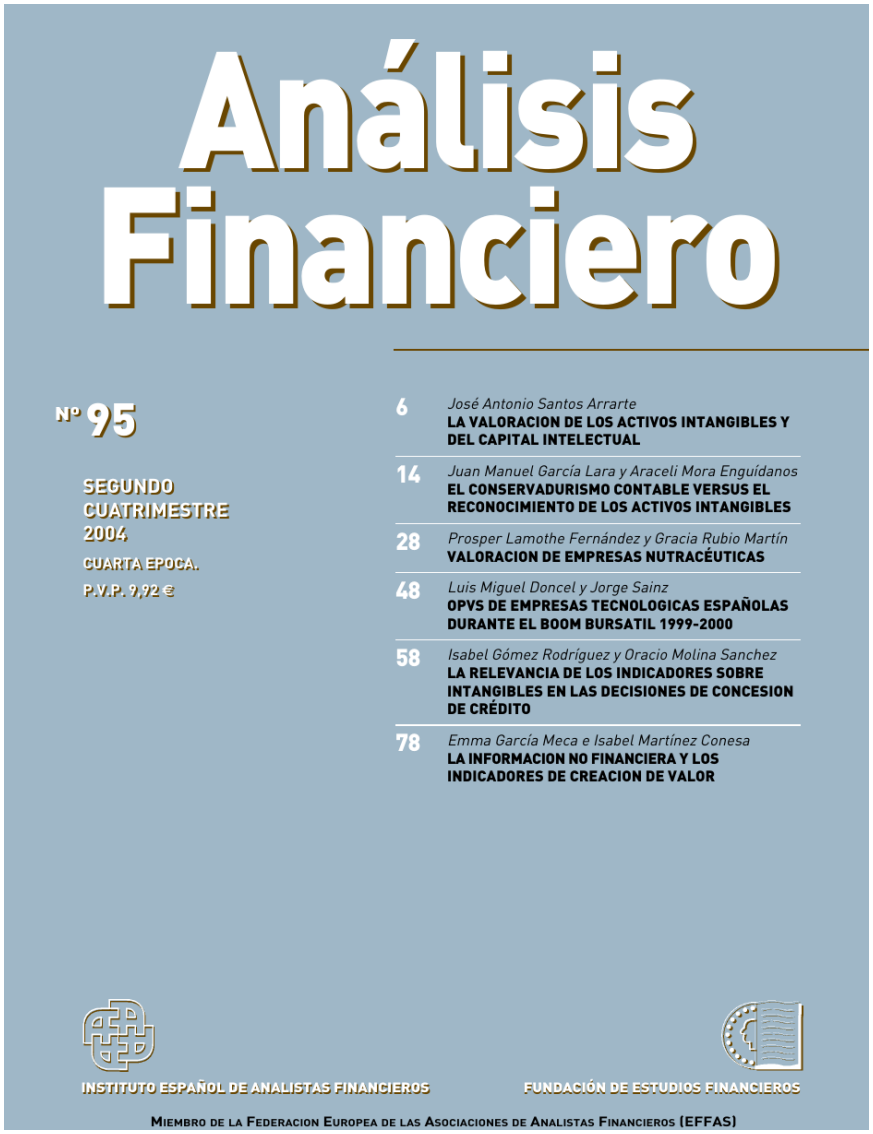

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No 95 – Second quarter 2004

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José Antonio Santos Arrarte – Universidad Europea de Madrid

The Valuation of Intangible Assets and Intellectual Capital

I.- THE CONTROVERSY OVER THE ADEQUACY AND RELIEF OF THE CURRENT ACCOUNTING

The general recognition of the informative relevance of the accounting data of companies has been losing weight; from the beginning of the 70s to the present, when it is found that there are a number of aspects that are not properly reflected by the current accounting, and the idea of a loss of relevance of accounting is spreading, in the sense that it explains an increasingly smaller part of the evolution of the quotes: it is said that the earnings and book value data fail or take a long time to reflect the true situation of the company, and that the information is incorporated into the expectations, anticipated by the stock market quotes. These are arguments whose consistency seems to be increasing, especially referring to the American stock market (although, given its greater development, its validity is presumed also for the other stock markets).

There is a first group of authors who are of the opinion that accounting information, as currently conceived and practiced, does not reflect (in the determination of the relevant magnitudes for the stock market, such as benefit or cash flow, or own resources) in an adequate and sufficient way, some aspects that have been developed with increasing importance within the process of change in the business activity, which motivates the aforementioned loss of relevance of accounting information.

Among these authors, Lev stands out, who argues that "classical" accounting has a very limited or no utility in relation to the prediction of the evolution of prices, because it suffers from three types of defects: its generic character, the reflection it makes of the point of view of managers, and, in addition, the omission of intangible assets. Lev, is the author who has the largest number of individual or asoced articles (such as Lev and Sougiannis, Lev and Ohlson, Amir and Lev, Kasznik and Lev, Lev and Zarowin, or Lev, Sarath and Sougiannis), and together with others such as Chang, or Sougiannis, attributes the greatest loss of relevance to defects in the accounting of intangible assets and research and development (R&D) expenses in particular.

These arguments that question (or relativize) the importance of accounting information have received two types of answers:

The first type of answers, recognizes the importance of the question posed if only for conceptual purposes, and proposes operational solutions in the form of technical improvements. The second type of answers, simply reject that this criticism is true because they find that there is not a sufficient empirical basis for such resounding statements.

In short, this controversy has served to focus the attention of professionals and authorities on the evolution of the metric system of companies. But it must be noted that the opinion that it would be very convenient for the

proper functioning of the stock markets a radical adaptation of it (from the "traditional" function of reflection of transactions at historical cost, to the "modern" function of reflection of the faithful image of the results of a company at a "reasonable" value of the market -perspectives-).

However, the updating of accounting criteria has been imposed by several scandals of "creative accounting" (off-balance sheet operations that increase the risks of companies without adequate accounting reflection), which have emerged in the world of large corporations, whose shareholders seem to be just one more contract than those managed by the administrators.

Update of accounting standards initiated by the American FASB, in accordance with the Securities and Exchange Commission, and, in June 2002, by the European Union in a Regulation that adopts the accounting standards of the IASB (nics), whose greatest novelty is the establishment of fair value as a guiding criterion (affected according to most opinions by its high degree of discretion); the complexity of the subject would advise, at a minimum, to complement what can be called "classic information" with "modern information", and that the users of the same can go decanting their preferences and completing their knowledge.

In any case, within the concepts that can be considered as "intangible assets" and "intellectual capital", the IASB admits their valuation at fair value "when there is a reliable reference value" and "without the book value of the assets being able to exceed the present value of the benefits they can generate". As we can see, this is one of the most difficult issues in its realization, since there are currently no objective criteria of definition that allow certification by experts in these matters.

Among the various proposals that we have known, we have raised the recent contributions of Edvinsson and Lev because it seems to us that they summarize the question with common sense and with a meritorious effort of quantitative concreteness.

We will make a brief presentation in the second section of this article, as a previous step to an exercise of quantification of the same taking as an example some Spanish values, so that it allows us to visualize the results of their proposals.

In the third section, we will try to explain how the evolution of the stock markets affects the elaboration of the aforementioned proposals, in order to relativize the part of those conclusions based on correlations whose validity seems doubtful.

II.- THE PROPOSALS OF EDVINSSON AND LEV FOR THE VALUATION OF INTANGIBLES AND INTELLECTUAL CAPITAL

II.1 Intangibles and intellectual capital.

Although these are two authors of very diverse training, experience and circumstances, both agree that the "creation of value" originates in the company through the work and initiatives of human capital, the organic

methods that it designs and improves over time, and the relationships with customers and suppliers that the company has been accumulating, plus those that start in the innovation process, within a framework of limited resources. Of all the factors mentioned, the greatest value creation is granted to the innovation factor, although all the factors contribute and must be incorporated into the accounting.

The difference between them lies, as will be seen later, in that Lev's approach refers more to the "intangibles" themselves (patents, trademarks, know-how, research and development, implementation tests, organic capacity...), while Edvinsson's approach adds what he calls "intellectual capital" (thus incorporating in the previous concepts the workers of the company and their capabilities).

For both authors, the activity of companies is immersed in a new conception of the "value chain", since the conception based on the "industrial" (physical content of the products) is overcome to move to a conception based on the "intangible" (content in knowing incorporated into the product); it is almost a "new economy", which requires "new" workers to expand their ability to renew knowledge so that they can increase their productivity (from "know how" to "know who")

From this point of view, and in another area, it is also necessary to modify accounting, since "previous" accounting, which they consider as a first generation in knowledge management tools, reflects the situation of ownership of the tangible at historical cost (wealth comes to be the ownership of buildings and machines). However, in the situation described, a "new" accounting is needed, second generation of knowledge management tools, which also reflects the situation of ownership of intangibles at fair value (wealth is also the human and intangible assets available to the company) to complement it.

Both authors also point out the growing economic importance of intangibles, and estimate that their current incidence was in the year 2000 of the order of:

- more than 10% of GDP in the USA.
- more than 70% of annual business investment in the USA.
- more than 50% of the market capitalization in the USA

II.2 The valuation of intellectual capital according to Edvinsson.

For its part, Edvinsson, proposes an outline of the total value of the company, based on the model that starts, in 1993, the Swedish insurance company Skandia, of which he had been appointed general director of intellectual capital in 1991 (for the first time in business history).

A.- Intellectual capital.

Edvinsson observes that the flow of information between the company and the environment, and even within the company itself, creates qualitative assets, "invisible" from the point of view of traditional accounting; these are assets that need a long period of time to be constituted (they have a fixed medium character), which can have several uses at the same time, and that

increase with the increase in their use, being a source of a more lasting competitive advantage than the financial assets of companies.

He then proposes the following scheme of the total value of the company:

		-Physical Capital	
	Financial Capital	-	
		-Monetary Capital	
Total value –			-Competency
		-Human Capital	- -Attitude
	Intellectual Capital-		-Intellectual agility
			-Relations
		-Structural Capital-	-Organization
			-Renovation and Development

In it, the concept of intellectual capital is added to traditional financial capital (composed of physical or material capital and monetary capital), and this is subdivided into two groups: the "thinker", or human capital, and the "non-thinking", or structural capital (internal organizational value and external relationship).

B.- Stock market dynamics of the Skandia model.

For Edvinsson, the valuation of the company by the Stock Exchange should reflect the four stages of the incorporation and enhancement of intellectual capital.

C.- Valuation of intellectual capital.

According to Edvinsson, who quotes Tobin, the value of these intangibles would be the difference between the stock market value and the net book value:

In our opinion, it is a residual definition not sufficiently validated, since the concept "Value of Intangibles" (or Good-will) in this variant is at the expense of two values (market value and book value) that are presumed to be adequate for that of the efficient market in the first case, and for the certainty of accounting science in the second.

However, both values are far from being reliable permanently, generally and homogeneously, and it does not seem that they can be taken as a basis for an assessment (by simple difference between them) of something as difficult to measure as intellectual capital or intangibles; therefore, that definition seems more like an approximation to its assessment than an assessment itself.

II.3 The valuation of intangibles according to Lev.

Culminating more than 20 years of research, Lev 7 proposes a new accounting methodology whose comment would take us away from the object of this article, and, in collaboration with Gu, a new way of valuing intangible assets.

Here the concept is more elaborate, but the valuation is still of the residual type. To obtain the concept of "normal profits", an estimate of them is made of the "ex ante" type that is now in vogue, that is, starting from the current level, their future evolution is estimated in several phases (first phase, of about 5 years, at the growth rate estimated by analysts; second phase, of about ten to fifteen years, at a rate decreasing to the "normal" rate of the economy; and third phase, perpetuity at this rate). Once the stream of "normal profits" is obtained, the profits that are considered to have been obtained by the "other assets" (material assets and financial assets) are subtracted from them, with which the "profits attributable to intangible assets" are found on a residual date.

"Profits attributable to intangible assets" are thus the difference between the total normal profits and the profits that are estimated to have been produced by the other assets at the historical rates of return of the sector or of the value; therefore, we are also faced with an approximate definition, which does not take into account the possible variation in the rates of return of "other assets" in the future, nor the likely impact of environmental costs not included in current costs other than indirectly via valuations of a sufficiently efficient market, nor possible sources of value other than strict intellectual capital.

Once the part of the profits attributable to the intangible assets has been determined, it finds the discounted value of the intangible assets through the CAPM model; as we know, this model refers us in turn to market valuations (via risk-free return, estimation of the expected return of the market and beta applicable to each company).

In short, like Edvinsson, there is in Lev a connection with stock market valuations that introduces a bias of subjectivism when determining the value of intangible assets. These are ways that require an exogenous crutch to determine the value of intangible assets and intellectual capital.

Chart

Comparison of Intellectual Capital Valuations

VCI according to the residual method, VCI according to the discount method, Differences

II.4 SOME EXAMPLES OF VALUATION OF INTANGIBLE SPANISH COMPANIES

If we apply the residual method of Edvinsson to the most relevant Spanish companies among those listed, it is observed that companies of state origin (such as Endesa, Altadis, Repsol and Telefónica) have a higher valuation of

intellectual capital than those of private origin in industrial or construction activities (Acerinox and Fomento), or that of the "new economy" sector (Zeltia, Sogecable and Telefónica 2001, in a "normal" year, and Telefónica 2002, in a "sanitation" exercise).

If we make an approximation to Lev's method of discounting intangible profits, it is observed that the valuations of the companies of the "new economy" would be at a level much lower than those of the companies of the "traditional" economy.

In the final column, the differences between the two methods are observed, which are still important: Edvinsson's method values "new economy" companies more, and Lev's method values "traditional economy" companies more.

III.- THE EVOLUTION OF STOCK MARKET ACTIVITY.

As we have seen, both methods of valuation of intangibles resort to stock market quotes directly or indirectly. Therefore, it is worth noting some aspects that have characterized the evolution of the stock markets, and that affect the form and levels of valuation granted to listed companies.

Referring to the Spanish case, it is necessary to point out first of all the evolution of the stock market itself (following the levels of effective contracting in relation to the market capitalization figure). Figure 1 shows several phases:

- From 1960 to 1974, in which the development measured in rates of cumulative increase has an exceptional level and accelerates at the end of the period (probably as a result of the emergence of movable investment funds), but without going beyond 6% of the capitalization.
- From 1974 to 1986, there is the great Fall in the Spanish stock market and the recovery (probably on the occasion of the entry into the European Economic Community, and the consequent irruption of foreign institutional investors); again, the highest cumulative annual growth rate of hiring is observed, which places the ratio at the end of the period at 27% of the capitalization.
- From 1986 to 1996, the ratio stabilizes around 27%, due to the increase in capitalization growth rates, although the hiring figures also obtain very high increases (probably due to the increase in the use of derivatives and the applications of the "caregivers").
- From 1996 to 2002, (probably as a result of the international boom of the stock exchanges and the continued increase in the use of derivatives and the aforementioned applications), the ratio increased to 88% on the capitalization.

In summary, lately on the Madrid stock exchange they change hands every year, and every year, they share in an amount that represents 88% of the ownership at market prices of all listed companies: liquidity is large.

The aforementioned evolution, which can be considered homogeneous with that of other stock exchanges (if anything later) allows us to outline a vision

of the process of valuation of companies by the market: in it, savers and speculators are included who, once organized in collective investment institutions with greater regulation (such as funds) or less regulation (such as off-shore, with a profile similar to the peñas quinielísticas), they make their opinion felt in increasing amounts and proportions, and, sometimes, with excessive demands for existing offers; hence, what is gained in liquidity is not always gained in accuracy, and, although the risk premium of stocks decreases, the probability of bubbles (even "rational" ones) becomes greater.

When the activity is guided by science, one of the effects obtained is the increase in the accuracy of forecasts and a greater mastery of the rates of variation of controlled phenomena. Graphs 2 8 and 39 below show that this is the case for basic economic magnitudes, such as industrial production. However, the evolution of the quotes deviates from this pattern, since, although there is a trend towards greater predictability in that initial time until 1958, it turns again towards increasing volatilities since 1958.

It is worth asking about what happened in 1958, and the answers received will range from the denial of any relationship to its magnification, through other interpretations of a macro or exchange rate type.

Figure 4 shows that, prior to 1958, the dividend yield on stocks consistently exceeded the yield on government bonds; in fact, one of the criteria of investors to buy or sell was that of the distance or proximity of both returns.

After 1958, both the criterion of dividend distribution is extended only in cases where the profitability of the company is equal to or lower than that of the market and the practice of share repurchases, which causes a greater relative weight of the revaluation of the quotes on the dividend yield in the total return obtained by investors

The pressure on managers exerted by this new model could be at the root of the erosion of management practices that, we hope, has reached its limit with the cases known in 2001 (Worldcom, Enron, Tyco, and others).

Since the effective contracting of securities measured in relation to market capitalization is one of the relevant indicators of the evolution of demand in general terms, it seems reasonable to affirm that its influence is felt on stock market results. Since 1981, Shiller and others have been raising, based on the dividend discount model, the excessive volatility of stock prices in relation to the dividends received.

As can be seen in Figure 5, the valuation according to the dividend discount model would have been a slightly increasing slope, with hardly any fluctuations, while the evolution of the dividend price index has been extraordinarily fluctuating (especially between 1995 and 2000); hence Shiller has titled his book "Irrational Exuberance".

All this reaffirms the idea that stock market valuations are rather the result of the availability of investors' funds applied to the set of securities (virtually expandable through derivatives trading), based on expectations deduced from the available information (macro and micro).

In the micro, it seems that the information would be disseminated according to the efficient market in the nucleus most related to the company, and that its "perfection" would be diluted as its scope moves away (strong, semi-strong and weak efficiencies).

In the macro, it would happen in the same way, but the breadth of the effects that derive from the macro information can dominate (or at least affect) the validity of the coined in the micro.

In any case, it does not seem that it is convenient to link the valuations of intangible assets (micro) that should serve as an anchor, with market parameters (micro, macro, availabilities and expectations) that reflect more or less ephemeral equilibrium conditions.

IV. CONCLUSIONS.

The criticisms that have been made of the accounting of companies for their inability to reflect the new economic realities (intangible assets and intellectual capital) have a good part of foundation. Once this reality has been admitted in general, and, therefore, the need for an update of the accounting criteria available to investors of the different stock markets, the authors do not agree on the way to value intangible assets and intellectual capital, since some point out the danger of instilling subjectivism where the realism of the carrying of payment and collection commitments reigns.

Among the proposals that aim to solve this problem of subjectivism in the valuations of intangibles, those of Edvinsson and Lev stand out.

Once examined, it is observed that both have in common the residual character (the concepts are not valued by themselves, but by difference with another concept that is supposed to include them), and the recourse to stock market valuations (Edvinsson directly and Lev more indirectly, but equally decisively). On the other hand, in the example made for the Spanish case, there are great differences between the valuations of both methods.

The evolution of the stock markets towards greater liquidity due to greater participation of investors has contributed or at least coincided over time with the increase in volatility in prices, and with the expression by relevant authors of certain reasonable doubts about the efficiency of the markets themselves.

In my opinion, these are reasons that advise that the determination of the values of intangibles and intellectual capital (a micro task) be carried out endogenously and outside the exogenous criteria (based on the values granted by the market based on the micro, macro, availabilities and expectations mentioned above criteria).

Perhaps the way to apply the aforementioned IASB criterion ("when there is a reliable reference value" and "without the book value of intangible assets being able to exceed the present value of the benefits they can generate") is through the real options method, which allows assessing the probabilities of such benefits occurring and the sequential adaptation of accounting figures to the actual evolution of expectations.