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VALUATION OF INTERNET COMPANIES: METHODS COMPARED

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Abstract

Internet business valuation is a challenge because internet business has unique features and thus, needs to consider other issues than the traditional income statement and balance sheet numbers. Furthermore, many internet companies have generated negative accounting income in spite of extraordinarily high stock price. Given these circumstances, the advanced valuation model for internet business with consideration of the high growth potential capacity is apparently needed.

This paper is designed primarily to review previous researches on the corporate valuation models as the theoretical background and then to select a possibly best-suited valuation model for internet business among the presented models. After having then outlined the theoretical framework through an analysis of the literature, the value drivers of the internet companies and the evaluation difficulty that can arise from them will be highlighted. Subsequently, the main evaluation methods used for Internet companies are analyzed: starting from the financial method and the multiples method, then analyzing more advanced methods such as Real Options and Eva.

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Keywords: Internet Company, valuation model, DCF, traditional method.



1. Introduction

The evaluation of Internet Companies has become increasingly important in recent years as a result of the increasingly frequent listing of companies oriented to the new economy and e-business.

As is known, the value of a company is a function of a multiplicity of parameters. In the net economy, value is mainly identified with the strategy and the intangible assets, i.e. the ability to adapt to continuous change.

As a result, so that the methods of evaluating traditional economic capital can be applied to Internet companies, it is necessary to make adjustments that take into account the characteristics and peculiarities of the new economy.

Given these circumstances, the advanced valuation model for internet business with consideration of the high growth potential capacity is apparently needed.

In this context, the paper aims to analyze the most suitable economic assessment methods for Internet companies to be used "in a system" with traditional ones in order to obtain a fair estimate of the economic value of the company to be evaluated.

After having then outlined the theoretical framework through the analysis of the literature, the value drivers of the internet companies and the evaluation difficulty that may arise from them will be highlighted. Subsequently, the main evaluation methods used for Internet companies are analyzed: starting from the financial method and the multiples method, then analyzing more advanced methods such as Real Options and Eva.

The purpose of this study is threefold:

1. provide a general overview on the strictly theoretical and definitive aspects regarding the evaluation of *Internet Companies*;
2. identify the set of factors and variables, able to act, influence and stimulate the ability of Internet Companies to create value;
3. analyze the various evaluation issues for an Internet Company in order to identify the most suitable evaluation methods for these types of company.

The work is structured as follows: Section 2 is the analysis of the literature concerning overview on the strictly theoretical and definitive aspects regarding the evaluation of *Internet Companies*; Section 3 explains the drivers of the value of internet companies; our research hypotheses; Section 4 describes the evaluation problems of internet companies; the following sections are dedicated to the analysis of the main evaluation methods used in international literature; finally, the study concludes with a discussion of the main findings.

2. Literature Review

Internet firms are often strikingly different from other firms. Consider the results from a study by Hand (2000) on a sample of 274 Internet firms, 274 non-Internet firms and 213 IPO-matched non-Internet firms. An Internet firm has over half its revenues from Internet. The median Internet firm has ten times the market capitalisation yet employs only 40% of the number of people from a median firm. Relative to the median firm, the median Internet firm also has more than three times the beta risk (2.55 versus 0.78), one third of its stock held by institutions (8% versus 27%), half as much of its issued shares in public float (31%

versus 62%), a public float turnover that is 6.5 times faster (once every 19 versus 143 trading days) and five times as much of its public float sold short (5% versus 1%). This pattern holds also when Internet firms are compared with IPO-matched firms.

Another striking feature is the underpricing of the median Internet firm: the Internet firm is four times as underpriced at its IPO as the median IPO matched non-Internet firm (37% versus 9%) with the mean underpricing for Internet firms reaching 69% to be compared with an average underpricing for all US IPOs over the period 1960-1996 of 16%. These differences are unusual but not unique historically. A study by Amir and Lev (1996) for the ten years beginning 1984, reported that 69% of quarterly EPS of the 14 independent cellular telephone companies they examined were negative. Amir and Lev also report that the corresponding figure for 44 biotechnology companies over the same period was 72%. This compares to Hand's result of 77% of Internet firms reporting negative EPS over the period 1997:Q1-1999:Q2, suggesting that Internet firms may be no more unprofitable than other groups of firms in earlier technology-based, high growth industries which went through an IPO cycle.

In terms of classification, the terms "Internet-based" and "Internet-related" companies are often used as synonyms and are used to shorten them both by simply cataloging such companies as "Internet companies" or Internet companies or as e-business companies. (Perrini, 2000, p. 4).

In reality, these terms identify two different types of companies based on the percentage of turnover deriving from the use of the network and the part of the business affected by the exploitation of the web. Combining, therefore, these two variables is distinguished between internet-based, in which the existence of the internet is the *raison d'être* and internet-related, where the internet is a simple peripheral.

Another classification can be made based on the attitude of companies towards technological advances, distinguishing Internet Companies as: - attendants, waiting before adopting a new technology; - conservatives, which have similar characteristics to the wait-and-see companies but can operate only in sectors that are not very dynamic; - frenetic, which have a high speed of use of innovations but a low degree of use; -anticipators, who use only the newly introduced technologies. They are quick to adopt innovation and have a high degree of use. They manage to exploit fully the potentials embodied in the technology.

Finally, depending on whether companies involved in the development and companies involved in the development are *old-old companies*, *old-new companies*, *new-old companies* and *new-new companies*.

In general, however, the main distinction in use is between Business to Business (B2B) and Business to Consumer (B2C) Internet firms (e.g. Demers & Lev, 2000; Davis 2001). Across these categories, the most widely used in the USA: e-tailers and e-commerce, Software, Enablers, Security, Content & portals, High speed and infrastructure and ISP and access. Trueman, Wong & Zhang, (2000) especially focus on the difference between e-tailers (producing revenues by attracting visitors to their web sites and selling products) and the p/c firms (portal- and content community firms, who depend for their revenues largely on advertising). Keating, Lys and Magee (2001) make a distinction between firms that market or sell primarily via the Internet ("direct" firms, or B2C firms) and firms that provide Internet infrastructure ("support" firms). Perotti and Rossetto (2000) make a further distinction within the content and portal category, distinguishing between vertical portals, who specialize in the sales of one product (e.g. Amazon focusing originally on selling books via the Internet) and horizontal portals, who sell all sorts of products or give access to multiple services.

3. Drivers of the value of Internet companies

In the traditional value chain, information is considered as a support and service element, whereas in Internet companies these are a source of value. The classic value chain must therefore be adapted to the characteristics of the companies in the Net Economy: while in the traditional model the company focuses on effectiveness and competitiveness by launching well-defined products on the market, the new value chain is rather an external model - internal where the strategy revolves around the customer. In other words, the new value chain is built by aggregating different content providers (information, products, services) in order to meet the Internet business guiding criterion, i.e. to optimize the c.d. customer experience.

In the virtual market, therefore, we can no longer speak of a value chain but a matrix of potential inputs and outputs that can be collected and distributed through a wide variety of channels, in different ways and times (Rayport & Sviokla, 1995).

The virtual value chain is the process by which simple data takes on value in the virtual world. It is possible to divide each phase into five activities (Camussone, 1998, pp. 22-26): • acquisition of information; • organization of information; • selection of information; • summary of information; • distribution of information.

With regard to value drivers, Internet companies can increase their value by following two paths: efficiency and growth. Efficiency, understood as the ability to obtain a return on capital that is higher than its cost, can be measured as the difference between the return on capital and its cost (EVA-WACC). The growth, obtainable by implementing appropriate investments and as long as the operating income is not higher than the permanent income, is given by the ratio of the permanent income to the income for the period (E_{perm}/E).

From the figure, the companies that are on the curve do not create or destroy value, and therefore their value is equal to the book value. This result can be achieved not only in a "standstill" situation, that is, when the EVA is equal to the cost of capital and when the current income is equal to the permanent one, but in all those combinations in which the benefits / costs produced by efficiency is perfectly balanced by the costs / benefits of growth. On this curve, therefore, it is also possible to find companies that, although presenting rather high levels of efficiency, obtain an evaluation only equal to their added value deriving from efficiency. The effect is the same also in the opposite direction (Bini, 2000).

Experience recalls that the great creators of wealth are positioned in the upper left corner and therefore their extraordinary success is due to surprising growth rates. This situation seems to perfectly reflect the profile of Internet companies that, despite having negative ROEs, are recognizable by the market enormous values. The vast majority of Internet-based companies are currently losing money and expect to do so in the next few years, however, whenever they decide to price themselves, the stock market capitalization squirts vertically until it reaches values that make the balance sheet data insignificant (Perrini, 2000 , pp. 83-84).

4. Evaluation problems of Internet companies

As is known, for traditional companies, most of the valuation methods can be traced back to magnitudes such as profits, shareholders' equity and cash flows, whereas for Internet companies, operating in the economy, almost always, these variables do not they are usable. The Internet Companies, in fact,

often are characterized by the lack of production of profits, poor investments in tangible assets and their cash flows are mainly negative with a generally low invested capital.

To this we must add the peculiarities of a constantly changing sector, which make the understanding of the business even more difficult, a fundamental moment in the evaluation process.

Moreover, Internet companies often act as initiatives with only two possible results, success or failure, which depend on how the company succeeds in capturing market shares. The evaluation problems are therefore linked both to the distinctive characteristics of a start-up and to specific problems in the sector.

All that has been said, one wonders if the "classical" valuation methods are able to determine the value of the company's capital correctly, as these are often "firms with no earnings, no history and no comparables" (Damodaran, 2000).

As is known, in fact, traditional methods of assessment have some limitations when they are to be used for new or newly created companies, especially if they are high-tech companies with strong prospects for development. In fact, these methods need to be fed with data taken partly from the past that in the specific case do not exist or are very lacking. Moreover, when past data are also available, they are often of very little importance (modesty of turnover, significant losses, etc.) compared to future prospects that could be very different and much more positive. Finally, the very specific nature of each new initiative that makes future data uncertain is also to be considered.

Basically, therefore, in addition to the lack of past data, future ones are also considered to be very random.

However, while admitting the presence of factors that differentiate Internet companies from traditional companies, the common belief is that they should still prefer classic approaches compared to more innovative ones, adapting them to the reality of Internet companies (Athanasakos, 2007).

Therefore, it is believed in the literature that it is necessary and sufficient to adapt the application of traditional methods so that we can take into account those factors that differentiate Internet companies (Damodaran, 2002; Perrini, 2000).

Therefore, one should not go into a frantic search for new valuation methods, but in a careful re-elaboration and adaptation of the valuation logic existing in a complex and complex process able to grasp critical issues and information for a rational use. and demonstrable of the chosen method.

One method often suggested to evaluate Internet businesses is that of real options. In this way it is possible to insert the various evolutionary scenarios within the evolution and arrive at a more precise evaluation, taking into account the peculiar win / lose structure of the initiatives of the sector.

In particular, it is necessary to consider that:

- the presence of any profits or cash flows achieved at the time of valuation are not a good indicator of the future ability of the company to generate future cash flows;
- the value can be largely generated by the intangibles components;
- the value of current options can only be a small portion of the total value, determined therefore by growth opportunities and the ability to exploit future opportunities for cash flow generation;
- the degree of uncertainty in this type of activity cannot be eliminated with any evaluation formula;

- these markets evolve with great rapidity, are characterized by high contestability on the part of new parties and the absence of established companies from which information on costs, revenues and investments can be obtained;
- these initiatives have only two possible "win or lose" outcomes.

Among the various valuation methods in the case of Internet companies, the financial method turns out to be incorrect: the high level of randomness of the basic assumptions distorts the calculation of Discounted Cash Flow (DCF). Even the use of real options, while on the one hand, may seem like a method that manages to capture the peculiarities of the sector, on the other hand, remains a method of difficult practical application.

The most applied methodology in professional practice is that of multiples and among these the most used are the Sales Multiple (EV/Sales) and the P/E to Growth. However, since Internet companies did not record profits especially during the initial phase of their life, empirical multiples were often used, based on non-financial indicators, and the creation of a comparable company base was rather difficult.

The main evaluation methods used for Internet companies are analyzed below: starting from the financial method and the multiples method, and then analyzing more advanced methods such as Real Options and Eva.

5. The DCF Method

The ideal situation in which it is easy to apply the financial method in the DCF version is that in which the cash flows are positive and predictable with sufficient reliability and in which the risk relating to the company, represented by the cost of capital, can be determined with a good degree of approximation. However, as anticipated, the Internet Companies are characterized, at least in the startup phase, to have negative cash flows with the consequent difficulty in applying the DCF. Nevertheless, the latter continues to be the method that can boast more credit for the estimation of companies operating in the net economy.

As known, the application of the DCF requires the estimation of three main parameters, namely cash flows, the terminal value and the cost of capital.

The first step towards determining cash flows is the analysis of external variables that influence the activity of the company in proportion to its links with the surrounding environment. We can distinguish between: technological variables (internet access, software development, security, infrastructure, hardware, payment system development); socio-cultural variables (demographic diffusion of the Internet, user familiarity, attitude of the same and of the enterprises towards the problem of privacy); institutional and legislative variables (import / export tariffs and international trade agreements, intellectual copyright laws, standardization of the laws of use and sale of personal information, uncertainty of tax laws) (Rangone & Capriotti, 1999).

Considering therefore these three groups of variables, closely linked to each other, it is necessary to try to understand how these can impact on the operational decisions and the strategic choices of the company.

Once this first analysis has been carried out, we move on to the study of the competitive environment which, in the case of the Internet Company, is characterized by exceptional dynamism, to be highly innovative and without clear boundaries between the various business areas. It is therefore necessary to

identify the strengths and weaknesses of the company being assessed, of the opportunities that it could seize and of the threats that could jeopardize its existence (SWOT analysis).

A further fundamental step is the study of the company's positioning in its life cycle which includes four phases: birth, growth, maturity and decline. In the net economy the characteristic "S" shape of a company's life cycle is extremely compact since the cycle itself is not measured in years, but in months, if not in weeks (on the contrary it is measured in years).

In this sector, in fact, the life cycle is extremely accelerated due to the enthusiasm generated by new ideas, the presence of venture capitalists and the awareness of the advantages deriving from being a first mover that pushes companies to quote for the collection of large capital that requires the financing of its growth in the initial phases of its journey. Thus a different connotation of cash flows is observed within the various phases.

During the birth, cash flows are often negative due to the low turnover and the high marketing costs, the working capital frees financial availability as there are no receivables from customers and investments in fixed assets of a tangible nature are irrelevant, while those of intangible type are always quite limited. Subsequently, during the growth phase, cash flows, albeit negative, increase exponentially as the number of customers increases. The growth corresponds to a considerable generation of cash in terms of working capital since there are no loans and the warehouse, thanks to technological support, is almost virtual. Investments in fixed assets are rare, to which the strategic acquisition of companies that perform functional activities is preferred. It is in the maturity stage that the characteristics of an Internet Company allow significant positive cash flows that are partially absorbed by the need to acquire a warehouse due to the increase in customers.

It is now necessary to identify how an internet company produces cash flows and which are the main differences with traditional companies. The total flow of the company is given by the algebraic sum of cash earning and cash investment. The first type of flow is generated by the company in the form of operating income after tax, while the second represents the flow generated by the company by divesting or investing in fixed assets, increasing or decreasing the net working capital. Internet companies are distinguished by generating cash flow in a completely new way compared to traditional companies: it is therefore important to take into account the time structure of costs and revenues. From the study of cash-earning and cash-investing trends, we can identify four "types" of companies that distinguish themselves by the way they generate cash flows (Perrini, 2000):

1. traditional growth companies, operating in profitable businesses but needing investments to remain competitive and expand;

2. companies that have negative cash flows and destroy value. They are generally companies in the initial phase of their development (startup) or who continue to invest and operate in business that are no longer profitable (companies in crisis);

3. companies in restructuring or emerging efficient companies, which are in an anomalous and often transitory position, characterized by positive cash flows that, however, do not derive from the company's core business but from efficient management of net working capital or investments in fixed assets;

4. companies that produce "super cash flow", which not only generate more than positive operating income, but are able to increase their FCF through investment management.

The traditional companies initially produce negative cash flows due to investments and the low profitability of their business and with the passage of time they come to produce positive cash-earning, offset by the negative flow for maintenance investments. Only in some rare cases do they increase their cash flow thanks to a positive cash investment. In the net economy the situation is different. Internet companies, enjoying a high level of bargaining power and not requiring substantial investments in fixed assets of a tangible nature, are initially found in what we have defined to be an anomalous position. Subsequently, in the course of their evolution, thanks to a greater penetration of the product / service in the market and the full use of the potential offered by the Network, they will be able to generate a substantial amount of cash flows.

Considering what has been said so far, the evaluator should be able to identify the effective capacity of the company to generate results in the immediate future, proceeding to determine the same for the purposes of the valuation. For the companies of the net economy for the estimation of cash flows it starts from an analysis of the demand and the potential market through variables such as the penetration rate of the tools that allow the use of the web and the identification of users who could be attracted by the offer. Subsequently, it will be possible to estimate revenues through: a forecast of the market share that the company will be able to obtain and maintain; the definition of the average value attributable to each user and a hypothesis on the growth of the users themselves; the definition of appropriate growth rates of the turnover to be applied to the current one. Once the revenues have been projected, the fundamental quantities in the calculation of cash flows can be defined through the application of the economic margin ratios (EBITDA on turnover). Then, to the marginality obtained, the investments envisaged in working capital and in fixed assets are added, thus obtaining the projections for the operating cash flows of the company. These projections must be carried out for the entire evaluation period.

In the application of the DCF to an Internet Company another key moment is the identification of a correct estimation horizon. Some Authors (Perrini, 2000) suggest widening the time horizon for the evaluation of companies that present negative cash flows, thus giving more space to analytical forecasting (up to the achievement of positive cash flows). In this way, however, the weight of the TV on the calculation of the evaluation is greatly reduced and, consequently, the same will be less dependent on the data resulting from the strategic plans of the company.

In practice it is rationally suggested to choose a time horizon equal to the duration of the competitive advantage period (CAP), in essence, equal to the duration of the period in which the company will have return rates of capital invested above the WACC. Since, for Internet companies, the identification of the CAP is not always a simple operation (sometimes it is impossible) there are two different attitudes. Some limit themselves to using as a horizon the one envisaged by the industrial plan. Others state that in doubtful situations it is preferable to adopt longer time horizons, thus extending the horizon envisaged by the plan (in the 3-5 year rule) up to 8-10 years, in order to reduce the weight that the terminal value has in the evaluation. This latter attitude is certainly more followed in practice and the most common among financial analysts.

A fundamental variable for the calculation of TV is the growth rate "g" which, in the case of new internet companies, represents almost the entire value and consequently the choice of the same, which will then be applied for the estimate of revenues and profits. For traditional and stable growth companies it is usual to calculate g using the historical growth rate of profits. This procedure is also inapplicable in the

case of companies experiencing strong growth and / or in the presence of losses, as often happens with Internet companies. In addition, the absence of historical data makes the calculation of the complex historical growth rate and operation not useful for the purposes of the valuation, since it cannot in any way represent a reliable estimate of the expected future growth rate. One could rely on the forecasts of financial analysts who follow the company but, especially in the case of long-term estimates, these would also be unreliable in the case of employment in the valuation. It therefore remains necessary to find alternative ways to estimate the g rate. If we consider that growth can be determined starting from the reinvestment rate and the quality of investments (understood in the widest possible sense and therefore also including acquisitions, new distribution channels, the expansion of marketing capacity, etc.) it can proceed to estimate the growth rate through an analytical method, thus basing itself on the company's fundamentals.

Having specified the methods for identifying cash flows and for determining the future growth rate and the TV, the cost of capital, i.e. the discount rate to be used in the discounting of cash flows, remains to be estimated for the application of the DCF. .

It is necessary to specify that internet start-ups tend to be financed mainly with risk capital or, possibly, preferring hybrid loans to debt, such as preference shares convertible into ordinary shares and bonds convertible into shares. Moreover, unlike the traditional economy, it is not appropriate for companies in the net economy to hypothesize a constant cost of capital as this would be an excessive banality of reality, since it would mean that interest rates, financial structure and risk profile remain unaffected in time.

Financial analysts usually use the CAPM to estimate the cost of risk capital, assuming it is sufficient to measure and reward only the risk added by a single investment to a well-diversified portfolio of securities of a marginal investor, i.e. one who hardly buy a security for strategic reasons. Therefore, it is assumed that the risk of an investment calculated in this way can be broken down into two components: a specific one linked to the investment itself and a non-diversifiable systematic, common to all investments. In reality, however, the hypothesis of a "good diversification" of a marginal investor's portfolio is difficult. In fact, in the case of large companies, and especially when they are very young, the shareholder base is strongly concentrated, while, for smaller companies, they are more likely to be of interest to investors with limited time horizons even a few minutes (the so-called day traders). It is therefore preferable to proceed with greater caution or opt for the adoption of a real estimation process that more accurately reflects the riskiness of the securities since, as the marginal investor is not well diversified, it is impossible to separate between systematic risk and specific.

All that has been said so far remains the inability of the DCF model to handle uncertainty. Not being sure that the cash flows are really an expected value, there is the risk of using only flows related to successful scenarios and, consequently, incurring an upward distortion of the valuation. To limit this, on the occasion of the Internet Companies, we often resort to a modified version of the method in question, divided into three phases:

1. analytical techniques are used to grasp and understand the economic fundamentals of the company and predict its future performance;
2. the high uncertainty is dealt with explicitly through the use of so-called "scenario probabilities";
3. we identify a time point N from which the analysis is traced up to the present.

In other words, with this approach we want to identify over time the moment in which the company will be able to operate in a scenario characterized by normal operating conditions (different from those of

strong growth that characterize the current condition) and, from this, draw back the business development up to the current performance. Various alternative scenarios are then built on the future of the company and, for each of them, the value that it might have is calculated. Each individual scenario is associated with a certain probability, thus reaching the value of the company as a weighted average of the values assumed by the same in the different scenarios identified.

Based on future company performance forecasts, this particular method is very advantageous for those types of companies that, like the Internet Companies, do not have historical data. Moreover, with this approach it is possible to deal with the problems related to the uncertainty and to the high growth rates of Internet companies.

We could therefore see that, regardless of the version of the DCF model that you want to use, many analyzes are needed that, in some surrounding, could make the application too complex. The method of constant cash flows remains, being the most formally correct, valid in its "traditional" form to be successfully applied to the Internet.

6. The multiples method

The multiples method makes it possible to determine the value of the company's capital on the basis of prices traded in large organized markets for securities representing shares in the capital of comparable companies (so-called guideline companies) (Musaio, 2009).

Therefore, relationships (multiples) are identified between the market price of the capital of comparable companies and some business economic variables. By applying these multiples to the economic variables of the company, we reach the desired value.

The prerequisites underlying this method are as follows:

- the first consists in assuming that the value of the company varies in direct proportion to the variations occurring in the economic variable chosen as a performance parameter;
- the second relates to the equality in expected growth rates in the company cash flows and in the degree of risk.

In the event that both the aforementioned assumptions are satisfied, the multiples method provides a measure of the more objective value compared to that obtained with the methods based on flow-quantities (income and financial method) as it is based on market expectations both for company growth and for the discounting rate.

However, the two hypotheses may not easily occur: in fact, comparable companies rarely present equality in the growth rates of cash flows and in the degree of risk. Moreover, it seems quite simplistic to attribute to a single economic variable the role of a performance parameter capable of explaining the difference in value between companies.

The multiples can refer to values that are formed in different contexts, so we have stock market multiples and multiple control market multiples. Further possible distinctions are between the economic-financial multiples and the multiple businesses. The former, refer to economic and financial figures, the latter are empirical indicators and refer to specific elements that characterize the business model.

Enterprise-type multiples make it possible to arrive directly at the estimate of the value of capital, while Multiply Equity allow arriving at the estimate through the difference between the value of the operating capital and the market value of the financial debts.

More specifically, the method is divided into the following phases:

- I. identification of a sample of companies comparable to the one being assessed;
- II. identification of an expressive performance parameter that is able to "explain" the differences in market prices in relation to companies comparable to the one being valued;
- III. calculation of the multiples of comparable companies, as the ratio of price to performance parameter of each of them;
- IV. identification of the average value of the multiple;
- V. application of the multiple to the same performance parameter of the company being assessed.

In essence, a multiple expresses the relationship between the "price" of capital (P) of a company (x) and an explanatory quantity (G), such as net income or EBIT or operating cash flow, referring to company itself:

The definition of an average value of the multiple (M_m), allows to reach the value of a company (y) through the product between the average multiple and the explanatory quantity referring to the company being assessed:

$$W_y = G_y \times M_m$$

Very often, in the evaluation of Internet companies, we refer to multiples based on operational quantities, judging them on the basis of capacity to generate traffic. However, it is necessary to determine the real ability to transform visitors into revenues.

One of the most used value drivers is the number of users and their loyalty. In fact, we need to distinguish users based on the frequency with which they visit the site.

There are several operational problems in using the multiples method for evaluating Internet companies, such as:

- the difficulty in identifying comparable companies, with markets, growth rates, similar financial structures, at least within a single country (with the exception, in many cases, of the United States);
- the variability of market prices; courses in Internet titles are notoriously very changeable (with the frequent possibility of losing or earning 50% or more of their value in a single day);
- at least relative inefficiency of financial markets, in particular in some countries;
- stock prices usually only express the value of the sale of small shares of capital, without considering a "majority premium";

Moreover, the methods of turnover and user multiples do not take into account the profitability of the company (a crucial variable). On the other hand, the multiples method is very simple to calculate and provides an immediate result, without the need for complex evaluations and calculations. In any case, the multiples of turnover and users are very "primitive" measures of company value and are normally used "faute de mieux".

7. Real Options Valuation

The theory of real options arises and develops in the early 1980s as an alternative tool for the evaluation of highly complex activities, for which classical capital budgeting approaches, such as DCF, proved inadequate. These, in fact, are not able to grasp the interaction between current investments and future decisions, a critical point when investments are to be considered that, for the age of the company, derive their value above all from the benefits deriving from future developments which may involve their implementation. To consider, therefore, the relationship between current investments and future decisions and the discretion of the management which, assuming an active and non-passive position, is able to seize the opportunities when certain scenario conditions occur, has resorted to the approach of the real options. Technically, this approach is an extension of the option concept, born in the financial sector, to pricing applications on elements of the real world. To better understand, therefore, the functioning of the real options method, it is necessary to dwell on the characteristics of the financial options.

The financial options are contracts, among derivatives, which give the holder the right, not the obligation, upstream of a payment of a premium, to buy (call options) or sell (put options) a certain amount of good or a security (underlying) at a pre-established price (strike price); we will talk about a European option if the date on which it is possible to exercise the right is only one, while, of American option, if the right can be exercised over a period of time. In the case of a call option, which gives the holder the right to purchase the underlying asset or security at a fixed price, if the stock price (S) is lower than the strike price (X), it will be called out of the money option.

In this case the owner will have no expediency in the exercise of his right and will be able to provide for the purchase, at more advantageous conditions, directly on the market. On the other hand, there is talk of an option in the money, when as the price of the underlying asset increases, the option payoff becomes positive because S is greater than X . In the case of By derivative we mean that particular financial instrument whose value derives, precisely, from that of an underlying asset (called underlying asset or underlying security) identifiable in: shares, bonds, interest rates, currencies, indices or even goods. We can distinguish between: future, swap and put option, which entitles the holder to the sale at a set price, the situation is specular. We will then talk about an option in the money, with a positive payoff, as long as the value of the underlying is lower than the strike price; while, when S is greater than X , a negative payoff will occur and the put option will be defined out the money. An option is defined at the money if there is an equivalence between S and X and for the owner it is indifferent to exercise his right or not.

The models used in practice for pricing an option are the Black and Scholes model and the binomial model. In short, the first is based on the creation of an algorithm from which an equivalent portfolio can be determined, consisting of a mix of a certain number of underlying asset units and a certain amount of debt in such a way that, for every possible future scenario, the portfolio offers the same return as the option. Assuming that there is no possibility of arbitrage and that the prices of the underlying asset vary continuously, the price of the option must necessarily be equal to the current value of the portfolio. The binomial model is based on the hypothesis that the price of the underlying asset evolves according to a stationary multiplicative binomial process, that is, that the value varies discretely according to two stationary multiplication coefficients (fixed), indicators of positive or negative scenarios. Therefore, a portfolio is constructed, consisting of a certain number of shares and bonds without risk so that in every

scenario its payoff replicates that of an option, the problem of determining the value of the same translates into the determination of the value of the equivalent portfolio. To extend the analysis over time, the construction of the so-called stock price trees and the value of the option is used. The criticism of the binomial model is based on the fact that in reality the prices of an asset generally take more than two values at the end of a period, from the moment in which the activities on the market can be exchanged continuously. In practice, to avoid this, we try to make the model more realistic by referring to particularly short time intervals so that we can assume that there are only two possible variations in the price. Both models are based on the fact that the price of a financial option depends on the several factors (the price of the underlying asset; the exercise price of the option; etc).

The real options deriving directly from the financial ones and have an operation almost identical to that of the latter. They can be defined as the discretionary investment opportunity that a given company, with a view to managerial flexibility, will be able to grasp in the future if certain favorable conditions come to maturity, simply because it has made basic strategic investments today. In the logic of the so-called real option approach (ROA), the company is therefore seen as a portfolio of basic strategic investments that, only for having been carried out, allows it, by making additional future investments, to access incremental benefits such as greater market share, elimination of a competitor, higher cash flow, higher turnover, etc. With reference to the logical scheme of a financial option, the basic strategic investments represented the premium option paid spot, while the incremental benefits of the underlying assets and the cost of the additional investments are the exercise price of the option. ROA is characterized by being an analytical method, and not empirical, which allows a description of reality with the merit of absolute flexibility, being usefully applicable for evaluation purposes in contexts of high uncertainty. In the DCF, we have seen, we tend to consider a set of risks that the company might have to face taking care of the effects that they could have either in the cash flows or in the cost of capital. In the case of Internet Companies, uncertainty, being high, plays a predominant role in the economic aspects of the life of the same and for this reason the real options lend themselves as a suitable evaluation tool. According to some taxonomies proposed in the literature among the real options we can distinguish:

- **deferment option:** i.e. the possibility of deferring the start of the project to the most opportune moment. The value is constituted of the possibility that, within the period of deferment, something can happen that positively changes the value of the project to be realized;
- **expansion option:** they consist in the opportunity to increase the size of the project in those cases where the price of a product or other market conditions are more favorable than expected;
- **contraction option:** speculating on the expansion option envisages the downsizing of the original project to respond, for example, to unpredictable market developments;
- **abandonment option:** this is the opportunity to dispose of a project by receiving an exit value in return. It will be exercised in those circumstances in which the exit value is greater than the current value of the cash flows expected from the project;
- **conversion option:** consists of the adaptability of a project, i.e. the possibility of using otherwise the repercussions of a project prematurely interrupted;
- **temporary suspension option:** this is the opportunity to interrupt a specific activity temporarily, without compromising the possibility of reactivating it in the future.

It therefore remains to understand how it is possible to apply the model of real options for the purpose of evaluating a company. In the literature we can identify two main evaluative philosophies. The first approach is based on the relationship that exists between a call option and the economic capital of the company and on the consequent possibility of extending the applicability of the option pricing models to the estimate of W. This method is known by the name of contingent claims analysis, proposed for the first time by Black and Scholes. The authors hypothesize that the company has only two sources of financing, its own capital and the capital of third parties, that the debt is completely represented by a "zero coupon bond", that the assets are represented by a participation of a listed company and finally that the company does not pay dividends. At a theoretical level, the strike price could therefore be identified with the nominal value of the debt and the underlying asset with the value of the company. In this way, the issue of bonds would be tantamount to an option to repurchase the debt sold by the shareholders. When the debt expires, two different limit situations may occur: shareholders will have an interest in "redeeming" the company, obtaining a residual value, if the value of the same is greater than the nominal value of the debt; they will not exercise option rights, leaving the management in the hands of creditors, if the value of the company is less than the value of the debt. In the case of the Internet Company this approach is formalized by Livian (2000), "the intrinsic value of an Internet company can be seen as a call option in which the exercise price (P) corresponds to the capital invested by the company to succeed in "conquering" the greatest possible number of users. The current value of the underlying asset is equal to the product of the number of users of the company multiplied by the value per user".

According to other scholars (Micalizzi & Trigeorgis, 1999) of the subject, instead, the use of real options as a tool for assessing the economic capital of an enterprise should be based on the identification of the so-called extended NPV given by the sum of the NPV of each project and the value of the option, represented by the equilibrium price of the expected cash flow option during the life of a project, the value of the initial investment required to implement it. In practice, it is used as an instrument of choice among alternative investment projects in those circumstances in which all the possible investments cannot be achieved.

8. Conclusion and Discussions

Internet business valuation is a challenge because internet business has unique features and thus, needs to consider other issues than the traditional income statement and balance sheet numbers. Furthermore, many internet companies have generated negative accounting income in spite of extraordinarily high stock price.

The characteristics that distinguish Internet businesses from traditional ones have had repercussions in the evaluation process and in the application of the traditional valuation models, in particular DCF and multiples. Many experts try to give an explanation to the overvaluations, incurred in recent years for this type of companies, have sought new valuation paradigms such as specific multiples of the sector and the method of real options.

This paper was designed primarily to review previous research on business evaluation models as a theoretical background and then to select an evaluation model best suited for the Internet business among the models presented. After having delineated the theoretical framework through an analysis of the

literature, the value factors of Internet companies and the difficulty of evaluation that may derive from them are highlighted. Subsequently, the main evaluation methods used for Internet companies were analyzed.

From the analysis of the above methods it has emerged as more than a methodological problem, the question must be traced back to the fact that these types of companies follow a more accelerated life cycle compared to that followed by more traditional companies, with the consequence of being evaluated before yet to own a market for their products. In this sense, therefore, we have tried to affirm that more than a conceptual problem, of old methods no longer suitable or adaptable, we must resort to a correct estimate of the key inputs of the evaluation, since the value of a company is and will always be linked the same factors (the ability to generate cash flow, risk and life of the company).

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