

# Aggregate market-based measurement of country-specific balance-sheet conservatism

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*Abstract:* In this paper we review recent literature that following Givoly and Hayn (2000) methodology uses aggregate market-based measures to analyse time evolution of unconditional conservatism. We find that alternative specifications of Givoly and Hayn aggregate market-based measure are used as equivalent measures in the literature. At the same time, we find no analysis proving the goodness of this alternative measures. To highlight the consequences of use the alternative measures, we conduct an analysis of the evolution of unconditional conservatism using them. Concretely, we analyse the effect of International Financial Reporting Standards on the country-specific unconditional conservatism. Our results show that the use of specifications alternative to Givoly and Hayn aggregate market-based measure can result in misleading conclusions.

*Keywords:* Aggregate book-to-market ratio; arithmetic mean of the ratios; IFRS adoption; market-based accounting research; ratio of the arithmetic means; unconditional conservatism.

## 1 Introduction

Conservatism is an accounting principle that involves prudence when changes in assets and liabilities values and economic results are accounted. Huijgen and Lubberink [18] point out that the conservatism is an intrinsic characteristic of accounting, and Sterling [26] claims that conservatism is “the most ancient and probably the most pervasive principle of accounting valuation”.

Following, among others, Basu [1] and Beaver and Ryan [3], two kinds of accounting conservatism can be observed in the financial statements. The first one was defined by Basu [2] as the accountant’s practice of recognizing bad news more quickly than good news. It is named as conditional, earnings or *ex-post* conservatism. In his definition, Basu in a

simple way translates into financial economics terminology the accounting principle of “anticipate all losses but anticipate no gains”, already reflected in the Bliss [4] book.

The other kind of conservatism that we find in financial statements is named as unconditional, balance sheet or *ex-ante* conservatism. Feltham and Olhson [8] define it as systematic, and news independent, persistence to undervalue the net assets of the company (equity) through policies and methods that are conservative. Christie [7] and Fields, Lys and Vincent [10] survey the empirical evidence regarding unconditional conservatism in the literature. Gray [16,17] developed the seed of an international research line in this field. More recently, Givoly and Hayn [14] analyse time

evolution of this kind of conservatism in the US. Givoly and Hayn [14] methodology is being widely used to test the effects of the International Financial Reporting Standards (IFRS) first adoption on unconditional conservatism in several countries, reviving a research stream waned by the early 1990s.

In this context, to answer country-specific research questions requires summarizing firm-specific ratios with a single country-specific number, and it is usually done computing the arithmetic mean of firm-specific ratios. Concretely, the sample book-to-market ratio (BtM) or its inverse, the market-to-book ratio, is usually used to measure unconditional conservatism and it is also usual that the arithmetic mean (or the median) of the firm-specific ratios be chosen to determine country-specific measures.

Contrarily to other disciplines, in market-based accounting research, the analysis of the consequences on the findings of using the arithmetic mean (or the median) to summarize ratios has received little attention. Despite the fact that arithmetic means of both variables that define a ratio have some meaning, the arithmetic mean has the undesirable property of that the meaningful ratio of arithmetic means is not equal to the arithmetic mean of the ratios that becomes meaningless.

To avoid this problem, some authors, as Fleming and Wallace [11], recommend the use of the geometric mean to average normalized numbers. In fact, it is straightforward to show using a logarithmic transformation of the arithmetic mean of ratios that the geometric mean of the ratios equals to the ratio of the geometric means. However, Smith [25] points out that the general solution to arithmetic mean uselessness is not to use geometric mean but to always normalize results after the appropriate aggregate measure(s) is (are) calculated, and not before. Fleming and Wallace [11] make of the same point their “third rule” that advocates using the sum (or the arithmetic mean) of raw (unnormalized) values of the variables whenever this “total” has some meaning.

In this context, the main objective of this paper is to alert about the mistaken conclusions than, in general, can be inferred from the results achieved by using the arithmetic mean (or median) of firm-specific ratios as a country-specific ratio. In particular, to alert about the mistaken conclusions than can be inferred from the results achieved by using the arithmetic mean (or median) of firm-

specific BtM ratios as a country-specific measure in the unconditional accounting conservatism analyses.

To this end, we conduct a market-based accounting research that uses country-specific BtM ratios to measure unconditional conservatism. Concretely, we analyse the country evolution of the balance sheet accounting conservatism. This analysis allows us to determine whether changes in accounting principles, such as the mandatory first application of IFRS, affect the country level of balance sheet conservatism.

The rest of this paper is structured as follows. In Section 2, we introduce the country-specific measure of balance-sheet conservatism applied in Givoly and Hayn [14] analysis. In Section 3, we review the previous literature that follows the Givoly and Hayn [14] approach, focusing on the country-specific measurement of the unconditional conservatism. In Section 4, we conduct the empirical analysis to show the different results achieved by using alternative country-specific measures of the unconditional conservatism. The data we use in our empirical research is analysed in Subsection 4.1. In Subsection 4.2, we construct the country-specific measure in different ways and show their dynamics along the sample period. In Subsection 4.3, we use the temporal evolution of the country-specific measures to analyse the effect of first application of IFRS on the country-level balance-sheet conservatism and discuss results. In Section 5, we expose the main conclusions derived of our literature review and our empirical analysis.

## 2 The aggregate M/B ratio in the Givoly and Hayn (2000) approach

Givoly and Hayn [14] paper was pioneer in the analysis of time evolution of country-specific accounting conservatism. Using a set of accounting conservatism measures (the accumulation of non-operating accruals, the timeliness of earnings to bad and good news, characteristics of the earning distribution and the market-to-book ratio) they conclude that conservative financial reporting increases in the US over time in their sample period of 1950-1998.

Following Stober [27] and based on Feltham and Ohlson [8] valuation model, they use a proxy for conservatism based on the balance-sheet-oriented definition of conservative accounting. Within this definition the accounting conservatism is reflected

by the positive expected value of the excess of the market value over the book value of the firm's equity. As Givoly and Hayn [14] note, this notion of conservatism points to the use of the market-to-book ratio, the inverse of BtM, as a proxy for the degree of conservatism.

Although the positive market-to-book ratios may be due to usually expected firm's positive economic rents and actual growth options, whether investors equity valuation is based on the present value of future cash flows, the market-to-book ratio would tend to be higher when accounting measurement is more conservative. Thus, whether a ratio greater than one may not indicate *per se* conservative accounting, an increase in the ratio over time suggests, *ceteris paribus*, an increase in the degree of reporting conservatism.

Concretely, Givoly and Hyan [14] use in their empirical analysis the ratio of the aggregate market value of firms' equity to their aggregate book value, and refer to it as "the aggregate M/B ratio". In this way the authors avoid the use of simple average ratio across individual companies suggesting that the uselessness of the latter is due to its cross-sectional variance dependence. This variance dependence is a direct consequence of the characterization of the cross-sectional underlying probability distribution. But, in fact, the raw data used by Givoly and Hyan [14] to compute the sums that define their "aggregate M/B ratio" also have probability distributions that do not avoid this dependence on variance. On the other hand, the variance dependence does not ultimate cause the meaningless of the simple average ratio across individual companies.

Givoly and Hayn [14] using their "aggregate M/B" measure conclude that this ratio increases over time and, after controlling for market expectation of growth, that the higher ratios may be driven by depressed book values due to the accumulation of non-operating accruals.

### 3 The BtM use in the related literature

Several papers follow Givoly and Hayn [14] methodology to analyse the time evolution of balance-sheet conservatism in different countries. Many of them use this methodology to analyse the effect of IFRS adoption on balance-sheet conservatism. However, there are also many of these papers that do not use the Givoly and Hayn [14] "aggregate M/B ratio", or use it questionably.

Without attempting to be exhaustive, below we discuss some of these papers focusing our attention principally on the BtM use. These papers and their relevant characteristics are also summarized in Table 1.

#### 3.1 Garcia and Mora (2004)

The authors examine the level of accounting conservatism across eight European countries (United Kingdom, Germany, France, Switzerland, the Netherlands, Italy, Spain and Belgium) and test the differences among them. They use the Basu [2] definition of accounting conservatism, i.e., earnings conservatism, but also the Feltham and Ohlson [8] definition of conservatism, which implies a persistent understatement of the book value of shareholders' equity, i.e., balance-sheet conservatism. Their results show that there are both balance sheet and earnings conservatism practices in all those countries. However, continental countries show larger balance-sheet conservatism and lower earning conservatism than UK. In line with Pope and Walker [23] the authors associate balance-sheet conservatism practices with reduced levels of earnings conservatism.

This paper replicates and extends the previous comparative study on balance sheet conservatism of Joos and Lang [20]. Starting from Zhang [28] definition of unconditional conservatism related to the BtM ratio, the authors consider that unconditional conservatism implies that the market-to-book ratio will be greater than one, even when they recognize explicitly that the existence of favourable opportunity set and rents or synergies between assets also may explain market-to-book values greater than one.

Following Givoly and Hayn [14], and without adding any comment, they firstly analyse the unconditional conservatism using the "appropriate way". They use the evolution of the aggregate market-to-book ratio computed by aggregating the market value of all firms in the sample (per year, at the balance sheet date) and the book value of shareholders' equity at year-end (per year), obtaining then the value of the market-to-book ratio of the country for each year. In most cases (98 out of a total of 106), the authors find values of the aggregate market-to-book greater than one. And on time average the aggregate market-to-book ratios are significantly greater than one, at the 1% level of significance, in all counties except Switzerland, Italy and Spain. Finally, they find a significant

difference between the UK aggregate market-to-book and those of the other countries.

### 3.2 Fernandes, García and Gonçalves (2007)

Fernandes, García and Gonçalves [9] examine the existence of conservative practices in the Portuguese accounting system. They examine whether the book value can be understated due to conservative practices to protect creditors' interests, i.e., balance-sheet conservatism. They also compare the Portuguese results with British and German results. The authors use a sample of non-financial firms for the period 1994-1998. The authors conclude with surprise that Portugal is less unconditional conservative than the United Kingdom.

Following Givoly and Hayn [14], they use the aggregate market-to-book ratio, computed as the aggregate market value of all firms in the sample divided by their aggregate book value at year-end. They reproduce the Givoly and Hayn [14] argument of cross-sectional variance dependence analysed above. However, as they wish to compare the ratio across countries, they argue that the use of the simple average ratio is unavoidable, and finally they use the two specifications, the aggregate market-to-book ratio and the single average ratio, expecting to find no differences between them. Interestingly, their results always show market-to-book ratios greater than one but also show clear different patterns between these measure specifications for a specific country.

### 3.3 Iñiguez, Poveda and Vázquez (2013)

This paper analyses the effect of the application of IFRS on the balance-sheet conservatism in Spain. The authors follow basically the methodology in the García and Mora [12] paper, and explicitly consider their work an extension of that paper. Their results show contradictory evidence depending on the measure used as proxy of unconditional conservatism.

As a first step, they also analyse the balance-sheet conservatism through the evolution of the BtM. But surprisingly these authors, contrary to García and Mora [12], do not use the Givoly and Hayn [14] methodology to compute the aggregate BtM year-end ratio. Without any additional justification, they use the arithmetic mean and the median value of the firm-specific ratios in the year in order to test the equality of these measures between the sample sub-periods defined by the IFRS mandatory adoption in

the European countries. The authors conclude that they cannot provide conclusive evidence on the evolution of unconditional conservatism between the two subsamples.

### 3.4 Lai, Lu and Shan (2013)

Lai, Lu and Shan [22] examine whether Australian financial reporting became more conservative over time as United States and European evidence in Givoly and Hayn [14] and Grambovas, Giner and Christodoulou [15] show. They also analyse the impact of mandatory IFRS adoption on accounting conservatism in Australia. They use four measures of conservatism in order to ensure the soundness of their results. Among these measures, they consider the market-to-book ratio, where a higher ending market-to-book ratio would generally be consistent with a higher level of balance-sheet conservatism. For the authors this measure has a solid theoretical background (Roychowdhury and Watts, [24]) but relies on accounting and market data that require the assumption of market efficiency.

Concretely, they compute the (arithmetic) mean, median and aggregate level of market-to-book ratio, where aggregate market-to-book ratio is the aggregate market capitalizations of the sample firms over the aggregate book value of equity in a particular year. Their results show different patterns for each of the three measures of country-specific market-to-book ratios, differences that authors do not justify. Moreover, their conclusions about the effect of IFRS adoption on balance-sheet conservatism are based on the arithmetic mean of firm-specific ratios. They conclude that unconditional conservatism arises due to the IFRS adoption based on the sign of the difference between the values of the two sub-samples, but they do not report a formal test for the significance of these differences.

### 3.5 Khalifa, Othman and Hussainey (2016)

More recently, Khalifa, Othman and Hussainey [21] examine the time-series extent and shift of accounting conservatism in thirty-seven emerging countries over the period 2000-2012. The authors use a set of measures to assess the degree of conservatism. Following Givoly and Hayn [14], they include the market-to-book ratio as a measure of conservatism. Specifically, they compute the mean and median of market-to-book firm ratios but do not use the "aggregate M/B ratio" proposed by Givoly and Hayn [14]. They conclude, according to the market-to-book mean and median values, that

(unconditional) conservatism has increased since 2007 after a period of decreasing in these countries.

## 4 Empirical analysis

### 4.1 Data

As Table 2 summarize, we use in our empirical analysis all book value (BV) and market value (MV) corresponding to the 150 firms listed in Spanish Stock Market in the period 2000-2009 that are available from Compustat Global Vantage database. Concretely, we have 1,274 observations for BV and 1,030 for MV. From this initial sample, we select the specific samples and subsamples of firm-year data to use for subsequent analysis. In Table 2 we also summarize the selection process.

The minimum requirement to be included in the initial sample is to have available positive data for both variables, BV and MV, at the same time. This requirement limits the sample size to 1,019 firm-year observations. The different samples defined below are divided into two periods: 2000-2004, that we call pre-IFRS (adoption), and 2005-2009, which we call post-IFRS (adoption). So, the sum of the two complementary subsamples of data is necessarily equal to the number of data of the full sample that contains them. The first sample we use has all the 1,019 data, divided between the two periods, 445 observations in pre-IFRS, and 574 observations in post-IFRS. In Table 3-Panel A we can observe their descriptive statistics.

In the market-based accounting literature in general and specifically in that dedicated to the analysis of conservatism, is usual the exclusion of financial companies for their idiosyncratic characteristics. In the following empirical sections, where the effects of a change in accounting standards are analysed, it should also be repaired in that companies in this sector apply specific accounting standards dictated by the financial supervisory authorities, so their exclusion becomes even more justified. Therefore, our second sample is made from the first excluding those observations concerning financial sector companies. Their main statistics are showed in Table 3- Panel B.

On the other hand, in order to avoid bias introduced by changes in the composition of the group of companies in the pre-IFRS and post-IFRS periods, beyond those in the subsamples sectorial

composition, we use a constant sample of firms as in Givoly and Hayn [14]. In this sense, we eliminate all those companies for which available firm-year observations are not full, i.e., ten years. The group of companies that accomplish this criterion includes 75 firms, so the total number of observations is 750, which are divided equally between the pre-IFRS period and post-IFRS. Their summary statistics can be seen in Table 3-Panel C. The drawback of using constant samples, beyond the reduction in the number of observations, is the possibility to introduce a survival bias. But it is also true that such bias may be offset by the bias introduced by no consider companies that during the sample period get their inclusion in the stock market, thus the significance of the total bias and its sign become a purely empirical question.

The fourth sample that we use combines the characteristic of the two previous samples. Thereby, from the third sample we exclude observations concerning financial companies remaining a total of 600 firm-year observations corresponding to 60 non-financial companies for which ten year-firm observation are available. The descriptive statistics of this sample, and its subsamples, appear in Table 3-Panel D.

### 4.2 Measuring the country-specific unconditional conservatism

As we discuss above, the correct specification of BtM ratio to be used as a proxy of country-specific balance-sheet conservatism is the variable aggregate BtM (BtMa) defined as the ratio between the sum of the all book value firms (BVa) and the sum of the all market value firms (MVa) as Givoly and Hayn [14] propose. Note that it is equal to the ratio of the arithmetic means of the variables since the number of firms involved in both means are necessary the same. This definition coincides with the “third rule” of Fleming and Wallace [11] and the recommendation made by Smith [25].

In Table 4 we report the computed values for each sample and year of the BtMa and its two components, BVa and MVa. For the four samples defined, in Figure 1 we represent the year-end values of the BtMa (right scale) along with the evolution of its components, the MVa and the BVa (left scale). We can see as, for each sample, BVa evolves along time smoothly, while the variability observed in the ratio BtMa is largely determined by the variability of the MVa, drawing both variables an almost exactly symmetrical behaviour.

To carry out our comparative analysis, we also compute the other alternative measures used in the literature reviewed above. Concretely, we compute the simple average of the firm ratios and their median value. In Figure 2 we represent again the year-end values of the BtMa ratio for the four samples used, but now along with the year-end values of the (arithmetic) mean and the median value computed from BtM firm-year ratios. As we can see the values of these three variables for each sample draw significant different patterns both in their year-end values and in their yearly evolution. The highest differences are located in pre-IFRS period resulting in an increased incidence in the analysis between subsamples. This fact justifies, also empirically, the relevance of the choice of the variable used in this analysis.

Finally, in Figure 3, we represent by measure (the BtMa ratio, the year-end values of the arithmetic mean and the median value computed from BtM firm-year ratios) their behaviour for the four samples defined above. In the BtMa ratio case a similar temporal behaviour for each sample is observed, although samples that include financial companies (1 and 3) and those that exclude them (2 and 4) result in BtMa ratios nearly identical. So the hypothesis of no-constant sample bias is empirically rejected. On the other hand, we can observe that samples including financial firms (1 and 3) result in BtMa ratios significantly different from those samples that exclude them (2 and 4). This fact corroborates the relevance of the exclusion of financial firms in these analyses, such as recommended by the empirical accounting literature.

We can also observe in Figure 3 how the differences in the patterns draw by the (arithmetic) mean and the median value computed from BtM firm-year ratios of each of the four samples are unclear. They reflect neither the hypothesis of no-constant sample bias nor the impact of including financial firms in the sample, but no otherwise. Note that in these contexts random results and conclusion can be found.

### 4.3 The effect of the IFRS adoption

In the analysis of the differences between pre- and post-IFRS periods we use the usual parametric test of mean differences and, due to the small number of annual data in the periods, a nonparametric test for rank sum differences. Specifically, for the

parametric test, we use the t-test on the equality of means depending on the equality or not of variance of subsamples, so previously we perform a test of equality of variance. Although the previous analysis suggests working with the non-financial constant sample, in this section we perform all tests on the four samples as robustness analysis of the results for the non-financial constant sample.

To test variance equality between subsamples we use the Brown-Forsythe test. This test allows not to assume normality in the subsamples. The tests of variance equality do not allow rejecting the hypothesis of equal variance in the four samples. Table 5 shows the results for the t-test of equality of means for sub-samples with equal variances. In those cases that the statistic is closet to reject the null hypothesis of equal variances (between 15% and 10% of significance) we also use t-test no assuming equality of variance of subsample to test mean equality, checking that the results reported in Table 5 do not change.

We can see that the hypothesis of equality of means between periods cannot be rejected at the significance level of 10% in constant sample of non-financial companies (sample 4), but also not in any of the other samples. Moreover, the Mann-Whitney non-parametric rank-sum test, whose results appear in the last column of Table 5, confirms the results obtained with the parametric test, since in no case we can reject the null hypothesis of equal medians. Note that as we can also see in Table 5, the significance level is higher in those samples in which financial companies are not included (2 and 4), confirming the motivation for their exclusion: financial industry alters noticeably the composition of the sample due to the idiosyncrasy of its companies.

Our analyses show evidence supporting that mandatory first adoption of IFRS by the Spanish listed firms has not modified the country-specific balance-sheet conservatism. Results corroborate previous evidence found in Callao, Jarne and Laínez [6], Callao, Ferrer, Jarne and Laínez [5], Garrido and Vázquez [13] using alternative methodologies to the one we have used. However, interestingly, although Iñiguez, Poveda and Vázquez [19] use the same methodology follows by us, but using as country-specific balance-sheet conservatism measure the arithmetic mean of the year-end BtM ratios of firms, their results are contrary to ours. This fact confirms the relevance of using country-

specific measures correctly computed from firm-specific data.

## 5 Conclusions

In this paper we review recent literature that following Givoly and Hayn [14] uses country-specific market-based measures to analyse the time evolution of the country-specific unconditional conservatism. We find that four of the five papers analysed use country-specific book-to-market ratios (BtM), or alternatively market-to-book ratios, computed differently as Givoly and Hayn [14] do. Moreover, when the Givoly and Hayn [14] aggregate measure is simultaneously used with these alternative specifications in these papers it draws a clear different pattern to that of other.

With the aim of alerting about the mistaken conclusions than can be inferred from the results achieved by using, as usual, the arithmetic mean (or the median) of firm-specific ratios as a country-specific ratio, we analyse the country evolution of the balance-sheet accounting conservatism using for measure it the country-specific BtM but computed in different ways. Concretely, we compute the aggregate BtM *a la* Givoly and Hayn, the simple average of the firms' ratio and their median value. Our results show that the values of these three variables draw significant different patterns both in their year-end values and in their yearly evolution. Moreover, these differences are not regular distributed along the sample period. This fact confirms empirically that they are not interchangeable measures.

These results are present in the four samples that we construct requiring that been firm constant and excluding financial firms. However, our results show that the wrongly inclusion of financial firms in the sample alters considerably the patterns draw by these variables. On the contrary, the hypothesis of no-constant sample bias is not empirically confirmed.

A further analysis allows us to determine the effect of mandatory first application of the International Financial Reporting Standards (IFRS) on the country level of balance-sheet conservatism using correct computed country-specific BtM ratios. Different test, parametric and nonparametric, have been conducted and their results do not allow us to conclude that balance-sheet conservatism has changed due to the implementation of IFRS in Spain. Comparing this evidence with the previous

one obtained by using the same methodology but building country-specific BtM ratios without a statistical basis, we found that they are contrary. This fact confirms empirically that the alternative use of these country-specific BtM specifications can influence results enough to change conclusions.

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**Table 1. Revision of methodologies and findings in previous literature**

<b>Papers</b>	García and Mora (2004)	Ferreira, García and Gonçalves (2007)	Iñiguez, Poveda and Vázquez (2013)	Lai, Lu and Shan (2013)	Khalifa, Othman and Hussainey (2016)
<b>Period(s)</b>	1987-2000	1994-1998	2000-2004 2005-2009	1993-2000 2000-2009	2000-2007 2007-2012
<b>Countries</b>	European (8)	Portugal	Spain	Australian	Emergent (37)
<b>BtM (or MtB) measures</b>	Aggregate	Aggregate Mean Median	Mean Median	Aggregate Mean Median	Mean Median
<b>Different measure patterns</b>		Yes	Yes	Yes	Yes

**Table 2. Summary of firm sample selection and financial variables data sources**

<i>Panel A.</i>	Firms by samples	
	Full sample	150
	Full sample excluding financial companies	107
	Firm with positive data all years	75
	Firm with positive data all years excluding financial companies	60
<i>Panel B.</i>	Firm-year data	
	Book values	1274
	Market values	1030
	Positive Book Values and Market Values	1019
<i>Panel C.</i>	Firm-year data excluding financial companies	
	Book values	913
	Market values	794
	Positive Book Values and Market Values	788

Sample from Compustat Global Vantage for Spanish listed companies in Madrid Stock Exchange for 2000-2009 sample period.

**Table 3. Summary statistics for Spanish listed companies**

<i>Panel A. Full sample</i>					
	Obs	Mean	Std. Dev.	Min	Max
2000-2009					
MV	1,019	4,016.93	11,558.91	4.24	104,634.40
BV	1,019	1.840.34	5,576.62	0.13	68,666.56
2000-2004					
MV	445	3.303.88	9,725.33	4.24	76,396.48
BV	445	1.527.83	4,287.73	0.13	38,603.00
2005-2009					
MV	574	4.569.74	12,782.05	7.34	104,634.40
BV	574	2.082.61	6,392.98	10.19	68,666.56
<i>Panel B. Full sample excluding financial companies</i>					
	Obs	Mean	Std. Dev.	Min	Max
2000-2009					
MV	788	3,342.62	9,703.56	4,76	104,634.40
BV	788	1,341.32	3,553.38	0,13	26,636.53
2000-2004					
MV	349	2,678.71	8,364.26	4,76	76,396.48
BV	349	1,194.67	3,243.77	0,13	25,865.57
2005-2009					
MV	439	3,870.42	10,628.72	7,34	104,634.40
BV	439	1,457.90	3,781.09	10,19	26,636.53
<i>Panel C. Sample constant</i>					
	Obs	Mean	Std. Dev.	Min	Max
2000-2009					
MV	750	5,019.96	13,266.89	4.76	104,634.40
BV	750	2,296.39	6,364.18	4.98	68,666.56
2000-2004					
MV	375	3,808.15	10,507.91	4.76	76,396.47
BV	375	1,756.89	4,627.48	4.98	38,603.00
2005-2009					
MV	375	6,231.77	15,463.85	15.49	104,634.40
BV	375	2,835.89	7,688.75	10.85	68,666.56
<i>Panel D. Sample constant excluding financial companies</i>					
	Obs	Mean	Std. Dev.	Min	Max
2000-2009					
MV	600	4,063.89	10,984.59	4.76	104,634.40
BV	600	1,658.29	4,005.42	4.98	26,636.53
2000-2004					
MV	300	3,028.37	8,966.39	4.76	76,396.47
BV	300	1,357.63	3,469.79	4.98	25,865.57
2005-2009					
MV	300	5,099.40	12,616.58	23.54	104,634.40
BV	300	1,958.94	4,463.15	11.28	26,636.53

MV: Market Value, BV: Book Value.

**Table 4. Summary statistics for aggregate variables***Panel A. Full sample*

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
MVa	311,641	291,733	218,482	286,893	361,477	432,230	600,863	658,421	408,016	523,500
BVa	127,990	132,087	121,243	135,607	162,957	167,601	199,310	266,304	261,748	300,457
BtMa	0.4107	0.4528	0.5549	0.4727	0.4508	0.3878	0.3317	0.4045	0.6415	0.5739

*Panel B. Full sample excluding financial companies*

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
MVa	193,764	184,999	139,985	183,875	232,247	275,525	382,173	427,653	279,471	334,293
BVa	85,309	83,156	75,448	82,971	90,057	94,389	109,333	138,832	139,613	157,850
BtMa	0.4403	0.4495	0.5390	0.4512	0.3878	0.3426	0.2861	0.3246	0.4996	0.4722

*Panel C. Sample constant*

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
MVa	311,007	287,895	213,250	277,046	338,857	400,462	538,349	576,007	357,510	464,584
BVa	127,520	128,792	117,361	130,755	154,406	158,436	183,597	229,998	228,774	262,655
BtMa	0.4100	0.4474	0.5503	0.4720	0.4557	0.3956	0.3410	0.3993	0.6399	0.5654

*Panel D. Sample constant excluding financial companies*

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
MVa	193,151	184,306	137,748	177,933	215,372	252,051	347,251	385,714	249,167	295,639
BVa	84,872	82,530	74,027	80,775	85,087	89,195	101,828	129,015	126,200	141,445
BtMa	0.4394	0.4478	0.5374	0.4540	0.3951	0.3539	0.2932	0.3345	0.5065	0.4784

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MVa: Aggregate Market Value, BVa: Aggregate Book Value, BtMa: Aggregate Book-to-market ratio

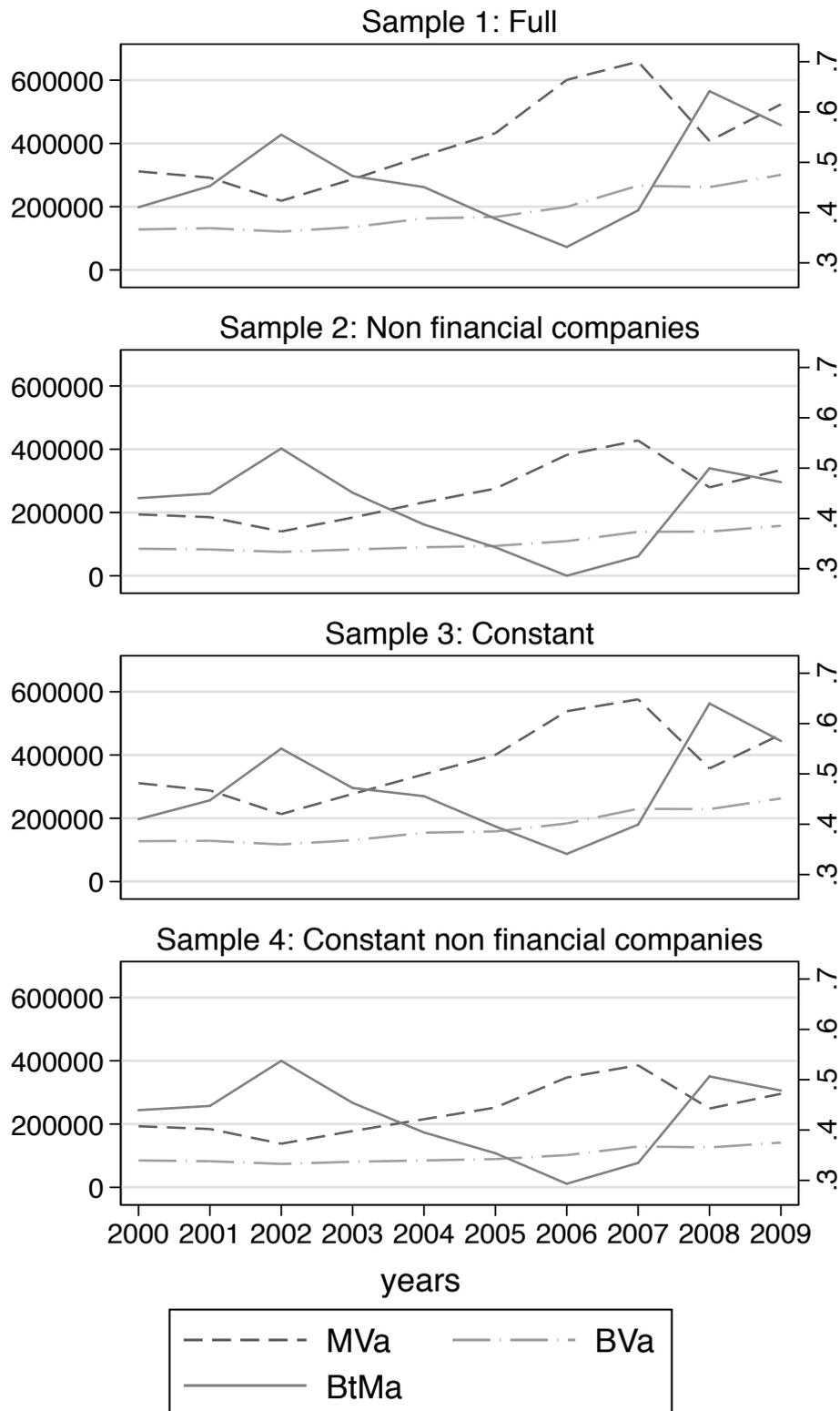
**Table 5. Results equality means and medians test**

BtMa	Mean Pre NIIF	Mean Post NIIF	Difference	t-test	Rank-test
Sample 1	0.468	0.467	-0.001	0.9939	0.6015
Sample 2	0.454	0.384	-0.070	0.1886	0.3457
Sample 3	0.466	0.468	0.001	0.9848	0.6015
Sample 4	0.454	0.393	-0.061	0.2476	0.3472

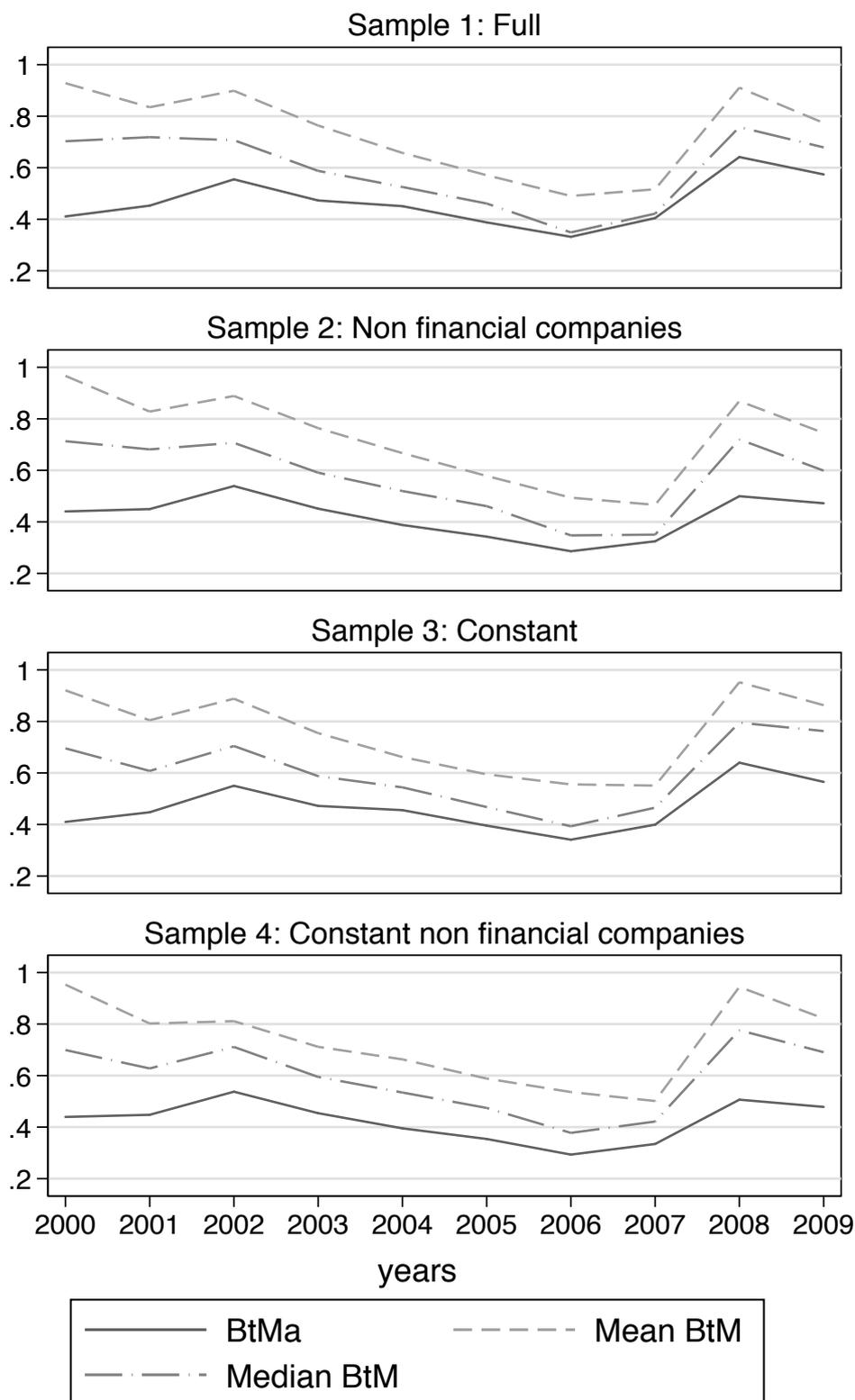
\*\*\*; \*\*; and \*, denote significant at 1%, 5% and 10% level.

BtMa: Aggregate Book-to-Market ratio. Results for t-test conditioned to equality variance test of Brown-Forsythe. Rank-test show results of Mann-Whitney non-parametric test.

**Figure 1. Aggregates Market Value, Book Value and Book-to-market ratio**



**Figure 2. Aggregate Book-to-market ratio, mean and median of firm-specific BtM ratios**



**Figure 3. Aggregate, mean and median of Book-to-Market ratio by samples**

