

# COMPREHENSIVE INCOME IN TIMES OF CRISES: EVIDENCE FROM SPANISH COMPANIES

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## ABSTRACT

*Given the increasing importance of comprehensive income as an indicator of corporate performance internationally, especially since the revision of International Accounting Standard 1 (IAS 1) by the International Accounting Standards Board (IASB) in 2007, in this paper we intend to assess its impact on the more traditional net income during the period 2004-2008 for the select group of the Spanish IBEX-35 listed companies, pursuant to the information disclosed in accordance with said IAS. This will allow us to verify the importance of comprehensive income for the corporate groups at a time of serious financial and economic crisis as was 2008. The non-parametric Wilcoxon Signed-Rank Test was used to perform the corresponding statistic comparisons, as the variables did not conform to normalcy. The results showed a statistically significant impact of comprehensive income on net income for three of the five years that were studied, especially for 2008, when there was a spectacular decline in corporate performance when considering the impact of the first on the second. This confers more informational relevance to comprehensive income, being much more in tune with market reality than traditional net income.*

**JEL:** M41

**KEYWORDS:** Comprehensive Income, Net Income, Times of Crises, Spanish Companies (IBEX-35)

## INTRODUCTION

The most influential accounting standard setters around the world, among which are the Accounting Standards Board (ASB), (FRS 3, 1992, revised in 1993, 1999 and 2007), the Financial Accounting Standards Board (FASB), (SFAS 130, 1997), and the IASB (IAS 1, 1997, revised in 2003 and 2007), require that companies disclose their comprehensive income, considered in the Statement of Financial Accounting Concepts (SFAC 6, 1985, par. 70) by FASB as all changes in equity during a period except those resulting from investments by owners and distributions to owners.

This is determined by adding to net income the expenses and revenues that the regulations state should be directly recognized in equity, such as unrealized gains and losses in available-for-sale securities, adjustments associated to derivatives and cash flow hedges, and certain foreign currency translation adjustments. Thus, we have an accounting income more in tune with market reality than the more traditional net income.

The importance of comprehensive income as an indicator of corporate performance internationally is increasing, especially since the revision of IAS 1 by the IASB in 2007. We have reviewed current literature and in this paper we assess the impact of comprehensive income on the more traditional net income during the period 2004-2008 for the select group of Spanish IBEX-35 listed companies, pursuant to the information disclosed in the Consolidated Financial Statements in accordance with the International Financial Reporting Standards (IFRS) by IASB, and in particular with the aforementioned IAS 1.

As the period 2004-2008 comprised years of economic and stock market expansion, with steep drops in the stock markets in 2008, we have a period that allows us to assess the importance of comprehensive income compared to net income in the corporate groups during the years of economic bounty as opposed to 2008, which saw a serious economic crisis and drops in the international stock markets.

In order to perform the pertinent statistical contrasts it may have been suitable to use the paired T-test for the case of two related samples, but the variables did not conform to normalcy in any of the years studied. Therefore it was considered more appropriate to use the alternative non-parametrical Wilcoxon Signed-Rank Test.

The results of our study, in line with the pioneering work of Sousa (2009a), and Sousa and Carro (2009b), show a statistically significant impact of comprehensive income on net income for three of the five years that were studied, especially for 2008 when there was a spectacular decline in corporate performance. This confers more informational importance to comprehensive income, much more in tune with market reality than the traditional net income.

The general layout of the paper is as follows: we first present a Literature Review section outlining the essential conceptual foundations that comprehensive income is based on, with references to the empirical research carried out internationally in recent years. In the Data and Methodology section we then justify the choice of companies comprised in the sample and the information taken from their annual reports, as well as the contrast tools used for the research. The Empirical Results section contains the tables and figures that show the empirical evidence of our paper, with the corresponding analyses and comments. Lastly we present the Conclusions, which show the main findings, the limitations encountered and the future lines of research that this study lead to.

## LITERATURE REVIEW

We must first define the essential theory on which comprehensive income is based as a foundation for our research, and then review the empirical literature produced internationally in recent years.

The FASB was the first standard-setter to incorporate the concept of comprehensive income in the SFAC 3 (1980), replaced by SFAC 6 (1985), where this concept is defined in paragraph 70 as “the change in equity of a business enterprise during a period from transactions and other events and circumstances from non-owner sources. It includes all changes in equity during a period except those resulting from investments by owners and distributions to owners”.

As we can see, this is close to the British Nobel award winner Hicks’ (1939, p. 172) concept of income. As he established in his book *Value and Capital*, the aim of calculating income is to show how much an individual can consume without becoming impoverished, for which he developed the following central concept of income: “A man’s (*sic*) income is the maximum value which he can consume during a period and still expect to be as well off at the end of the period as he was at the beginning”.

If we transfer this concept to Accounting, according to Alexander (1950, p. 15), the profit of a business corporation can be defined as the amount of dividends that a company can distribute to shareholders without reducing the capital invested, that is, to be as well off at the end of the year as it was at the beginning.

This concept would evidently lead us to the *clean surplus* theory (Brief and Peasnell, 1996; Feltham and Ohlson, 1995; Beale and Davey 2000; and Mattessich, 2002; among others), according to which profit is determined comparing the book value of equity at the end of a financial year with that registered at the beginning of the year, without the shareholders’ operations.

In short, as referred by Linsmeier *et al.* (1997) and Sousa (2007 and 2009b), by adopting comprehensive income we have such an important event in Accounting at the beginning of the 21<sup>st</sup> century as is the approach to the economic concept of income advocated by authors of the classical normative-deductive approach several decades ago (MacNeal, 1939; Edwards and Bell, 1961; Alexander, 1950; Moonitz, 1961, and Sprouse and Moonitz, 1962, among others). However, it is not conceived as a sole and unquestionable *a priori* magnitude, but rather devised to satisfy the needs of the users, particularly of investors, given that it contributes to the efficient functioning of the market and to usefulness of the accounting information for market valuation of corporations (Mora, 2004, p. 10).

When looking at the international empirical literature on comprehensive income produced in recent years, we find that some descriptive research projects analyze the importance of comprehensive income for corporations as opposed to the more traditional net income (Luecke and Meeting, 1998; Bhamornsiri and Wiggins, 2001; Pandit *et al.*, 2006; among others).

Likewise, another set of research projects concentrate on the capital market (Dhaliwal *et al.*, 1999; O'Hanlon and Pope, 1999; Hodder *et al.*, 2006, among others), and aim to prove along general lines whether comprehensive income would explain stock returns better than net income.

On the other hand, some research projects analyze the impact of comprehensive income on net income from different viewpoints [Sousa (2008a, 2008b, and 2009a), and Sousa and Carro (2009a, 2009b and 2009c)]; whereas others concentrate on studying the impact that presentation formats have on analysts and investors (Hirst and Hopkins, 1998; Maines and McDaniel, 2000; and Hunton *et al.*, 2006).

From the aggregate of representative research on comprehensive income produced internationally in recent years, the works of Sousa (2008a) and Sousa and Carro (2009a) centre on issues similar to our research. However, these authors work with samples and periods that differ from ours, and do not include the effects of the serious economic crisis that began showing in 2008, thus our study will provide empirical evidence on aspects as yet not investigated.

We also consider that our research may contribute to the international debate on the presentation of corporate performance, set forth in the EFRAG-ICAC (2006) document, Cauwenberge and Beelde (2007), and the joint project on financial statement presentation by the IASB (2009) and the FASB (2009), among others.

## DATA AND METHODOLOGY

We took as reference for our research the information disclosed in the Consolidated Annual Reports of the IBEX-35 listed companies pursuant to the IFRS by the IASB, especially pursuant to IAS 1, for the years 2004-2008. This information is available on the website of the Spanish Stock Exchange Commission (CNMV) and on the websites of the listed companies. Given that this period comprised years of economic and stock exchange expansion as well as 2008, a year of great recession and drop of the Stock Markets around the world, this will allow us to confirm the extent to which comprehensive income, as opposed to net income, affects corporate groups under very unfavorable economic and financial circumstances.

We have also limited our research to the companies listed on the IBEX-35 (*Iberia Index*) drawn up by Bolsas y Mercados Españoles (BME), which is a capitalization-weighted stock market index, comprised of the 35 most liquid Spanish stocks traded in the continuous market, and is the benchmark index for the Bolsa de Madrid (the Madrid Stock Exchange). Among other listed companies, the following are comprised in this index: Telefonica, Banco Santander Central Hispano, Banco Bilbao Vizcaya Argentaria, Repsol, and Endesa; large Spanish corporations that are present worldwide, especially in Latin America.

From January 1st, 2005 all of the listed companies in the European Union have the obligation to formulate their consolidated financial statements pursuant to the IFRS by the IASB. This, in addition to the current convergence of the economic information models with the IASB regulations, not only at a European level, but worldwide, makes our research current and of international interest given that we work with a sampling of the 35 most liquid Spanish listed companies that apply these regulations.

On the other hand, as we wish to empirically evaluate the impact of comprehensive income on net income for the aforementioned sample and period, it may be suitable to compare the medians between both types of results with the paired T-test for the case of two related samples. Nevertheless, as shown in table 1 and in accordance with the one-sample kolmogorov-smirnov test, we rejected the null hypothesis of normalcy for the variables made up of the differential between comprehensive income and net income in the years 2004-2008.

consequently, as the variables in some of the years of the study did not conform to a normal distribution, we must use the alternative non-parametric wilcoxon signed-rank test for the comparison, with a 95% confidence level, which leads us to a  $p < 0.05$  significance. This non-parametric test contrasts the null hypothesis that the medians of two related variables are the same, which applied to the specific field of our research allows us to determine whether comprehensive income differs significantly from net income for the group of the 35 ibex-listed companies in the years 2004-2008.

Table 1: One-Sample Kolmogorov-Smirnov Test

		CI-2004 -NI-2004	CI-2005 -NI-2005	CI-2006 -NI-2006	CI-2007 -NI-2007	CI-2008 -NI-2008
	N	35	35	35	35	35
Normal parameters <sup>a</sup>	Mean	15.65 224.97	286.73 556.51	-73.74 259.15	-155.33 490.54	-965.93 1,874.29
	Standard Deviation					
	Absolute	0.279	0.321	0.270	0.286	0.314
Most extreme differences	Positive	0.279	0.321	0.186	0.223	0.246
	Negative	-0.258	-0.264	-0.270	-0.286	-0.314
Kolmogorov-Smirnov Z		1.651	1.902	1.595	1.693	1.855
Asymp. Sig. (2-tailed)		0.009	0.001	0.012	0.006	0.002

*Test distribution is Normal. This Table shows the contrast of normalcy of the variables made up of the differential between comprehensive income (CI) and net income (NI) in the years 2004-2008 for the IBEX-35 listed companies.*

As we know, the paired T-test for two related samples is used in many areas of human knowledge, or its alternative in non-parametric tools, the Wilcoxon Signed-Rank Test, which we used in our research to contrast whether significant differences exist between two measurements taken for each of the subjects comprised in our sample, one before and the other after introducing a certain treatment or stimulus.

In this paper, we decided to take two measurements of corporate performance such as comprehensive income and net income. This will allow us to evaluate whether the aggregate of the items included in comprehensive income, in particular, the revenues and expenses that should initially be recognized in equity, significantly affect corporate performance.

## EMPIRICAL RESULTS

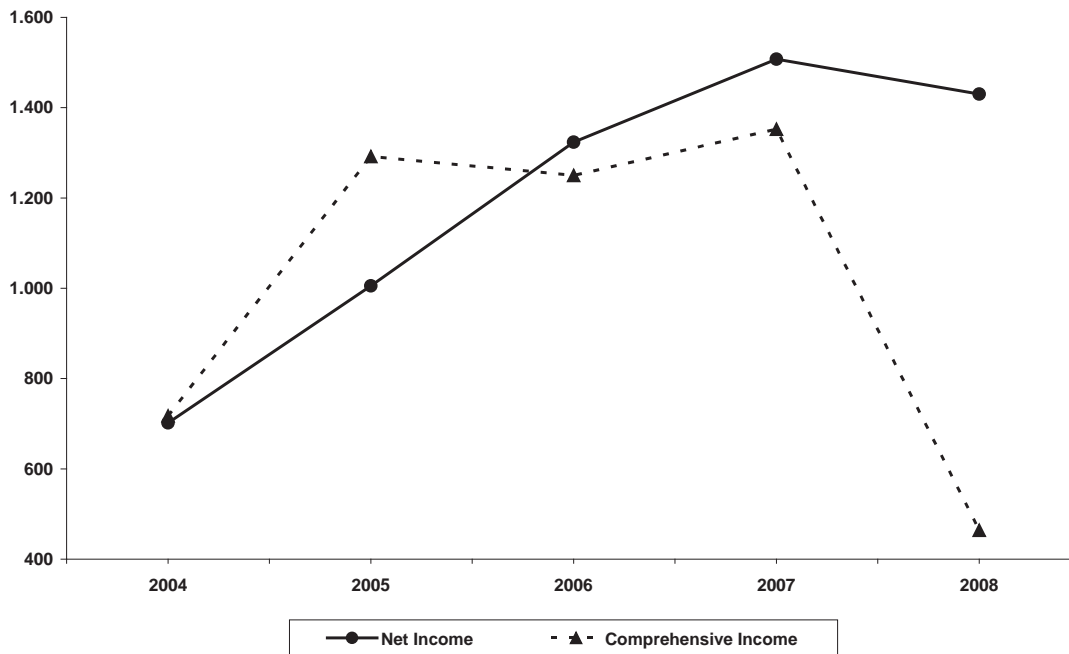
We now proceed to the disclosure and analysis of the results of our research. Table 2 contains the descriptive statistics of the variables that our research is based on, and Figure 1 shows their means profile throughout the study period. Likewise, Figure 2 shows the IBEX-35 behavior during the years studied in our research.

Table 2: Descriptive Statistics

Variable	N	Mean	Standard Deviation	Minimum	First Quartile	Median	Third Quartile	Maximum
NI-2004	35	701.69	1,019.50	-44.60	135.80	332.80	695.00	3,996.20
CI-2004	35	717.34	989.67	-71.20	80.00	411.70	697.60	3,703.50
NI-2005	35	1,005.34	1,570.31	-10.00	152.10	396.00	834.90	6,749.80
CI-2005	35	1,292.07	2,080.72	-58.00	155.70	474.30	1,268.80	8,049.30
NI-2006	35	1,323.78	1,899.39	45.70	200.20	608.60	1,388.60	8,245.80
CI-2006	35	1,250.04	1,832.41	18.60	170.20	700.00	1,478.80	8,039.40
NI-2007	35	1,507.67	2,340.93	2.00	223.00	787.60	1,336.60	9,636.20
CI-2007	35	1,352.35	2,020.26	-182.00	222.70	731.90	1,326.30	8,423.00
NI-2008	35	1,430.02	2,479.00	-1,650.00	182.40	397.40	1,257.70	9,332.40
CI-2008	35	464.09	1,604.98	-3,660.00	-110.00	244.10	871.50	6,447.00

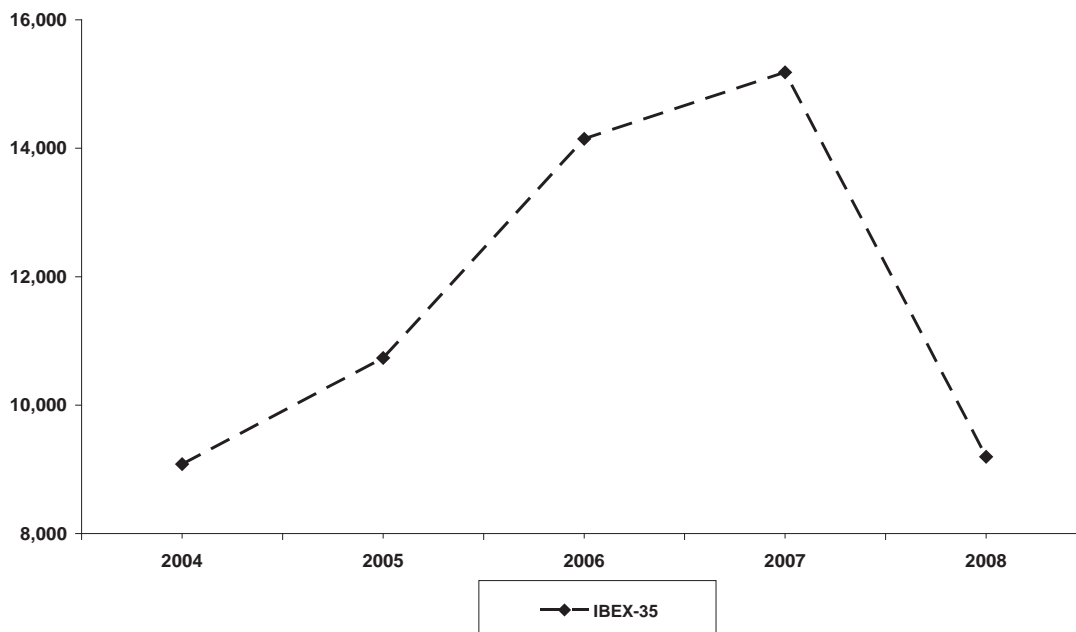
*This Table shows the descriptive statistics for Comprehensive Income (CI) and Net Income (NI) in the years 2004-2008 for IBEX-35 Listed Companies.*

Figure 1: Behavior of the Means of Comprehensive Income (CI) and Net Income (NI) for the Years 2004-2008 for IBEX-35 Listed Companies



*This Table shows the behavior of the means of Comprehensive Income (CI) and Net Income (NI), expressed in million Euros, for IBEX-35 listed companies at the end of each of the years during the period 2004-2008.*

Figure 2: Behavior of the IBEX-35 during the Period 2004-2008



*This Figure shows the behavior of the IBEX-35 at the end of each of the years from 2004-2008, with values expressed in dots on said index.*

In keeping with the years of stock market expansion 2004-2007, when a large rise in the IBEX-35 was registered according to Figure 2, net income, and to a lesser degree comprehensive income, also showed noticeable increases as shown in Figure 1.

The serious 2008 crisis that led to the drop in international stock markets also severely affected the aggregate of IBEX-35 listed companies, with spectacular losses in the index for that year. However, it is noteworthy within this context of serious economic and stock market crisis that net income and comprehensive income do not follow the same behavior pattern in keeping with the descriptive statistics under analysis.

This shows that net income for the aggregate of the listed companies is practically immune to the serious 2008 crisis, whereas comprehensive income causes a spectacular decline in the corporate groups' performance, showing a behavior that is practically parallel to the large drop in the IBEX-35. On the other hand, with the help of the boxplot analysis and as shown in Table 3, we wanted to identify the specific impact of comprehensive income on net income on the corporate groups, based on the extreme scores and outliers registered in each of the years studied.

Table 3: Extreme Scores (\*) and Outliers (o) Regarding the Relative Impact of Comprehensive Income (CI) on Net Income (NI) during the Period 2004-2008

LISTED COMPANIES	INDUSTRIES	YEARS OF THE PERIOD 2004-2008					Mean 2004-2008
		2004	2005	2006	2007	2008	
Abengoa	Basic Materials, Industry and Construction	- 35	52	- 74 o	96 *	-166	-5.4
Acerinox	Basic Materials, Industry and Construction	- 10	90	- 36	- 96 o	- 397 o	-89.8
Actividades de Construcción y Servicios	Basic Materials, Industry and Construction	- 10	16	- 7	37 o	- 68	-68
Cintra	Consumer Services	- 60	- 480 *	- 32	- 9,200 *	- 2,528 *	-2,460
Criteria Caixacorp	Financial and Real Estate Services	133 *	65	- 16	35 o	- 277	-277
Ferrovial	Basic Materials, Industry and Construction	0	- 17	10	- 53 o	- 122	-122
Grifols	Consumer Goods	-50 o	129 o	-59 o	- 68 o	12	-7,2
Iberdrola Renovables	Oil and Energy	- 37	2	4	-161 *	12	-36
Iberia	Consumer Services	2	1	5	- 9	- 838 *	-167.8
Obrascón Huarte Lain	Basic Materials, Industry and Construction	- 41	47	- 59 o	- 21	- 180	-50.8
Sacyr Vallehermoso	Basic Materials, Industry and Construction	71 o	- 14	- 29	- 13	- 118	-20.6
Telecinco	Consumer Services	- 89 *	0	0	8	0	-16.2

*This Table shows the extreme scores ( \* ) and outliers ( o ) for the IBEX-35 listed companies regarding the relative impact of Comprehensive Income (CI) on Net Income (NI) for the period 2004-2008, measured as  $[(CI - NI) / NI] \cdot 100$ . In this formula, we had to take absolute value in the denominator so that the sign effect would not distort the reality of the studied relative impact.*

The extreme scores, which appear in Table 3 marked with an asterisk ( \* ), are defined as scores that are greater than 3 box lengths away from the upper or lower edge of the box. The outliers, which are noted with a circle ( o ), are defined as scores that are between 1.5 and 3 box lengths away from the upper or lower edge of the box.



We see that a significant number of corporate groups, practically 35% of the sample, show extreme scores and/or outliers for at least one year of the five-year span, with a number of negative values, some of which are remarkable. This generally denotes the noticeable negative impact of comprehensive income on net income, especially for a year of such serious economic crisis as was 2008.

After the analysis of the statistics that describe the net income and comprehensive income behavior for the study sample and period, along with their association with the IBEX-35 behavior, we proceed to perform the corresponding comparisons which will ultimately determine whether there are statistically significant differences between both types of result and, if any, in which specific years.

Table 4 shows the negative, positive and tied ranks, along with the means and sums of ranks in the net income and comprehensive income comparison for each of the years studied.

Table 4: Ranks of Wilcoxon Signed-Rank Test

	N	Mean Ranks	Sum of Ranks
<b>Negative Ranks</b>	21 <sup>a</sup>	15.00	315.00
<b>NI-2004 Positive Ranks</b>	13 <sup>b</sup>	21.54	280.00
<b>CI-2004 Ties</b>	1 <sup>c</sup>		
<b>Total</b>	35		
<b>Negative Ranks</b>	8 <sup>d</sup>	11.38	91.00
<b>NI-2005 Positive Ranks</b>	25 <sup>e</sup>	18.80	470.00
<b>CI-2005 Ties</b>	2 <sup>f</sup>		
<b>Total</b>	35		
<b>Negative Ranks</b>	16 <sup>g</sup>	23.31	373.00
<b>NI-2006 Positive Ranks</b>	18 <sup>h</sup>	12.33	222.00
<b>CI-2006 Ties</b>	1 <sup>i</sup>		
<b>Total</b>	35		
<b>Negative Ranks</b>	24 <sup>j</sup>	18.56	445.50
<b>NI-2007 Positive Ranks</b>	10 <sup>k</sup>	14.95	149.50
<b>CI-2007 Ties</b>	1 <sup>l</sup>		
<b>Total</b>	35		
<b>Negative Ranks</b>	26 <sup>m</sup>	19.85	516.00
<b>NI-2008 Positive Ranks</b>	8 <sup>n</sup>	9.88	79.00
<b>CI-2008 Ties</b>	1 <sup>o</sup>		
<b>Total</b>	35		

a. NI-2004 < CI-2004; b. NI-2004 > CI-2004; c. NI-2004 = CI-2004; d. NI-2005 < CI-2005; e. NI-2005 > CI-2005;

f. NI-2005 = CI-2005; g. NI-2006 < CI-2006; h. NI-2006 > CI-2006; i. NI-2006 = CI-2006; j. NI-2007 < CI-2007;

k. NI-2007 > CI-2007; l. NI-2007 = CI-2007; m. NI-2008 < CI-2008; n. NI-2008 > CI-2008; o. NI-2008 = CI-2008.

This Table shows the sums and means of the ranks in the Wilcoxon Signed-Rank Test for Comparison of Net Income (NI) and Comprehensive Income (CI) for IBEX-35 Listed Companies in the years 2004-2008. These ranks will be the reference for the comparisons shown in Table 5.

As the comparisons by difference are performed with net income (NI) as minuend and comprehensive income (CI) as subtrahend, a positive rank evidently denotes a higher value of the first as opposed to the second and vice versa.

Since a clear predominance of positive ranks is found only in 2005, and very slightly in 2006, the number of corporate groups for which comprehensive income (CI) exceeds net income (NI) is higher in these years only.

However, as a consequence of the strong negative impact of comprehensive income (CI) on net income (NI), negative ranks as well as their sums and medians largely exceed positive ranks in the years 2004, 2007, and especially in a year of serious crisis as was 2008.

The behavior of the positive and negative ranks that we have just analyzed lead to statistically significant differences between comprehensive income and net income in the years 2005, 2007, and 2008, with  $p < 0.05$ , particularly in 2008, with  $p = 0.00$ .

Table 5: Contrast Statistics for the Wilcoxon Signed-Rank Test

	NI-2004 CI-2004	NI-2005 CI-2005	NI-2006 CI-2006	NI-2007 CI-2007	NI-2008 CI-2008
Z	-0.299 <sup>a</sup>	-3.386 <sup>b</sup>	-1.291 <sup>a</sup>	-2.530 <sup>a</sup>	-3.736 <sup>a</sup>
Asymp. Sig. (2-tailed)	0.765	0.001 **	0.197	0.011 **	0.000 **

a. Based on negative ranks.

b. Based on positive ranks.

*This Table shows the contrast statistics of the Wilcoxon Signed-Rank Test for Comparison of Net Income (NI) and Comprehensive Income (CI) for IBEX-35 Listed Companies in the period 2004-2008. As we are working with a 95% confidence level, the test's significance for each year is determined by  $p < 0.05$ .*

Given this empirical evidence, we can state that comprehensive income has a significant impact on net income in three of the five years studied, and especially in 2008, when there was a serious economic crisis and drop in the Stock Markets.

On the other hand, it is worth mentioning that Sousa's work (2008a) with a sample of ninety-two Spanish companies listed on the Madrid Stock Exchange —instead of the select group of IBEX-35 listed companies subject of this research— also evidenced statistically significant differences in the impact of comprehensive income on net income, specifically for the years 2004-2007. However, as we are proving, our research provides additional empirical evidence as it takes into account the crisis effect.

Likewise, Sousa and Carro (2009a), who worked with a different sample over a different period, looked at 136 European companies listed on the New York Stock Exchange and NASDAQ during the period 1999-2004, and they found a statistically significant impact of comprehensive income on net income for the years 1999, 2001, 2002, and 2004.

Taking into account the empirical evidence found in our research, as well as in the aforementioned studies, the statistically significant differences found in a large number of years for different samples and time periods are mainly due to the consideration of the new elements comprised in comprehensive income, namely the unrealized gains and losses in available-for-sale securities, adjustments associated with derivatives and cash flow hedges and certain foreign currency translation adjustments. This implies a much broader perspective that is more in tune with market reality than the traditional net income.

Therefore, a measurement of corporate performance shows the market impact much more clearly, as happened with the current crisis, if an all-inclusive concept of income is used as opposed to the more traditional net income measure. This also provides more information for users and particularly for investors, who are considered as primary users.

## CONCLUSIONS

The importance of comprehensive income as an indicator of corporate performance is increasing, especially due to the revision of IAS 1 by the IASB in 2007. Thus, we are witness to a configuration of corporations' profits that is much more in tune with market reality than other measurements of profit such as the more traditional net income.

We have empirically studied the impact of comprehensive income on net income within the context of these trends in international financial information, using as a reference the corresponding consolidated information of the select group of Spanish IBEX-35 listed companies for the period 2004-2008.



When performing the contrasts with the Wilcoxon Signed-Rank Test, we found statistically significant differences between both ranks for the years 2005, 2007, and 2008 as  $p < 0.05$ , and specifically for 2008, with  $p = 0.00$ . Given this empirical evidence, we can state that comprehensive income had a significant impact on net income in three of the five years studied, and especially in 2008, when there was a serious economic crisis and drop in the Stock Markets.

Therefore, it is now evidenced that the market impact is shown much more clearly if comprehensive income or an all-inclusive concept of income is used as opposed to the more traditional measure of net income, as has happened with the current serious crisis. This in turn provides more information for users and particularly for investors, who are considered as primary users in the English-speaking accounting models, towards which the accounting models of the rest of the world are leaning.

Likewise, the empirical evidence provided in our research may entail another element to add to the current debate in international accounting literature and regulations regarding the need for alternative measurements of corporate performance, such as comprehensive income, which is distant from the historical cost accounting model and represents a reference that is much more in tune with market reality than the traditional net income.

Lastly, even though our research was carried out with information disclosed by the main Spanish companies, we consider that we have placed a limitation on our work, having centered our study only on this sample. This consequently opens new lines of research, aiming to verify the impact of comprehensive income on net income in a context of economic crisis taking into consideration different company samples.

This research should be extended to work with different samples, among other possibilities a sampling of North American companies with information disclosed on comprehensive income pursuant to SFAS 130 of the FASB from 1997 onwards, or a sample of European Union listed companies, because as of the first of January 2005 they are obliged to disclose comprehensive income in their consolidated statements pursuant to IFRS of the IASB.

This would allow to assess the impact of comprehensive income on net income in times of crises, such as the beginning of the year 2000 and currently as of 2007, with a larger and wider sample that would allow us to prove the extent to which empirical evidence is similar to that of our present research.

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