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FINANCE

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Adopción de IFRS en una economía emergente: El caso de Chile

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Abstract

Purpose – The purpose of this paper is to analyze the impact triggered by adopting International Financial Reporting Standards (IFRS) in South America. In order to do this, the case of Chile is considered, as it was the first country in the region to adopt IFRS in full form from 2009.

Design/methodology/approach – The authors analyze a sample of 43 Chilean companies. The analysis has two stages. First, the authors analyze if the adoption of IFRS in Chile produced a statistically significant change in the main financial indicators. Then, the authors analyze the market reaction to the announcement of the adoption and implementation of IFRS, by doing an event study.

Findings – The authors found that adopting IFRS in Chile produced a statistically significant change in the main financial indicators, except for in leverage and Price-Earnings Ratios. As for the main accounts of the financial statements, the authors found significant differences, with the exception of inventories and current assets. However, after assessing the market reaction to the announcement of the adoption and implementation of IFRS, by studying the events, the authors report neither reward nor punishment by the market.

Originality/value – This paper pioneers the analysis of the impact triggered by adopting IFRS in South America. The authors results apply not only to Chile but also to a number of South American countries since many of these countries share similar characteristics with Chile.

Keywords IFRS, Financial indicators, Event study
Paper type Research paper

JEL Classification — C30, C33, G15, G32

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Resumen

Propósito – Nosotros analizamos el impacto provocado por la adopción de las Normas Internacionales de Información Financiera (IFRS) en América del Sur. Para ello consideramos a Chile, porque fue el primer país de la región en adoptar IFRS en forma completa a partir de 2009.

Diseño/metodología/enfoque – Nosotros analizamos una muestra de 43 empresas chilenas. Nuestro análisis tiene dos etapas. En primer lugar, analizamos si la adopción de IFRS en Chile produjo un cambio estadísticamente significativo en los principales indicadores financieros. Luego, analizamos la reacción del mercado ante el anuncio de la adopción IFRS, mediante un estudio de eventos.

Resultados – Encontramos que la adopción de IFRS en Chile produjo un cambio estadísticamente significativo en los principales indicadores financieros, a excepción de los ratios de apalancamiento y precio-beneficio. Además, encontramos diferencias significativas en las cuentas de los estados financieros, con la excepción de inventarios y activos circulantes. Por otra parte, después de evaluar la reacción del mercado ante el anuncio de la adopción de IFRS, mediante un estudio de eventos, no encontramos un premio ni un castigo por parte del mercado.

Originalidad/valor – Somos pioneros en analizar el impacto provocado por la adopción de IFRS en América del Sur. Nuestros resultados se aplican no sólo a Chile, sino también a una serie de países de América del Sur, ya que muchos de estos países tienen con Chile similares características.

Palabras clave IFRS, Estudio de eventos, Índices financieros

Tipo de papel Trabajo de investigación

1. Introduction

From the various processes that have been implemented in adopting International Financial Reporting Standards (IFRS) throughout the world, there have been a number of studies researching the differences between local accounting standards and IFRS. Additionally, these studies show how, among other factors, adoption of international accounting has impacted the results of the company, the economy, and the development of the local country. In this context, studies have been focussed mainly on inquiring if adopting IFRS has had an impact on the main financial indicators (Jarva and Lantto, 2010; Lantto and Sahlström, 2009) and if the market rewards this type of initiative (Armstrong *et al.*, 2010). These studies have focussed mainly on European and Asian economies, and, as such, there is scarce evidence for South America.

The object of our work is to investigate how the first adoption of IFRS in South America impacts the financial indicators and if the market rewards this adoption. Thus, our study is based on Chile, as it was the first South American country to fully adopt IFRS.

This research investigates the impact of adopting IFRS on the key financial indicators in Chile. In order to do so, we first built a trustworthy accounting database with Chilean accounting standards and IFRS for the same period. Then, using the created database, we analyzed the changes in the main financial ratios in order to finally investigate the main reasons for the differences found from the perspective of the IFRS compared to the local accounting standards. To inquire if the market rewarded adopting IFRS, we carried out an event study including several dates around the process of adopting IFRS in Chile.

Primarily, the results show important differences in the main financial ratios before and after adopting IFRS. In this context, because Chile was the first country to adopt IFRS in South America, the differences in the financial ratios can be evaluated and determined, which may be objectively associated with the change in rule. In this way, the Chilean experience could guide countries that have not yet adopted the standards to know where relevant fluctuations could take place in their financial information. Second, we did not find relevant evidence for whether the market rewarded this adoption. As such, the empirical evidence, mainly from Europe, suggests that companies that have

implemented IFRS show a substantial increase in consumer confidence in the companies, in their internal communication, and they also deliver greater transparency to capital markets (Barth *et al.*, 2006), which suggests a reward for adopting IFRS. However, one should not ignore the fact that whether a new accounting system is adopted or not in a country will depend on the legal and institutional environment of the firms (Ball *et al.*, 2000; La Porta *et al.*, 1998), and the specific characteristics of the country's corporate systems – market orientation, ownership structure, among other factors (La Porta *et al.*, 1999). In this context, Chile is a country that has high-ownership concentration and a civil law system (La Porta *et al.*, 1997, 1998). This type of law entails low-legal protection for investors compared to a common law system (Bianco and Casavola, 1999; La Porta *et al.*, 1997, 1998; Volpin, 2002). These characteristics differ from those of developed countries and emerging economies where the literature focusses on studying the impact of adopting IFRS, and it could be inferred, a priori, that adopting IFRS in Chile would be rewarding, providing more quality and transparency in financial information. However, Chile has carried out several changes in regulations that tend toward improving market liquidity, competence, efficiency, and transparency. The first change was the enactment of Law No. 19,705 or public takeover bid on share, or as it is known in Spanish *Oferta Pública de Adquisición de Acciones* (OPAS), which equated the rights of the minority and majority shareholders of public corporations. Later, in 2001, the first capital market reform was enacted as Law No. 19,769, which was considered a necessary step to strengthen the Chilean financial sector. Notwithstanding, the benefits contributed by the OPAS law and the law amending the capital market (MKI), a new reform was necessary, and Law No. 20,190 (MKII), was passed on June 5, 2007, with the objective of proposing an array of legal initiatives and rules which tended toward developing the venture capital industry, increasing markets competitiveness, and strengthening the regulation capacity. In 2009, the third capital market reform (MKIII) took effect, which had the objective of delivering more liquidity and depth to the capital market, increasing the financial market to ensure access to the bank financial system for a broader universe of agents, and facilitating the integration of Chilean capital markets, introducing incentives for foreign investors. This progress could counterbalance the problems of ownership concentration and the type of legal system, diluting the expected reward of delivering more quality transparency in financial market information by adopting IFRS.

Our work contributes to the financial literature by providing more empirical evidence on the effect of adopting IFRS in an emerging region, where studies in this area are incipient. Furthermore, we report evidence of a significant impact on financial indicators that help guide South American countries that have not yet adopted the practice. Finally, we did not find relevant evidence of whether the market rewarded this adoption.

This study is organized as follows: Section 2 develops the conceptual framework of our study. Section 3 describes the sample and the methodology used. Section 4 describes event study. Section 5 analyzes the main results. Finally, Section 6 summarizes the main conclusions.

2. Conceptual framework

2.1 Chile's adoption of the IFRS

In order to standardize the worldwide accounting standards, in June 1973, the first meeting of the International Accounting Standard Committee (IASC) was held in London. Later, in 1974, the committee issued its first report: The International Accounting Standards (IAS No. 1), which referred to the disclosure of accounting policies. This launched a global standardization process of financial and accounting information known as the IFRS.

In Europe, the European Commission of IASC determined that all the companies that were registered on European Union (EU) stock markets should begin to use IFRS for their consolidated financial statements as of January 1, 2005.

In Latin America, the process of adoption has been not been uniform. Some countries such as Peru have adapted IFRS locally, and others, such as Colombia, began to apply to Group 1[1] in 2013, and full adoption should take place in 2015. In Chile, the process of adoption was approved by the IDB in 2002. The organism responsible for its execution was the Chilean Association of Accountants (Colegio de Contadores de Chile AG). This project involved the commitment of the superintendence of securities and insurance (SVS).

In May 2005, SVS agreed with the Chilean Association of Accountants, in that companies regulated by SVS should adopt IFRS. In May 2006, project First-IFRS was approved, which supported the adoption process, beginning the undertaking in July of that year. Formally, on October 16, 2006, circular 368 was issued, establishing that entities issuing public offers should adopt the international rule as of January 1, 2009. In February 2007, circular 384 was issued, delivering supporting information, and in August of that year, SVS issued an adoption calendar of the IFRS norms for entities regulated by them. This calendar established that publicly traded corporations with over 25 percent of market presence were required to present their financial statements under the international norm as of 2009. It is important to state that IFRS 1 requires the company to provide two years of financial statements to ensure it meets the qualitative characteristic of information comparability; therefore, the first companies to apply the international norm in full in Chile, presented in 2008 and 2009.

2.2 IFRS and its impact on financial ratios

There are several studies that research whether or not adopting IFRS caused a change in measuring certain financial accounts and indicators. O'Connell and Sullivan (2008) researched the impact of mandatory conversion to IFRS on the net income of the largest EU companies, finding an important increase in the net income of 2004. Only 12 percent of the surveyed companies experienced decline in net income due to the conversion to IFRS. Jarva and Lantto (2010), for a sample of Finnish companies, with financial statements of 2007, reported that applying IFRS increased revenues, reduced equity, and increased liabilities. Enoch (2012) reported an important relationship between adopting IFRS and direct foreign investment in Nigeria, stating that Nigerian companies adopting IFRS would be able to generate greater funds from foreign sources. Agca and Aktas (2007) found that the financial indicators liquidity ratio and asset turnover suffered statistically significant changes for a sample of companies in Turkey listed on the Istanbul Stock Exchange. Hung and Subramanyam (2007), using a sample of German companies between 1998 and 2002, reported that total assets and net book value of equity, as well as the net income variation, were significantly higher under the IFRS norm than under German accounting rules. With respect to the UK, Latridis (2010) found that the implementation of IFRS in 2004 had a favorable effect on the financial performance of the companies, and Morricone *et al.* (2009), in a study carried out between 1996 and 2006, reported a statistically significant decrease of the value of intangible assets. Lantto and Sahlström (2009) studied the adoption of IFRS in Finland and found that it changed the magnitude of the main financial indicators. In summary, the empirical evidence is clear in stating that adopting IFRS caused significant changes in certain accounts, as well as in the main financial and economic indicators in several countries around the world.

2.3 Market reaction toward adopting IFRS

Studies have analyzed whether or not adopting IFRS has an impact on the stock market. For example, Karamanou and Nishiotis (2005) found abnormal positive return around, and after announcing the adoption of NICs[2], for Austria, Denmark, Germany, South Africa, Switzerland, and Turkey. However, Daske (2006) did not find significant evidence to validate the hypothesis that announcing the change of local accounting norm toward international accounting norm caused an economic benefit for a sample of 735 German companies. Klimczak (2011) found similar results for Poland. Additionally, Hope *et al.* (2006) reported that for countries that already had relatively strong protection mechanisms for investors, the incremental benefit of adopting IFRS was mild. In turn, Perramon and Amat (2006) stated that adopting IFRS in non-financial Spanish companies had diverse effects on the company's profits. Armstrong *et al.* (2010), after studying 16 events related to announcing the adoption of IFRS in 18 European countries and the stock market reactions, found a positive reaction for the companies, before they applied the norm, that had lower quality financial information and in those with mainly asymmetrical information. Moreover, they found a positive reaction in banks with low-quality information before applying IFRS.

In summary, abnormally positive returns have been reported for companies in countries adopting IFRS; however, not all cases are statistically significant. The discrepancies of these results could be attributed mainly to the market structure, the legal systems of the countries and the applied methodology. In this sense, Ball (2006) manifests that adopting IFRS is an economic and political experiment, and only time will tell the pros and cons for investors.

3. Data and methodology

All Chilean public companies presenting financial statements under IFRS in 2009 and under Chilean GAAP[3] were considered simultaneously, without making differences between consolidated and individual financial statements. Out of a total of 160 listed public companies presenting financial statements under IFRS, we were able to build a database for 43 companies with information for the same period. Under local GAAP and IFRS, all the companies were required to deliver their financial statements under IFRS. This was done in order to determine the difference that could be assigned by adopting IFRS.

Under IFRS, assets and liabilities are registered at fair value which causes adjustments in balance sheet figures, direct allocation of some unrealized gains and losses to the Income Statement, and allocation of some other unrealized gains and losses to other comprehensive income. As a result, liquidity and leverage ratios are affected due to balance sheet variations, and coverage ratios are affected due to balance sheet variations and recognition of unrealized gains/losses. The impact of consolidation on ratios is difficult to isolate, as the differences are incorporated or combined in the consolidated figures. Incorporating minority interest in equity also significantly impacts the financial statements, directly affecting profitability and leverage ratios. Other differences affect leverage and profitability ratios, particularly in impairment test procedures applied to long-lived assets. The standards on leases, pensions, and contingencies may report higher levels of liabilities under IFRS, while the standard on share-based payments may require higher expense and equity recognition. Moreover, IFRS requires more information to be disclosed in the corresponding notes on financial statements; providing additional information that is potentially useful but further jeopardizing the comparability of ratios. In summary, we can expect changes in the main ratios but we cannot anticipate the direction of the variations.

Based on the financial information reported in the financial statements, the following financial indices were created: operating profit margin (OPM) (operating income over sales); return on equity (ROE) (earnings before interest over equity); return on assets (ROA) (EBIT over total assets); Quick Ratio (QR) (current assets minus inventories over current liabilities); Current Ratio (CR) (current assets over current liabilities); debt to equity (LEV) (liabilities over equity); and investment in fixed assets (IFA) (fixed assets over total assets). These indicators were selected because they were considered to represent the four key dimensions of financial analysis with the accounting database, which are: performance, leverage, liquidity, and investment. We also studied the Price-Earning Ratio (PER) and the relation between the market value of assets[4] and their book value (ML).

To investigate if the conversion from GAAP to IFRS caused significant changes in financial ratios, we analyzed the differences between them, calculated before and after the conversion from GAAP to IFRS, and we examined if they were statistically significant.

Then, we studied in-depth, which of the IASs caused the differences in the financial ratios. This was done following Lantto and Sahlström (2009) by identifying the IFRS norms that cause greater differences in the items of the financial statements, in order to identify significant changes in the ratios. Then, we computed the restated ratios by adding a specific standard, first, to the numerator of the ratio, then, to the denominator of the ratio, and finally to both. This allows us to explore whether the differences between the ratios are mainly caused by restatements in numerator, denominator, or in both elements. Restated ratios can be expressed as:

$$R_{\mathrm{IFRS/IAS}} = \frac{\mathrm{Numerator}_{\mathrm{GAAP}} + \mathrm{standard}_{\mathrm{IFRS/IAS}}}{\mathrm{Denominator}_{\mathrm{GAAP}} + \mathrm{standard}_{\mathrm{IFRS/IAS}}} \quad (1)$$

We also calculated the differences between the GAAP-based coefficients and the ratios are then updated through a specific IFRS. The differences between the ratios may be expressed as:

$$\mathrm{Differences} = R_{\mathrm{IFRS/IAS}} - R_{\mathrm{GAAP}} \quad (2)$$

As such, we can obtain the differences between the ratios between the local GAAP and the ones obtained under IFRS, and it can then be evaluated if the difference is statistically significant.

4. Event study

In order to observe whether the market reacted to the announcement of adopting IFRS, studies of events were carried out in relation to adopting and implementing IFRS on the following dates:

- October 26, 2005: Regular Registration No. 11,098 issued by SVS informing of the agreement with the Association of Accountants during the process of adopting IFRS;
- October 16, 2006: Circular 368 issued by SVS informing that adopting IFRS is mandatory as of January 1, 2009, except for insurance companies;
- August 28, 2007: the first formal timeframe for adopting IFRS is delivered;
- November 19, 2008: the enforceability of presenting financial statements under international norms is made more flexible;

- May 29, 2009: first company to present financial statements under IFRS (Telefónica); and
- individual adoption of each company (first semester of 2010, corresponding to the first quarter of results).

As was discussed in the introduction, the announcement of IFRS adoption to the market does not necessarily imply an either positive or negative impact on stock prices. This is because, among other reasons, minority stockholders do not really perceive a change in information transparency due to other issues (i.e. lack of adequate supervision from SVS).

5. Results

5.1 Financial ratios

Table I presents the financial ratios for 2009, when different companies changed from local GAAP to IFRS. Panel A reports the financial ratios under local GAAP, Panel B,

Ratio	Mean	Median	SD	Skewness	Kurtosis	Minimum	Maximum
Panel A: financial ratios calculated under local GAAP							
OPM	0.085	0.085	0.277	−4.389	26.174	−1.494	0.570
ROE	0.085	0.071	0.109	0.857	1.566	−0.094	0.445
ROA	0.047	0.035	0.063	1.027	2.132	−0.072	0.264
CR	2.498	2.005	1.510	1.315	1.504	0.601	6.898
QR	1.922	1.702	1.335	1.871	4.197	0.296	6.854
IFA	0.365	0.349	0.229	0.124	−0.607	0.000	0.902
LEV	0.963	0.739	0.699	1.711	5.642	0.123	3.875
PER	16.821	11.878	37.412	2.267	5.852	−28.652	142.737
ML	1.288	1.197	0.353	0.328	−0.294	0.633	2.011
Panel B: financial ratios calculated under IFRS							
OPM	0.032	0.113	0.642	−4.639	25.232	−3.603	0.876
ROE	0.107	0.084	0.228	−2.842	15.471	−1.068	0.508
ROA	0.067	0.053	0.102	−0.446	4.545	−0.319	0.329
CR	2.265	1.670	1.477	1.287	0.916	0.585	5.939
QR	1.759	1.255	1.295	1.714	2.884	0.271	5.901
IFA	0.334	0.315	0.231	0.227	−0.930	0.000	0.829
LEV	0.942	0.767	0.681	1.419	2.412	0.002	3.281
PER	13.812	10.540	22.775	1.823	5.028	−24.146	91.041
ML	1.144	1.116	0.405	−0.265	0.809	0.008	1.891
Differences between ratios calculated under GAAP and IFRS							
OPM	−0.053	0.006	0.564	−5.973	38.860	−3.599	0.826
ROE	0.020	0.027	0.195	−3.531	22.649	−1.066	0.489
ROA	0.020	0.015	0.080	−0.219	10.495	−0.319	0.307
CR	−0.199	−0.091	0.473	−1.453	5.963	−2.131	0.968
QR	−0.141	−0.090	0.417	−0.249	4.679	−1.567	1.196
IFA	−0.034	−0.004	0.134	−3.590	15.137	−0.689	0.123
LEV	−0.047	−0.018	0.203	−0.595	2.327	−0.594	0.465
PER	−2.822	−1.017	31.674	−1.004	12.548	−130.317	103.119
ML	−0.116	−0.054	0.266	−4.976	26.407	−1.499	0.029

Table I.
Descriptive statistics of financial ratios

Notes: OPM, operating profit margin; ROE, return on equity; ROA, return on assets; QR, Quick Ratio; CL, current liquidity; LEV, liability to equity; SD, standard deviation
Source: *Economática*

under IFRS, and Panel C, the difference between both. It is observed that the financial ratios do not follow a normal distribution and there is an important deviation. Therefore, we used non-parametric tests to determine if the differences were statistically significant. We used the median ratio values and financial consignments to test the statistical significance of differences by contrasting the signs for the median with Wilcoxon rank test[5].

The results of Table II (Panel A) indicate that leverage, PER[6] and the IFA do not differ significantly after the convergence. All the rest of the differences are statistically significant. The results show that, after adopting international standards, the OPM increased, ROE increased, as well as ROA. In contrast, the CR and the QR decreased. Moreover, the investment in physical assets also decreased and the market value of assets over book value also decreased. Regarding the non-significant variations, debt increased and the PER decreased.

In general, the results show that the change to IFRS produces positive changes in profitability and negative changes in liquidity and investment; leverage, on the other hand, does not show significant changes.

To research the main reasons for the differences between local GAAP-based and IFRS-based ratios, we first look at the differences between GAAP-based and IFRS-based

	GAAP	IFRS/IAS	Difference	P1	P2
Panel A: financial ratios					
OPM	0.085	0.113	0.006	**	**
ROE	0.071	0.084	0.027	**	***
ROA	0.035	0.053	0.015	***	***
CR	2.005	1.670	−0.091	***	***
QR	1.702	1.255	−0.090	***	***
LEV	0.739	0.767	−0.018		
IFA	0.349	0.315	−0.004	**	
PER	11.878	10.540	−1.017		
ML	1.197	1.116	−0.054	***	***
Panel B: income statement					
Sales	82,573,385	73,905,790	64,345	**	**
Operating profit	3,123,430	4,293,000	67,344	**	***
Net income	1,980,845	4,693,515	159,880	**	***
Panel C: balance sheet					
Assets					
Inventories	10,731,237	3,806,742	–		
Current assets	43,813,018	58,079,766	3,848		
Cash and cash equivalents	1,064,464	5,406,540	2,046,740	***	***
Shareholder's equity and liabilities					
Equity	54,944,414	77,502,815	1,906,940	***	***
Long-term debt	12,793,566	18,707,410	902,163	***	***
Current liabilities	21,187,331	24,789,958	723,395	***	***
Total equity and liabilities	93,586,648	116,622,208	2,529,727	***	***

Notes: P1, probability of sign statistics; P2, probability of Wilcoxon signed-rank; OPM, operating profit margin; ROE, return on equity; ROA, return on assets; QR, Quick Ratio; CR, Current Ratio; LEV, debt to equity; IFA, investment in fixed asset; PER, price earnings ratio; ML, market-to-book value of assets. **,***Significant at the 5 and 1 percent levels, respectively

Source: *Economática*

Table II. Medians of financial ratios and financial statement items (thousands of Chilean pesos)

financial statement items. In the Income Statement (Table II, Panel B) sales decreased, operating profit increased and net income increased. With regard to the balance sheet (Table II, Panel C), there are significant changes in cash and cash equivalent, which increased, in addition to liability and equity, which in general increased. It is interesting to note that IFRS enables considering fixed income investments as equivalent to cash, which would have caused the increase in cash observed in Table II. Those investments would have been previously classified as current assets, which did not have a statistically significant variation as inventories did.

In summary, important changes are observed in the financial ratios, mainly caused by the changes in liabilities and accounts of the Income Statement. This suggests that the IASs that affect these items have an important incidence on new post-IFRS financial ratios.

After ascertaining which of the changes in the financial statement items explain the differences in the financial ratios, we investigated which of the IFRS caused the differences in these ratios. The results are reported in Tables III-V. We studied how each IAS in particular impacted most of the selected ratios, considering the areas that could be assigned to a particular standard, such as the cases of provisions and capital reserves.

For this, and for each ratio studied, changes in the numerator (Panel A), denominator (Panel B), and both (Panel C) for each IAS that impacted a particular ratio were evaluated. This is done for the complete sample (Md1) and a sub-sample that excluded the companies that did not suffer changes (Md2). The number of companies that increase their indicators are reported (+) and those that decrease (–). Finally, the probability of sign statistics (P1) and the probability of Wilcoxon signed-rank statistics (P2) are reported.

Table III shows the results for the performance ratio. In the case of OPM, IAS 18 was analyzed, because it establishes how to register income obtained from the sale of goods, services and interest, taxes, and dividends. In short, it generates a negative variation after adoption (Panel A) for the total sample, as well as for the one that excludes the companies that do not suffer changes. This is consistent if we consider that a fall in sales causes a decrease in the operating income. Therefore, as the numerator declines (operating margin), the ratio also decreases. This may be because the criteria of the international standard to recognize income are more conservative than the local ones, which would cause the income to decrease[7]. IAS 18 establishes that sales, services, and the use of assets by a third party that yields interest, royalties, and dividends, are considered as income. It also regulates the recognition of income by growth of biological assets and/or developing work in progress, and among others, factors that may have had incidence on the decrease of total income registered by the entities. Likewise, the international standard defined that the interest should be recognized using the effective interest rate, royalties in relation to the agreement they are based on, and dividends (when the right to receive them is established). The local standard is allowed to recognize more income since the principle used was accrued income.

In the counterpart (Panel B), the change is in the denominator. In this case the decrease in sales has a positive impact on OPM, because the operating profit would be divided by a lower sales amount, which is indifferent for the purpose of this analysis, as a change in sales would automatically change the operating incomes. Due to the above, changes in the numerator and denominator should be considered together (Panel C), in order to evaluate the global effect of adopting IFRS, the likely consequence

Table III.
Impact of IFRS adoption on performance ratios

	OPM						ROE						ROA					
Norm	Md1	Md2	+	−	P1	P2	Md1	Md2	+	−	P1	P2	Md1	Md2	+	−	P1	P2
Panel A																		
IAS 18	−0.0001	−0.0002	20	21	***	***	−0.0001	−0.0002	20	21	***	***	0.0000	−0.0001	20	16	***	***
Panel B																		
IAS 18	0.0452	0.0460	30	10	***	***												
IAS 2													0.0003	0.0002	40	12	**	***
IAS 16													−0.0002	−0.0004	20	18	***	***
IAS 32							0.0023	0.0030	20	16	**	***						
IAS 39													0.0008	0.0009	18	17	**	**
Panel C																		
IAS 2																		
IAS 16																		
IAS 18	0.0009	0.0010	24	19	***	***												
IAS 18, 32							0.0018	0.0019	24	19	**	***						
All													0.0002	0.0004	21	18	**	**

Notes: Medians of the differences between GAAP and the restated ratios are calculated for all firms (Md1) and by excluding those that do not suffer any effect by the adoption of the standard in question (Md2); P1, probability of sign statistics; P2, probability of Wilcoxon signed-rank statistics; OPM, operating profit margin, ROE, return on equity; ROA, return on assets. **,***Significant at the 5 and 1 percent levels, respectively

Standard	QR Md1	QR Md2	QR +	QR −	QR P1	QR P2	CR Md1	CR Md2	CR +	CR −	CR P1	CR P2
Panel A												
IAS 2	−0.0236	−0.0248	18	12	***	***						
IAS 39	−0.0088	−0.0090	22	20	**	***	−0.0088	−0.0090	22	20	**	***
Panel B												
IAS 37	−0.0348	−0.0004	22	16	**	***	−0.0348	−0.0004	22	16	**	***
IAS 39	−0.0051	−0.0052	26	16	**	**	−0.0051	−0.0052	26	16	**	**
Panel C												
IAS 2, 37	0.0414	0.0445	18	12	***	***						
IAS 37, 39							0.1610	0.0172	29	13	***	***
IAS 39	0.1610	0.0172	29	13	***	***	0.1610	0.0172	29	13	***	***
All	−0.0145	−0.0148	17	13	***	***	−0.0035	−0.0040	21	19	***	***

Table IV.
Impact of IFRS adoption on liquidity ratios

Notes: Medians of the differences between GAAP and the restated ratios are calculated for all firms (Md1) and by excluding those that do not suffer any effect by the adoption of the standard in question (Md2); P1, probability of sign statistics; P2, probability of Wilcoxon signed-rank statistics; QR, Quick Ratio; CR, Current Ratio. **,***Significant at the 5 and 1 percent levels, respectively

Standard	LEV Md1	LEV Md2	LEV +	LEV −	LEV P1	LEV P2	IFA Md1	IFA Md2	IFA +	IFA −	IFA P1	IFA P2
Panel A												
IAS 16							0.0012	0.0013	20	18	***	***
IAS 37	0.0000	−0.0001	22	16	**	***						
IAS 39	−0.0001	−0.0003	21	14	**	**						
Panel B												
IAS 32	0.0000	0.0001	18	16	**	***						
IAS 39	−0.0001	−0.0002	20	16	**	***	0.0008	0.0009	18	17	**	**
Panel C												
IAS 16, 39							0.0002	0.0003	18	17		
IAS 37, 39	0.0000	−0.0001	18	16	**	***						
IAS 39	0.0000	−0.0001	18	16	**	***						
All	0.0000	0.0001	17	17			0.0002	0.0003	18	17		

Table V.
Impact on IFRS ratios on debt and investment in fixed assets

Notes: Medians of the differences between GAAP and the restated ratios are calculated for all firms (Md1) and by excluding those that do not suffer any effect by the adoption of the standard in question (Md2); P1, probability of sign statistics; P2, probability of Wilcoxon signed-rank statistics; LEV, debt to equity ratio; IFA investment in fixed assets over total assets. **,***Significant at the 5 and 1 percent levels, respectively

being that it will be positive for both samples. In summary, out of a total of 43 companies that are affected by this change, 24 have been impacted positively and 19 negatively.

For ROE, IAS 18 and 32[8] were analyzed. The former has an impact on the numerator (Panel A), and the latter, on the denominator (Panel B), considering that the financial investments that are classified as available for sale have an impact on equity. In the first case, adoption has a negative impact because, at the sales level, it affects the return, while in the second case it has a positive impact; therefore, it is inferred that adjustments were negative in equity. When they are assessed together (Panel C), it is

observed that adopting IFRS has a positive impact in 24 companies. This would indicate that IFRS would make sales decrease and would increase equity. It must be noted that when financial statements are presented for the first time under international standards, the difference due to the value of different items of the balance sheet is reflected in the equity, which results in a great variation of this component in the financial statement that is the pillar of ROE.

Finally, for the case of ROA, IAS 2, 16, 18, and 39[9] were used. Panel A shows that, consistent with the previous results, a decrease in sales has a negative impact on the performance indexes. However, the negative impact of IAS 2 reflects that the decrease in inventories causes a positive impact on ROA (Panel B). For the same reasons, in relation to IAS 16, we found that the increase of fixed assets causes a decrease in ROA. Finally, the positive change in IAS 39 has a positive impact on ROA, due to the positive revaluation of financial assets. It is important to note that the changes are statistically significant. In summary, adopting IFRS causes a positive change in the performance indicators OPM, ROE, and ROA. This suggests that the changes in the balance sheet are more important than those in the Income Statement.

In terms of first adoption, companies had the unique opportunity to present their assets according to a fair market value, being able to recognize losses due to obsolescence or initial overvaluation in equity and not on the Income Statement, which may be done only during the year that the standards are adopted. This situation would support the decrease in equity and non-current assets, and even in inventories.

Table IV shows the results for the ratios of liquidity. For QR, IAS 2, 37[10], and 39 were analyzed. Panel A shows that changes in marketable securities and/or cash and cash equivalent (IAS 39) cause the ratio to decrease in the same way as the changes in inventories (IAS 2). This happens because both items are considered current assets and therefore a decrease in their amounts would cause the indicator to drop. In Panel B, the accounts payable and current liabilities (IAS 39) also cause the ratio to decrease due to the increase of debt. When both effects are assessed together (Panel C), we observe that they cause a positive impact on financial ratios, that is, in spite of the decrease in certain accounts, adopting IFRS causes an increase in liquidity. These results are similar for the CR and are all statistically significant. When all the changes are analyzed together (at the bottom of the table), an important decrease is observed both in the QR and the CR, which is consistent with the results reported in Table II.

Table V shows the results for ratios of debt and investment. For the case of LEV, changes in IAS 32, 37, and 39 are analyzed. Panel A shows that IAS 37 produced negative changes in LEV. This might have been caused by a decrease in provisions of contingent liabilities (IAS 37), or the valuation of liabilities (IAS 39). Also, an increase in the value of investments that are classified as available for sale (IAS 39) caused the equity value to increase, reducing the indicator. Panel B shows that IAS 32 causes a positive change in LEV while IAS 39 causes a negative change. When both IAS 37 and 39 are analyzed together, both convey negative and statistically significant changes in the levels of indebtedness of the companies. When all the changes are considered together, there is no significant difference in the LEV in adopting IFRS.

For the case of IFA, we analyzed IAS 16[11] and 39. Panel A shows that the changes in fixed assets (IAS 16) cause positive changes in the ratio because the total fixed assets are divided by the total assets. This variation was expected, because of the great innovation of the international standard compared to the local one, the former enabling the valuation of assets of property, plants, and equipment according

to their market values, which is forbidden under Chilean GAAP. For the same reason, changes in valuation of financial assets also cause a change in the investment indicator of fixed assets. When the changes of IAS 16 and 39 (Panel C) are assessed together, we do not find statistically significant changes.

5.2 Event study

Table VI presents the event study results. Panel A of Table VI reports the results for the window (−1, +1) days, Panels B and C show the results for the windows (−5, +5) and (−10, +10) days, respectively.

We carried out the analysis using the daily returns for the companies in the sample. Normal returns are obtained by regressions using the market model where the IGPA[12] is used as the proxy for the market index.

The estimation window is over a period of from two months to 30 days of the corresponding event. Abnormal returns (ARs) are calculated by the difference between the actual return and the expected return. Column 1 of Table VI shows the cumulative average abnormal return (CAARs) for each of the windows defined above. The *p*-values are reported in parenthesis under the CAARs. The number of companies used in the analysis is presented in Column 2.

As shown in Column 1, in general there are no significant market reactions during the dates of the events being analyzed. Specifically, for the window (−1, +1), there are no significant abnormal yields at the level of 5 percent. Only CAARs for August 28, 2007 are negative and significantly different from zero at the 10 percent level. For the (−5, +5) window, the result is different at the 5 percent level only for May 29, 2009, while for October 16, 2006, the result is significantly different from zero at the 10 percent level. For the (−10, +10) window, there are no statistically different from zero CAARs.

It is important to note that the *t*-tests were calculated using unadjusted standard error. In this sense, due to the clustering, the hypothesis of independence of ARs is not met. The consequence of the violation of the independence assumption is that the estimate of the standard deviation has a downward bias, and consequently, the statistical test would be too high (Collins and Dent, 1984). In spite of this bias, most of the *t*-tests are not significant; therefore, we do not offer results for adjusted errors. Instead of this, we conducted non-parametric tests due to the small size of the sample (under 30 firms) in some of the events. Thus, Column 3 presents the total number of ARs observed at each specific date. Column 4 presents the number of positive ARs in this window. Column 5 presents the results of a sign test, the first non-parametric test we considered. Under the null hypothesis, the expected proportion of abnormal positive returns is 0.5. With $N+$ the number of abnormal positive returns in the event window and N, the total number of observations, the statistical sign test is given by:

$$\left[\frac{N^{+}}{N}-0.5\right]\frac{N^{0.5}}{0.5}\overset{a}{\sim}N(0.1) \tag{3}$$

As we can see, only two of the tests are significant at the 10 percent level. It is important to note that the sign test performs poorly if the AR distribution is biased, a situation that is common when daily returns are used. Column 6 shows the Shapiro-Wilk normality test. The null hypothesis details that the distribution of ARs is distributed normally. The *p*-value of the test is presented in parenthesis under

Date	(1) CAAR	(2) No. of companies	(3) No. of returns in the window	(4) No. of positive returns in the window	(5) Sign test	(6) Shapiro-Wilk normality test	(7) Asymmetry	(8) Range test
Panel A	*(−1,+1)*							
October 25, 2001	−0.52%	32	105	45.71%	−0.878	0.866	−1.589	0.000
	(0.437)				(0.380)	(0.000)	(0.000)	(1.000)
October 15, 2002	0.10%	29	90	38.89%	−2.108	0.795	0.571	−0.843
	(0.859)				(0.035)	(0.000)	(0.027)	(0.399)
August 27, 2003	−0.67%	37	117	46.15%	−0.832	0.979	−0.242	−1.225
	(0.080)*				(0.405)	(0.074)	(0.278)	(0.221)
November 18, 2004	0.08%	28	84	57.14%	1.309	0.991	−0.105	0.000
	(0.899)				(0.190)	(0.847)	(0.679)	(1.000)
May 28, 2005	1.13%	27	81	51.85%	0.333	0.882	1.228	−1.373
	(0.311)				(0.739)	(0.000)	(0.000)	(0.170)
Individual adoption date	−0.14%	31	93	51.61%	0.311	0.979	0.258	0.707
	(0.682)				(0.756)	(0.152)	(0.285)	(0.479)
Panel B	*(−5,+5)*							
October 25, 2001	−1.45%	32	385	52.47%	0.968	0.926	−0.824	−1.283
	(0.245)				(0.333)	(0.000)	(0.000)	(0.199)
October 15, 2002	2.37%	29	330	46.97%	−1.101	0.305	12.419	−0.163
	(0.054)*				(0.271)	(0.000)	(0.000)	(0.871)
August 27, 2003	0.06%	37	429	46.62%	−1.400	0.612	7.256	−0.100
	(0.967)				(0.161)	(0.000)	(0.000)	(0.920)
November 18, 2004	0.01%	28	308	54.22%	1.481	0.981	−0.237	0.235
	(0.992)				(0.138)	(0.001)	(0.093)	(0.814)
May 28, 2005	2.35%	27	297	48.82%	−0.406	0.864	1.552	−1.805
	(0.039)**				(0.685)	(0.000)	(0.000)	(0.071)
Firm individual adoption date	−0.20%	30	330	48.18%	−0.661	0.958	0.657	0.784
	(0.821)				(0.509)	(0.000)	(0.000)	(0.433)
Panel C	*(−10,+10)*							
October 25, 2001	−2.86%	32	735	51.43%	0.775	0.783	−1.035	−1.315
	(0.183)				(0.439)	(0.000)	(0.000)	(0.188)
October 15, 2002	1.68%	29	630	46.98%	−1.514	0.374	14.184	0.141
	(0.113)				(0.130)	(0.000)	(0.000)	(0.888)
August 27, 2003	−1.62%	37	819	48.35%	−0.943	0.718	5.872	−0.260
	(0.215)				(0.345)	(0.000)	(0.000)	(0.795)
November 18, 2004	0.97%	28	588	53.57%	1.732	0.988	−0.094	0.245
	(0.627)				(0.083)	(0.000)	(0.355)	(0.807)
May 28, 2005	2.65%	27	567	46.91%	−1.470	0.901	1.281	−2.438
	(0.224)				(0.142)	(0.000)	(0.000)	(0.015)
Firm individual adoption date	−1.38%	30	630	47.14%	−1.434	0.967	0.600	0.437
	(0.305)				(0.151)	(0.000)	(0.000)	(0.662)

Notes: *p*-values in ( ) were computed using heteroskedasticity robust standard errors. *,**Significant at the 10 and 5 percent levels, respectively

Table VI. Event study results

the *W* statistic. Column 7 shows asymmetry in the distribution of returns and the *p*-value (in parenthesis) of a test built under the null hypothesis with an asymmetry of zero. These tests provide strong evidence of non-normality of ARs, with strongly biased distributions.

Corrado (1989) developed a non-parametric test of ranges that transforms the possible asymmetry in the distribution of ARs into a normal distribution for the different values of the considered ranges, where the moments, for samples greater than or equal to ten, are similar to those expected from a standard normal distribution[13].

Column 8 shows the results of this range of tests. As we can see, only in one of the cases, May 29, 2009, the null hypothesis can be rejected with abnormal performance at the 5 percent level. These results reinforce those obtained by the parametric tests and provide strong evidence against the existence of ARs for the dates of the events under analysis.

6. Conclusions

As a result of the various methods used in adopting IFRS throughout the world, there have been a number of studies investigating the differences between local accounting standards and IFRS. In general, the literature concludes that these differences impact on key financial ratios and cause different market reactions.

On the first point, in this paper, we consider the work of Lantto and Sahlström (2009) as a basis to investigate whether there was a significant impact on the main financial ratios when adopting IFRS. We found that for financial ratios based on accounting information (under the dimensions of performance and investment), adopting IFRS caused an increase in these ratios, all of them being statistically significant. This suggests that, in addition to improving the financial accounting information, the companies benefitted from adopting IFRS because they showed improvement in their financial indices. However, liquidity ratios decrease significantly. It was also possible to anticipate that many indicators should be analyzed with a different view from the first year of adoption, because several of the adoption effects were reflected in the equity, which is the basis for determining the profitability and liquidity ratios.

Additionally, this research included the event study to determine the stock market response to the announcement of adopting and implementing IFRS. We did not find an economic effect that may be related to the announcement. Only some companies had differences in the stock prices; however, there is no relation and/or similarity in the effects for them. Therefore, the hypothesis of ARs is rejected.

In summary, this paper adds to the literature on the economic consequences of adopting IFRS throughout the world by analyzing its impact on the main financial ratios. The results indicate that adopting IFRS has changed the magnitude of the most important financial ratios of Chilean companies. Future lines of research could be directed toward disaggregating these results with further detail, for example, in certain industrial sectors or markets with more or less financial restriction. At the same time, how IFRS has improved the quality of information that is delivered to the market could be explored, comparatively analyzing countries with different environments (legal, judicial, quality of accountants, ownership concentration, etc.).

Follow-up research is suggested on the main financial ratios to observe how they might change due to the learning process of adequately using the new accounting standard. It is also recommended to contemplate the analysis of the impact on stock prices when significant changes take place in the ratios, as well as expanding the sample in Latin America in order to consider the impact of IFRS in the region. Finally, this work presents some limitations. First, one of the means of measuring accounting information quality is by evaluating the presence of conditional conservatism in profits. In this sense, Jara and Arias (2013) find that conditional conservatism in the profits of Chilean companies is more pronounced under IFRS regulations, suggesting that the use

of IFRS improves the relevance and trustworthiness of the reported accounting information. This leads to some ratios having changed due to this, and is beyond the application of the standard. Second, we did not consider an adjustment due to discretionary accruals, which may affect financial reasoning at the time of adoption. However, as demonstrated in the literature (e.g. Dechow, *et al.*, 1995), the reasons for accounting manipulation are generated by discretional and non-discretional adjustments, which include incentives for management, obtaining loans and opportunities for market transactions. The above may be fostered by a low-regulatory environment, which would imply that by improving accounting standards, the opportunities for manipulation decrease. This would support the need to re-evaluate the financial indicators under the IFRS standards, because they would represent a more objective and real indicator with regard to the companies analyzed in different perspectives. Finally, we should note that 2009 was the first time IFRS was applied; therefore, the companies, as well as the auditors (except for the Big Four)[14], would not be exempt if they were not so precise in applying the rule, as it could have implications in later years. In this regard, in terms of the normative environment, at the date of adopting the international standard by the first Chilean companies, the external audit market was not completely regulated. On January 1, 2010, Law 20,382 of corporate governance entered into force, which made the types of services explicit that audit firms could simultaneously deliver to the same entity or economic group. After the law was applied, it was also decided that external audits of regulated entities could only be performed by SVS registered and authorized companies, eliminating the registration of independent auditors that were authorized until 2009 to sign opinions in audits of regulated entities.

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Notes

1. Security issuers, public interest entities, companies with staff of over 200 employees or total assets of over 30,000 minimum current legal monthly salaries, and companies that meet the requirements established in Decree 2784 of December 28, 2012.
2. Currently known as IFRS.
3. The main differences between IFRS and GAAP are:
   Under local GAAP: assets and liabilities are mainly recorded at monetarily corrected historical costs; its use is limited to certain consignments, such as investments and financial instruments; cautious criteria prevails in the practical application; although Chile is not a hyperinflationary economy (according to IAS 29), for fiscal purposes, the specific monetarily corrected norms of Article 41 of the Law of Income prevail; in practice, the form of a transaction prevails over the economic fund; the disclosures that must be included in financial statements are minor.
   Under IFRS: assets and liabilities are registered in economic terms, including the concept of reasonable value (fair value); reasonable value is present in most consignments; prudential criteria (conservative) is part of the conceptual framework, but it does not prevail; monetary correction is only applied in hyperinflationary economies (IAS 29). In terms of valuing, the

concept of impairment becomes relevant (IAS 36), both when using the cost model or the revaluation model; the economic fund always prevails over form; disclosures required by financial statements are extensive.

4. Market value is defined as the market capitalization plus the financial debt value.
5. Non-parametric tests allow compararison of the median of two related samples with no need to assume a probability distribution.
6. In this case, the sample was reduced from 43 to 32 because of transaction problems that caused the observed prices not to be trustworthy, as well as the presence of extreme values.
7. IAS 18 states that the income of ordinary activities of the sale of goods, services, and use by third parties of the entity's assets that produce interest, royalties, and dividends.
8. IAS 32: establishes the principles of classifying and presenting financial securities as debt or equity, as well as the compensation of financial assets and liabilities.
9. IAS 2: establishes how to treat existences, including cost determination and recognition as expense. IAS 16: establishes the principles for initial recognition and valuing of physical assets. IAS 39: establishes the criteria for recognizing, canceling, and valuing financial assets and liabilities.
10. IAS 37: establishes criteria to recognize and value provisions, contingent assets, and contingent liabilities, and guarantees that enough information is revealed in the notes on the financial statements to allow users to understand the nature, amount, and amortization schedule.
11. NIC 16: establishes the principals for initial recognition and subsequent valuation of the equipment.
12. IGPA stands for Indice General de Precios de Acciones. This general price index (IGPA) measures changes in prices of most shares listed on the Santiago Stock Exchange (Bolsa de Comercio de Santiago), and such measurement is performed through market capitalization or values of groups of different companies classified according to their activity in different industrial and sub-industrial sectors.
13. See Melle (2005) for further detail.
14. Deloitte, Ernst & Young, PWC, and KPMG, all firms with best global presences.

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