



Relevance of intangibles for the valuation of companies' shares in the capital market: Evidence from the Argentine context

Relevancia de los intangibles para la valoración de las acciones de las empresas en el mercado: evidencias desde el contexto argentino

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Abstract

The objective of this paper is to analyze the influence of the information on intangible assets and intellectual capital in the valuation of companies' shares in the Argentine capital market (ACM), where there are no published works of this nature. The analysis is carried out applying a self-constructed model, based on Ohlson (1995). The data correspond to the period 2009-2018 and have been collected directly from original sources. They were obtained from the companies' consolidated annual financial statements and from the stock trading records of Buenos Aires Stock Market. The results reveal that identifiable intangible assets, human and structural capital are value relevant, contributing to increase the existing evidence regarding the role of intangibles in the external valuation of companies, which is particularly limited for under developed markets.

JEL Code: M41, O34, G32, C33

Keywords: : intangible assets; intellectual capital; value relevance; capital market; Argentina

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Resumen

El objetivo de este trabajo es analizar la influencia de la información sobre activos intangibles y capital intelectual en la valoración de las acciones de las empresas que cotizan en el mercado de capitales argentino (MCA), donde no se han constatado trabajos publicados de esta naturaleza. El análisis se realiza aplicando un modelo de construcción propia, basado en Ohlson (1995). Los datos corresponden al período 2009-2018 y han sido recolectados directamente de fuentes originales. Se obtuvieron de los estados financieros anuales consolidados de las empresas y de los registros de negociación de sus acciones en el Mercado de Valores de Buenos Aires. Los resultados revelan que los activos intangibles identificables, el capital humano y el estructural poseen relevancia valorativa, lo que contribuye a acrecentar la evidencia existente en torno al papel de los intangibles en la valoración externa de las empresas, la cual es particularmente limitada para mercados poco desarrollados.

Código JEL: M41, O34, G32, C33

Palabras clave: activos intangibles; capital intelectual; relevancia valorativa; mercado de capitales; Argentina

Introduction

Today, intangibles play a central role in creating value within companies. They are strategic resources par excellence and one of the main sources of competitive advantage (Azofra, Ochoa, Prieto, & Santidrián, 2017; Xu & Wang, 2018; Xu & Li, 2019) in an environment that has evolved toward a knowledge-based economy. Accounting has significant information deficiencies in the current context since, even though the main regulation issuers have adopted the approach of the usefulness of information for decision-making (Scott, 2009), the dominant position they have had concerning intangibles has been conservative, being, in general, restrictive regarding their inclusion in the financial statements.

As a result, only a few intangible assets are included in the category "intangible assets," and a significant portion of them are not included in these statements because they do not meet the requirements for accounting recognition. These elements are usually included under the denomination of "intellectual capital," a term that, in one of its most widely used meanings since the pioneering conceptualization of Edvinsson and Malone (1997) -and the one adopted in this research-, is used to refer to intangible elements that can be considered hidden assets, since they do not appear in the financial statements of the companies.

The evidence on the significant gap between the book value and market value of companies listed on stock exchanges, initially documented by Lev (2001) and reaffirmed in recent research (Kimouche & Rouabhi, 2016a and b), together with that referring to the weakness in the relation between market variables and accounting information (Lev & Zarowin, 1999; Hail, 2013; Badu & Appiah, 2018), highlights the limitations of the accounting systems in place to provide useful information for the external valuation of companies. At the same time, it reveals the existence of other sources of information

representative of value creation, which are considered by investors and have an impact on the market value of firms, and which appear to be directly linked to intangibles and, in particular, to intellectual capital that does not appear in the financial statements.

Thus arises the need to examine and contrast to what extent the information on intangibles, whether it is recognized or not by accounting, is relevant for the valuation of companies in the capital markets, which is very meaningful in the context of the questioning of the usefulness of accounting information for decision making, whereas, as pointed out by the International Accounting Standards Board -IASB- (2018), in its conceptual framework, relevance is one of the fundamental qualitative characteristics of useful financial information.

The present research is presented using this framework, which aims to analyze the influence of information on intangible assets and intellectual capital on the value that the market assigns to the companies. The purpose is to study the extent to which the variables referring to intangibles can explain the prices observed in the market.

The research is conducted for the 2009-2018 period. Its context is the capital market (ACM), where no ADVIshed works of this nature have been found. Besides, the high concentration of traded volume in a few companies and their short duration in the stock market indices (Dapena, 2012; Tolosa, 2013) represent an ideal environment for its study due to the special characteristics given by its limited development. The analysis has been performed using a model created by the authors based on Ohlson's (1995) valuation framework. The data were collected directly from sources and obtained from the annual consolidated financial statements filed with the Buenos Aires Stock Exchange and the stock trading records on the Buenos Aires MERVAL Index.

The work has been structured as follows. First, a review of the literature is presented, which involves the most significant conceptual and regulatory aspects related to the intangible resources that are the subject of this work, an exhaustive review of the previous empirical literature that has examined the role of intangibles for the market, and the presentation of the theories that support this study. The third section describes the research design and the fourth contains the empirical results and their discussion. The paper concludes by pointing out its main conclusions and contributions, setting a precedent regarding the model used to examine the relation between intangibles and market values and the variables included, which may be susceptible to further replication.

Review of the literature

Conceptual and regulatory framework

The intangible resources on which this study focuses include a wide range of elements that can be classified into two broad categories: intangible assets and intellectual capital.

The expression "intangible assets" (IA) is commonly used to refer "exclusively to those investments of an intangible nature that, following accounting regulations, can be recognized as assets and, consequently, can be reflected in the company's balance sheet" (Cañibano, Sánchez, García, & Chaminade, 2002, p. 16). Accounting for IA is a subject that has been discussed in the accounting literature for more than a century, but no agreement has been reached on the criteria for its recognition and measurement. Nevertheless, in general, both the Argentinean accounting regulations (AAS) and the International Financial Reporting Standards (IFRS) of the IASB¹ require, for the recognition of IA, the possibility of obtaining future economic benefits and reliable measurement, with the addition of the requirement of identifiability in IAS 38 (IASB, 2018).

The lack of generally accepted recognition criteria also leads to a lack of agreement regarding which investments can be considered IA. Nonetheless, two main categories can be distinguished according to the identifiability criterion: goodwill and other identifiable intangible assets, which the standards mentioned above have differentiated to regulate their accounting treatment.

Regarding the latter, both AAS and IFRS regulate their recognition and measurement, differentiating between those acquired and those generated internally. In addition, they specify certain items that cannot be recognized as assets, such as expenses related to research and other expenses incurred for the internal development of brands, client lists, and similar items. Argentinian regulations differ in allowing the capitalization of organizational and pre-operating costs, a situation not contemplated in IAS 38 (IASB, 2018). Concerning goodwill, both standards only allow the recognition of the goodwill acquired in a business combination. Nevertheless, AAS postulates that negative goodwill should be recognized when the price paid in the transaction is less than the amount of the net identifiable assets acquired, while IFRS indicates that this difference should be recognized as a gain (Ficco, 2019).

¹The Financial Reporting Framework, IAS 38 and IFRS 3 of the IASB regulate the accounting for IA. In Argentina, the Technical Resolutions (TR) issued by the Argentine Federation of Professional Councils in Economic Sciences (FACPE, 2020) are in force, specifically, RT 16, 17, 18 and 21. TR 26 established the mandatory application of IFRS for all listed companies -except for financial, insurance, cooperatives and civil associations- for fiscal years beginning in 2012, except for gas transportation and distribution companies, whose application was deferred to fiscal years beginning in 2013.

On the other hand, the term "intellectual capital" (IC) represents a much broader concept for which a generally accepted definition has not yet been reached. Nonetheless, based on the main characteristics that are present in most of the concepts formulated, it can be stated that IC refers to the set of intangible elements that are related to each other, foremost among them the available knowledge—at the individual and organizational level—which are to a certain extent hidden, because they are not reflected in the financial statements prepared based on the current regulations, and which permit the company to function, in combination with the other resources, being a source of competitive advantage and value creation (Edvinsson & Malone, 1997; Ross, Ross, Dragonetti, & Edvinsson, 2001; Ginesti, Caldarelli, & Zampella, 2018).

IC includes elements of various kinds that can be grouped into several categories, with those corresponding to human, structural, and relational capital being those identified by most authors (Edvinsson & Malone, 1997; Bontis, 1998; Ross, 2017; Sardo & Serrasqueiro, 2018; Tejado & Araujo, 2018). Human capital is the stock of individual knowledge that resides in employees (Bontis, Chong, & Richardson, 2000) and includes the knowledge they possess, as well as their capabilities, experiences, and skills (Cañibano et al., 2002). This knowledge is tacit (Bontis, 1998), so it is only retained by the company with difficulty. Nonetheless, it is the essential source of other strategic resources (Bontis, 1998; Ginesti et al., 2018) and value creation (Smriti & Das, 2018), which is why it is considered the key component of IC (Tyskbo, 2019).

Structural capital is the infrastructure that incorporates, forms, and sustains human capital (Edvinsson & Malone, 1997). Nevertheless, it also enhances it, enabling it to optimize its returns and, thus, those of the company as a whole (Bontis, 1998). It is, essentially, knowledge that the organization has internalized (Ross et al., 2001), thus revealing its ability to transmit and accumulate intellectual material (Ochoa, Prieto, & Santidrián, 2010). It includes the organizational routines that convert individual knowledge into collective knowledge (Bollen, Vergauwen, & Schnieders, 2005). It involves a wide variety of components that can be grouped into two large blocks (Ochoa et al., 2010; Smriti & Das, 2018): the internal elements currently operative in the organization, such as infrastructure, processes, and business culture and those relating to the company's capacity for renewal and the results of innovation. The latter include trademarks, patents, copyrights, and others (Cañibano et al., 2002; Ginesti et al., 2018; Tyskbo, 2019).

Relational capital is fundamentally associated with the value generated by the relations that the company enters into with its environment through the long-term exchange of information and products with different stakeholders, including clients, suppliers, alliance partners, and shareholders (Ross et al., 2001, Forte, Matonti, & Nicolò, 2019). It is, therefore, an external dimension to the organization, although the value of these relations, as Sveiby (2018) rightly points out, is influenced by the actions of its members,

who are the ones who initiate and maintain them. Moreover, some authors have remarked the importance of structural capital as a support to establish and sustain relations with external stakeholders (Sardo & Serrasquero, 2018).

Review of the previous empirical literature

There is abundant empirical evidence on the relevance of intangibles for the valuation of companies by investors. Nevertheless, most of it refers to capital markets with a significant degree of development. In addition, it is possible to identify two independent lines of work within what Andriessen (2004) identifies as different communities: the accounting community and the IC community. In the first line, the valuation relevance of intangibles recognized for accounting purposes has been studied, while in the second line, the valuation relevance of the different components of IC has been examined.

The idea of value relevance has various interpretations. Nonetheless, the most common, and the one adopted in this paper following Barth, Beaver, and Landsman (2001), is the one that holds that an accounting (or non-accounting) figure is relevant to investors if it has a significant association with market prices.

Research conducted by the accounting community reveals the existence of a significant and positive association between the overall figure corresponding to IAs and the market value of bonds (Choi, Kwon, & Lobo, 2000; Iñiguez & López, 2005; Priotto, Quadro, Veteri, & Werbin 2011). Notwithstanding, for the different IA categories, the evidence is strong regarding the valuation relevance of the identifiable, but not entirely conclusive for the goodwill.

Thus, Ritter and Wells (2006), Dahmash, Durand, and Watson (2009), Oliveira, Rodrigues, and Craig (2010), Kimouche and Rouabhi (2016a), Da Silva, Rodrigues, and Klann (2017), and Omarjee, Yasseen, and Mohamed (2019) note the value relevance of the two categories. Ocaik and Findik (2019), in a study conducted on identifiable intangible assets, obtained evidence showing their positive influence on the market value of firms. Kimouche and Rouabhi (2016b) also produced findings that reveal a positive association between such assets and market prices but find that this association is negative for goodwill. Infante and Ferrer (2017), on the other hand, detect that goodwill is not a variable considered by investors.

These results are largely explained by the particular nature of the goodwill, which is not directly observable after its acquisition. Therefore, the figure reported in the financial statements is only representative of the value of the intangible at the time of the business combination (Giner & Pardo, 2007), which results in the accounting regulations applicable to the measurement of this asset, in the years after its initial recognition, generating a very significant influence on its valuation at the capital market level, as shown by Bepari and Mollik (2017), Wahyuni, Dewantoro, and Avianti (2018), Omarjee et al. (2019),

and Kwon and Wang (2020).

In the line of research on IC, the relation between its dimensions —human, structural, and relational— and the market value of the companies has been examined, leading, in certain cases, to mixed results. Since these investigations focus on items not reported in the financial statements that are difficult to measure, they have generally been measured through proxies, using financial and non-financial information.

Previous literature provides strong evidence of human capital's positive impact on price formation. Thus, Yu, and Zhang (2008), who measure it with a proxy referring to employee productivity, confirm its value relevance, as do García, Rodríguez, and García (2018), who use cumulative investment in employee training as a proxy. Wang (2008) and Liu, Tseng, and Yen (2009) obtain similar results, finding that some of the proxies they use to measure human capital are positively associated with market prices. Studies by Swartz, Swartz, and Firer (2006), Nimtrakoom (2015), Suherman (2017), Villegas, Hernandez, and Salazar (2017), Sardo and Serrasqueiro (2017), and Bayraktaroglu, Calisir, and Baskak (2019) find a significant and positive association between the indicator of efficiency in the use of human capital —calculated from the Value Added Intellectual Coefficient -VAIC- (Pulic, 2000)— and companies' market values. Ferraro and Veltri (2011), while finding no evidence of a direct influence of human capital on prices, manage to demonstrate that it has an indirect effect when examined in its interaction with structural capital, which is consistent with the results obtained by Cabrita and Bontis (2008), Özer and Çam (2017), and Barbosa, Coelho, and Weersma (2019). Although they are in the minority, some studies have found evidence of a significant negative association between human capital and market prices. Among them are those of Smriti and Das (2018) and Forte et al. (2019), who, in line with the above, have interpreted such results as deriving from the assessment of the relevance of IC components individually, when the combined effect produced by their interaction is essential.

Regarding the relation between structural capital and the market value of companies, some studies have examined organizational or process capital and innovation capital separately, considering the variety of components that make up this dimension. Similarly, Wang (2008), using proxies based on administrative and marketing expenditures to measure process capital and R&D spending to measure innovation capital, obtained results that support the valuation relevance of both dimensions. Similar results were obtained by Liu et al. (2009), although using different measures for each. Sharma (2018), in contrast, finds a significant but negative association between innovation capital and market prices, as do Ferraro and Veltri (2011) between process capital and prices. In this last study, moreover, and in agreement with Yu and Zhang (2008), evidence is obtained that innovation capital is not taken into account in the valuation of the companies. For their part, Veltri and Silvestri (2011), Nimtrakoom (2015), Suherman (2017), Sardo and Serrasqueiro (2017), and Smriti and Das (2018) find a positive and significant association between

the indicator measuring efficiency in the use of structural capital -calculated based on VAIC- and market prices. In contrast, Swartz et al. (2006), Sharma (2018), Bayraktaroglu et al. (2019), and Soetanto and Liem (2019) obtained evidence that such an indicator is not meaningful for price formation, while Forte et al. (2019) find that it is significantly, but negatively, related to companies' market values.

Regarding relational capital, previous studies have not been able to demonstrate its value and relevance convincingly. Thus, Yu and Zhang (2008) obtain results showing that advertising spending is a value driver but that sales volume does not influence price formation. In Wang's (2008) study, on the other hand, advertising spending has a negative association with prices, but the variable measuring sales growth rate is positively associated with prices. Ferraro and Veltri (2011), using sales as a proxy for relational capital, and Sharma (2018), taking advertising spending as a proxy, conclude that investors positively value this dimension of IC. García et al. (2018) also note the valuational relevance of relational capital, which they measure through the accumulated investment in advertising. Furthermore, Liu et al. (2009), Nimtrakoom (2015), Suherman (2017), and Soetanto and Liem (2019) obtained results showing that relational capital has no impact on the corporate value assigned by the market.

Thus, the review of the literature makes clear the diversity of results obtained for the link between intangibles and the market value of companies while confirming that previous research has studied, separately, the valuation relevance of IA and IC. This situation shows the need to provide evidence on a relation that needs further study, as well as to provide a complete overview of the intangible determinants of the value of the companies, which would also make it possible to increase the limited existing evidence for underdeveloped markets. To this end, the empirical research presented below was carried out.

Theories explaining the dissemination of information and the role assigned to it

Studies of the value relevance of intangibles can be supported by different theories that have been used to explain the disclosure of information by companies and the role assigned to it, such as agency theory, stakeholder theory, and signaling theory.

Agency theory (Jensen & Meckling, 1976) focuses mainly on the relation between the company's shareholders (principals) and managers (agents), which is characterized by the divergence of interests between the parties and by an asymmetric distribution of information, which can lead to opportunistic behavior. According to this theory, information disclosure is a means to reduce information skewness and mitigate agency costs (Larrán & García, 2004; Rieg & Vanini, 2015). Particularly, information on intangibles provides shareholders with greater knowledge about the company (Ellis &

Seng, 2015) and thus helps them make more efficient decisions by providing information on key value drivers (Tejedo, Ferraz, & Emmendoerfer, 2017).

For the stakeholder theory, described by Freeman (1984), the company is conceived as a set of stakeholders that interact with each other constantly and dynamically, and the relations that the company maintains with them are the key to its survival and growth. In this way, the company must meet the expectations of all its stakeholders, so it has a responsibility to give them an account of its management to help them make appropriate decisions (Ríos, Torres, Tirado, & Carbonell, 2009). In this context, information disclosure is part of the dialogue that allows for negotiating the relation between the company and its stakeholders (Ochoa, Prieto, & Santidrián, 2012). Specifically, information on intangibles is an element to obtain their support and approval (Whiting & Miller, 2008), to the extent that, by referring to strategic resources, it increases the value they perceive in the company (Tejedo & Alfaro, 2014).

Signaling theory has important relations with the abovementioned theories. From this perspective, the disclosure of information by the company constitutes a mechanism to signal to the market its better relative position vis-à-vis other companies (Ross, 1979), which also contributes to decreasing information asymmetries (Kimouche & Rouabhi, 2016b) and thus, to the improved decision-making of current and potential investors and other stakeholders. In particular, information on intangibles allows companies to signal their superior quality, as they are the most significant corporate attributes for wealth creation (Whiting & Miller, 2008; Tejedo et al., 2017).

Research design

In order to fulfill the objective set out in the introduction, a model based on Ohlson (1995) was developed to test, for all the companies in the sample, the association between the variables referring to intangibles and the value assigned to them by the market.

In order to study the diversity of intangibles present in the companies, recognized and unrecognized intangibles were considered. Thus, the model includes, as independent variables, the two fundamental categories of intangible assets (IA): goodwill (GW) and other intangible assets (OIA), obtained from the companies' financial statements, and the three dimensions of greatest consensus for grouping the components of intellectual capital (IC): human capital (HC), structural capital (SC), and relational capital (RC), for whose measurement proxies based on accounting information are used. As a dependent variable representing market values, stock prices (P) were considered. Figure 1 outlines the proposed working model and the variables under study, which provides a framework for the research hypotheses.

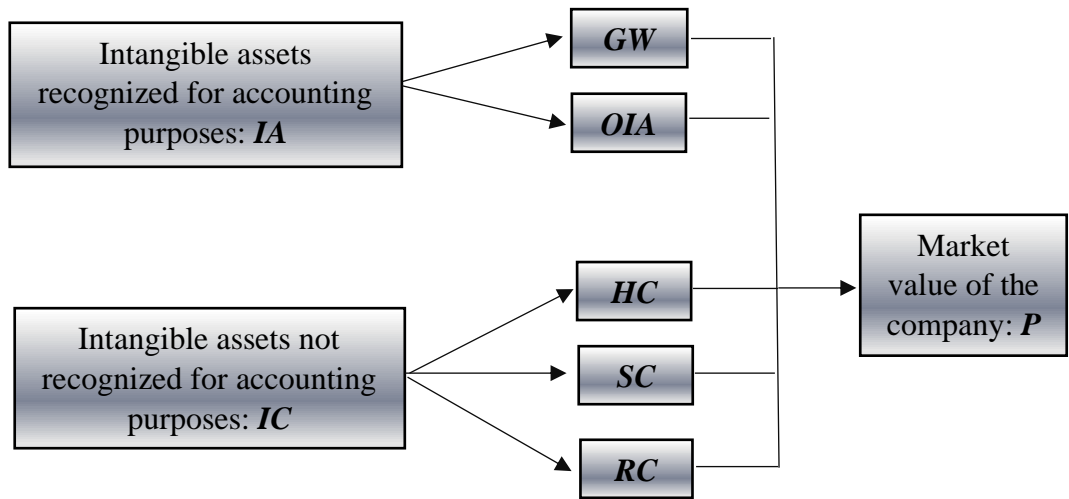


Figure 1. Working model and variables under study.
Source: created by the authors.

Development of research hypotheses

The review of previous empirical literature that has examined the valuational relevance of IA and IC provides evidence of the association between information referring to these elements and the valuation of companies in the market (Ritter & Wells, 2006; Wang, 2008; Dahmash et al., 2009; Oliveira et al., 2010; Ferraro & Veltri, 2011; Nimtrakoom, 2015; Kimouche & Rouabhi, 2016a and b; Da Silva et al., 2017; Sardo & Serrasqueiro, 2017; Garcia et al., 2018; Sharma, 2018; Ocak & Findik, 2019; among others).

This empirical evidence, together with the explanations provided by agency, stakeholder, and signaling theories concerning the disclosure of information by companies and the role assigned to it, support the idea that the different types of intangibles, whether recognized or unrecognized in accounting, can have valuation effects on the ACM. Indeed, investors are expected to consider the information in their decisions to buy and sell shares, which will produce price changes. Specifically, they are expected to have a positive association with the market value of the companies, as they are all representative of value creation. Therefore, the research hypotheses are formulated as follows:

H1a: The GW recognized in the financial statements of companies listed on the ACM is relevant for the valuation of their shares in that market.

H1b: The OIAs recognized in the financial statements of companies listed on the ACM are relevant for the valuation of their shares in that market.

H2a: The HC of the companies listed on the ACM is relevant for the valuation of their shares in that market.

H2b: The SC of companies listed on the ACM is relevant for the valuation of their shares in that market.

H2c: The RC of the companies listed on the ACM is relevant for the valuation of their shares in that market.

Model construction and definition of variables

The construction of the model to contrast the hypotheses is based on the one developed by Ohlson (1995), as it is a company valuation model that focuses on the "determinants of value" (AECA, 2006, p. 10). Specifically, it formalizes the link between the firm's value and the fundamental accounting variables: equity and income, including, in addition, a variable that represents "other information" not yet reflected in the financial statements but which is expected to impact future results. It is, therefore, a complete valuation model, which provides a solid methodological basis for understanding the relation between the company's market value and accounting and non-accounting variables, making it possible to assess whether they are relevant to investors.

Specifically, it is based on a version of Ohlson's (1995) model widely used by previous research, which is specified as follows:

$$P_{it} = \beta_0 + \beta_1 BV_{it} + \beta_2 NI_{it} + \beta_3 v_{it} + \varepsilon_{it} \quad (1)$$

where P_{it} is the market value of the company i shares at time t , BV_{it} is the book value of the net worth of company i at time t , NI_{it} is the company i 's accounting profit for period t , and v_{it} is "other information" that influences the value of company i but is not contained in its financial statements at time t .

In order to incorporate the variables related to the different types of intangibles, modifications are made to expression (1) in two ways. On the one hand, BV is decomposed into two components: intangible assets (IA) and the book value of net tangible elements (TBV), following the original approach of Ely and Waymire (1999). In turn, IA is broken down into two main categories: GW and OIA. On the other hand, the variable "other information" (v) is identified with that referring to intellectual capital (IC) in its different dimensions (HC, SC, and RC), since the human, organizational, and relational aspects of the company, although not reflected in the financial statements, have an important capacity to produce effects on its future performance. This idea is grounded in different theoretical positions underpinning the concept

of IC itself (Wernerfelt, 1984; Barney, 1991) and has also been considered in some previous empirical studies (Wang, 2008; Yu & Zhang, 2008; Liu et al., 2009; Ferraro & Veltri, 2011; and Veltri & Silvestri, 2011).

Proxies based on accounting measures are used to measure the different components of IC, which fall within the financial methods of measuring IC (Andriessen, 2004). In addition, the investment-based approach has been adopted (Goebel, 2015; Forte, Tucker, Matonti, & Nicolò, 2017) to the extent that most of the selected proxies are based on expenditure that can be considered as investments with the capacity to generate future economic benefits linked to the existing knowledge within the organization. Two proxies were considered for each dimension, following Sveiby (1997), who suggests using a few indicators to have a simple and representative measurement system.

The selected proxies are listed in Table 1, and the previous studies support their selection.

Table 1
 Proxy variables selected for the different dimensions of IC

IC Dimension	Selected proxy variables	Previous studies on which they are based
Human capital (HC)	Personnel Expenses (PE)	Swartz et al. (2006), Ferraro and Veltri (2011), Veltri and Silvestri (2011), Goebel (2015), Nimtrakoom (2015), Özer and Çam (2017), Suherman (2017), Villegas et al. (2017), Sharma (2018), García et al. (2018), Ginesti et al. (2018), Smriti and Das (2018), and Forte et al. (2019)
	Sales / Personnel Expenses (Sales/PE)	Swartz et al. (2006), Wang (2008), Yu and Zhang (2008), Liu et al. (2009), Veltri and Silvestri (2011), Nimtrakoom (2015), Suherman (2017), and Sharma (2018)
Structural capital (SC)	Administrative and marketing expenses (A&M)	Lev, Radhakrishnan, and Zhang (2009), Ferraro and Veltri (2011), Goebel (2015), Lev, Radhakrishnan, Evans (2016), and Mačerinskienė and Survilaitė (2019)
	Administrative and marketing expenses / Sales (A&M/ Sales)	Wang (2008) and Yu, Wang and Chang (2009).
Relational capital (RC)	Sales (Sales)	Yu and Zhang (2008), Wang (2008), Liu et al. (2009), Ferraro and Veltri (2011), and Iazzolino, Chiappetta, and Chiappetta (2018).
	Advertising Expenditure (ADV)	Yu and Zhang (2008); Wang (2008); Liu et al. (2009), Yu et al. (2009); Nimtrakoon (2015), Suherman (2017), Sharma (2018), García et al. (2018), Xu and Wang (2018), Soetanto and Liem (2019), and Xu and Li (2019)

Source: created by the authors

In accordance with the above considerations, expression (1) is modified to present the model schematized in Figure 1, as shown below:

$$P_{it+3} = \beta_0 + \beta_1 TBV_{it} + \beta_2 NI_{it} + \beta_3 GW_{it} + \beta_4 OIA_{it} + \beta_5 PE_{it} + \beta_6 Sales/PE_{it} + \beta_7 A\&M_{it} + \beta_8 A\&M/Sales_{it} + \beta_9 Sales_{it} + \beta_{10} ADV_{it} + \varepsilon_{it} \quad (2)$$

where the variables are defined as indicated in Table 2.

Two issues are worth highlighting concerning the definition of the variables. Firstly, the method for calculating share prices includes the time it takes for the market to incorporate accounting information into decisions. Secondly, the explanatory variables' values are deflated by the number of shares, following the method of Barth and Clinch (2009), who propose this as an effective way to mitigate the biases produced by the scale effect in estimating econometric models.

Table 2
 Variables definition

Symbol	Definition
P_{it+3}	Average price per share of company i in the third month following year-end t
TBV_{it}	Tangible book value (per share) of company i at year-end t
NI_{it}	Net income after taxes (per share) of company i for financial year t
GW_{it}	Goodwill (per share) reported in the financial statements of company i at the end of financial year t (net of accumulated depreciation ² and impairment losses)
OIA_{it}	Other intangible assets (per share) reported in the financial statements of company i at the end of financial year t (net of accumulated depreciation and impairment losses)
PE_{it}	Personnel expenses (per share) of company i for financial year t
$Sales/PE_{it}$	(Sales / Personnel Expenses) of company i for financial year t
$A\&M_{it}$	Marketing and administrative expenses (per share) of company i for financial year t (net of personnel and advertising expenses)
$A\&M/Sales_{it}$	(Administrative and marketing expenses* / Sales) of company i for financial year t * net of personnel and advertising expenses
$Sales_{it}$	Net sales (per share) of company i for year t
ADV_{it}	Advertising expenses (per share) of company i for financial year t

Source: created by the authors

The structure of the available data, determined by variables that are measured for each company in different years, imposes the need to use a model for correlated data. Therefore, from the econometric point of view, model (2) is used under the specification of a linear model for panel data. More specifically, a fixed effects specification has been chosen to capture unobservable between-subjects heterogeneity since, as De Jager (2008) points out, it is the most appropriate for accounting research. Likewise, to solve the problems of dispersion of the values of the dependent variable (P), a transformation of the same will be used so that the response variable is the natural logarithm of the share price (lnP). Thus, the model to be estimated is as follows:

²The term "depreciation" is used, following the terminology used by Argentine accounting regulations.

$$\begin{aligned} \ln P_{it+3} = & \beta_0 + \beta_1 TBV_{it} + \beta_2 NI_{it} + \beta_3 GW_{it} + \beta_4 OIA_{it} + \beta_5 PE_{it} + \beta_6 Sales/PE_{it} + \beta_7 A\&M_{it} \\ & + \beta_8 A\&M/Sales_{it} + \beta_9 Sales_{it} + \beta_{10} ADV_{it} + \mu_i + \varepsilon_{it} \end{aligned} \quad (3)$$

where μ_i is a random variable to capture unobservable individual heterogeneity; the other variables are defined as indicated in Table 2.

For the estimation of model (3), a within estimator is used, which is the most appropriate strategy for fixed effects models, since it allows for consistent estimates of the β parameters (Cameron & Trivedi, 2005). In addition, robust estimations based on White (1980) have been carried out since this methodology is widely accepted as a solution to the heteroscedasticity in the regression errors. It also answers serial autocorrelation, provided that cross-sectional independence is fulfilled (Baltagi, 2013; Díaz & Vargas, 2017).

Temporal space and sample

The research is conducted on a sample of companies listed on the ACM belonging to different sectors of activity. The period chosen is from 2009 to 2018 inclusive, which provides a broad temporal range for the analysis³.

Given that the ACM is characterized by a short duration of the companies in the stock market indexes that produces a changing situation in the listing panel, in order to select the companies that are part of the sample, only those that were continuously listed during the period 2009-2018 were considered, with 52 companies identified as being in this situation.

For this set, the accounting and market information necessary for the research was collected, which allowed 520 annual observations to be obtained. From this total, the observations for which the variables' net worth or accounting result assume negative values were eliminated because they were inconsistent with Ohlson's (1995) valuation framework. The existence of 118 observations with this condition reduces the total sample to 402 observations. Observations with extreme outliers were also eliminated, considering as such those that deviate from the mean value by more than 5 times the standard deviation in at least two of the study's explanatory variables⁴. It was decided to eliminate 49 observations, leaving a final sample of 353 corresponding to 46 companies.

³In 2008, some macroeconomic events had a significant impact on the ACM. Therefore, to avoid the distortions that the data corresponding to that year could generate in this study, the time frame chosen begins in 2009. It ends in 2018, which corresponds to the last fiscal year for which the consolidated annual financial statements of the companies studied were available at the time of this research.

⁴Extreme values are usually considered to be those data outside the interval $(\bar{x} - 3\sigma, \bar{x} + 3\sigma)$, or at most, outside the interval $(\bar{x} - 4\sigma, \bar{x} + 4\sigma)$, where \bar{x} is the mean of the values of the variable and σ is the standard deviation. In addition,

Empirical results and discussion

This section presents the descriptive analysis of the sample, the results obtained from the estimation of the model (3), and the discussion.

The descriptive statistics of the sample are summarized in Table 3. It can be seen that all the explanatory variables have high coefficients of variation, which indicates that these are variables with great dispersion. It can also be seen that the transformation of P to the logarithmic form (nlp) has made it possible to reduce the dispersion of the price data.

Table 3
 Main descriptive statistics of the sample

Variable	Mean	Standard deviation	Variation coefficient	Median	Maximum	Minimum
P*	21.97	37.54	1.71	8.00	440.60	0.19
nlp	2.20	1.35	0.61	2.08	6.09	-1.66
TBV*	6.99	9.25	1.32	3.60	63.09	-7.49
NI*	1.86	2.84	1.53	0.71	15.96	0.00
GW*	0.04	0.44	10.13	0.00	7.55	-1.48
OIA*	0.38	1.13	2.99	0.02	8.54	0.00
PE*	2.57	3.01	1.17	1.49	21.23	0.01
Sales/PE*	8.46	14.93	1.76	5.42	173.20	0.00
A&M*	1.93	3.28	1.70	0.70	21.40	0.00
A&M/Sales*	0.14	0.21	1.54	0.11	2.99	0.00
Sales*	17.62	32.86	1.86	7.83	489.02	0.00
ADV*	0.14	0.35	2.44	0.01	2.82	0.00

* Values expressed in Argentine currency (ARS) per share

Source: created by the authors

Table 4 shows the results obtained in estimating model (3) with data corresponding to 2009-2018. It is observed that the intraclass correlation coefficient (ρ) indicates that 52.92% of the total variability is due to variability among the companies, this heterogeneity being an indicator that it is appropriate to use fixed effects. The maximum likelihood test for fixed effects redundancy returns p-values < 0.01 (F-test and χ^2), revealing that the fixed effects of the companies are different with at least 99% confidence, which also lends support to the use of this model. The coefficient of determination (R^2 within) is medium and similar to that of other studies using fixed-effects panel models (Oliveira et al., 2010; Ferraro & Veltri, 2011; Wahyuni et al., 2018).

three measures commonly used to determine outliers and influential values in a regression model were analyzed: the studentized residuals and the DFFITS and COVRATIO statistics. Seventy percent of the eliminated observations coincide with those reported as outliers or potentially influential by these measures, which supports the elimination procedure used.

The coefficients and p-values shown in Table 4 reveal that the variables NI, OIA, PE, Sales/PE, A&M, and A&M/ Sales are statistically significant and positive at the 10% significance level, while TGBV, GW, Sales, and ADV are not. These results indicate that identifiable intangible assets (OIA) provide relevant information for investors, while goodwill (GW) is insignificant in the price formation process. Regarding IC, it is clear that human capital and structural capital have value relevance since the two proxies of human capital (PE and Sales/PE) and the two proxies of structural capital (A&M and A&M/ Sales) are significant and positive. In contrast, none of the proxies of relational capital (Sales and ADV) are significant, which shows that this dimension has no impact on the corporate value assigned by the market. Thus, evidence was obtained favoring hypotheses H1b, H2a, and H2b, while the results do not support H1a and H2c.

Table 4
 Valuation relevance of intangible assets and intellectual capital

Explanatory variables	Coefficient	Standard error	Statistic t	p-value
TBV	-0.0078	0.0205	-0.38	0.706
NI	0.1715**	0.0701	2.45	0.018
GW	-0.0530	0.1092	-0.49	0.629
OIA	0.1059**	0.0487	2.18	0.035
PE	0.1750***	0.0522	3.35	0.002
Sales/PE	0.0054*	0.0027	1.97	0.055
A&M	0.0510*	0.0279	1.83	0.074
A&M/ Sales	0.2722***	0.0794	3.43	0.001
Sales	-0.0019	0.0013	-1.53	0.133
ADV	-0.2164	0.2726	-0.79	0.431
Constant	1.3297***	0.0938	14.17	0.000
No. of observations	353			
R ² within	0.4680			
Intraclass correlation (rho)	0.5292			
Test F	5.78***			
Chi ²	222.14***			

Note: The within estimator and robust estimation were performed based on the White (1980) correction⁵. The symbols ***, ** and * denote that the variable is significant at 1%, 5%, or 10%, respectively. The variables are defined as indicated in Table 2.

Source: created by the authors

The results suggest that, despite the problems of recognizing and measuring identifiable intangible assets, investors perceive them as legitimate assets, considering that they provide information about and contribute to the companies' future earnings. They also reveal that the ACM understands the

⁵As a preventive step, the possibility of multicollinearity among the explanatory variables included in model (3) has been examined through variance inflation factors (VIF). Following Gujarti and Porter (2010), there is no evidence of multicollinearity, as the VIFs were all less than 10.

importance of human capital as a primary and key component of IC and the importance of structural capital as a support and enhancer of the former since, as Nonaka and Takeuchi (1995) argue, the interaction of both is the engine of the entire process of knowledge creation.

These results contribute to the agency, stakeholder, and signaling theories that underpin this study since, by revealing that information referring to these intangible elements has a favorable impact on share prices, they provide evidence that investors value it as an instrument to obtain greater knowledge of the company and reduce the information asymmetries that exist concerning its managers and as part of the dialogue with stakeholders that makes it possible to account for the company's management to all its stakeholders and to reveal the value created for all of them, and also as a sign of the company's better relative position to others.

The intangible elements relevant to investors participating in the ACM are consistent with those for which previous literature has provided the strongest evidence. Thus, the findings reconfirm those of Ritter and Wells (2006), Oliveira et al. (2010), Kimouche and Rouabhi (2016a and b), Da Silva et al. (2017), Omarjee et al. (2019), and Ocaik and Findik (2019), which find that investors take identifiable intangible assets into account in stock pricing, and those of Wang (2008), Liu et al. (2009), Nimtrakoom (2015), Suherman (2017), and Sardo and Serrasquero (2017), who find evidence supporting the valuation relevance of both human and structural capital.

The goodwill was not a variable of interest to investors, which can be linked to the fact that this accounting figure does not express the value of the intangible asset except at the time of the business combination. Relational capital was not meaningful either, which is understandable if it is considered, as Sveiby (1997) indicates, that this is an essentially external dimension, which is also affected by factors outside the companies. These results are also in tune with previous studies, which have not provided strong evidence of the valuational relevance of either of these two intangibles, as reflected in the work of Yu and Zhang (2008), Wang (2008), Kimouche and Rouabhi (2016b), Infante and Ferrer (2017), and Soetanto and Liem (2019). At this point, it is important to point out that these results do not contradict the contributions mentioned above to the theories on which this study is based since, as Larrán and García (2004) point out, there is information that is essential to value a company adequately. Nevertheless, its usefulness for users is conditioned both by its difficulty of measurement and its capacity to be extrapolated in estimating the amount and risk of the company's future cash flows.

Accordingly, given the accounting configuration of these variables, this lack of value relevance provided by the results of the study would also confirm that those variables that do not reduce the skewness of information and uncertainty—basic postulates of the role assigned to information by these theories—are precisely those that are irrelevant according to their postulates. This shows, once again, "a close interrelation between the economics of information and the economics of uncertainty: the lack of

information on the relevant circumstances of the future or on the procedure to make a correct assessment of the results of economic decisions is nothing more than a reflection of the problems caused by the uncertainty faced by the agents involved in the relations of production and exchange" (Azofra & Prieto, 1996, p. 46).

Finally, as regards the key accounting variables, TGBV and NI, only the latter was significant. The lack of relevance of tangible net worth is consistent with that attributed to income and intangibles to the extent that, as Giner and Pardo (2007) point out, the former is a proxy for the liquidation value of the company, while the other concepts are proxies for future cash flows. Furthermore, and as pointed out by Yu and Zhang (2008), who, like Oliveira et al. (2010) and Wahyuni et al. (2018), obtained results consistent with those of this research, the lack of valuation relevance of tangible net worth suggests that investors prioritize intangible capital over financial capital as a value generator.

Conclusions

This paper analyzes the relevance of intangibles for price formation in the context of the ACM, where no previous studies of this nature have been found to exist. An innovative perspective was adopted for the analysis that involves considering intangibles both recognized and unrecognized by accounting, concerning which there is an important gap to be filled insofar as previous research has studied their valuation relevance separately as a result of approaches from two different fields: that of accounting research and that of IC research.

The study was conducted from 2009-2018 on a sample of companies belonging to different sectors of activity. In order to achieve this and thus fulfill the purpose of examining —jointly— the valuation relevance of IA and IC, a pricing model has been constructed that includes variables referring to the intangible diversity involved in the two large groups referred to above, which is novel from a methodological point of view. The model is based on a company valuation framework with solid theoretical foundations: Ohlson's (1995), which also contributes to the rigor of this research, an issue not always addressed in previous works, which often have not adopted a theoretical model that justifies the selection of the variables to be analyzed.

The results provide evidence of the association between the value of the companies listed on the ACM and the information on identifiable intangible assets and human and structural capital, confirming the valuation relevance of these intangibles.

These results show that intangibles provide information for evaluating the different investment opportunities in the ACM and contribute to the valuation of the companies participating in the ACM. In particular, the findings show the capacity of investors to value the different knowledge-based intangible

resources as determinants of the value creation of the companies by revealing that they understand the importance of the strategic components of IC: human capital, as a primary component and key factor for its development, and structural capital, as a sustaining and empowering element of the human factor and an essential indicator of the organization's ability to transmit and store intellectual material.

The relevance assigned to identifiable intangible assets is consistent with the above since they involve various elements that reveal the innovation capacity of the companies and are the accumulated result of past investments in value generators that have been recognized in their financial statements. Furthermore, the valuation relevance of identifiable intangible assets suggests that, despite the problems posed by their accounting, the figure reported through such statements reflects the value of their future economic benefits so that investors perceive them as legitimate assets capable of providing relevant information for the estimation of the company's value.

These findings, which coincide with the strongest evidence provided by previous works and at the same time support the theories underlying the study, contribute to increasing the existing empirical evidence on the role of different types of intangible resources in the valuation of companies in the stock markets, which is necessary to support the construction of a theory, as yet undeveloped, to explain the influence of intangibles on value creation.

Furthermore, given that previous studies have been carried out on capital markets with a significant degree of development, this research, whose context is a relatively underdeveloped market, the Argentinean one, contributes to increasing the limited existing evidence for this type of market.

It should also be noted, as a contribution of the work, its potential to contribute to accounting regulation, to the extent that the results obtained, which show the relevance of intangibles for investors, contribute to highlighting the need to include more information on these resources in the financial statements, or in supplementary statements, to increase their usefulness, which would serve to strengthen the knowledge base that could guide the development of new financial accounting regulations or the modification of existing ones.

Nevertheless, the research has certain limitations that should be noted. On the one hand, the small number of companies in the sample is due to the inherent characteristics of the ACM. Although sufficient information was available to estimate the proposed model correctly, this fact shows the need for additional analyses that could contribute to a better understanding of the phenomenon under analysis. Among them is analysis by sector, since applying a sectorial classification representative of the existing diversity by type of activity would have left some sectors with very few companies. Therefore, for future research, it would be useful to replicate this study with a larger sample that includes companies from other countries, mainly in Latin America, which would also enable an investigation of the effects of cultural and institutional characteristics on the value relevance of intangibles.

On the other hand, the lack of publicly available non-accounting information in Argentina has generated limitations when defining the variables to measure IC, leading to its being measured using proxies based on accounting measures. Therefore, considering that certain non-financial indicators could be more representative of IC, future research could also explore the possibility of constructing them from the analysis of the information on IC that companies disclose through means other than financial statements, among which sustainability reports could be considered.

Finally, another interesting future perspective is the analysis of the effect of the adoption of IFRS on the valuation relevance of intangibles, which would contribute to a better understanding of the relation between intangibles and the valuation of companies in the market.

References

- Andriessen, D. (2004). *Making sense of intellectual capital: Designing a method for the valuation of intangibles*. Burlington, USA: Elsevier Butterworth-Heinemann.
- Asociación Española de Contabilidad y Administración de Empresas (2006). Documento N° 8: *Aplicabilidad del modelo de Ohlson para la valoración de acciones*. Madrid: AECA.
- Azofra, V., Ochoa, M., Prieto, B. y Santidrián, A. (2017). Creando valor mediante la aplicación de modelos de capital intelectual. *Innovar*, 27(65), 25-38. <https://doi.org/10.15446/innovar.v27n65.64887>
- Azofra, V. y Prieto, M. B. (1996). *La teoría positiva de la contabilidad en los sistemas de información contable internos*. Madrid: ICAC – MEyH.
- Badu, B. y Appiah, K. (2018). Value relevance of accounting information: an emerging country perspective. *Journal of Accounting & Organizational Change*, 14(4), 473-491. <https://doi.org/10.1108/jaoc-07-2017-0064>
- Baltagi, B. (2013). *Econometric Analysis of Panel Data*. (5th Ed.). New York: John Wiley & Sons.
- Barbosa, J., Coelho, A. y Weersma, L. (2019). The mediating effect of strategic orientation, innovation capabilities and managerial capabilities among exploration and exploitation, competitive advantage and firm's performance. *Contaduría y Administración*, 64(1), 1-25. <http://doi.org/10.22201/fca.24488410e.2019.1918>
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120. <https://doi.org/10.1177/014920639101700108>
- Barth, M., Beaver, W. & Landsman, W. (2001). The relevance of the value relevance literature for financial accounting standard setting: another view. *Journal of Accounting and Economics*, 31(1-3), 77-104. <https://doi.org/10.2139/ssrn.246861>

- Barth, M. y Clinch, G. (2009). Scale effects in capital markets-based accounting research. *Journal of Business Finance & Accounting*, 36(3-4), 253-288. <http://doi.org/10.1111/j.1468-5957.2009.02133.x>
- Bayraktaroglu, A., Calisir, F. y Baskak, M. (2019). Intellectual capital and firm performance: An extended VAIC model. *Journal of Intellectual Capital*, 20(3), 406-425. <https://doi.org/10.1108/jic-12-2017-0184>
- Bepari, M. y Mollik, A. (2017). Regime change in the accounting for goodwill: Goodwill write-offs and the value relevance of older goodwill. *International Journal of Accounting & Information Management*, 25(1), 43-69. <https://doi.org/10.1108/ijaim-02-2016-0018>
- Bollen, L., Vergauwen, P. y Schnieders, S. (2005). Linking intellectual capital and intellectual property to company performance. *Management Decision*, 43(9), 1161-1185. <https://doi.org/10.1108/00251740510626254>
- Bontis, N. (1998). Intellectual capital: An exploratory study that develops measures and models. *Management Decision*, 36(2), 63-76. <https://doi.org/10.1108/00251749810204142>
- Bontis, N., Chong, W. y Richardson, S. (2000). Intellectual capital and business performance in Malaysian industries. *Journal of Intellectual Capital*, 1(1), 85-100. <https://doi.org/10.1108/14691930010324188>
- Cabrita, M. y Bontis, N. (2008). Intellectual capital and business performance in the Portuguese banking industry. *International Journal of Technology Management*, 43(1-3), 212-237. <https://doi.org/10.1504/ijtm.2008.019416>
- Cameron, A. y Trivedi, P. (2005). *Microeconometrics: Methods and Applications*. New York: Cambridge University Press.
- Cañibano, L., Sánchez, M. García, M. y Chaminade, C. (2002). *Proyecto Meritum: Directrices para la gestión y difusión de información sobre intangibles*. Madrid: Fundación Airtel Móvil.
- Choi, W., Kwon, S. y Lobo, G. (2000). Market valuation of intangible assets. *Journal of Business Research*, 49(1), 35-45. [https://doi.org/10.1016/s0148-2963\(98\)00121-0](https://doi.org/10.1016/s0148-2963(98)00121-0)
- Da Silva, A., Rodrigues, T. y Klann, R. (2017). A influência dos ativos intangíveis na relevância da informação contábil. *Revista Contemporânea de Contabilidade*, 14(31), 26-45. <https://doi.org/10.5007/2175-8069.2017v14n31p26>
- Dahmash, F., Durand, R. y Watson, J. (2009). The value relevance and reliability of reported goodwill and identifiable intangible assets. *The British Accounting Review*, 41(2), 120-137. <https://doi.org/10.1016/j.bar.2009.03.002>
- Dapena, J. (2012). *Instrumentos de Inversión y Mercados Financieros*. Buenos Aires: Fundación BCBA.

- De Jager, P. (2008). Panel data techniques and accounting research. *Meditari Accountancy Research*, 16(2), 53-68. <https://doi.org/10.1108/10222529200800012>
- Díaz, M. y Vargas, J. (2017). Estrategias metodológicas para datos de panel. El caso de los bancos típicos en Argentina. Ponencia, Congreso Interamericano de Estadística, Universidad Nacional de Rosario, Argentina.
- Edvinsson, L. y Malone, M. (1997). *Intellectual Capital. Realizing your company's true value by findings its hidden brainpower*. New York: Harper Collins Publishers.
- Ellis, H. y Seng, D. (2015). The value relevance of voluntary intellectual capital disclosure: New Zealand evidence. *Corporate Ownership and Control*, 13(1), 1071-1087. <https://doi.org/10.22495/cocv13i1c9p9>
- Ely, K. y Waymire, G. (1999). Accounting standard-setting organizations and earnings relevance: Longitudinal evidence from NYSE common stocks, 1927-93. *Journal of Accounting Research*, 37(2), 293-317. <https://doi.org/10.2307/2491411>
- Federación Argentina de Consejos Profesionales de Ciencias Económicas [Argentine Federation of Professional Councils in Economic Sciences] (2020). *Resoluciones Técnicas [Technical Resolutions]*. Buenos Aires: FACPCE.
- Ferraro, O. y Veltri, S. (2011). The value relevance of intellectual capital on the firm's market value: An empirical survey on the Italian listed firms. *International Journal of Knowledge-Based Development*, 2(1), 66-84. <https://doi.org/10.1504/ijkbd.2011.040626>
- Ficco, C. (2019). Los activos intangibles en la normativa contable argentina y en las normas internacionales de información financiera. *Contabilidad y Auditoría*, 50, 61-108. Available in: <http://www.ojs.econ.uba.ar/index.php/Contyaudit/article/view/1591/2247C>. Accessed: 19/10/2019.
- Forte, W., Matonti, G. y Nicolò, G. (2019). The impact of intellectual capital on firms' financial performance and market value: Empirical evidence from Italian listed firms. *African Journal of Business Management*, 13(5), 147-159. <https://doi.org/10.5897/ajbm2018.8725>
- Forte, W., Tucker, J., Matonti, G. y Nicolò, G. (2017). Measuring the intellectual capital of Italian listed companies. *Journal of Intellectual Capital*, 18(4), 710-732. <https://doi.org/10.1108/jic-08-2016-0083>
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Boston: Pitman.
- García, L., Rodríguez, A. y García, J. (2018). Impact of investments in training and advertising on the market value relevance of a company's intangibles: The effect of the economic crisis in Spain. *European Research on Management and Business Economics*, 24(1), 27-32. <https://doi.org/10.1016/j.iemeen.2017.06.001>

- Giner, B. y Pardo, F. (2007). La relevancia del fondo de comercio y su amortización en el mercado de capitales: Una perspectiva europea. *Revista Española de Financiación y Contabilidad*, 134(36), 389-415. <https://doi.org/10.1080/02102412.2007.10779625>
- Ginesti, G., Caldarelli, A. y Zampella, A. (2018). Exploring the impact of intellectual capital on company reputation and performance. *Journal of Intellectual Capital*, 19(5), 915-934. <https://doi.org/10.1108/jic-01-2018-0012>
- Goebel, V. (2015). Estimating a measure of intellectual capital value to test its determinants. *Journal of Intellectual Capital*, 16(1), 101-120. <https://doi.org/10.1108/jic-12-2013-0118>
- Gujarati, D. y Porter, D. (2010). *Econometría*. (Quinta Ed.). México: Mc Graw Hill.
- Hail, L. (2013). Financial reporting and firm valuation: Relevance lost or relevance regained? *Accounting and Business Research*, 43(4), 329-358. <https://doi.org/10.1080/00014788.2013.799402>
- Iazzolino, G., Chiappetta F. y Chiappetta, S. (2018). Relational Capital and financial performance: an empirical analysis on a sample of Italian firms. *Problems and Perspectives in Management*, 16(1), 245-258. [https://doi.org/10.21511/ppm.16\(1\).2018.24](https://doi.org/10.21511/ppm.16(1).2018.24)
- Infante, R y Ferrer, R. (2017). The impact of intangibles on the value relevance of accounting information: An empirical examination of listed companies in the Philippines from 2012 to 2016, *Proceedings of the International Conference (October 2017)*, IGBR, ed.: 30-35.
- International Accounting Standards Board (2018). *Conceptual Framework for Financial Reporting*. London: IASB.
- International Accounting Standards Board (2018). *International Accounting Standard 38: Intangible assets*. London: IASB
- Iñiguez, R. y López, G. (2005). Valoración de los activos intangibles en el mercado de capitales español. *Revista Española de Financiación y Contabilidad*, 34(125), 459-499. <https://doi.org/10.1080/02102412.2005.10779553>
- Jensen, M. y Meckling, W. (1976). Theory of the firm: Managerial behaviour, agency costs and capital structure. *Journal of Financial Economics*, 3(4), 305-360. <https://doi.org/10.2139/ssrn.94043>
- Kimouche, B. y Rouabhi, A. (2016a). The impact of intangibles on the value relevance of accounting information: Evidence from French companies. *Intangible Capital*, 12(2), 506-529. <http://doi.org/10.3926/ic.653>
- Kimouche, B. y Rouabhi, A. (2016b). Intangibles and value relevance of accounting information: Evidence from UK companies. *Jordan Journal of Business Administration*, 12(2), 437-458. <https://doi.org/10.12816/0033358>

- Kwon, S. y Wang, G. (2020). The change in the value relevance of accounting information after mergers and acquisitions: evidence from the adoption of SFAS 141 (R). *Accounting & Finance*, 60(3), 2717-2757. <https://doi.org/10.1111/acfi.12411>
- Larrán, M. y García, E. (2004). La relevancia de la información no financiera en la estrategia empresarial de divulgación voluntaria: Percepciones empresa-analista sobre su utilidad. *Revista valenciana de economía y hacienda*, 12, 127-145. Available in: https://www.researchgate.net/ADVlication/28105136_La_relevancia_de_la_informacion_no_financiera_en_la_estrategia_empresarial_de_divulgacion_unitaria_Percepciones_empresa-analista_sobre_su_utilidad. Accessed: 15/04/2019.
- Lev, B. (2001). *Intangibles: management, measurement and reporting*. Washington: The Brookings Institution Press.
- Lev, B., Radhakrishnan, S. y Evans, P. (2016). *Organizational capital. A CEO's guide to measuring and managing enterprise intangibles*, Report, The Center for Global Enterprise.
- Lev, B., Radhakrishnan, S. y Zhang, W. (2009). Organization capital. *Abacus*, 45(3), 275-298. <https://doi.org/10.1111/j.1467-6281.2009.00289.x>
- Lev, B. y Zarowin, P. (1999). The boundaries of financial reporting and how to extend them. *Journal of Accounting Research*, 37(2), 353-385. <https://doi.org/10.2307/2491413>
- Liu, D., Tseng, K. y Yen, S. (2009). The incremental impact of intellectual capital on value creation. *Journal of Intellectual Capital*, 10(2), 260-276. <https://doi.org/10.1108/14691930910952650>
- Mačerinskienė, I. y Survilaitė, S. (2019). Company's intellectual capital impact on market value of Baltic countries listed enterprises. *Oeconomia Copernicana*, 10(2), 309-339. <https://doi.org/10.24136/oc.2019.016>
- Nimtrakoon, S. (2015). The relationship between intellectual capital, firms' market value and financial performance: Empirical evidence from the ASEAN. *Journal of Intellectual Capital*, 16(3), 587-618. <https://doi.org/10.1108/jic-09-2014-0104>
- Nonaka, I. y Takeuchi, H. (1995). *The knowledge creating company: How Japanese companies manage the dynamics of innovation*. New York: Oxford University Press.
- Ocak, M. y Findik, D. (2019). The impact of intangible assets and sub-components of intangible assets on sustainable growth and firm value: Evidence from Turkish listed firms. *Sustainability*, 11(19), 5359. <https://doi.org/10.3390/su11195359>
- Ochoa, M., Prieto, M. B. y Santidrián, A. (2012). Una revisión de las principales teorías aplicables al capital intelectual. *Revista Nacional de Administración*, 3(2), 35-48. <https://doi.org/10.22458/rna.v3i2.486>

- Ochoa, M., Prieto, M. B. y Santidrián, A. (2010). Estado actual de los modelos de capital intelectual y su impacto en la creación de valor en empresas de Castilla y León. *Revista de Investigación Económica y Social de Castilla y León*, 13, 15-205. Available in: <https://www.cescyl.es/es/ADVlicaciones/premios/actual-modelos-capital-intelectual-impacto-creacion-valor-e>. Accessed: 08/01/2019.
- Ohlson, J. (1995). Earnings, book values and dividends in equity valuation. *Contemporary Accounting Research*, 11(2), 661-687. <https://doi.org/10.1111/j.1911-3846.1995.tb00461.x>
- Oliveira, L., Rodrigues, L. y Craig, R. (2010). Intangible assets and value relevance: Evidence from the Portuguese stock exchange. *The British Accounting Review*, 42(4), 241-252. <https://doi.org/10.1016/j.bar.2010.08.001>
- Omarjee, F., Yasseen, Y. y Mohamed, W. (2019). The value relevance of aged goodwill: A South African study. *Southern African Business Review*, 19, 1-23. <https://doi.org/10.25159/1998-8125/3868>
- Özer, G. y Çam, İ. (2017). The moderating effect of human capital on innovation capital and firm market value relationship. An application on BIST. *International Journal of Management Economics and Business*, 2017 Special Issue, 512-522. <https://doi.org/10.17130/ijmeh.2017icmeh1735469>
- Priotto, H., Quadro, M., Veteri, L. y Werbin, E. (2011). Los activos intangibles: Una prueba empírica en empresas argentinas. Ponencia, XVI Congreso Internacional de Contaduría, Administración e Informática, México.
- Pulic, A. (2000). VAIC™ – an accounting tool for IC management. *International Journal of Technology Management*, 20(5-8), 702-714. <https://doi.org/10.1504/ijtm.2000.002891>
- Rieg, R. y Vanini, U. (2015). Value-Relevance of Intangibles and intellectual capital Disclosure on market-to-book value ratio: A longitudinal multilevel regression of german DAX Firms. Working Paper. <https://doi.org/10.2139/ssrn.2906636>
- Ríos, A., Torres, M., Tirado, P. y Carbonell, A. (2009). Stakeholders, intangibles y generación de valor en las empresas del IBEX-35: Una estimación mediante modelos de panel. *Revista Española de Financiación y Contabilidad*, 38(142), 239-263. <https://doi.org/10.1080/02102412.2009.10779668>
- Ritter, A. y Wells, P. (2006). Identifiable intangible asset disclosures, stock prices and future earnings. *Accounting & Finance*, 46(5), 843-863. <https://doi.org/10.1111/j.1467-629x.2006.00190.x>
- Roos, G. (2017). Knowledge management, intellectual capital, structural holes, economic complexity and national prosperity. *Journal of Intellectual Capital*, 18(4), 745-770. <https://doi.org/10.1108/jic-07-2016-0072>
- Roos, J., Dragonetti, N. y Edvinsson, L. (2001). *Capital Intelectual*. Buenos Aires: Paidós.

- Ross, S. A. (1979). *Disclosure regulation in the financial markets: Implications of modern finance theory and signalling theory*. New York: Mc Graw Hill.
- Sardo, F. y Serrasqueiro, Z. (2018). Intellectual capital, growth opportunities, and financial performance in European firms: Dynamic panel data analysis. *Journal of Intellectual Capital*, 19(4), 747-767. <https://doi.org/10.1108/jic-07-2017-0099>
- Sardo, F. y Serrasqueiro, Z. (2017). A European empirical study of the relationship between firms' intellectual capital, financial performance and market value. *Journal of Intellectual Capital*, 18(4), 771-788. <https://doi.org/10.1108/jic-10-2016-0105>
- Scott, W. (2009). *Financial Accounting Theory*. (5th Ed.). Toronto: Pearson Prentice Hall. Sharma, P. (2018). Enterprise value and intellectual capital: Study of BSE 500 firms. *Accounting and Finance Research*, 7(2), 123-133. <https://doi.org/10.5430/afr.v7n2p123>
- Smriti, N. y Das, N. (2018). The impact of intellectual capital on firm performance: A study of Indian firms listed in COSPI. *Journal of Intellectual Capital*, 19(5), 935-964. <https://doi.org/10.1108/JIC-11-2017-0156>
- Soetanto, T. y Liem, P. (2019). Intellectual capital in Indonesia: Dynamic panel approach. *Journal of Asia Business Studies*, 13(2), 240-262. <https://doi.org/10.1108/jabs-02-2018-0059>
- Suherman, R. (2017). The impact of intellectual capital toward firm's profitability and market value of retail companies listed in Indonesia Stock Exchange (IDX) from 2013-2016. *iBuss Management*, 5(1), 98-112. Available in: <http://ADVlication.petra.ac.id/index.php/ibm/article/view/5877>. Accessed: 08/01/2019.
- Sveiby, K. (1997). The intangible assets monitor. Available in: <https://www.sveiby.com/article/The-Intangible-Assets-Monitor>. Accessed: 08/01/2019.
- Sveiby, K. (2018). Measuring intangibles: suggested indicators with cases. Available in: <https://www.sveiby.com/article/Measuring-Intangibles-Suggested-Indicators-with-Cases>. Accessed: 08/01/2019.
- Swartz, G., Swartz, N. y Firer, S. (2006). An empirical examination of the value relevance of intellectual capital using the Ohlson (1995) valuation model. *Meditari Accountancy Research*, 14(2), 67-81. <https://doi.org/10.1108/10222529200600013>
- Tejedo, F. y Alfaro, E. (2014). Asociación entre las características empresariales y la divulgación sobre capital intelectual: Un estudio de las empresas del Ibex 35. *Estudios de Economía Aplicada*, 32(1), 371-398. <https://doi.org/10.25115/eea.v32i1.3215>
- Tejedo, F. y Araujo, J. (2018). Estrategia de gestión y divulgación del capital intelectual: Influencia del gobierno corporativo. *Contaduría y Administración*, 63(2), 1-18. <https://doi.org/10.22201/fca.24488410e.2018.1236>

- Tejedo, F., Ferraz, J. y Emmendoerfer, M. (2017). Mecanismos de gobierno corporativo y capital intelectual. *Revista Brasileira de Gestão e Negócios*, 19(65), 394-414. <https://doi.org/10.7819/rbgn.v19i65.3024>
- Tolosa, L. (2013). El contenido informativo de los estados contables y de los precios de las acciones en la toma de decisiones de inversión. Análisis de empresas que cotizan en el mercado de capitales argentino. Tesis doctoral, Universidad Nacional de Córdoba, Argentina.
- Tyskbo, D. (2019). Managers' views on how intellectual capital is recognized and managed in practice: A multiple case study of four Swedish firms. *Journal of Intellectual Capital*, 20(2), 282-304. <https://doi.org/10.1108/JIC01-2018-0017>
- Veltri, S. y Silvestri, A. (2011). Direct and indirect effects of human capital on firm value: Evidence from Italian companies. *Journal of Human Resource Costing & Accounting*, 15(3), 232-254. <https://doi.org/10.1108/14013381111178596>
- Villegas, E., Hernández, M. y Salazar, B. (2017). La medición del capital intelectual y su impacto en el rendimiento financiero en empresas del sector industrial en México. *Contaduría y Administración*, 62(1), 184-206. <http://doi.org/10.1016/j.cya.2016.10.002>
- Wahyuni, E., Dewantoro y Avianti, I. (2018). Has goodwill become more relevant after IFRS convergence in Indonesia? *Journal of Accounting and Investment*, 19(2), 239-256. <https://doi.org/10.18196/jai.1902104>
- Wang, J. (2008). Investigating market value and intellectual capital for SyP 500. *Journal of Intellectual Capital*, 9(4), 546-563. <https://doi.org/10.1108/14691930810913159>
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171-180. <https://doi.org/10.1002/smj.4250050207>
- White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, 48(4), 817-838. <https://doi.org/10.2307/1912934>
- Whiting, R. y Miller, J. (2008). Voluntary disclosure of intellectual capital in New Zealand annual reports and the "hidden value". *Journal of Human Resource Costing & Accounting*, 12(1), 26-50. <https://doi.org/10.1108/14013380810872725>
- Xu, J. y Li, J. (2019). The impact of intellectual capital on SMEs' performance in China. *Journal of Intellectual Capital*, 20(4), 488-509. <https://doi.org/10.1108/JIC-04-2018-0074>
- Xu, J. y Wang, B. (2018). Intellectual capital, financial performance and companies' sustainable growth: evidence from the Korean manufacturing industry. *Sustainability*, 10(12), 4651. <https://doi.org/10.3390/su10124651>

- Yu, F. y Zhang, L. (2008). Does intellectual capital really create value? 4th International Conference on Wireless Communications, Networking and Mobile Computing. IEEE. <https://doi.org/10.1109/wicom.2008.2324>
- Yu, H., Wang, W. y Chang, C. (2009). The pricing of intellectual capital in the IT industry, Working Paper, National Chengchi University. <http://doi.org/10.2139/ssrn.1327668>