{1\ldots n})$$

This model allows to make an Index to compare different units within the same company or different companies (Ottosson & Weissenrieder, 1996). This comparison takes into account the organization's performance today and in the past. That is:

$$CVA\ Index = \frac{Operating\ Surplus\ margin + WCM\ margin + Non - strategic\ investment\ margin}{OCFD\ margin}$$

The CVA model includes only relevant topics for management to discuss. Attention is not diverted to discussions about accounting issues, which usually do not create value. The model is simply and closely linked to ongoing operations and therefore can be used by managers to understand and communicate business realities

## 5. DYNAMIC METHODS

The models of valuation of companies, previously presented, methods based on the equity / income perspective and the methods based on Net Cash Flows, presuppose that the assets of the companies are

passively detained (Fernandes, Armada, & Rodrigues, 2005b). With the real options methodology, it is possible to consider today the implications of managers being able to make decisions in the future that change the pattern of cash flows initially forecast (Copeland & Antikarov, 2003). That is, with the Real Options (RO) an investor can define the ideal moment to invest, or to estimate the value of the uncertainties of the project, because this methodology makes it possible to evaluate the flexibility of a management project (Santos, Soares, Mendes, & Ferreira, 2014).

The RO method has been used by several authors to evaluate the possibility of postponing certain projects in the most diverse business areas, increasing management flexibility and therefore increasing project value [e.g. (Boomsma, Meade, & Fleten, 2012; S.-C. Lee & Shih, 2011; Lin & Wesseh, 2013; Monjas-Barroso & Balibrea-Iniesta, 2013; Nang, Takezawa, & Takezawa, 2002; Reuter, Szolgayová, Fuss, & Obersteiner, 2012; Santos et al., 2014; Siddiqui, Marnay, & Wiser, 2007; Zhang, Zhou, & Zhou, 2014)]. Authors such as Amram e Kulatilaka (1999) consider that many managers have already understood that there is something wrong or, at least, incomplete, with traditional valuation methodologies such as VAL, and it is necessary to add more information such as the real options Which remain open. These, at least theoretically, enable managers to make more realistic and therefore more informed decision-making.

Menegaki (2008) defines an RO as being, the right but not the obligation to make an investment decision regarding real assets.

Copeland et al. (2002) classify ROs into five categories: abandonment option, development postponement option, expansion or contraction option, extension or abbreviation option, magnification option, change options, composite options, and rainbow options.

For Copeland e Antikarov (2003), the essence of the value of ROs is that when investing in risky assets, we can learn from observing what happens in the real world, thus allowing us to adapt our behaviour to Various situations that appear at the moment. In this sense, it is possible to increase the potential growth of the investment and to reduce the possible inherent risks. Theiy also add that in the real options framework, we use up-to-date knowledge or information to expand opportunities and reduce risk. The RO evaluation thus becomes a modern evaluation method, which provides theories and tools for adapting and reviewing decision-making for capital-intensive projects (Inthavongsa, Drebenstedt, Bongaerts, & Sontamino, 2016).

However, the RO method does not fit all companies, as they must be flexible. In other words, flexibility adds value to the projects (Martín-Barrera, Zamora-Ramírez, & González-González, 2016), considering the authors that the RO method is the most appropriate to evaluate management flexibility.

There is an analogy between financial options and real-world investments, hence the name "real options" (Martín-Barrera et al., 2016; Tsui, 2005). Martín-Barrera et al. (2016) link an investment opportunity to a call option considering that: the share price is equal to the current value of the operating assets of the company to be acquired (or developed projects); The strike price is the necessary expense (or investment required); The expiration period is the period of time that the decision may be postponed; The risk-free rate of return equals the time value of money, and finally the variance of stock returns represents the risk of the company's assets.

The application of the RO to companies evaluation can be done through the binomial model or Black-Scholes[4] model, following four steps: (i) frame the application, identifying possible decisions that could be

[4] They are considered two solid and rigorous methods that produce correct prices for financial options (Tsui, 2005).

made and when they can be exercised; (ii) implement the option evaluation model; (iii) analyse the results and compare them with other methods (in this case, VAL); And (iv) redesigning the RO model in order to obtain better results (Martín-Barrera et al., 2016).

However, Martín-Barrera et al. (2016) consider that the increase in value resulting from management flexibility is only considered if managers are willing to exercise the options.

## 6. RISK ANALYSIS

By analysing the various methods for valuation of companies, it is necessary to estimate some variables, always being associated with this estimate the risk. Risk is something that can happen; unlike a problem that is something that we know will happen (or has already happened). If an event is associated with risk, then there is a potential loss or impact associated with that event (Amland, 2000).

Risk analysis is critical in uncertain and risky situations such as business and business value. Risk models are developed to serve as an aid to the decision-making process (Frey & Patil, 2002).

An individual's propensity to take or avoid risk can have a significant impact on decision-making under conditions of risk and uncertainty. Risk propensity is a general personality trait that causes individuals to demonstrate consistent tendencies toward risk seeking or risk aversion in a variety of situations (Keil, Wallace, Turk, Dixon-randall, & Nulden, 2000).

One of the main tools of management that can be used in the evaluation of companies and businesses is the sensitivity analysis, being important in the decision making using the construction of scenarios, enabling the manager to take contingency measures for different future situations. In the evaluation process, the sensitivity analysis allows estimating the change in the value of the company or business, as a consequence of variations that may occur in the independent variables, while the others remain constant.

This tool allows you to analyse the impact that small changes, in one or more than one variable, can cause in the final result. In this way, the sensitivity of the parameters of the model is identified and the robustness of the results is evaluated (Borgonovo & Plischke, 2016). From the point of view of Frey e Patil (2002), sensitivity analysis can help identify critical control points, prioritizing data collection, verification and validation of a model. For the authors, the sensitivity analysis model can be used to identify the most significant risk or risk factors that help in developing priorities for risk mitigation.

There are numerous specially developed software packages that allow for sensitivity analysis (Hyde & Maier, 2006). However, the authors consider that the commonly used sensitivity analysis methods are limited, not only because they are focused on one type of input parameter, but also because one predominantly only one parameter is varied at one time. In the Microsoft Excel program in the Date menu and Hypothesis Analysis submenu it is possible to perform a sensitivity analysis with two variables varying at the same time. The advantage of using Microsoft Excel as a development environment is that it provides features that allow data analysis and manipulation and visualization of results, and is available to a broad group of people (Hyde & Maier, 2006).

## 7. BRIEF CONCLUSIONS

Evaluating companies is not an easy task. The company is worth for the enterprise that it establishes but it will also be worth by the entrepreneurs who own it or the managers that lead it and still by the environment that surrounds it, finding these factors in constant evolution. Mallinson e French (2000) argue that in order to be able to evaluate, several variables need to be taken into account. In this way, choosing a method is a very difficult task. This is because, value is a quality of things that motivates its acquisition. When we appreciate a quality, we are incorporating, to some extent, subjectivity and can thus vary the value from person to person.

Different valuations allow the goods to be commercialized giving rise to the markets, in which, the confrontation of values gives rise to the price. The business market does not have the characteristics of a perfect market, nor is it a homogeneous market (companies with identical characteristics differ in profit, efficiency or productivity). This means that there are no universal parameters with minimal operability for an evaluation. When evaluating, several assumptions should always be considered in relation to the objectives of the evaluation.

Of the methods analysed, the one that seems to indicate a fairer value for the company is the CVA - Cash Value Added method. As Ottosson e Weissenrieder (1996) consider, this method does not underestimate the positive effect, on the market value, of a company being able to identify truly profitable investments in the future. Another distinguishing characteristic is that it uses the same valuation criteria to compare historical profitability with future profitability, allowing an objective assessment of whether its plans for the future create or destroy value (Ottosson & Weissenrieder, 1996).

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