

Relationship between market value and book value of Major Indian Information Technology firms under pre and post IFRS

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Abstract

Many researches have been conducted on the effect of adoption of IFRS on value relevance of firms e.g. Mohd Halim and Zulkifli [2008], Ahmed and Goodwin [2006], Harris and Muller [1999], Bartov et al. [2005], Lin and Chen [2005], Horton and Serafeim [2006], Schiebel [2006], Niskanen et al. [2000] and Mohd Kadri et al. [2008]. Even though they have employed similar model [Ohlson, 1995], their results were not conclusive. In India, the effect of adoption of IFRS on value relevance of accounting numbers is still not known yet as the IFRS is not fully applicable. Current study utilised Ohlson [1995] model to investigate the relationship between market value, book value and earnings [value relevance] of Indian Information Technology (IT) firms under two different financial reporting environments namely Indian AS environment and IFRS environment. The results show that significant relationship exists between market value, book value and earnings throughout the period under study. When the sample is separated into AS environment and IFRS periods, a more significant relationship between market value, book value and earnings exists during the IFRS period.

Keyword : Adoption of financial reporting standards, market value, book value, earnings

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1. Introduction

1.1 Problem Statement

Many researches are done on value relevance of accounting numbers. It is an area in capital market research. Banz [1980], Ohlson [1989, 1990 and 1991], Feltham and Ohlson [1995], Bartholdy and Peare [2000] and Graham and King [2000] have worked on it. And they found existence of relationship between market value, book value and earnings of firms.

In 1999 researchers started using Ohlson [1995] as a tool to see the effect of adoption of IFRS on value relevance of accounting numbers. Many studies have been conducted like studies by Ahmed and Goodwin [2006], Harris and Muller [1999], Bartov et al. [2005], Lin and Chen [2005], Horton and Serafeim [2006], Schiebel [2006] and Niskanen et al. [2000]. The above researches found reconciliation of IFRS and national GAAP are value relevance except for Niskanen [2002].

Most of the above researches employed linear regression as developed by Ohlson [1995] or Feltham and Ohlson [1995] or modification of that model to find the relationship between market value and book value of the firm.

Many studies on the effect of adoption of IFRS on value relevance of firms have been done previously. Even though they were employing similar model [Ohlson, 1995], their results were not conclusive whereby [1] Australian GAAP is more value relevant than IFRS [Ahmed and Goodwin, 2006; [2] IFRS is closely associated with market value and US GAAP is closely associated with returns [Harris and Muller, 1999]. [3] US GAAP and IFRS is more value

relevant than German GAAP [Bartov et al., 2005]. [4] Chinese GAAP is more value relevant than IFRS [Lin and Chen, 2005]. [5] Change in earnings is value relevant [Horton and Serafeim, 2006]. [6] German GAAP is more value relevant than IFRS [Schiebel, [2006] and. [7] Finnish GAAP is not significantly different from IFRS [Niskanen et al., 2000]. [8] FRS is more value relevant than MASB (Malaysian Accounting Standard Board) environment [Mohd Kadri et al., 2008]

There are a few gaps arise. First, all those researches were conducted in Europe, Australia and China. Second, In India, the effect of adoption of IFRS on accounting numbers and value relevance are still not known yet since the IFRS is not implemented in India at its full.

Current study intends to fill the gaps of knowledge by focusing the investigation on the effect of adoption of IFRS on value relevance of reported financial information by collecting and analysing financial data of Indian Information Technology [IT] firms from year 2010 to year

2014. The gap could be resolved by answering the following research questions:

- (1) Does book value and earnings as per Indian Accounting Standards (AS) of Indian IT firms' value relevant?
- (2) Does adoption of IFRS affects value relevance of book value and earnings of Indian IT firms?

1.2 Research Objective

The objectives of the study are:

- (1) To investigate the value relevance between book value and earnings as per Indian Accounting Standards (AS) of Indian IT firms
- (2) To investigate whether adoption of IFRS has an effect on value relevance of book value and earnings of Indian IT firms.

1.3 Theoretical Framework

It is well established in the theory of finance that the economic value of an asset can be determined by discounting the expected benefits to the owner over the holding period at the opportunity cost of capital.

However, when this rule is applied to the firm as a whole, the stream of benefits to be discounted

can be defined in a number of different ways and this leads to alternative versions of the same basic model.

1.3.1 Dividend Discount Model

The most direct approach to valuing shares defines the benefits to the owners as the dividends paid during the holding period plus the proceeds received from selling the shares at the end of that period. However, when the shares are sold, the relevant price will be determined by discounting the cash flows the new owner expects to receive during the subsequent holding period. Consequently, if it is assumed that markets are efficient and the firm is a going concern with an indefinite life, it can be shown by successive substitution that the current price of the shares P_0 can be calculated by discounting the stream of all future dividends. This is shown in the following formula:

$$P = \frac{D_1}{r - g}$$

The variables are: P is the current stock price. g is the constant growth rate in perpetuity expected for the dividends. r is the constant cost of equity capital for that company. D_1 is the value of the next year's dividends.

1.3.2 Residual Income Model

Residual Income Model is an approach to equity valuation that formally accounts for the cost of equity capital. Using the residual income approach, the value of a company's stock can be calculated as the sum of its book value and the present value of its expected future residual income, discounted at the cost of equity, r , resulting in the general formula:

$$V_0 = BV_0 + \sum_{t=1}^{\infty} \frac{RI_t}{(1 + r)^t}$$

1.3.3 Ohlson Model

One of the main attractions of the residual income model for researchers is that it provides a sound theoretical link between share prices and the two summary accounting variables that is consistent with the traditional dividend discount model. On the other hand, like the dividend discount model itself, the residual income model can be difficult to apply because it requires

estimates for an indefinite period of time. Therefore, to make the models operational, simplifying assumptions usually have to be made about relationships between current and future values.

Ohlson model can be viewed as a weighted average of a book value and an earnings model, with appropriate adjustments for dividends and other value relevant information that is not yet reflected in the accounts. As before, the dividends variable d is broadly defined to include other transactions with shareholders, such as share issues and repurchases.

Ohlson [1995] model:

$$MV = a + a_1E + a_2BV + e$$

Where:

MV is market value of firm's equity at end of year t scaled by number of shares at t

E is earnings for year t under MASB or FRS scaled by number of shares

BV is book value of equity under MASB or FRS scaled by number of shares

e is error.

A particular attraction of the Ohlson model for empirical researchers is that, unlike the basic residual income model that requires estimates of future abnormal earnings, the linear dynamics incorporated in the Ohlson framework allows price to be expressed in terms of current variables. Furthermore, the model goes beyond a general functional relationship to predict the sign and range of values for the respective coefficients.

On the other hand, like any other model, the Ohlson framework has limitations. First of all, the model refers to the individual firm and does not predict that the parameters are the same for all firms (although this is often implied in cross-sectional studies). Secondly, the variable that represents other value relevant information is not specifically defined and therefore difficult to test. In fact, empirical studies often omit it with the implicit assumption that it can be absorbed entirely in the intercept and random error terms. Thirdly, while the dynamics incorporated in the Ohlson framework are plausible, they are only one of many possible ways in which residual income could evolve over time.

Nevertheless, while it has limitations, the model has made a significant contribution to empirical research as it provides a sound theoretical link between share prices and accounting information that was previously missing.

2. Literature Review

2.1 Introduction

This research will examine the effect of adoption of IFRS on value relevance of reported financial information.

2.2 Effects of IFRS on accounting numbers

A study by Callao, Jarne, and Laínez [2007], analysed the impact of the European Union's adoption of IFRS on different aspects of Spain accounting models. They found 5 out of 16 balance sheet items and 6 out of 9 ratios changed significantly.

Ahmed and Goodwin [2006] analysed the effect of adoption of IFRS in Australia. They found that AIFRS earnings are higher than AGAAP earnings whereas AIFRS equity is lower than AGAAP equity, and more firms have earnings decreases than increases. The effect on ratios is most significant for leverage where the AIFRS ratio is higher than AGAAP ratio.

Omrod and Taylor [2004] studied UK companies' impact of the change to IFRS on companies' debt contracts. They found changes in reported profits and balance sheet amounts, and more volatile reported earnings figures.

2.3 Effect of adoption of IFRS on value relevance

Ahmed and Goodwin [2006] found that AGAAP reported financial information is more value relevance compared to AIFRS reported financial information.

Harris and Muller [1999], using 31 companies, reconciled IFRS-US GAAP annual reports between 1992–1996 using Multiple linear regression [Earnings and Ohlson models]. They found that reconciliations are value-relevant, IFRS are more closely associated with prices-per-share than US GAAP, but US GAAP are more closely associated with returns than IFRS.

Bartov et al. [2005] reconciled annual reports of 417 companies [US GAAP, German GAAP and IFRS] between 1998 to 2000 using linear regression [cross sectional and time series]. They

found that US GAAP and IFRS are more value relevant than German GAAP.

Lin and Chen [2005] reconciled annual reports of 415 companies [reconciliation of Chinese GAAP and IFRS] between 1995–2000 using multiple linear regressions [Earnings and Ohlson models]. They found Chinese GAAP more value relevant than IFRS.

Horton and Serafeim [2006] reconciled annual reports of 85 companies [reconciliation of UK GAAP-IFRS] for year 2005 using multiple linear regressions [event and value relevance studies]. They found that reconciliation adjustments in respect of earnings [but not in respect of shareholders' equity] are value relevant.

Schiebel [2006] reconciled annual reports of 12 German companies [GAAP and IFRS] from 2000 to 2004 using linear and exponential regression [panel data]. He found German GAAP more value relevant than IFRS.

Niskanen et al. [2000] reconciled annual reports of 18 companies [reconciliation of Finnish GAAP and IFRS] for a period of 1984–1992 using multiple linear regressions [Earnings model]. However, they found that reconciliations do not appear to be value-relevant.

Mohd Halim bin Kadri, Zulkifli Mohamed [2008] investigated the relationship between market value, book value and earnings [value relevance] of Malaysian [property] firms under two different financial reporting environments namely MASB environment and FRS environment. When the sample is separated into MASB and FRS periods, a more significant relationship between market value, book value and earnings exists during the FRS period.

2.4 Conclusion

From the above literature review, the researcher concludes that adoption of IFRS could affect the relationship between market value, book value and earning.

3. Research Methodology

3.1 Hypothesis Development

Ho1 There is no significant relationship between Earnings, book value and Market Value of Indian IT firms from 2010-2014 applying Indian Accounting Standards.

Ho2 There is no significant relationship between Earnings, book value and Market Value of Indian

IT firms from 2010-2014 applying International Financial and Reporting Standards.

Ho3 There is no significant difference between the relationship between Earnings, book value and Market Value of Indian IT firms from 2010-2014 applying Indian Accounting Standards and those of International Financial and Reporting Standards.

3.2 Sample

The study is performed only on five large Indian IT companies as under:

Company	Referred in paper as	BSE Company Code	NSE Company Code
Infosys Ltd.	Infosys	500209	INFY
Wipro Limited (Western India Products Limited)	Wipro	507685	WIPRO
Tata Consultancy Services Limited	TCS	532540	TCS
HCL Technologies Limited	HCL	532281	HCLTECH
MindTree Consulting Private Limited	Mindtree	532819	Mindtree

The sample is taken from the view point of the market capitalisation of these companies in Indian stock markets.

3.3 Data Collection and Analysis

The major sources of data of all the selected companies are Annual reports of the companies, newspapers, web portals of companies and stock exchanges and other published sources. These sources have been utilized to collect relevant and useful secondary data.

The data collected are processed and analysed using the SPSS whereby multiple linear regressions will be performed.

4. Findings

4.1 Introduction

Regression tests are performed to identify the relationship between dependent variable and independent variables. In this study, the dependent variable is market value whereas the

independent variables are book value and earnings. Book value and earnings are said to be value relevant if the relationship between market value, book value and earnings are significant. Book value and earnings are not value relevant if the relationship with market value is not significant.

A few tools can be used to measure the relationship between market value, book value and earnings. First, R can be used to find the correlation between market value and book value. Second, R^2 indicates how many percent of the variation in dependent variable is explained by independent variables. Third, adjusted R^2 measures the goodness of model fit.

4.2 Regression of firms in Indian AS Environment and IFRS Environment

Table 1: Results of regression of market value, Book value and earnings of selected Indian IT companies during Indian AS Environment

Company	Models	Adjusted R^2	Coefficients	Standardized Coefficients
			B	Beta
Infosys	(Constant)	0.478	3086.894	
	EPSas		-74.461	-7.508
	BVas		16.340	7.990
Wipro	(Constant)	0.523	306.751	
	EPSas		7.330	.610
	BVas		-.137	-.026
TCS	(Constant)	0.796	133.337	
	EPSas		12.983	.514
	BVas		4.339	.435
HCL	(Constant)	0.852	-362.947	
	EPSas		10.732	.338
	BVas		7.285	.631
Mindtree	(Constant)	0.964	-507.809	
	EPSas		5.645	.425
	BVas		2.664	.589

Dependent variables: Market Value (MV)

Independent variables: Book value as per IFRS (BVas), Earnings as per IFRS (EPSas)

Table 2: Results of regression of market value, Book value and earnings of selected Indian IT companies during IFRS Environment

Company	Models	Adjusted R ²	Coefficients	Standardized Coefficients
			B	Beta
Infosys	(Constant)	0.67	1851.339	
	EPSifrs		-31.546	-3.404
	BVifrs		7.108	3.770
Wipro	(Constant)	0.945	107.826	
	EPSifrs		5.730	.399
	BVifrs		1.939	.421
TCS	(Constant)	0.858	-195.947	
	EPSifrs		-107.715	-4.278
	BVifrs		45.881	5.202
HCL	(Constant)	0.954	798.569	
	EPSifrs		49.236	2.733
	BVifrs		-12.663	-1.774
Mindtree	(Constant)	0.968	-494.427	
	EPSifrs		5.767	.436
	BVifrs		2.471	.578

Dependent variables: Market Value (MV)

Independent variables: Book value as per IFRS (BVifrs), Earnings as per IFRS (EPSifrs)**4.3**

Findings

4.3.1 Infosys

Regression of Indian AS environment indicates that for the period of 2010-2014, book value and earnings of firms are value relevant. The adjusted R^2 of 0.478 indicates that book value and earnings of the firm can explain 47.8% of the market value of the firms. As per Indian AS environment, market value of firms can be explained by book value and earning at a limited stage only [47.8%]. It does mean that 52.2% of market value of firm during this period is explained by other factors that could be goodwill [according to Ohlson, 1995, the difference between market value and book value is goodwill]. The result has enabled the researcher to conclude that hypotheses 1 can be rejected.

Regression of IFRS environment indicates that book value and earning of firm can explain 67.0% of the market value of firms. The result has enabled the researcher to conclude that hypotheses 2 can be rejected.

Now the Adjusted R^2 in IFRS Environment [0.670] is higher than that of in Indian AS Environment [0.478]. That means the explanatory power that book value and earnings have during the IFRS period is higher than in Indian AS environment. The result has enabled the researcher to conclude that hypotheses 3 can be rejected.

4.3.2 Wipro

Regression of Indian AS environment indicates that for the period of 2010-2014, book value and earnings of firms are value relevant. The adjusted R^2 of 0.523 indicates that book value and earnings of the firm can explain 52.3% of the market value of the firms. As per Indian AS environment, market value of firms can be explained by book value and earning at a limited stage only [52.3%]. It does mean that 47.7% of market value of firm during this period is explained by other factors. The result has enabled the researcher to conclude that hypotheses 1 can be rejected.

Regression of IFRS environment indicates that book value and earning of firm can explain 94.5% of the market value of firms. The result has enabled the researcher to conclude that hypotheses 2 can be rejected.

Now the Adjusted R^2 in IFRS Environment [0.945] is higher than that of in Indian AS

Environment [0.523]. That means the explanatory power that book value and earnings have during the IFRS period is higher than in Indian AS environment. The result has enabled the researcher to conclude that hypotheses 3 can be rejected.

4.3.3 TCS

Regression of Indian AS environment indicates that for the period of 2010-2014, book value and earnings of firms are value relevant. The adjusted R^2 of 0.796 indicates that book value and earnings of the firm can explain 79.6% of the market value of the firms. As per Indian AS environment, market value of firms can be explained by book value and earning at a limited stage only [79.6%]. It does mean that 20.4% of market value of firm during this period is explained by other factors. The result has enabled the researcher to conclude that hypotheses 1 can be rejected.

Regression of IFRS environment indicates that book value and earning of firm can explain 85.8% of the market value of firms. The result has enabled the researcher to conclude that hypotheses 2 can be rejected.

Now the Adjusted R^2 in IFRS Environment [0.858] is higher than that of in Indian AS Environment [0.796]. That means the explanatory power that book value and earnings have during the IFRS period is higher than in Indian AS environment. The result has enabled the researcher to conclude that hypotheses 3 can be rejected.

4.3.4 HCL

Regression of Indian AS environment indicates that for the period of 2010-2014, book value and earnings of firms are value relevant. The adjusted R^2 of 0.852 indicates that book value and earnings of the firm can explain 85.2% of the market value of the firms. As per Indian AS environment, market value of firms can be explained by book value and earning at a limited stage only [85.2%]. It does mean that 85.2% of market value of firm during this period is explained by other factors. The result has enabled the researcher to conclude that hypotheses 1 can be rejected.

Regression of IFRS environment indicates that book value and earning of firm can explain 95.4% of the market value of firms. The result has enabled the researcher to conclude that hypotheses 2 can be rejected.

Now the Adjusted R^2 in IFRS Environment [0.954] is higher than that of in Indian AS Environment [0.852]. That means the explanatory power that book value and earnings have during the IFRS period is higher than in Indian AS environment. The result has enabled the researcher to conclude that hypotheses 3 can be rejected.

4.3.5 Mindtree

Regression of Indian AS environment indicates that for the period of 2010-2014, book value and earnings of firms are value relevant. The adjusted R^2 of 0.964 indicates that book value and earnings of the firm can explain 96.4% of the market value of the firms. As per Indian AS environment, market value of firms can be explained by book value and earning at a limited stage only [96.4%]. It does mean that 96.4% of market value of firm during this period is explained by other factors. The result has enabled the researcher to conclude that hypotheses 1 can be rejected.

Regression of IFRS environment indicates that book value and earning of firm can explain 96.8% of the market value of firms. The result has enabled the researcher to conclude that hypotheses 2 can be rejected.

Now the Adjusted R^2 in IFRS Environment [0.968] is higher than that of in Indian AS Environment [0.964]. That means the explanatory power that book value and earnings have during the IFRS period is higher than in Indian AS environment. The result has enabled the researcher to conclude that hypotheses 3 can be rejected.

5. Conclusion

Research on value relevance of accounting numbers is not new. The application of the model to see the effect of IFRS on value relevance of accounting numbers is not also new. However the research on the effect of IFRS on accounting numbers in India is still new and less explored. Current study investigates the effect of adoption of IFRS on value relevance of book value and earnings of Indian IT companies under two different accounting environments.

Based on the results of the study a few conclusions can be made. First, it shows that book value and earnings of Indian IT companies are value relevant throughout the period under study. Second, the results also show that book value and earnings of firms are more value relevant during the IFRS Environment than Indian AS Environment. This might be due to the

introduction of fair value related new reporting standards.

For future research, either different sectors or more sectors are selected as sample so that the results is more generalised.

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