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RESEARCH ARTICLE



The influence of mandatory adoption of IFRS in Argentina on value relevance of accounting information

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ABSTRACT

This study investigates the effect of mandatory adoption of International Financial Reporting Standards (IFRS) on the value relevance of accounting information in Argentina, which originated via the regulation that required all public non-financial companies to change the accounting standards, for fiscal periods starting in January 2012. As with most value-relevance studies, this research employs the Ohlson Model to examine the empirical association between equity prices and two main accounting variables: Net Earnings (representing the Income Statement) and the Book Value of Equity (representing the Balance Sheet). Panel data for 40 companies over a period of 23 years, from quarterly financial reports published by the Buenos Aires Stock Exchange (BCBA), are examined. The reported results suggest that mandatory adoption of IFRS in Argentina does *not* improve the value relevance of any of the tested variables. On the contrary, after the switch in accounting standards, the accounting numbers present a weaker association with the stock price.

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KEYWORDS

Value relevance; Argentina; IFRS; value investing; Ohlson model

1. Introduction

Since January 2012, non-financial publicly traded companies of Argentina have been required to prepare financial statements according to International Financial Reporting Standards (IFRS), instead of Local Generally Accepted Accounting Principles (Local GAAP). National Decree No. 562/09 of the National Securities Commission (CNV is the Spanish acronym) established the mandatory adoption of IFRS for all public firms, except for financial and insurance companies.

It is unclear how investors reacted to mandatory IFRS adoption in Argentina. There seems to be a widespread impression that local accounting standards have lost their value relevance, and that the implementation of international accounting standards is beneficial for financial markets due to, firstly, an improvement in information quality and, secondly, an increase in the comparability of accounting standards with respect to other countries. These reasons were included in those set by the CNV in Argentina, at the time of imposing the adoption of IFRS for all non-financial public companies; with the argument that the IFRS “constitute internationally recognized quality standards whose

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adoption is a necessary condition to favour the investments that our capital market requires”; and that “the financial information prepared according to IFRS will be comparable, reliable, objective and relevant at the international level, allowing the attraction of capital” (Comisión Nacional de Valores, 2009, p. 3). Hence, an improvement in value relevance is one of the explicitly stated goals of the CNV with respect to this regulation.

Prior works on the impact of IFRS adoption in other countries present mixed results. Some studies find improvements in the quality of accounting information while others do not, or they find improvements but only under certain circumstances. For example, a well-known study of 21 countries (Barth, Landsman, & Lang, 2008), provides evidence that the adoption of IFRS improves the quality of accounting amounts; including less earnings smoothing, more timely recognition of losses, and a higher association of accounting amounts with share prices and returns. However, it has also been shown that cross-country differences in accounting quality are likely to remain following IFRS adoption, as accounting quality is a function of the firm’s overall institutional setting; including the legal and political system of the country in which the firm resides (Soderstrom & Sun, 2007).

The present research is traced with a particular interest in value investing. Accounting data are especially important for value investors (and, in general, for fundamental investors). They typically analyze at least 10 years of historical financial statements, and rarely invest in start-ups or companies for which there is insufficient information available. For value investors, a change in the rules by which the economic results of the firm are measured equals a loss of part of the company’s history.

It is important to test whether the proposed objective has been met, given that 1) the change in accounting standards implies a loss in comparability with previous years, which in itself reduces (rather than increases) the quality of financial information, and 2) Argentine companies have been forced to allocate a significant amount of resources to switch from Local GAAP to IFRS. Moreover, since Argentina has been a high-inflation country for decades, it seems contradictory to aim for international comparability with respect to accounting standards, while at the same time inflation adjustment continues to be a forbidden practice for local entities. According to estimations in the *Paying Taxes 2018* report of the World Bank Group & Price Waterhouse Coopers (2018), Argentina’s total tax and contribution rate reached 106%. In the same category, South America averages 52.6%, Central America averages 42.1%, and North America averages 38.9%. The impossible figure of 106% is mainly a result of the prohibition to record inflation adjustments on financial statements. Thus, a company is forced to pay income tax whenever it reports nominal profits (even if they are losses in real terms). In these cases, the “Income” tax becomes a capital stock tax. Adding more regulations to the business environment, such as new accounting rules, is usually perceived as a waste of valuable resources. In light of these arguments, the assumed benefits of mandatory adoption of IFRS should be viewed with scepticism.

This paper explores whether the CNV meets one of the stated goals regarding IFRS: to enhance the relevance of financial statements for capital markets. If the implementation of the new standards does not result in a visible improvement in the quality of financial information, companies may end up simply absorbing the financial cost of migration,

while underappreciating decades of history by breaking comparability with previous years.

There is an extensive body of research on voluntary and mandatory IFRS adoption in other countries but, to the best of our knowledge, to date this topic has not been investigated in the case of Argentina. It is natural that empirical studies appeared earlier for other countries (for example, the European Union adopted IFRS for fiscal years starting in January 2005), while in Argentina the implementation of IFRS became effective for fiscal periods starting in January 2012, circumscribed to public non-financial companies. Hence, without empirical research, the expected benefits are yet to be determined.

To investigate the influence of the mandatory implementation of IFRS in Argentina, this study adapts the accounting-based valuation model of Ohlson (1995), which relates Equity Prices to Net Earnings and Book Value of Equity. Following previous research in the body of literature, this study controls for growth and leverage. The sample used in this investigation comprises all non-financial public companies in the Buenos Aires Stock Exchange (BCBA) that had available data before and after the mandatory implementation of IFRS. Panel data are drawn from 40 firms within a 23-year period (1997 to 2019), dividing the observations into two groups (Pre-IFRS and Post-IFRS). This study provides empirical evidence that the mandatory adoption of IFRS for all public non-financial companies in Argentina does *not* improve the value relevance of Earnings and Book Value of Equity. On the contrary, the value relevance of Net Earnings remains irrelevant in the Post-IFRS period, while the value relevance of the Book Value of Equity is diminished.

The remainder of this paper is structured as follows: [Section II](#) reviews the relevant literature. [Section III](#) focuses on the definition of value relevance. [Section IV](#) introduces the hypothesis development. [Section V](#) presents the sample. [Section VI](#) describes the research method. [Section VII](#) presents the results and discussion. [Section VIII](#) includes a brief conclusion.

2. Literature review

Over the last two decades, successive IFRS implementations, towards financial reporting convergence in different countries, prompted an extensive body of literature on the value relevance of financial information under the new standards. Most of the studies refer to mandatory adoptions (see Callao, Jarne, & Laínez, 2007; Cormier, Demaria, Pascale, & Teller, 2009; Devalle, Magarini, & Onali, 2010), but there is also research on voluntary adoptions (for example, see Kouki, 2018). Investigations cover, among other topics, effects on market liquidity (Daske, Hail, Leuz, & Verdi, 2008), cost of capital (Daske, 2006), comparability (Callao et al., 2007), unintended consequences (Brüggemann, Hitz, & Sellhorn, 2013), and value relevance (for example, see Clarkson, Hanna, Richardson, & Thompson, 2011 or Cormier & Magnan, 2016). Specifically focusing on the value relevance of accounting information, there are studies that comprise a large group of countries (for example, see Rodríguez García, Klender Aimer Cortez, Méndez Sáenz, & Garza Sánchez, 2016 regarding Latin America; Devalle et al., 2010 or André, Dionysiou, & Tsalavoutas, 2017 regarding Europe), with comparability problems that are due to the differences in local accounting standards. There are also studies with a limited scope

regarding a single country (e.g., Cormier & Magnan, 2016 regarding France; Bartov, Goldberg, & Kim, 2005 regarding Germany; Chalmers, Clinch, & Godfrey, 2011 regarding Australia; Tsalavoutas, André, & Evans, 2012 regarding Greece; Callao et al., 2007 regarding Spain). The latter citations can be regarded as antecedents of the present study in terms of methodology, sample selection, or common caveats regarding statistical tests.

The methodology employed in value relevance studies has somehow evolved. Most IFRS adoption investigations are not event studies, as implementations are long-term processes, and it is difficult to identify any specific event date. There is an extensive body of research, dated from more than a decade ago, based mainly on pooled ordinary least squares (OLS) regressions. Recent papers started to include difference-in-differences (DiD, as per Okafor, Anderson, & Warsame, 2016 or panel data models with random or fixed effects (see, for example, Goncalves, Lopes, & Craig, 2017; Francis, Hasan, & Siraj, 2020; or Odoemelam, Okafor, & Ofoegbu, 2019)).

The valuation framework provided by Ohlson (1995), which relates equity prices to Net Earnings and the Book Value of Equity, can be considered the main reference model in this area of research. The framework has been adapted to test different components of the financial statements; for example, in a recent paper, Gonçalves et al. (2017) examined the value relevance of fair value accounting for biological assets under International Accounting Standard 41 (IAS 41). Similarly, André et al. (2017) assessed IAS 36 *Impairment of Assets* and IAS 38 *Intangible Assets*, in response to a previously documented issue of non-compliance with the disclosures mandated by IAS 36 and IAS 38 during the early years of IFRS adoption by European Union listed firms; and Khan, Bradbury, and Courtenay (2017) investigated the value relevance of comprehensive income and its components, with an emphasis on the asset revaluation reserve and the change in fair value of available-for-sale securities.

Incentives to really improve the quality of financial information are also important. In a study across 30 countries, Daske, Hail, Leuz, and Verdi (2013) classify firms into “label” adopters and “serious” adopters. The authors find that label adopters do not present the same benefits in liquidity and cost of capital as serious adopters. In other words, the imposition of a new set of accounting standards does not necessarily produce high-quality financial statements, as long as there are incentives for firms to become label adopters.

In another study regarding incentives, Daske et al. (2008) provide evidence of a positive effect on market liquidity, a decrease in the firm’s cost of capital, and an increase in equity valuations; but *only* in countries where firms have incentives to be transparent and where legal enforcement is strong. In the light of these investigations, and reinforcing the need for empirical testing, it should be a concern that Argentina clearly cannot be classified within the aforementioned group of countries.

Distinct factors that also affect the materialization of expected IFRS adoption benefits are, among others, the alignment between financial accounting and tax accounting (Alford, Jones, Leftwich, & Zmijewski, 1993), U.S.A. cross-listings (Cormier & Magnan, 2016), the level of shareholder protection (Houque, Van Zijl, Dunstan, & Karim, 2012; Hung, 2001), managerial ability (Francis et al., 2020), and the quality of previous local accounting standards. Regarding the latter, in a recent study of firms listed on the Taiwan Stock Exchange (TWSE or TAIEX), Wu, Hsieh, Yu, and Chu (2016) employed the Ohlson Model to test value relevance in an economy that already had

quality standards before the application of IFRS (for example, Taiwan regulators used to follow the U.S. GAAP) and those authors conclude that, for a country that already has a set of high-quality accounting standards, convergence with IFRS cannot significantly improve the value relevance of financial statements.

In terms of rating shareholder protection, it is interesting to note that Houque et al. (2012), in a list of 46 countries, places Argentina, Russia and China at the bottom; indicating the weakest protection of minority shareholders' interests.

The consequences of mandatory IFRS implementations around the world have been studied from different perspectives, but the body of literature does not show results with a uniform effect in all countries. In turn, the benefits of reporting under IFRS only appear under certain conditions. Consequently, studies with mixed conclusions can be found. In terms of the findings, value relevance studies can be classified into three groups. The first group includes studies that find positive associations between value relevance and IFRS implementation (for example, see Cormier & Magnan, 2016; Kargin, 2013; Rodríguez García et al., 2016). The second group includes studies where no improvements in value relevance are attributed to IFRS adoption (for example, see Clarkson et al., 2011), or where reductions in the value relevance of accounting numbers are observed. The third group includes studies that provide evidence of an improvement in the value relevance of certain variables, simultaneous with a deterioration in the value relevance of others. For example, for firms listed on the Australian Securities Exchange (ASX), Chalmers et al. (2011) document that Earnings become more value relevant, whereas the Book Value of Equity does not. In a similar manner, a study of companies listed in Frankfurt, Madrid, Paris, London and Milan reports an increase in the value relevance of earnings, concurrent with a decrease in the value relevance of book values (see Devalle et al., 2010).

Mandatory IFRS adoption studies with a focus on value relevance started to appear in Europe after the convergence process was initiated in 2005. Local accounting standards of different European countries were replaced with IFRS, leading to separate studies for each country (Christensen, Lee, Walker, & Zeng, 2015 in the case of Germany; Horton & Serafeim, 2010 in the case of U.K; Gjerde, Knivsflå, & Sættem, 2011 in the case of Norway; Callao et al., 2007 in the case of Spain; Kargin, 2013 in the case of Turkey; Tsalavoutas et al., 2012 in the case of Greece). Multiple-country studies were also produced (Capkun, Cazavan, Jeanjean, & Weiss, 2008 for seven European countries; Kouki, 2018 also for Germany, France and Belgium; Kang, 2013 for 13 European countries; Armstrong, Barth, Jagolinzer, & Riedl, 2010 conducted an event study for the European Union). In the African and Asian region, similar investigations appeared with the advent of IFRS (Chebaane & Othman, 2014).

It took a few years for the phenomenon to reach Latin America. Recent IFRS adoption studies are mostly covering a group of countries, with the problems of mixing different economies such as, for example, Argentina and Chile. In an earnings management study, comprising the six largest Latin American economies (Argentina, Brazil, Chile, Colombia, Mexico, and Peru), Mongrut and Winkelried (2018) provide evidence against the belief that the mere adoption of IFRS is sufficiently adequate to guarantee transparency in emerging markets. In a value relevance study, based on a sample of 923 companies from Brazil, Chile, Argentina, and Mexico, Rodríguez García et al. (2016) document that the quality of accounting information increases with IFRS adoption mainly in large firms of Brazil, Chile, and Mexico but not in Argentina. Similarly, in

a study relating the adoption of IFRS and analysts' information environment for Argentina, Brazil, Chile, Mexico and Peru, Aroldo Freitas De Moura and Gupta (2019) highlight that the investor protection mechanism in Argentina is weaker than in the other four countries.

In summary, the 2005 switchover to IFRS in Europe led to numerous value relevance studies on that continent, investigating changes from local accounting standards to the international standards. Both individual and group studies appeared for European countries; a process that also seems to be occurring in Latin America. Argentina has been included in a few group studies on related subjects (Houque et al., 2012; Mongrut & Winkelried, 2018; Rodríguez García et al., 2016) but, as far as we know, there are no individual studies for Argentina. Moreover, the referred studies are not exclusively focused on value relevance. In Argentina, the mandatory implementation of IFRS became effective for fiscal periods following initiation in January 2012. Eight years have passed since then and, to the best of our knowledge, the value-relevance effects of the change in accounting standards have not yet been investigated.

3. Value relevance

Following prior research, value relevance of financial statements is defined as the ability of accounting data to summarize information which is impounded in market prices (Francis & Schipper, 1999).

Other studies affirm that value relevance research assesses how well accounting amounts reflect information used by equity investors (Barth, Beaver, & Landsman, 2001). Value relevance, earnings smoothing, and timely loss recognition are part of the broader topic of accounting quality (Barth et al., 2008). The conceptual framework of the Financial Accounting Standards Board establishes four fundamental recognition criteria for accounting information: 1) definition, 2) measurability, 3) reliability, and 4) relevance. Accordingly, it defines an accounting amount as relevant when it is capable of making a difference in user decisions (Financial Accounting Standards Board, 1984). In the academic literature, an accounting amount is defined as value relevant if it has a predicted association with equity market values (Barth et al., 2001).

The link between value relevance and information prepared under IFRS is also a topic of recent studies; for example, Okafor et al. (2016) and Cormier and Magnan (2016) examined evidence from Canada, Chalmers et al. (2011) examined evidence from Australia, and Kouki (2018) examined data from a group of European countries.

4. Hypothesis development

A change in a complete set of accounting standards is a long and expensive process for a company. Not only does it consume time and economic resources but also it implies a loss of comparability with financial numbers of previous years. The adoption of new standards does not directly impact operating variables, as customer satisfaction or product quality, but rather it is only intended as a benefit to the users of financial statements, with clearly stated goals that are established by the standard setters.

Once the goals have been specified, scientific research may help standard setters achieve such an objective. It may also provide insights to investors or other users of

financial information, without drawing inferences for standard setters (see, for example, Kothari, 2001). In a context of weak shareholder protection, tenuous law enforcement, and absence of the right incentives for serious adopters, the imposition of a new set of standards should be analyzed in depth. If the benefits of the adoption do not materialize, only the costs and the loss of comparability with previous years will remain. Breaking comparability with historical information constitutes significant damage to certain types of investors – the value investors – who use historical financial statements as their main valuation input (typically, at least 10 years of historical data). For these investors, as well as for other fundamental investors, historical accounting numbers are key for investment decisions (for example, see Piotroski, 2000).

Value relevance studies employ diverse valuation models relating accounting variables and equity stock prices; using the latter as a benchmark to assess what type of accounting numbers are important to investors. They do not attempt to produce a value for the company – which is the domain of fundamental analysis – and they are not aimed at being sufficiently inclusive for the decisions of standard setters. However, they do provide valuable insights for both investors and standard setters; especially within the framework of the accounting standard setting process, which is both an economic process and a political process.

The alleged benefits of IFRS cannot be taken for granted. Their success in improving earnings quality depends on at least two factors: high-quality standards and a country's overall investor protection (Soderstrom & Sun, 2007). On the contrary, a context of weak investor protection at a country level favours earnings management activities (Leuz, Nanda, & Wysocki, 2003). High-quality standards do not automatically translate into high-quality reporting. Ball (2001) maintains a sceptical view of making sudden changes to reporting and disclosure systems, due to the economic, political, legal, and institutional complexity involved in effecting actual change.

Given the undeniable cost that the mandatory adoption of a new set of standards imposes on Argentine companies, it is important to investigate whether this fact eventually influences the value relevance of accounting information. To test value relevance before and after the mandatory implementation of IFRS in Argentina, the present study follows prior work and expresses a firm's market price as a function of Net Earnings and Book Value of Equity (Ohlson, 1995).

The behaviour of Net Earnings and Book Value of Equity is not necessarily uniform, as shown in the literature (see, for example, Barth, Beaver, & Landsman, 1998; Collins, Pincus, & Xie, 1999). The adoption of IFRS may result in an increase of the value relevance of one variable, with the opposite effect of the other. Thus, it is convenient to discuss the effect on individual variables. Moreover, the focus on a particular variable also mirrors the accounting setters' approach, which generally establishes standards for specific accounting numbers (the change of a complete set of standards is a rare event). Therefore, a different hypothesis is defined for each variable. The research hypotheses are as follows:

H1: Mandatory adoption of IFRS in Argentina significantly increases the value relevance of Book Value of Equity.

H2: Mandatory adoption of IFRS in Argentina significantly increases the value relevance of Net Earnings.

Rejecting either H1 or H2 is interpreted as evidence that the value relevance of the variable under study does not improve after the mandatory adoption of IFRS in Argentina.

5. Sample

The sample is selected from the period of 1997 to 2019 for all non-financial public companies in Argentina. Quarterly earnings, book value of equity and share information are obtained from the quarterly financial reports that are published by the Buenos Aires Stock Exchange (Website: www.bolsar.com). Market values are from Bloomberg and the Buenos Aires Stock Exchange.

Three-month lagged share prices are used, since financial statements are published 3 months after the closing date (see Chalmers et al., 2011; Devalle et al., 2010; Frank, 2002; Hellström, 2006). Similar studies also use 4-month lagged share prices, when information takes longer to reach investors, as in Tsalavoutas et al. (2012) and Shan (2015), for example.

The initial sample comprises all listed firms in Argentina, for the 23-year period from 1997 to 2019. It is divided into “Pre-IFRS” and “Post-IFRS”, as in the works of Devalle et al. (2010), Chalmers et al. (2011), Tsalavoutas et al. (2012), Kouki (2018) and Chebaane & Othman (2014); excluding financial and insurance companies, as they do not report under IFRS. The complete list of public companies, as well as the identification of those that are included in the final sample, is presented at the end of this document in (Exhibit 1).

Only companies reporting under Local GAAP before the mandatory switch to IFRS in 2012 are relevant for the study, as they can be included in both groups (Pre- and Post-IFRS periods). Therefore, companies that do not fall into both groups, for which available data correspond solely to the Pre-IFRS period or to the Post-IFRS period, are excluded from the sample. Companies with missing values of Book Value of Equity, Net Income, Sales, or Stock Price are also excluded. The sample selection criteria provide 40 companies over 14 years (59 quarters, from 1997 to 2011) in the Pre-IFRS group (1,714 usable observations); and the same 40 companies over another 8 years (32 quarters, from 2012 to 2019) in the Post-IFRS group (1,065 usable observations). Initial sample comprises all listed firms in Argentina, for the 23-year period from 1997 to 2019; and it is then divided into the Pre-IFRS and the Post-IFRS groups. A summary of the sample selection is presented in (Table 1).

Table 1. Sample selection.

		Pre- IFRS	Post- IFRS
	Public firms	Sample size	Sample size
Initial sample: firms listed on the Buenos Aires Stock Exchange	90		
Less:			
Financial and insurance companies (IFRS not applicable)	–17		
Firms that do not fall into both groups (Pre- and Post-IFRS)	–9		
Firms lacking necessary financial or market data	–15		
Firms with irregular closing dates	–9		
Final sample	40	1,714	1,065

Initial sample comprises all listed firms in Argentina, for the 23-year period from 1997 to 2019; and it is then divided into two groups: “Pre-IFRS” and “Post-IFRS”. Sample size is measured in quarter of years available. Variable definitions are included in (Table 2)

Table 2. Definitions of variables.

Variable	Abbreviation	Type	Formula
Market Value of Equity	<i>MV</i>	dependent variable	Market value of Equity of a firm <i>i</i> three months after quarter <i>t</i>
Net Earnings	<i>E</i>	independent variable	Net Earnings of firm <i>i</i> at quarter-end <i>t</i>
Book Value of Equity	<i>BV</i>	independent variable	Book Value of Equity of firm <i>i</i> at quarter-end <i>t</i>
Growth	<i>GROW</i>	control variable	$GROW = (Sales_t / Sales_{t-1}) - 1$
Leverage	<i>LEV</i>	control variable	Total Long-Term Debt divided by Total Assets for firm <i>i</i> at quarter-end <i>t</i>

Table 3. Descriptive statistics for firm-quarter observations.

Panel A: Pre-IFRS Group (1997–2011)						
		Mean	Median	Minimum	Maximum	Std. Dev.
Market Value of Equity	<i>MV</i>	2,117.00	183.00	0.18	78,859.00	8,509.00
Net Earnings	<i>E</i>	40.93	3.02	−2,257.00	1,596.00	202.80
Book Value of Equity	<i>BV</i>	1,373.00	394.20	−1,440.00	26,060.00	3,486.00
Growth	<i>GROW</i>	0.13	0.04	−2,076.00	6.36	0.55
Leverage	<i>LEV</i>	0.15	0.09	0.00	1.05	0.18
Panel B: Post-IFRS Group (2012–2019)						
		Mean	Median	Minimum	Maximum	Std. Dev.
Market Value of Equity	<i>MV</i>	12,582.00	1,579.00	0.00	309,900.00	31,520.00
Net Earnings	<i>E</i>	283.00	14.86	0.00	25,017.00	1,781.00
Book Value of Equity	<i>BV</i>	6,458.00	695.40	−1,654.00	362,400.00	25,044.00
Growth	<i>GROW</i>	0.22	0.07	−0.92	6.82	0.78
Leverage	<i>LEV</i>	0.11	0.06	0.00	0.76	0.14

This table shows descriptive statistics for the dependent and independent variables. Definitions of variables are shown in (Table 2). This table shows descriptive statistics for the dependent and independent variables. Definitions of variables are shown in (Table 2).

Five variables are part of this study: Market Value of Equity (MV), Net Earnings (E), Book Value of Equity (BV), Growth rate in Sales (GROW), and the firm's leverage (LEV). Variable definitions are presented in (Table 2).

Descriptive statistics for the independent and control variables are presented in (Table 3). Effects of inflation are evident in the comparison between Pre- and Post-IFRS groups. The prohibition of adjusting financial statements for inflation stands out, highlighting the inconsistency of seeking a higher quality of information through standards, while leaving out the adjustment for inflation.

Pearson correlation coefficients are reported in (Table 4). As expected, Net Earnings and Book Values of Equity are positively correlated with Market Values, and with each other.

6. Research design

This empirical analysis is based on a conventional value relevance model, which expresses the value of a Firm's Equity as a function of its Net Earnings and Book Value of Equity (Ohlson, 1995). Following Barth et al. (2008), the first metric for value relevance is the explanatory power of a regression of the Equity Price of a Firm on Net Earnings and Book Value of Equity. This model is usually referred to as a price-regression model, in contrast with return-regression models, which are also common in value relevance studies.

Table 4. Correlations among independent and dependent variables.

Panel A: Pre-IFRS Group (1997–2011)						
		(MV)	(E)	(BV)	(GROW)	(LEV)
Market Value of Equity	(MV)	1.0000	0.7793	0.9098	−0.0287	−0.0764
Net Earnings	(E)		1.0000	0.7626	−0.0165	−0.1032
Book Value of Equity	(BV)			1.0000	−0.0372	−0.0836
Growth	(GROW)				1.0000	0.0040
Leverage	(LEV)					1.0000
Panel B: Post-IFRS Group (2012–2019)						
		(MV)	(E)	(BV)	(GROW)	(LEV)
Market Value of Equity	(MV)	1.0000	0.3803	0.8188	0.0392	0.1665
Net Earnings	(E)		1.0000	0.4715	0.0792	0.0297
Book Value of Equity	(BV)			1.0000	0.0227	0.1194
Growth	(GROW)				1.0000	0.0336
Leverage	(LEV)					1.0000

This table reports Pearson correlation coefficients among variables. Definitions of Variables are noted in Table 2). The number of firm-quarter observations is 1,714 in the Pre-IFRS group, and 1,065 in the Post-IFRS group.

The original model of Ohlson employs price per share, earnings per share, and book value per share. To avoid distortions from stock splits, the aforementioned variables were replaced by their equivalent total values: Market Value of Equity, Net Earnings, and Book Value of Equity (as in, for example, Tsalavoutas et al., 2012).

This study controls for leverage (LEV), as in the works of Shan (2015), Houque et al. (2012), and Marquardt and Wiedman (2004). Leverage is computed as Total Long-Term Debt divided by Total Assets. It also controls for growth (GROW), as in the works of Marquardt & Wiedman (2004), and Houque et al. (2012). Growth is computed as sales in year t minus sales in year $t-1$ and scaled by sales in year $t-1$.

Model selection criteria have been used to compare a list of models: Pooled Ordinary Least-Squares (Pooled OLS), Random effects, and Fixed effects regressions. With a focus on the Post-IFRS period, the Fixed effects model with robust standard errors was selected; as in the works of Devalle et al. (2010) and Karampinis and Hevas (2009).

To investigate whether the mandatory adoption of IFRS increases the value relevance of Net Earnings and Book Value of Equity, a panel data model with fixed effects is tested. The model equation is as follows:

$$MV_{it} = \beta_0 + \beta_1 E_{it} + \beta_2 BV_{it} + \beta_3 GROW_{it} + \beta_4 LEV_{it} + u_i + \varepsilon_{it}$$

For $i = 1, \dots, N$ firms, and $t = 1, \dots, N$ periods, where MV_{it} is the Market value of Equity of a firm i three months after quarter t ; BV_{it} is the Book Value of Equity of firm i at quarter-end t ; E_{it} equals Net Earnings of firm i at quarter-end t ; $GROW_{it}$ is measured by Sales growth rate which is defined as: $GROW_{it} = (Sales_t / Sales_{t-1}) - 1$; LEV_{it} is Total Long-Term Debt divided by Total Assets for firm i at quarter-end t ; u_i represents fixed effects; and ε_{it} is the error term.

Price models frequently reject tests of heteroscedasticity (Beisland, 2009). To correct for the possible presence of heteroscedasticity, robust standard errors are computed, based on the heteroscedasticity test of White (1980). Multicollinearity is evaluated by Variance Inflation Factors and by Belsley-Kuh-Welsch collinearity test.

Business practices of each company, as well as cultural or other unknown factors that are specific to each firm, may affect stock prices. Also, a decrease in value relevance of accounting information, rather than the mandatory change in accounting standards, might respond to a general deterioration of Argentina’s economy over time. Accordingly, fixed effects are added to the regression with the Least Squares Dummy Variable Model (LSDV), controlling for firm-specific and time-specific factors.

7. Results and discussion

This study examines panel data of quarterly financial information for the same 40 companies in successive quarters, covering the 23-year period of 1997–2019, before and after the mandatory adoption of IFRS in Argentina.

The research hypotheses, H1 and H2, are examined with an adjusted version of the Ohlson Model (see section VI), where a firm’s market value is a function of two main accounting variables: Net Earnings (in representation of the Income Statement), and Book Value of Equity (in representation of the Balance Sheet). Since the implementation of new accounting standards implies a change in the way each variable is measured, and in line with previous research, the dataset is divided into two groups (Pre-adoption and Post-adoption). The same statistical model specification is used to examine both groups.

The heteroscedasticity test (White, 1980) for Pre-IFRS and Post-IFRS groups is shown in (Table 5). The presence of heteroscedasticity is taken into account by computing robust standard errors.

Belsley-Kuh-Welsch collinearity diagnostics for Fixed effects regression, as well as Variance Inflation Factors, are presented in (Table 6). Results suggest that there is no evidence of excessive collinearity.

Results of the Fixed effects regression with robust standard errors are shown in (Table 7). Book Value of Equity is positive and statistically significant in both datasets, but loses significance from the 1% to the 5% level; with high R-squared in both panels. Net Earnings, in turn, are not significant in any of the datasets (nor are they significant before, or after the mandatory adoption of IFRS). The t-test results for the comparison between the Pre-IFRS and the Post-IFRS parameters suggest that, in the post-adoption period, the effect of Net Earnings on the dependent variable is diminished. Thus, the

Table 5. White’s test for heteroscedasticity.

Panel A: Pre-IFRS Group (1997–2011)
1714 observations, 40 cross-sectional units, time-series length: min 15, max 59
Null hypothesis: heteroscedasticity not present
Tst statistic: LM = 765.08
with p-value = P(Chi-square(14) > 765.08) = 0.0000
Panel B: Post-IFRS Group (2012–2019)
1065 observations, 40 cross-sectional units, time-series length: min 2, max 32
Null hypothesis: heteroscedasticity not present
Test statistic: LM = 455.049
with p-value = P(Chi-square(14) > 455.049) = 0.0000

The table shows the White (1980) heteroscedasticity test corresponding to the Pooled OLS panel data model. Panel A reports the results for the Pre-IFRS Group, and Panel B reports the results for the Post-IFRS Group. Both results suggest the possible presence of heteroscedasticity. Hence, robust standard errors are computed. The table shows the White (1980) heteroscedasticity test corresponding to the Pooled OLS panel data model. Panel A reports the results for the Pre-IFRS Group, and Panel B reports the results for the Post-IFRS Group. Both results suggest the possible presence of heteroscedasticity. Hence, robust standard errors are computed.

Table 6. Collinearity diagnostics.

Panel A: Pre-IFRS Group (1997–2011)							
Belsley-Kuh-Welsch collinearity diagnostics for Fixed Effects regression:							
Variance proportions							
Lambda	Condition index	Const.	E	BV	GROW	LEV	
2.576	1.000	0.030	0.028	0.040	0.016	0.035	
1.054	1.563	0.010	0.298	0.032	0.221	0.046	
0.886	1.705	0.016	0.083	0.000	0.759	0.049	
0.333	2.781	0.013	0.513	0.490	0.000	0.299	
0.150	4.139	0.931	0.078	0.437	0.004	0.571	
Lambda: smallest is 0.150336							
Count of condition indices ≥ 30 (strong linear dependence): 0							
Count of condition indices ≥ 10 (moderately strong linear dependence): 0							
				E	BV	GROW	LEV
Variance Inflation Factors:				2.400	2.394	1.002	1.011
Panel B: Post-IFRS Group (2012–2019)							
Belsley-Kuh-Welsch collinearity diagnostics for Fixed Effects regression:							
Variance proportions							
Lambda	Condition index	Const.	E	BV	GROW	LEV	
2.326	1.000	0.040	0.032	0.057	0.035	0.039	
1.162	1.415	0.032	0.327	0.127	0.003	0.039	
0.872	1.633	0.008	0.000	0.019	0.937	0.019	
0.474	2.217	0.016	0.633	0.796	0.008	0.009	
0.166	3.741	0.904	0.008	0.001	0.017	0.894	
Lambda: smallest is 0.166253							
Count of condition indices ≥ 30 (strong linear dependence): 0							
Count of condition indices ≥ 10 (moderately strong linear dependence): 0							
				E	BV	GROW	LEV
Variance Inflation Factors:				1.295	1.305	1.008	1.017

aDefinitions of variables are shown in (Table 2).

research hypothesis H1 is rejected. Similarly, the t-test results for the comparison between the Pre-IFRS and the Post-IFRS parameters for the Book Value of Equity indicate that, after the change in accounting standards, the effect of *BV* on the Market Value of Equity is also diminished. Thus, the research hypothesis H2 is rejected.

The overall effect, observed in both accounting variables, highlights the ineffectiveness of the mandatory adoption of IFRS in Argentina. Results from the Fixed-effects regression suggest that, in terms of both Net Earnings and the Book Value of Equity, the CNV's objective of improving value relevance through change in accounting standards is not achieved. The switch from Local GAAP to IFRS for public companies in Argentina does not translate into more relevant accounting variables for investors. With the mandatory adoption of international standards, the Book Value of Equity loses significance to explain equity prices, and Net Earnings remain insignificant in both panels. Thus, in contrast to previous research for other countries, it cannot be argued that value relevance improves, or simply switches from Net Earnings to Equity.

These findings contradict those of the first group of papers outlined in Section II, where positive associations between value relevance and IFRS implementation are documented. These findings also contradict those of the third group, where mixed results are reported (improvement in the value relevance of certain variables, simultaneously with the deterioration of the value relevance of others). The results of this investigation are in line with the second group of studies: no improvements in the value relevance of accounting variables are observed in the Post-adoption period.

Table 7. Panel data with fixed effects.

		(1)		(2)
		Pre-IFRS Group		Post-IFRS Group
		(1997–2011)		(2012–2019)
Constant		–798.49		5,082.02 *
		(590.0960)		(2,786.9200)
Net Earnings	(E)	8.07		–0.2157
		(4.8166)		(1.2613)
Book Value of Equity	(BV)	1.81	***	0.80 **
		(0.3934)		(0.3132)
Growth	(GROW)	–10.70		1,495.99 *
		(42.5961)		(820.3040)
Leverage	(LEV)	638.74		18,684.50
		(550.994)		(16,423.5000)
Observations		1,714		1,065
LSDV R-squared		0.8967		0.7826
Schwarz criterion		32,319		23,766
Within R-squared		0.6224		0.4643
Akaike criterion		32,079		23,547
Hannan-Quinn		32,168		23,630
Joint test on named regressors				
Test statistic: F(4, 39)		11.6532***	Test statistic: F(4, 39)	9.2841***
p-value		0.0000	p-value	0.0000
Robust test for differing group intercepts				
Null hypothesis: the groups have a common intercept				
Test statistic: Welch F(39, 511.8)		96.1096***	Test statistic: Welch F(39, 220.2)	19.1292***
p-value		0.0000	p-value	0.0000
T-test for mean differences				
		(E)	(BV)	
Test statistic:		–2.3548**	–2.8433***	
p-value		0.01853	0.0045	

The table presents the results of Panel data with fixed effects. Due to White's test results, robust (HAC) standard errors are computed. Definitions of Variables are discussed in (Table 2); robust standard errors are reported in parenthesis; ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. The table presents the results of Panel data with fixed effects. Due to White's test results, robust (HAC) standard errors are computed. Definitions of Variables are discussed in (Table 2); robust standard errors are reported in parenthesis; ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Our results are consistent with mandatory adoption of IFRS resulting in a weaker association between accounting variables and a company's stock price, contrary to the stated goals of the standard setter. According to these results, the imposition of a new set of standards does not translate into more value relevant accounting numbers. Plausible explanations, in the light of previous research, are: 1) a context of weak law enforcement (Daske et al., 2008), 2) weak investor protection (Houque et al., 2012; Hung, 2001; Soderstrom & Sun, 2007); and 3) the presence of incentives for label adopters (Daske et al., 2013).

In establishing the adoption of IFRS for all non-financial public companies in Argentina, the CNV assumes comparability, reliability, and “relevance at the international level” will be achieved (as mentioned in Section I); specifically addressing the attraction of capital. However, the change imposed by the CNV is principles based. In other words, accountants and auditors follow general principles, rather than detailed standards; adapting these principles to specific situations (Ball, 2006). Thus, the context in which those principles are interpreted affects accounting quality. Countries with strong shareholder protection may favour a fair presentation of information to shareholders, whereas countries with strong creditor protection may favour conservative interpretations to record assets. A context of weak investor protection at a country

level favours earnings management activities (Leuz et al., 2003). In Argentina, the failure to achieve increased value relevance of accounting information with the IFRS adoption can be understood as the consequence of combining principles-based standards (Ball, 2006), with an environment of weak shareholder protection (Houque et al., 2012).

Moreover, without the appropriate political and legal context, as well as the right incentives for firms to become serious adopters, a change in the measurement system can be perceived as an opportunity for manipulation of the accounting numbers. Regulatory flexibility is one of the prone areas of creative accounting (Amat & Gowthorpe, 2004). Each time accounting regulation permits a choice of policy, an opportunity for manipulation appears. Similarly, a change in the entire set of standards invites managerial discretion; with the addition of making more complex the comparison with historical data. Investors, however, are not easily misled by the new regulation, and they might anticipate the opportunity for manipulation. The breach of comparability with historical data cannot be assumed value neutral.

The contributions of this study can provide an insight to standard setters. If the possibility of meeting the goal established by the CNV is low, as the literature suggests whenever there are incentives for label adopters, and the change of standards is carried out in isolation, without a corresponding change in the context for it to succeed; then the country is exchanging a distant possibility of improving value relevance of accounting information, for a concrete loss of resources, time, and comparability with information of previous years.

8. Conclusion

This study investigates the effect of mandatory adoption of IFRS on the value relevance of accounting information in Argentina, which originated via the regulation that required all public non-financial companies to change the accounting standards, for fiscal periods starting in January 2012. As with most value-relevance studies, this research employs the Ohlson Model to examine the empirical association between equity prices and two main accounting variables: Net Earnings (representing the Income Statement) and the Book Value of Equity (representing the Balance Sheet). Panel data for 40 companies over a period of 23 years, from quarterly financial reports published by the Buenos Aires Stock Exchange (BCBA), are examined. The reported results suggest that mandatory adoption

Exhibit 1. Listed companies and final sample.

Ticker	Name	Type	(A)	(B)	(C)	(D)	Sample
AGRO	AGROMETAL S.A.	Commercial					AGRO
ALUA	ALUAR ALUMINIO ARGENTINO S.A.	Commercial					ALUA
AUSO	AUTOPISTAS DEL SOL S.A.	Commercial					AUSO
GAMI	B-GAMING S.A.	Commercial		1			
BBAR	BANCO BBVA ARGENTINA S.A.	Financial	1				
BHIP	BANCO HIPOTECARIO S.A.	Financial	1				
BMA	BANCO MACRO S.A.	Financial	1				
BPA	BANCO PATAGONIA S.A.	Financial	1				
BRIO	BANCO SANTANDER RIO S.A.	Financial	1				
ESME	BODEGAS ESMERALDA S.A.	Commercial					ESME

(Continued)

Exhibit 1. (Continued).

Ticker	Name	Type	(A)	(B)	(C)	(D)	Sample
BOLT	BOLDT S.A.	Commercial				1	
BYMA	BOLSAS Y MERCADOS ARGENTINOS S.A.	Financial	1				
CVH	CABLEVISION HOLDING S.A.	Financial	1				
CGPA	CAMUZZI GAS PAMPEANA S.A.	Commercial					CGPA2
CAPX	CAPEX S.A.	Commercial				1	
CAPU	CAPUTO S.A.	Commercial					CAPU
CARC	CARBOCLOR S. A.	Commercial					CARC
CADO	CARLOS CASADO S.A.	Commercial			1		
CELU	CELULOSA ARGENTINA S.A.	Commercial				1	
CEPU	CENTRAL PUERTO S.A.	Commercial					CEPU
URBA	CENTRAL URBANA S.A.	Financial	1				
COLO	COLORIN S.A.	Commercial					COLO
COMO	COMPANÍA ARG. DE COMODORO RIVADAVIA	Commercial			1		
INTR	COMPANÍA INTRODUCTORA DE BUENOS AIRES S.A.	Commercial		1			
CTIO	CONSULTATIO S.A.	Commercial			1		
COUR	CONTINENTAL URBANA S.A. INVERSORA	Financial	1				
CRES	CRESUD S.A.	Commercial			1		
DGCU	DISTRIBUIDORA DE GAS CUYANA S.A.	Commercial					DGCU
DOME	DOMEC S.A.	Commercial				1	
DYCA	DYCASA SOCIEDAD ANONIMA	Commercial					DYCA
EDSH	EDESA HOLDING S.A.	Financial	1				
EDLH	EDESAL HOLDING S.A.	Financial	1				
EMAC	ELECTROMAC S.A.	Commercial		1			
EDN	EMPRESA DISTRIB. Y COMERC. NORTE S.A.	Commercial					EDN
EMDE	EMPRESA DISTRIBUIDORA ELECTRICA REGIONAL S.A.	Commercial					EMDE
ELAP	EMPRESA DISTRIBUIDORA LA PLATA S.A.	Commercial			1		
DSUR	EMPRESA DISTRIBUIDORA SUR S.A. (EDESUR)	Commercial			1		
CECO	ENEL GENERACION COSTANERA S.A.	Commercial					CECO2
FERR	FERRUM S.A.	Commercial					FERR
FIPL	FIPLASTO S.A.	Commercial					FIPL
REGE	GARCIA REGUERA S.A.	Commercial				1	
GARO	GAROVAGLIO Y ZORRAQUIN S. A.	Commercial					GARO
GRIM	GRIMOLDI S.A.	Commercial					GRIM
GCLA	GRUPO CLARIN S.A.	Commercial					GCLA
OEST	GRUPO CONCESIONARIO DEL OESTE S.A.	Commercial					OEST
GGAL	GRUPO FINANCIERO GALICIA S.A.	Financial	1				
VALO	GRUPO FINANCIERO VALORES S.A.	Financial	1				
GSUP	GRUPO SUPERVIELLE S.A.	Financial	1				
HAVA	HAVANNA HOLDING S.A.	Commercial		1			
JMIN/HARG	HOLCIM (Argentina) S.A.	Commercial					HARG
Ticker	Name	Type	(A)	(B)	(C)	(D)	Sample
HULI	HULYTEGO S.A.	Commercial			1		
PATA	IMPORTADORA Y EXP. DE LA PATAGONIA S.A.	Commercial					PATA
ROSE	INSTITUTO ROSENBUSCH S.A.	Commercial					ROSE
IEBA	INVERSORA ELECTRICA DE BUENOS AIRES S.A.	Commercial			1		
INVJ	INVERSORA JURAMENTO S.A.	Commercial		1			
IRSA	IRSA INVERSIONES Y REPRESENTACIONES S.A.	Commercial			1		
IRCP	IRSA PROPIEDADES COMERCIALES S.A.	Commercial			1		

(Continued)

Exhibit 1. (Continued).

Ticker	Name	Type	(A)	(B)	(C)	(D)	Sample
RICH	LABORATORIOS RICHMOND S.A.C.I.F.	Commercial		1			
LEDE	LEDESMA S.A.	Commercial				1	
LEID	LEYDEN S.A.	Commercial			1		
LOMA	LOMA NEGRA COMPAÑIA INDUSTRIAL ARG. S.A.	Commercial		1			
LONG	LONGVIE S.A.	Commercial					LONG
MTBA	MATBA ROFEX SOCIEDAD ANONIMA	Financial	1				
METR	METROGAS S.A.	Commercial					METR
MVIA	METROVIAS S.A.	Commercial			1		
MIRG	MIRGOR S.A.	Commercial					MIRG
MOLA	MOLINOS AGRO S.A.	Commercial		1			
SEMI	MOLINOS JUAN SEMINO S.A.	Commercial				1	
MOLI	MOLINOS RIO DE LA PLATA S.A.	Commercial					MOLI
MORI	MORIXE HERMANOS S.A.	Commercial				1	
GBAN	NATURGY BAN S.A.	Commercial					GBAN
NCON	NUEVO CONTINENTE S.A.	Financial	1				
PAMP	PAMPA ENERGIA S.A.	Commercial					PAMP
PREN	PAPEL PRENSA S.A.	Commercial		1			
PATR	PATRICIOS S.A.	Commercial			1		
PSUR	PETROLERA DEL CONOSUR S.A.	Commercial					PSUR
PGR	PHOENIX GLOBAL RESOURCES P.L.C.	Financial	1				
POLL	POLLEDO S.A.	Commercial			1		
PATY	QUICKFOOD S.A.	Commercial					PATY
RIGO	RIGOLLEAU S.A.	Commercial				1	
SAMI	S.A. SAN MIGUEL	Commercial					SAMI
COME	SOCIEDAD COMERCIAL DEL PLATA S.A.	Commercial					COME
TECO	TELECOM ARGENTINA S. A.	Commercial					TECO2
ERAR/TXAR	TERNIUM ARGENTINA SOCIEDAD ANONIMA	Commercial					TXAR
TGLT	TGLT S.A.	Commercial			1		
TRAN	TRANSENER CIA. DE TRANSP. DE ENERGIA ELECTR.	Commercial					TRAN
TGNO	TRANSPORTADORA DE GAS DEL NORTE S.A.	Commercial					TGNO
TGSU	TRANSPORTADORA DE GAS DEL SUR S.A.	Commercial					TGSU
INDU	UNIPAR INDUPA S.A. INDUSTRIAL Y COMERCIAL	Commercial					INDU
YPFD	YPF S.A.	Commercial					YPFD
Totals	90		17	9	15	9	40

List of public companies in Argentina for the 23-year period from 1997 to 2019. Excluded companies from the final sample are: (A) Financial and insurance companies, as IFRS are not applicable for them; (B) Firms that do not fall into both groups (Pre and Post-IFRS); (C) Firms lacking necessary financial or market data, (D) Firms with irregular closing dates. The list of 40 companies included in the final sample is presented in the last column.

of IFRS in Argentina does not improve the value relevance of any of the tested variables. On the contrary, after the switch in accounting standards, the accounting numbers present a weaker association with the stock price.

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