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Impact of IFRS on non-cross-listed Spanish companies: Financial analysts and volume of trade

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ABSTRACT

This study aims to analyse, within the scope of publicly listed Spanish companies, whether the mandatory implementation of International Financial Reporting Standards (IFRS) has had an effect on financial analysts' earnings forecasts and investments in non-cross-listed Spanish companies (those only listed on the Spanish capital market). A sample of 369 observations for companies listed on the Spanish securities market for the period 2004–2007, of which 84 are cross-listed, was used to perform the analysis. The results show that the transition from domestic to international accounting standards has had positive effects for non-cross-listed Spanish companies, leading to the improved accuracy of financial analysts' earnings forecasts and an increase in investments.

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1. Introduction

The wide range of financial reporting standards used around the world is an important factor that impacts data processing costs for investors who wish to diversify their investment portfolios on an international scale (Khurana & Michas, 2011). The use of domestic accounting standards make it more expensive and difficult to assess investment opportunities due to the complexity of comparing financial reports of companies listed on different international markets. Owing to this complexity, companies seeking to invest in other countries are obliged to reconcile their financial results to the host country's financial reporting standards to ensure comparability.

As of 1 January 2005, Regulation (EC) No. 1606/2002 of the European Parliament and of the Council requires all listed companies to prepare their consolidated financial reports in accordance with International Financial Reporting Standards (IFRS). The aim of simultaneously adopting IFRS in all listed companies in different countries is to achieve the greater uniformity, transparency, reliability, and comparability of financial data on capital markets (Alon &

Dwyer, 2014; Barth, Landsman, & Lang, 2008). In the case of listed Spanish companies, the mandatory adoption of IFRS in 2005 has facilitated the comparability of financial data with respect to other listed European companies.

The literature on the consequences of IFRS adoption is mixed. However, numerous studies have highlighted the benefits, including White (2007), Armstrong, Barth, Jagolinzer, and Riedl (2010), Daske, Hail, Leuz, and Verdi (2008), Johnson (2009), Zhou, Xiong, and Ganguli (2009), and Barth, Landsman, Lang, and Williams (2012), who report a positive impact of IFRS in terms of greater uniformity, transparency, and comparability of financial data, thus reducing data preparation and processing costs. The availability of more uniform and transparent data also reduces information asymmetries between investors and increases market liquidity (Abad, Cutillas-Gomariz, Sánchez-Ballesta, & Yagüe, 2018). As regards securities trading, Daske et al. (2008), Daske, Hail, Leuz, and Verdi (2013), Li (2010), and Christensen, Hail, and Leuz (2013) observed that IFRS adoption increases market liquidity. This increase is greater in countries with stronger enforcement mechanisms where companies have greater incentives to be more transparent. This beneficial impact can also be seen in variables relating to financial analysts such as greater consensus, more accurate earnings forecasts, and increased analyst following (Abdallah, Abdallah, & Ahmad, 2012; Byard, Li, & Yu, 2011; Garrido-Miralles

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& Sanabria-García, 2014; Horton, Serafeim, & Serafeim, 2013; Tan, Wang, & Welker, 2011).¹

However, other studies have concluded that the transition to IFRS has had a negative impact on the usefulness of the financial data presented in compliance with the new standards. As regards the Spanish capital market, there is no evidence that the application of IFRS improved the usefulness or relevance of data in financial reports (Callao, Jarne, & Laínez, 2007; Callao & Jarne, 2010). In terms of cost of equity, Chen, Chin, Wang, and Yao (2015) indicated that, contrary to widespread evidence, costs increased after mandatory IFRS adoption.

It is important to note that the Lisbon European Council meeting of 23 and 24 March 2000 concluded that the lower volume of trade on European capital markets compared to the US was due, in part, to the lack of common accounting standards. Common standards would allow all economic agents intervening in European markets to develop and use relevant and comparable financial data across markets. Although companies listed on the domestic as well as other European stock markets (cross-listed companies, CL companies hereafter) have to present financial data in accordance with IFRS, this was not the case for companies listed exclusively on the domestic market that present their annual accounts using domestic accounting standards (non-cross-listed companies, NCL companies hereafter).

Owing to the EU mandatory IFRS adoption as of January 2005, international investors can better understand the data contained in NCL Spanish companies' financial reports in a less costly manner, something that was not possible prior to adoption. In this context of greater quality, comparability, and transparency of financial data, it is believed that information asymmetries between investors should be reduced. Moreover, investor confidence should increase, which would in turn favour investment opportunities in Spanish companies with the desired end result of a larger volume of trade.

Although there is a vast body of literature on various aspects of the consequences of the transition from domestic accounting standards to IFRS, to the best of our knowledge, there are no studies that make a distinction between companies listed only on the domestic market (NCL companies) and companies listed on several capital markets simultaneously (CL companies).

Our study aims to contribute to the existing literature by investigating whether, in the case of Spain, mandatory IFRS adoption has had a heterogeneous impact depending on whether the company is cross-listed or non-cross-listed Spanish companies, respectively. To this end, we examine the performance of financial analysts' earnings forecasts and the investments made in Spanish companies in the period following mandatory IFRS adoption by measuring volume of trade. To perform the analysis, we used a sample of 369 observations from companies listed on the Spanish market for the period 2004–2007, which adopted IFRS for the first time as of 1 January 2005.

We believe the Spanish stock market,² which was chosen for this study, is of interest for two reasons: (1) because it obliges all listed Spanish companies to present consolidated data in accordance with IFRS at the same time, the selection bias present in samples from countries that employ voluntary adoption is

¹ In relation to other aspects, it was also found that adopting IFRS on the Spanish market led to a reduction in balance sheet conservatism (Iñiguez Sánchez, Poveda Fuentes, & Vázquez Veira, 2013), a positive assessment of the adjustments made as a result of the first application of IFRS (Aledo Martínez, Abellán Martínez, & Lin, 2014), market value relevance, and the incorporation of stock price adjustments to equity (Garrido & Vázquez, 2011).

² The choice of a specific country provides a stable legal framework and a sustained institutional structure of governance. As highlighted by Choi et al. (2013), the impact of the change in accounting standards can be better analysed from a national approach rather than an international comparison.

eliminated (Ashbaugh, 2001); and (2) because Spain is a country characterised by weak enforcement mechanisms and important differences between its accounting principles and criteria—which are based on the European continental accounting model—and IFRS, which are more aligned to the Anglo-Saxon accounting model (Callao, Ferrer, Jarne, & Laínez, 2009; Cutillas-Gomariz, Sánchez-Ballesta, & Yagüe, 2016; García Lara, Rueda Torres, & Vázquez Veira, 2008). In this regard, as stated in previous studies, more significant effects are expected in countries with accounting standards that differ comprehensively from IFRS.

The results show that after mandatory IFRS adoption in Spain in 2005, the accuracy of financial analysts' earnings forecasts improved significantly and volume of trade increased only for non-cross-listed companies. This evidence suggests that investors have been encouraged to make new capital investments in Spanish companies in which greater uniformity and comparability has been achieved in preparing and disseminating financial data as a result of adopting IFRS.

This paper is structured as follows. In Section 2, the hypotheses are explained. Sections 3 and 4 describe the sample and methodology used, respectively. Section 5 presents the results. Section 6 deals with the sensitivity analysis. And lastly, Section 7 presents the main conclusions.

2. Hypotheses

Many studies have focused on the effects of implementing IFRS on the capital market with respect to financial analysts' earnings forecast accuracy (Byard et al., 2011; Choi, Peasnell, & Toniato, 2013; Garrido-Miralles & Sanabria-García, 2014; Horton et al., 2013; Preiato, Brown, & Tarca, 2015; Tan et al., 2011). However, in our study, we verify whether the results described in the literature are similar for the Spanish market, and also try to provide evidence on whether there is a differential impact depending on whether companies are cross-listed on international markets or not.

With mandatory IFRS adoption, the accuracy of financial analysts' earnings forecasts is expected to increase due to the availability of more precise, uniform, transparent, and hence more useful financial data. However, given the aforementioned assumption, we examine whether this improvement in forecasting accuracy is the same for both CL and NCL Spanish companies. In our opinion, given that financial analysts are more familiar with the data presented by CL Spanish companies (they are larger, more transparent, and communicate more data) and forecasts are more accurate, it is expected that these companies will be less sensitive to changes in the data environment following IFRS adoption. It is important to note that before adopting IFRS in 2005, CL Spanish companies applied the domestic accounting standards of the capital market where they were listed, in addition to the Spanish regulations.³

Under this premise, by adopting international accounting standards, NCL companies would be expected to experience a greater change than CL companies in terms of preparing more uniform and more transparent financial data. The data would also have a higher level of disclosure as it would be understood by international as well as domestic investors. Moreover, several studies in the literature have found a positive relationship between the amount of data disclosed and the accuracy of financial analysts' earnings forecasts (Healy & Palepu, 2000; Hope, 2003).

Given the above, in this paper we aim to determine whether mandatory IFRS adoption has led to a significant improvement in

³ Adolfo Domínguez, for example, used German accounting standards until 2004, Altadis used the French standards, and Endesa used the US GAAP and the UK and German accounting standards.

financial analysts' earnings forecasts for NCL companies. With this objective, we formulate the following hypothesis:

H1: Mandatory IFRS adoption contributes to improving the accuracy of financial analysts' earnings forecasts for NCL Spanish companies.

To this end, we examine whether earnings forecast errors made by financial analysts using data from NCL Spanish companies decrease following the adoption of IFRS in comparison to CL companies. We consider whether this greater proximity between actual earnings and forecast earnings is due not only to the greater accuracy of financial analysts, but also to the fact that NCL companies now produce more precise and transparent financial data. Our aim is to provide evidence on whether or not the adoption of IFRS in Spain has the same impact on all listed companies, depending on if they already had some experience using IFRS.

Moreover, we determine whether the adoption of IFRS in Spain has contributed to improving investors' access to the Spanish capital market. The implementation of IFRS improves the convergence of accounting standards and facilitates the comparability of economic and financial results between companies operating in different countries. In this same line, incentives for domestic and international investors to invest in Spanish companies, especially in NCL companies, are expected to increase. To this end, we formulate the following hypothesis:

H2: The stock trading volume in NCL Spanish companies will increase after mandatory IFRS adoption.

We consider the possibility that international investors' interest in Spanish companies will increase given that prior to the change from domestic to international standards, investors had not shown interest in Spanish companies due to a lack of understanding of the financial data presented. As suggested by Hope, Jin, and Kang (2006), IFRS is a mechanism which allows countries to improve investor protection and make their markets more accessible to international investors. With IFRS, the data in financial reports is more easily comparable and understandable than when presented using domestic standards. This could provide greater incentives for investors to invest in companies that they might not have invested in previously. Prior to adopting IFRS, CL companies had to prepare their financial statements in accordance with the accounting standards of the country where they were listed, as well as with the Spanish regulations. Furthermore, given that data presented using IFRS is more transparent, domestic investors have fewer incentives to seek private data other than that which is publicly disclosed. As a result, asymmetric information is reduced and capital market liquidity increases (Abad et al., 2018), thus stimulating new investments.

3. Sample

Data on the companies were obtained from the Factset database, except data on volume of trade, which were obtained from the Compustat database. The sample initially comprised 548 observations from companies listed on the Spanish capital market that present consolidated data. Companies that voluntarily adopted IFRS prior to 2005 (13 observations) were excluded from the sample. In addition, 166 observations were eliminated from the sample as they lacked the financial data needed for the study. As a result, the final sample comprises 369 observations (98 companies: 80 NCL companies and 18 CL companies).⁴

⁴ There are 40 observations from financial entities, which correspond to nine banks. We did not exclude financial institutions from the sample as they are an important part of the EU's economy.

Table 1
CL companies listing frequency.

CL company	Years listed	Frequency
1. Adolfo Dominguez	5	5.95
2. Altadis	4	4.76
3. Banco de Valencia	5	5.95
4. Banco Popular Español	5	5.95
5. Banco Santander	4	4.76
6. Codere	1	1.19
7. Endesa	5	5.95
8. Ence	5	5.95
9. Iberdrola	5	5.95
10. Indra Sistemas	5	5.95
11. Obrascón Huarte Lain	5	5.95
12. Papeles Cartones Europa	5	5.95
13. Prisa	5	5.95
14. Repsol YPF	5	5.95
15. Sacyr Vallehermoso	5	5.95
16. Sol Meliá	5	5.95
17. TecnoCom	5	5.95
18. Telefónica	5	5.95

Number of years and frequency with which CL companies are listed in the period 2004–2007.

Table 2
Number of CL companies listed on international capital markets and number of securities per company in the period 2004–2007.

Market where listed	Number of companies	Number of years ^a
Berlin	2	5
Buenos Aires	3	14
France-CAC	1	4
Frankfurt	2	10
Lisbon	4	19
London	1	4
Munich	7	34
Stuttgart	2	6
UK-SEAQ International	2	10
Total	24	106

^a Number of years that companies have been listed during the period analysed.

The study period spans 2004–2007, and was broken down into three phases: IFRS transition (2004), IFRS adoption (2005), and post-IFRS adoption (2006 and 2007). All the companies in the sample closed their accounts as of December 31. Hence, we use the forecasts made by financial analysts at the close of that accounting period.

As regards the frequency with which CL companies traded in the period analysed,⁵ Table 1 shows that the majority of companies continued trading throughout the study period. More data on CL companies trading on other international exchanges are presented in Table 2. More specifically, the table indicates the number of companies and the number of years that companies have traded on international stock exchanges other than the Spanish exchange.

As regards the characteristics of the CL and NCL companies in the sample (Table 3), significant differences were found in terms of their size, measured as market capitalisation and total assets. The average CL company is almost seven times larger than the average NCL company. Furthermore, it was observed that financial analyst following and volume of trade is, on average, higher for CL than for NCL companies (Panel A). These results are supported by the test of equality of means of the abovementioned variables (size, financial analyst following, and volume of trade) of the CL and NCL companies (Panel B).

⁵ Terra Networks, S.A. did not trade consistently over the period 2004–2007. The last consolidated accounts were presented in 2004 and the company stopped trading in mid-2005.

Table 3
Characteristics of CL and NCL companies.

Panel A. Descriptive statistics of company characteristics				
	CL (N = 84)		NCL (N = 285)	
	Mean	Median	Mean	Median
Logarithm of market capitalisation	8.2390	8.0391	7.2805	7.4481
Total assets (millions of €)	52,270.80	8352.33	7503.58	1297.25
Number of analysts	17.4146	16.5000	10.5632	9.0000
Logarithm of trade volume	3.0049	3.1217	2.7868	2.8458

Panel B. Difference between means and medians test		
	p(t)	p(z)
Logarithm of market capitalisation	0.0001***	0.0000***
Total assets (millions of €)	0.0069**	0.0000***
Number of analysts	0.0000***	0.0000***
Volume of trade	0.0002***	0.0001***

p(t) = p-value Welch's unequal variances t-test.

p(z) = p-value Wilcoxon signed-rank test.

***, **, * = statistically significant at 1%, 5% and 10%, respectively.

4. Methodology

To examine the impact of IFRS on the accuracy of financial analysts' earnings forecasts and volume of trade, we included a number of control variables and distinguished between CL and NCL companies. The empirical model using ordinary least squares (OLS) is shown below:

$$AFE_{i,t} = \beta_0 + \beta_1 TRANS + \beta_2 ADOPT + \beta_3 POST + \beta_4 LNSIZE_{i,t} + \beta_5 LOSS + \beta_6 TIME + \beta_7 COV_{i,t} + \beta_8 CHEPS_{i,t} \quad (1)$$

$$VOL_{i,t} = \beta_0 + \beta_1 TRANS + \beta_2 ADOPT + \beta_3 POST + \beta_4 LNSIZE_{i,t} + \beta_5 LOSS + \beta_6 COV_{i,t} + \beta_7 CHEPS_{i,t} \quad (2)$$

where $AFE_{i,t}$ is the absolute forecast error for company i in year t , deflated by the share price at year-end t . $AFE_{i,t} = \frac{|EPS_{i,t} - FEPS_{i,t}|}{P_{i,t}}$, where $EPS_{i,t}$ is the earnings per share obtained by company i in year t , and $FEPS_{i,t}$ is the forecast EPS for company i in year t .

$P_{i,t}$ is the share price of company i at year-end t .

$VOL_{i,t}$ measures the volume of trade for company i in year t . The volume of trade is expressed as the logarithm:

$$\frac{\text{Totaltradedsharesforcompanyiinyeart}}{\text{Totaltradedsharesforcompanyiatyear} - \text{end}t}$$

$TRANS$ is a dummy variable that takes the value of 1 for each observation in the transition year of mandatory IFRS adoption (2004), and zero otherwise.

$ADOPT$ is a dummy variable that takes the value of 1 for each observation in the year of mandatory IFRS adoption (2005), and zero otherwise.

$POST$ is a dummy variable that takes the value of 1 for each observation in the years after mandatory IFRS adoption (2006 and 2007), and zero otherwise.

$LNSIZE_{i,t}$ is the logarithm of the market capitalisation of company i at year-end t .

$LOSS$ is a dummy variable that takes the value of 1 if the EPS for the current year is negative (companies with losses), and zero otherwise. $LOSS$ is a proxy that captures the level of difficulty in forecasting company results. Forecasts for losses are less accurate than forecasts for profits (Brown, 2001).

$TIME$ is the time elapsed from when analysts make annual earnings forecasts until the exact publication date of financial reports.

The first forecast after the fiscal year-end is taken as the forecast date for annual results.

$COV_{i,t}$ measures financial analyst following by the number of analysts making forecasts for company i in year t .

$CHEPS_{i,t}$ is the absolute value of the difference between the EPS of company i in the current year (t) and the EPS in the previous year ($t - 1$), deflated by the share price at year-end t , that is, $CHEPS_{i,t} = \frac{|EPS_{i,t} - EPS_{i,t-1}|}{P_{i,t}}$. This variable measures changes in earnings that are due to factors unrelated to IFRS. It is a proxy factor for the level of difficulty in forecasting company results. Lang and Lundholm (1996) suggest that there is less accuracy in EPS forecasting when there are significant changes in earnings.

To facilitate comparison with the other variables, the variables AFE and $CHEPS$ have been deflated by the share price (Byard et al., 2011; Lang & Lundholm, 1996).

The expected relationship is that CL companies provide more data than NCL companies given their larger size and greater financial analyst following. In this respect, the improvement in the uniformity and comprehensibility of the financial data produced by Spanish companies that adopted IFRS is also expected to have a more significant impact on NCL than on CL companies.

Consequently, as of 2005, new standards were established for the presentation of financial data by NCL Spanish companies. A scenario that could be expected to lead to a reduction in financial analysts' earnings forecast errors and an increase in volume of trade, which is more pronounced in relation to NCL company securities.

The explanatory variables include: $LNSIZE$, which measures size via stock market capitalisation; $CHEPS$, which captures changes in the figure of year-on-year profits and $LOSS$, which is a dummy variable for companies with losses (the latter two are proxies for the level of difficulty in forecasting company results). We also control for the time elapsed from when analysts make annual earnings forecasts until the exact publication date of financial reports ($TIME$). The closer forecasts are made to the date of publication, the more accurate they are and, consequently, forecasting errors are reduced (Brown, Taylor, & Walter, 1999).

Panels A and B of Table 4 show the Spearman correlation for the variables used in the analysis, differentiating between CL and NCL companies, respectively. As can be observed, all the explanatory variables show a fairly moderate correlation, indicating that each of the variables captures different data on forecasting errors and volume of trade, with the exception of the correlation between the variables $SIZE$ of the company and $NUMBER$ of analysts following a company. Due to this high degree of correlation (0.8853 for CL companies and 0.7268 for NCL) and in order to control for its effect, we did not directly include the number of analysts following a company, but used the residual not explained by $SIZE$ from the residual of the following regression (Forner & Sanabria, 2010):

$$LOG(\text{Numberofanalysts}) = cte + \delta_0 LOG(\text{size}) + e \quad (3)$$

5. Results

5.1. Descriptive analysis

The summary of the descriptive statistics of the variables used in our regression model are shown in Table 5: CL companies (Panel A), and NCL companies (Panel B). The mean coefficient of variation for inter-annual accounting results is 2.08% for CL companies and 4.89% for NCL companies. The mean number of analysts following a company is 17.41 for CL companies and 10.56 for NCL companies. The interval of time from when analysts forecast annual earnings until the publication date of financial reports is similar for the two groups of companies (51.34 and 52.15 days, respectively). In terms

Table 4
Spearman correlation for variables in the multivariate regression analysis.

Panel A. CL companies						
	LNSIZE	TIME	CHEPS	COV	AFE	VOL
LNSIZE	1					
TIME	-0.2839 (0.0097)**	1				
CHEPS	-0.1174 (0.2931)	0.0172 (0.8778)	1			
COV	0.8853 (0.0000)***	-0.1083 (0.3325)	-0.0107 (0.9239)	1		
AFE	-0.1047 (0.3488)	-0.0228 (0.8382)	0.5065 (0.0000)***	-0.0710 (0.5259)	1	
VOL	0.6084 (0.0000)***	0.1613 (0.1475)	0.2189 (0.0481)*	0.7289 (0.0000)***	0.0354 (0.7515)	1
Panel B. NCL companies						
	LNSIZE	TIME	CHEPS	COV	AFE	VOL
LNSIZE	1					
TIME	-0.2566 (0.0000)***	1				
CHEPS	-0.1390 (0.0247)*	0.0293 (0.6365)	1			
COV	0.7268 (0.0000)***	-0.2019 (0.0010)**	-0.1048 (0.0908)*	1		
AFE	-0.0970 (0.1177)	0.0353 (0.5700)	0.6887 (0.0000)***	-0.0989 (0.1107)	1	
VOL	0.1324 (0.0324)*	-0.0090 (0.8847)	0.0362 (0.5597)	0.3620 (0.0000)***	0.0649 (0.2958)	1

LNSIZE: logarithm of market capitalisation of company *i* at year-end *t*; TIME: time elapsed from when analysts make annual earnings forecasts until the exact date of publication of financial reports; CHEPS: absolute value of the difference between the EPS of company *i* in the current year (*t*) and the EPS in the previous year (*t* - 1), deflated by the share price at year-end *t*; COV: number of analysts making forecasts for company *i* in year *t*; AFE: absolute analysts' earnings forecast error for company *i* in year *t*, deflated by the share price at year-end *t*; VOL: volume of trade for company *i* in year *t*.

***, **, * = statistically significant at 1%, 5% and 10%, respectively.

Table 5
Descriptive statistics of explanatory variables in the regression model.

	Mean	Median	Max	Min	SD	Skewness
Panel A. CL companies (N = 84)						
LNSIZE	8.2390	8.0391	11.1396	4.5008	1.9058	-0.1905
TIME	51.3414	55.0000	62.0000	17.0000	10.9839	-1.7488
CHEPS	0.0208	0.0118	0.1402	0.0003	0.0269	2.7706
COV	17.4146	16.5000	45.0000	2.0000	11.5715	0.4153
AFE	0.0121	0.0065	0.1373	9.65E-05	0.0199	4.2102
VOL	3.0049	3.1217	4.2814	1.7244	0.4421	-0.4495
Panel B. NCL Companies (N = 285)						
LNSIZE	7.2805	7.4481	11.0948	3.8722	1.5058	-0.0781
TIME	52.1494	57.0000	90.0000	6.0000	12.3318	-1.5720
CHEPS	0.0489	0.0144	0.8958	0.0003	0.1246	5.4354
COV	10.5632	9.0000	33.0000	2.0000	7.1828	0.7749
AFE	0.0191	0.0052	0.3526	9.65E-05	0.0482	5.4153
VOL	2.7868	2.8458	3.9349	1.2652	0.4440	-0.4528

The descriptive statistics of the variables used in the study for CL (Panel A) and NCL companies (Panel B) are shown above. LNSIZE: logarithm of market capitalisation of company *i* at year-end *t*, in millions of euros; TIME: time elapsed from when analysts make annual earnings forecast until the exact date of publication of financial reports; CHEPS: absolute value of the difference between the EPS of company *i* in the current year (*t*) and the EPS in the previous year (*t* - 1), deflated by the share price at year-end *t*; COV number of analysts making forecasts for company *i* in year *t*; AFE: absolute analysts' earnings forecast error for company *i* in year *t*, deflated by the share price at year-end *t*; VOL: volume of trade for company *i* in year *t*; N: number of observations.

of volume of trade, the mean value is lower in NCL companies (2.78) than in CL companies (3.00).

Table 6 shows the evolution of the descriptive statistics of the dependent variables (VOL and AFE) in the different phases of the period analysed. As Panel A shows, the volume of trade is higher and the forecast error is lower for CL companies than for NCL companies

Table 6
Descriptive statistics of the dependent variables by time period.

Panel A. PRE-IFRS period				
	CL (N = 17)		NCL (N = 49)	
	Mean	Median	Mean	Median
VOL	2.9435	3.1273	2.6553	2.7131
AFE	0.0086	0.0069	0.0174	0.0050
Panel B. POST-IFRS period				
	CL (N = 33)		NCL (N = 132)	
	Mean	Median	Mean	Median
VOL	3.0719	3.1583	2.8925	2.9175
AFE	0.0100	0.0060	0.0161	0.0063
Panel C. Univariate analysis. Difference between means and medians test (PRE-POST)				
	CL		NCL	
	<i>p</i> (<i>t</i>)	<i>p</i> (<i>z</i>)	<i>p</i> (<i>t</i>)	<i>p</i> (<i>z</i>)
VOL	0.3943	0.1226	0.0018**	0.0022**
AFE	0.6225	0.8218	0.8673	0.2318

Panel A shows the descriptive statistics of the dependent variables (VOL and AFE) for CL and NCL companies for the period prior to IFRS adoption (2004). VOL: volume of trade for company *i* in year *t*; AFE: absolute forecast error for company *i* in year *t*, deflated by the share price at year-end *t*. Panel B shows the descriptive statistics of the dependent variables (VOL and AFE) for CL and NCL companies for the period after IFRS adoption (2006 and 2007).

Panel C shows the difference between means test *p*(*t*) and medians test *p*(*z*) for the dependent variables VOL and AFE.

N: number of observations.

p(*t*) = *p*-value Welch's unequal variances *t*-test.

p(*z*) = *p*-value Wilcoxon signed-rank test.

***, **, * = statistically significant at 1%, 5% and 10%, respectively.

in the pre-IFRS period. The same trend can be observed in Panel B for the post-IFRS period for the dependent variables analysed.

To test whether there are significant differences between the dependent variables before and after adopting IFRS we performed a univariate analysis (Table 6, Panel C). The results show that the mean (median) values for trading volume of NCL Spanish companies are significantly higher in the post-IFRS adoption years than in previous years. As regards the forecast error variable, there are no significant differences for CL companies or NCL companies between the period before and after adopting IFRS.

5.2. Impact of IFRS on financial analysts' forecast error in CL and NCL companies

Table 7 shows the results of the regression analysis estimate for CL (Panel A) and NCL (Panel B) companies, using financial analysts' earnings forecast error as a dependent variable. The results show that the coefficient associated with the variable POST is negative for both types of companies, thus confirming that the forecast error for the post-IFRS adoption period is lower for both CL and NCL companies. However, it is only statistically significant for NCL companies (*p*-value = 0.0378). It should be noted that the results obtained support the relationship stated in hypothesis H1.

The results suggest that CL companies are less sensitive to changes in the financial data environment due to the adoption of IFRS. In general, CL companies disseminate more business data, are followed more by analysts, and are subject to greater control by supervisory bodies. As a result, we detect no significant improvement in analysts' earnings forecast error.

However, when NCL companies begin to use IFRS instead of Spanish accounting standards greater accuracy in earnings forecasts is observed. The preparation of financial reports in the

Table 7
Multivariate regression analysis of the effect of mandatory IFRS adoption on financial analysts' earnings forecast errors.

	Coefficient	SD	t-statistic	p-value
<i>Panel A: CL companies</i>				
Constant	0.0326	0.0148	2.2032	0.0307
TRANS	-0.0001	0.0053	-0.0323	0.9743
ADOPT	0.0046	0.0054	0.8377	0.4049
POST	-0.0011	0.0049	-0.2283	0.8200
LNSIZE (-)	0.0005	0.0009	0.5381	0.5921
LOSS (+)	0.0790	0.0119	6.6327	0.0000***
TIME (+)	-0.0001	0.0001	-0.9602	0.3400
COV (-)	0.0046	0.0044	1.0434	0.3001
CHEPS (+)	0.0043	0.0016	2.6075	0.0110*
Adjusted R ²	41.28%	F-statistic	8.20	
<i>Panel B: NCL companies</i>				
Constant	0.1084	0.0223	4.8586	0.0000
TRANS	-0.0102	0.0090	-1.1275	0.2605
ADOPT	-0.0105	0.0089	-1.1817	0.2383
POST	-0.0163	0.0078	-2.0869	0.0378*
LNSIZE (-)	-0.0021	0.0019	-1.1224	0.2626
LOSS (+)	0.0131	0.0101	1.2988	0.1951
TIME (+)	6.71E-05	0.0002	0.2890	0.7727
COV (-)	-0.0110	0.0051	-2.1580	0.0318*
CHEPS (+)	0.0160	0.0018	8.7110	0.0000***
Adjusted R ²	24.60%	F-statistic	12.50	

***, **, * = statistically significant at 1%, 5% and 10%, respectively.

The following model was estimated:

$$AFE_{i,t} = \beta_0 + \beta_1 TRANS + \beta_2 ADOPT + \beta_3 POST + \beta_4 LNSIZE_{i,t} + \beta_5 LOSS + \beta_6 TIME + \beta_7 COV_{i,t} + \beta_8 CHEPS_{i,t}$$

AFE: absolute analysts' earnings forecast error for company *i* in year *t*, deflated by the share price at year-end *t*; TRANS: dummy variable that takes the value of 1 for each observation in the year of the transition to mandatory IFRS adoption (year 2004), and zero otherwise; ADOPT: dummy variable that takes the value of 1 for each observation in the year of mandatory IFRS adoption (2005), and zero otherwise; POST: dummy variable that takes the value of 1 for each observation in the years after mandatory IFRS adoption (2006 and 2007), and zero otherwise; LNSIZE: logarithm of the market capitalisation of company *i* at year-end *t*; LOSS: dummy variable that takes the value of 1 if the EPS for the current year is negative (companies with losses), and zero otherwise; TIME: the time elapsed from when analysts make annual earnings forecasts until the exact publication date of financial reports; COV: proxy for financial analyst following measured by the residual not explained by size; CHEPS: absolute value of the difference between the EPS of company *i* in the current year (*t*) and the EPS in the previous year (*t* - 1), deflated by the share price at year-end *t*.

framework of more uniform regulatory standards has led to a significant change in the usefulness of the data presented by NCL Spanish companies as perceived by economic agents. The possibility of being able to interpret data more easily could increase financial analysts' interest in following such companies, thereby improving earnings forecasts.

With regard to the other variables, in the case of CL companies (Table 7, Panel A), a positive and significant association is observed between analysts' forecast errors and the variable *LOSS* (*p*-value = 0.0000), and the variable *CHEPS* (*p*-value = 0.0110). This result confirms that forecast error is higher in companies with losses and more significant changes in earnings between two consecutive years, since it is more difficult for these companies to forecast earnings. As regards NCL companies (Table 7, Panel B), analysts' earnings forecast error is lower for those that are followed by a greater number of analysts. Moreover, changes in earnings between two consecutive years is a statistically significant factor in the increase in forecast errors for both types of companies.

5.3. Impact of IFRS on the volume of trade of CL and NCL companies

To test the impact of IFRS on the volume of traded securities of listed Spanish companies, we performed a regression model (2). The results are presented in Table 8 (Panel A for CL companies and Panel B for NCL companies).

Table 8
Multivariate regression analysis of the effect of mandatory IFRS adoption on volume of trade.

	Coefficient	SD	t-statistic	p-value
<i>Panel A: CL companies</i>				
Constant	2.1832	0.2072	10.5318	0.0000
TRANS	0.0692	0.1102	0.6285	0.5316
ADOPT	-0.0091	0.1123	-0.0818	0.9350
POST	0.1588	0.1001	1.5851	0.1172
LNSIZE (-)	0.1494	0.0192	7.7666	0.0000***
LOSS (+)	-0.0242	0.2432	-0.0996	0.9209
COV (+)	0.3636	0.0908	4.0023	0.0001***
CHEPS (+)	0.1140	0.0340	3.3490	0.0013**
Adjusted R ²	50.70%	F-Statistic	12.90	
<i>Panel B: NCL companies</i>				
Constant	2.3647	0.1423	16.6095	0.0000
TRANS	0.0634	0.0817	0.7768	0.4380
ADOPT	0.1741	0.0803	2.1682	0.0311*
POST	0.3678	0.0697	5.2751	0.0000***
LNSIZE (-)	0.0329	0.0163	2.0112	0.0454*
LOSS (+)	0.1361	0.0965	1.4105	0.1596
COV (+)	0.3732	0.0462	8.0692	0.0000***
CHEPS (+)	0.0092	0.0164	0.5588	0.5768
Adjusted R ²	24.88%	F-Statistic	13.30	

***, **, * = statistically significant at 1%, 5% and 10%, respectively.

The following model was estimated:

$$VOL_{i,t} = \beta_0 + \beta_1 TRANS + \beta_2 ADOPT + \beta_3 POST + \beta_4 LNSIZE_{i,t} + \beta_5 LOSS + \beta_6 COV_{i,t} + \beta_7 CHEPS_{i,t}$$

VOL measures the volume of trade for company *i* in year *t*. while the explanatory variables are the same as those described in Table 7.

In this case, the results show that mandatory IFRS adoption has a positive effect on volume of trade on the Spanish capital market. However, the effect is only observed for NCL companies in the year IFRS was adopted and later periods, as the coefficients were 0.1741 and 0.3678 with a 10% and 1% level of significance, respectively (Table 8, Panel B). Consequently, we can conclude that the increase in trade is especially relevant during the post-IFRS adoption period. In this respect, the CL companies show a positive but not significant increase (Panel A).

The increase in volume of trade for NCL companies may be due to an increase in investments by both domestic and international investors. As reported in previous studies, IFRS adoption leads to greater uniformity and transparency in preparing financial reports, thereby increasing the usefulness of the data presented to users. In this regard, by adopting international standards, domestic investors have less incentives to seek private data than publicly available data. In turn, this reduces information asymmetries and increases liquidity (Abad et al., 2018). Spanish companies presenting financial reports using IFRS make their data more understandable for international investors, which increases market access and facilitates the entry of new capital, thus leading to an increase in volume of trade.

In summary, IFRS adoption has resulted in the dissemination of more uniform financial data and reduced interpreting costs for investors, which has significantly increased incentives to make new investments in the Spanish capital market. These results are consistent with hypothesis H2.

6. Sensitivity analysis

To test the robustness of the results, we performed several alternative analyses that enabled us to confirm our previous findings on the effect of IFRS adoption on financial analysts' earnings forecast errors and volume of trade for CL and NCL companies.

First, we repeated the regression analysis performed in the previous section for the entire sample, but now with a dummy variable that enabled us to differentiate between CL and NCL companies. As the results in Table 9 confirm, mandatory IFRS adoption produces a

Table 9
Sensitivity analysis.

	Coefficient	SD	t-statistic	p-value
<i>Panel A: AFE</i>				
Constant	7.0943	1.3562	0.523	0.6012
TRANS	-6.3403	5.7953	-1.094	0.2746
ADOPT	3.8244	5.7573	0.066	0.9471
POST	-5.5663	5.0973	-1.092	0.2756
LNSIZE (-)	-1.3824	1.1643	-0.119	0.9055
LOSS (+)	3.0013	7.2053	0.417	0.6772
TIME (+)	5.8865	1.5294	0.385	0.7005
COV (+)	-6.3443	3.4743	-1.826	0.0687*
CHEPS (+)	2.7491	1.5572	17.658	0.0000***
CROSS	1.0643	4.2873	0.248	0.8042
Adjusted R ²	49.32%	F-Statistic	40.47	
<i>Panel B: VOL</i>				
Constant	2.0912	0.1694	12.340	0.0000***
TRANS	0.0659	0.0682	0.966	0.3349
ADOPT	0.1490	0.0676	2.203	0.0283*
POST	0.3211	0.0596	5.382	0.0000***
LNSIZE (-)	0.0739	0.0135	5.464	0.0000***
LOSS (+)	0.1140	0.0893	1.277	0.2024
TIME (+)	0.0019	0.0017	1.080	0.2808
COV (+)	0.3803	0.0415	9.159	0.0000***
CHEPS (+)	0.4615	0.1897	2.433	0.0155*
CROSS	-0.1582	0.0496	-3.189	0.0015**
Adjusted R ²	31.04%	F-Statistic	18.10	

***, **, * = statistically significant at 1%, 5% and 10%, respectively.
The results of the regression models are shown below. The differentiation between CL and NCL companies is achieved by including a dummy, where the variable CL takes the value of 1 and the variable NCL takes the value of zero. The dependent and explanatory variables are the same as in Tables 7 and 8. The estimated models are as follows:

$$AFE_{i,t} = \beta_0 + \beta_1 TRANS_{i,t} + \beta_2 ADOPT_{i,t} + \beta_3 POST_{i,t} + \beta_4 TIME_{i,t} + \beta_5 LNSIZE_{i,t} + \beta_6 LOSS_{i,t} + \beta_7 COV_{i,t} + \beta_8 CHEPS_{i,t} + \beta_9 CL_{i,t}$$

$$VOL_{i,t} = \beta_0 + \beta_1 TRANS_{i,t} + \beta_2 ADOPT_{i,t} + \beta_3 POST_{i,t} + \beta_4 TIME_{i,t} + \beta_5 LNSIZE_{i,t} + \beta_6 LOSS_{i,t} + \beta_7 COV_{i,t} + \beta_8 CHEPS_{i,t} + \beta_9 CL_{i,t}$$

higher increase in volume of trade for NCL companies. A significant negative coefficient is observed for CL companies, which leads us to conclude that the increase in volume of trade in CL companies is lower than that of NCL companies. The effect on volume of trade for NCL companies is shown in the intercept model.

We repeated the regression analysis performed in the study using several alternative controls.

First, we excluded the first year of IFRS adoption (2005) to eliminate effects that could be attributed to the transition year, as argued by Brochet, Jagolinzer, and Riedl (2013). Possible effects include the likelihood that companies may have greater incentives to disclose more data in the year of IFRS adoption or that they may be subject to greater controls by investors and regulators. The results obtained by excluding the year of adoption are robust.

Second, the analysis was repeated by differentiating the POST period in two different variables: 2006 and 2007. The results did not change.

Third, numerous studies in the literature suggest that certain characteristics of firms, such as being listed or not on the Ixex 35, could be regarded as proxies of the quality of the disseminated data and level of information asymmetry, both of which have an influence on trading activity. Therefore, the analysis in the previous section was repeated, controlling for the effect of companies being listed or not on the aforementioned stock exchange index. The results show an increase in the trading of securities for NCL companies not listed on the Ixex 35. This result is in line with previous results, and shows that the effect on trading is significantly positive for companies with fewer incentives to disclose relevant data prior to adopting IFRS.

Finally, additional evidence on the impact of IFRS is also provided by excluding financial entities from the sample. The results were as robust as those obtained in the previous section.

All the analyses provided additional evidence to confirm the previous results. The evidence reaffirms the significant effect of the transition to IFRS in improving financial analysts' earnings forecasts and increasing investments in NCL Spanish companies.

7. Conclusions

Despite the extensive literature on CL companies, few studies have compared the accounting and financial behaviour of CL and NCL companies outside the US capital market.

Our analysis reveals that financial analysts' earnings forecast errors were reduced in NCL companies following the adoption of IFRS. This result indicates that the preparation of financial reports in a more uniform regulatory environment has facilitated the interpretation of data for financial analysts, thereby improving earnings forecasts.

It is important to remember that the accounting data provided by Spanish companies is a key aspect for investors in investment decision-making. Consequently, how data is prepared is a crucial factor in the correct interpretation of a company's economic and financial situation and, as such, is the cornerstone upon which such investments are made.

In this regard, this study reveals a significant increase in volume of trade of securities after mandatory IFRS adoption in Spanish listed companies. This increase in trade occurs solely in NCL companies which had previously used domestic accounting standards only.

In light of the results obtained, we can conclude that IFRS adoption has had a positive effect on NCL companies given the improvement in the usefulness of financial data for external users. In this international regulatory environment, financial analysts' earnings forecasts are more accurate, data interpreting costs are lower, and investor confidence is higher, thus leading to an increase in new investments. However, these results are not evident in CL companies.

A possible limitation of our study could be the small sample size due to the substantial decrease in the number of observations since many companies did not provide the data needed to test the hypotheses. However, it should also be noted that by only using data up to and including 2007, our results isolate the impact of the financial crisis of 2008 and subsequent years.

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