



Value relevance and reliability of goodwill and intangibles on financial statements: the case of Istanbul Stock Exchange

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Abstract

Failure in reflecting the impact of intangibles on financial statements on the current and future market value of the company leads an investor that financial statements are insufficient to present an unbiased (true and fair) view of the firm's financial position. In that context the aim of this study is to examine financial reporting reliability of goodwill and intangibles and value relevance of financial reports. To observe the effects of accounting variables on market value of equity Feltham and Ohlson Model (1995) is employed and panel data method is applied which handles both cross sections and time series. Results indicate that the abnormal operating earnings is the main market value driver whereas the coefficients of goodwill and intangibles imply that there is lack of reliability in financial reporting.

Keywords: Value Relevance, Reliability, Goodwill, Intangibles, Panel Data Method

Finansal tablolarda şerefiye ve maddi olmayan duran varlıkların değer ilişkisi ve güvenilirliği: İstanbul Menkul Kıymetler Borsası uygulaması

Özet

Finansal tablolarda maddi olmayan duran varlıkların işletmelerin mevcut ve gelecekteki piyasa değerini yansıtmada yetersiz kalması, yatırımcılara işletmenin finansal durumunun tarafsız (doğru ve adil) bir şekilde sunulmamasına neden olmaktadır. Bu kapsamda, çalışmada finansal raporlamada güvenilirliğin ve başta şerefiye ve maddi olmayan duran varlıklar olmak üzere finansal tablolardaki değer ilişkisinin incelenmesi amaçlanmıştır. Muhasebe değişkenlerinin özsermayenin piyasa değeri üzerindeki etkisini incelemek amacıyla Feltham ve Ohlson Modeli'nden (1995) hareket edilmiş ve yatay kesit ve zaman serilerini birlikte ele alabilen panel data yöntemi uygulanmıştır. Sonuçlar, şerefiye ve maddi olmayan duran varlık kalemlerinin finansal raporlamada güvenilirliğinin eksikliğine işaret ederken, artık faaliyet karının (abnormal operating earnings) piyasa değerinin esas belirleyicisi olduğunu göstermektedir.

Anahtar Sözcükler: Değer İlişkisi, Güvenilirlik, Şerefiye, Maddi Olmayan Duran Varlıklar, Panel Data Yöntemi

1. Introduction

The users of financial statements such as present and potential investors, employees, lenders, suppliers and other trade creditors, customers, governments and their agencies and the public, use financial statements in order to satisfy some of their different needs for information. The objective of financial statements is to provide information about the

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financial position, performance and changes in financial position of an entity that is useful to a wide range of users in making economic decisions.

The elements directly related to the measurement of financial position are assets, liabilities and equity. An asset is a resource controlled by the entity as a result of past events and from which future economic benefits are expected to flow to the entity. The main method used by businesses to classify assets is to split them into tangible assets, which have a separate existence from the business (examples of which include buildings, land and machinery), and intangibles which do not. The International Accounting Standards Committee (IASC), in their International Accounting Standard (IAS) 38 Intangible Assets, defines an (identifiable) intangible asset as a “non-monetary asset without physical substance held for use in the production or supply of goods or services, for rental to others, or for administrative purposes. An asset is a resource: (a) controlled by an enterprise as a result of past events; and (b) from which future economic benefits are expected to flow to the enterprise”. Some clear examples of intangibles are goodwill, patents, research and development expenditure and trademarks. Intangible assets are usually created within the organization over a period of time, by the company itself. They are rarely acquired from an external source and are sold off individually – they can normally only be sold in conjunction with associated tangible assets.

Intangible assets are divided into two main categories: goodwill and other identifiable intangibles. There are two basic views of goodwill: it may be understood as the consequence of a firm’s above-normal ability to generate future earnings, or as a set of assets controlled by an acquired company but not reported in its financial statements. Identifiable (separable) intangibles are those which can be sold or acquired separately [1].

Goodwill is an asset which represents the future economic benefits arising from other assets acquired in a business combination that are not individually identified and recognized separately (International Financial Reporting Standard, IFRS 3, Business Combinations). Goodwill is an unidentifiable intangible asset, which cannot be individually identified and is an intrinsic part of a business [2]. It cannot be sold or bought separately from the entity and may be built over a number of periods. It arises from how the physical assets and human resources of the entity have been employed within the business environment and may be attributed to factors such as market penetration, an excellent distribution network, good industrial relations and superior management [3]. Any excess of fair market value over the book value of the acquired firm’s recognized net assets was recorded as goodwill. Goodwill is measured and recorded as the amount paid to acquire a business in excess of the fair value of its net identifiable assets. While the measurement approach is intended to capture the excess value created by a company that has the resources needed in order to continue to operate indefinitely (going concern), it is possible that the amount of goodwill recorded may also reflect an overpayment for the acquired firm [4]. Balance-sheet accounting goodwill data represents useful information if it helps investors form appropriate perceptions concerning intangible dimensions of firm value. As goodwill today constitutes a much larger part of acquisition prices [5] it has greatly impacted on figures shown on financial statements. Thus, it is very important to be able to measure the value of goodwill correctly during the buying and selling of an entity in accordance to the “risks and benefits of the deal”.

Furthermore, accounting standard regulators have always been faced with the trade-off between “relevance and reliability”. The three major objectives of financial reporting are to provide information that is useful for [6] making business and credit decisions, assessing the amount, timing, and uncertainty of cash flows, reporting enterprise resources, the claims on the resources, and the changes therein.

If intangibles are not reflected in the balance sheet, both earnings and book value of equity will be understated by the accounting model. Thus, investors will be provided with biased estimates of the firm's current market value and of its capability for the creation of value in the future [1]. More comprehensive, reliable and timely information on intangibles could be done by broadening the current accounting model and encouraging voluntary disclosure by management, explaining the impact that intangibles are likely to have in the future profitability of the firm. Because of increasing numbers of domestic and multinational mergers and acquisitions in Turkey, the value relevance and reliability of goodwill come into prominence.

The aim of this study is to test the reliability and value relevance of financial statements for the emerging Turkish market. The rest of the paper is organized as follows: in Section II evaluation of value relevance concept and the related literature are stated. Section III explains the preparation of the data set and decomposition of the accounting data especially goodwill and intangibles. In Section IV findings are represented. Finally, Section V presents the conclusion.

2. Background and Literature Survey

In a well-functioning financial market, financial statements are the most widely available information source for the investors about the economic activities of corporations. Measuring the effect of these financial statements on stock prices has been one of the main subjects of the studies on valuation. The seminal papers of Ohlson (OM) [7] and Feltham – Ohlson (FOM) [8] met with enthusiasm in the accounting and capital markets research since they simply connect accounting data to financial performance and firm value. Such relationship between accounting numbers and firm value is called as "value relevance" in accounting literature.

Value relevance research is designed to provide evidence to accounting standard setters that can update their prior beliefs about how accounting amounts are reflected in share prices and, thus, can be informative to their deliberations on accounting standards [9]. OM based on "Residual Income Valuation" which has been widely used and is now reviewed in relation to the recent efforts to test and apply the OM and FOM [10]. Ohlson's study consists of two main parts: The residual income valuation model (RIV) and the linear information dynamics. The RIV formulize firm value as the sum of the book value of equity and the present value of future abnormal earnings. "Abnormal earnings" refer to accounting earnings minus a charge for the cost of capital. The RIV model is an application of the Dividend Discount Model and its development can be attributed to Edwards and Bell [11] and Peasnell [12, 13]. Ohlson improves the model by including linear information dynamics.

Linear information dynamics allow forming a firm valuation model by modeling abnormal earnings and link current information to future abnormal earnings. OM is designed for unbiased accounting and is claimed to undervalue equity due to conservative reporting of the book value of operating assets. FOM's contribution to the OM is the adjustment for conservatism proportional to a firm's operating assets [10].

According to FOM model, to value a firm under conservative accounting principle, earnings and book values of operating assets are necessary. FOM suggests that there is a linear relationship between market and book value of equity (i.e. goodwill) and abnormal operating earnings, beginning operating assets and current investments in operating assets. Persistence of operating cash receipts increases the weight on abnormal operating earnings. The weight on beginning operating assets reflects conservatism and is a function of both operating cash receipts persistence and depreciation (one minus the ratio of depreciation expense to beginning operating assets) [14] .

FOM is based on clean surplus accounting assumption. Implementation of FOM requires identification of gains and losses and separating them into operating and financial, which is very difficult and sometimes impossible for accountants like investment income on the income statement, and equity investments on the balance sheet.

Under the following assumptions and definitions, Feltham and Ohlson models that firm market value of equity at time t (MVE_t) is a linear function of abnormal operating earnings (AOE_t), net operating assets (NOA) and book value of equity (BVE_t).

$$MVE_t = BVE_t + \beta_1 NOA_t + \beta_2 AOE_t \quad (1)$$

AOE is defined as actual operating earnings minus expected operating earnings equal to the firm's weighted average cost of capital (WACC) times lagged net operating assets ($AOE_t = Actual\ OE - k_{WACC} * NOA_{t-1}$). AOE simply represents additional earnings above the firms overall cost of capital. β_1 and β_2 are the regression coefficients that are a function of linear models and required rate of the return for the firm.

WACC can be calculated by using the Modigliani-Miller framework [15].

$$k_e = k_{WACC} + \frac{D}{E} (k_{WACC} - k_D) (1 - t) \quad (2)$$

Where k_e is the cost of equity, k_D is the cost of debt and t is the corporate tax rate.

Since OM and FOM models were first introduced, numerous accounting studies have investigated the relationship between market value and various accounting numbers to examine "value relevance". These models employed in the market based accounting research since the financial information was considered as a value component [16]. As mentioned above, this model is based on a belief that the market value of a company is composed of two components. These are the net investment value done (book value) and the present value of the period income. Collins, Pincus and Xie [17], Garrod and Rees [18], and Kothari and Zimmerman [19] are other studies that applied Ohlson model in developed countries. On the other hand accounting intangible assets should also be considered in the valuation models [20, 21]. Although authors pointed out that valuation of intangibles are very difficult to provide some direction to managers in the way they treat intangible assets could be beneficial in terms of reducing the bias and improving the reliability with which intangible assets are reported in financial statements [20, 22].

Amir, Harris, and Venuti [23], Chauvin and Hirschey [5], and McCarthy and Schneider [24] reported a significant positive relationship between goodwill and the market value of a firm. Jennings, Robinson, Thompson, and Duvall empirically investigated the relationship between market equity values and purchased goodwill. [25] Finally, Choi, Kwon, Lobo pointed out that the financial market positively values reported intangible assets on the balance sheet [20]. The market's valuation of a dollar of intangible assets is, however, not significantly different from its valuation of other reported balance sheet elements.

3. Data and Methodology

The aim of this study is to analyze financial reporting reliability of goodwill, identifiable intangible assets and value relevance of main balance sheets items as well as abnormal operating earnings. These items are the components of both net operating assets and the book value of equity. Book value of the equity can be decomposed as shown below.

$$BVE_t = (NOA - INT)_t + GW_t + ID_t + NFA_t \quad (3)$$

Where,

$(NOA - INT)_t$ is the net operating assets – total intangible assets at time t,

GW_t is the goodwill at time t,

ID_t is the identifiable intangible assets at time t and,

NFA_t is the net financial assets at time t.

Equation given in (3) points out that BVE is a linear function of GW and ID which are the main subject of this study. Since BVE covers NOA, NOA and BVE can be omitted to avoid multicollinearity. Amir et al.[23] and Dahmash et al. [22] methodology is followed in favor of using components of BVE. Below equation is a variation of FOM which separates operating assets into two components of intangible assets.

$$MVE_t = \beta_0 + \beta_1(NOA - INT)_t + \beta_2 GW_t + \beta_3 ID_t + \beta_4 NFA_t + \beta_4 AOE_t + \varepsilon_t \quad (4)$$

The valuation model given above is for value relevance and lack of reliability of intangible assets from the point of view of market. In equation (4) all coefficients reflect value relevance of balance sheet items, addition to this, β_2 and β_3 which are coefficients of goodwill and intangible assets reflects reliability of intangibles. In theory, these coefficients should be equal to 1, which means that financial reporting related to intangibles and goodwill perfectly reflects that market value and financial reporting is reliable. Reliability can be tested with the following hypotheses and these hypotheses can be tested by Wald coefficient test.

$$H_0: \beta_2 = 1$$

$$H_A: \beta_2 \neq 1$$

and,

$$H_0: \beta_3 = 1$$

$$H_A: \beta_3 \neq 1$$

Data set consists of 58 firms quoted in ISE which have goodwill in their balance sheets from 2005 to 2008 (inclusive). Financial sector and mining companies are excluded since their financial statements have different aspects. Additionally, firms with negative book value are also excluded. The period between 2002 and 2004 is not included because of inflationary accounting applications in Turkey.

In equations (2) and (4), variables were calculated as follow.

- Market value of equity (MVE) is the market value of firm as of March 31st. In the context of efficient market hypothesis, market prices reflect all available data in the market. Since financial statements are disclosed by the end of March in Turkey, market value of companies by the end of March is used. MVE is calculated by multiplying number of shares and market value of shares.
- NOA is equal to the operating assets minus operating liabilities. Operating assets operating liabilities are calculated according to equations given below.

Operating Assets = Current Assets – Cash – Short Term Inv. + NFA + Subsidiaries and Affiliates + Intangible Assets

Operating Liabilities = Total Liabilities – Financial Liabilities

- Net financial assets (NFA) is the difference between financial assets and financial liabilities where financial assets is total assets minus operating assets. Financial liabilities is the sum of long term debt and short term financial liabilities in current liabilities.
- In the literature abnormal operating earnings is defined as actual operating earnings minus expected operating earnings equal to the firm's weighted average cost of capital (WACC) times lagged net operating assets.

$$(AOE_t = Actual\ OE - k_{WACC} * NOA_{t-1})$$

This formulation has some limitations, since some of the variables cannot be measured directly, for example the cost of debt and the cost of equity. Simply WACC can be derived by MM propositions and the cost of equity can be calculated by the formulation given as:

$$k_e = k_{WACC} + \frac{D}{E} (k_{WACC} - k_D) (1 - t)$$

Where k_e denotes the cost of equity, k_D is the cost of debt and t is the corporate tax rate, D and E are the level of debt and equity respectively. In order to derive k_{WACC} , first of all k_e and k_D should be determined. Corporate tax rate (t) is 20 %. k_D is measured by dividing annual interest expenses by financial debt of a corporation.

Capital Asset Pricing Model (CAPM) can be an alternative for the cost of equity. According to CAPM;

$$k_{e,i,t} = r_{f,t} + \beta_{i,t} (r_{m,t} - r_{f,t}) \quad (5)$$

Where $r_{f,t}$ is the median of daily observations of the most traded treasury bond of Turkish Government in the year t , $\beta_{i,t}$ is the systematic risk of i^{th} stock, $r_{m,t}$ is the market rate of return in the year t , $\beta_{i,t}$ is measured by single index model.

$$r_{i,t} = \alpha_i + \beta_{i,t} r_{m,t} + \varepsilon_i \quad (6)$$

Where $r_{i,t}$ and $r_{m,t}$ are the rate of return of stock i and market index rate of return respectively, α_i is the constant term and ε_i is the error term of the model. To measure the systematic risk of the common stocks weekly adjusted closing prices and weekly closing prices of ISE 100 Indice on Wednesday are used to avoid calendar anomalies in Turkish Stock Exchange [32]. To define the cost of debt annual interest expenses are divided by financial debt of the firm.

Descriptive statistics about the variables in the panel data are summarized in table 1. Balance sheet items are simplified by omitting 8 digits. Eviews 6.0 econometric software is used for analysis.

Table 1 Descriptive Statistics

	MVE	NOA_INT	AOE	GW	INT	NFA
Mean	13.163	5.0032	0.5323	1.1167	0.6577	1.5713
Median	3.762	2.0335	0.2324	0.0135	0.1486	0.4288
Maximum	168.3	41.4034	18.449	22.304	27.343	27.698
Minimum	0.085	-0.4561	-2.9446	0.0009	0.00	-37.852
Std. Dev.	24.979	7.9614	2.2564	3.5213	2.9295	5.5335
Skewness	3.6169	2.6050	5.0843	5.2340	7.5206	-0.9704

Researchers frequently use panel data since data sets are composed of time series and cross sections. Main advantage of panel data is that one can formally model the heterogeneity across groups that are typically present in panel data. Panel data combining the characteristics of time series and cross sections may have firm specific effects, period-specific effects or both. There are three types of panel data models: pooled regression model, fixed effect model and random effect model [28]. Solutions to problems of heterogeneity and autocorrelation are of interest among these three types of panel data models. Both intercepts and slopes of the pooled regression model have constant coefficients. In the pooled regression model that has neither a significant firm-specific effect nor a period-specific effect, the data could be pooled and analyzed by an OLS regression model [29]. The fixed effect model assumes that there are differences in intercepts across firms or periods, whereas the random effect model explores differences in error variances.

4. Empirical Findings

The fixed effects approach assumes that differences across cross-sections can be captured in differences in the constant term, while the random effect approach handles the constants for each section as random parameters [30]. Baltagi pointed out that the fixed effect approach suffers from consistency problems [26]. If the number of time periods used in the panel data is fixed (small) and the number of cross sections approaches infinity, only the fixed effects estimation of β is consistent, while the fixed effects estimation of the individual cross section intercepts is not [27]. The random effect model considers the firm-specific effects as random variables, and it assumes that firm-specific effects are normally distributed throughout the sample [28].

In this study there are three steps to determine which panel data model should be selected. First, we used Chow test (F test) to determine whether the pooled regression model or the fixed effect model should be selected as the empirical model. The result showed that the fixed effect model was better than the pooled regression model. Second, Breusch–Pagan test (LM test) is applied to determine whether the pooled regression model or the random effect model should be selected to perform [28]. The result showed that the random effect model was better than the pooled regression model. Third, Hausman test is used to determine whether the fixed effect model or the random effect model should be used [28]. The results indicate that the fixed effect model is better than the random effect model. Therefore, fixed effect model is used for the effect of accounting variables on market value.

In accounting literature, it is more important to know that not controlling for individual fixed effects in a panel data can lead to an omitted variable bias problem and inconsistent estimates of the regression parameters. It is to be expected in an accounting panel data that there will be heterogeneity between different companies and therefore that estimating a regression equation that does not account for individual differences will lead to biased inconsistent results.

Below equation summarizes the fixed effect model results. All coefficients and F value are statistically significant at 5%. Numbers in parenthesis represent t statistics and numbers in square brackets represent p values of the coefficients. A positive relationship implies that the market value of equity will increase if the independent variables increase; and a negative relationship indicates that the market value of equity will decrease if the independent variables increase.

Results indicate that market value of a company is mainly driven by abnormal operating earnings of a company. This might be a result of future cash flow expectations. Coefficient of NOA_INT shows market value creation performance of net operating assets of Turkish companies. Operating asset investments increase market value. Presence of net financial asset decreases market value which might be a result of opportunity cost of keeping financial assets. High R² value implies the reliability of FOM.

The Fixed Effect Model Estimates

$$\begin{aligned}
 MVE_{t+3\ months} = & 2.9105 + 1.1059NOA_INT_t + 0.8942GW_t + 0.6701ID_t \\
 & \quad (8.3262) \quad (3.2261) \quad (2.0462) \quad (1.2481) \\
 & \quad [0.0000] \quad [0.0016] \quad [0.0428] \quad [0.0155] \\
 & -0.2109NFA_t + 6.2580AOE_t + \varepsilon_t \\
 & \quad \quad \quad (-1.6439) \quad (12.8783) \\
 & \quad \quad \quad [0.0208] \quad [0.0000] \\
 \\
 & R^2 = 0.80 \\
 & Adj R^2 = 0.79 \\
 & F\ Statistic = 100.69 \\
 & p\ value = 0.00
 \end{aligned}$$

Table 2 Wald Coefficient Test Results

Wald Test for Goodwill

Test Statistic	Value	Probability
F-statistic (1,124)	0.0586	0.809
Chi-square	0.0586	0.808

Wald Test for Intangibles

Test Statistic	Value	Probability
F-statistic (1,124)	0.3755	0.541
Chi-square	0.3755	0.540

Results related to reliability of goodwill and identifiable intangibles lead us to lack of reliability. According to coefficients, goodwill and intangibles do not increase market value as much as the other independent variables. On the other hand, Wald coefficient test results indicate that the hypotheses of $\beta_2=1$ and $\beta_3=1$ are rejected. Rejection of the hypothesis implies an important finding that the financial reporting of Goodwill and Intangibles is not reliable.

5. Conclusion

Relevance and reliability, the two primary qualities that make accounting information useful for decision making. Information is considered relevant if it has the capacity to make a difference in decision making. Failure in reflecting the impact of intangibles on the current and future market value of the company leads an investor that accounting statements fail to present an unbiased view of the firm's financial position. Therefore, investors are provided with irrelevant, unreliable and incomparable financial statements and will most likely not be able to assess the value driver items of a company to make efficient resource allocations.

In this study two issues are examined. First one is to test Feltham & Ohlson Model in Turkish Stock Exchange which models a linear relationship between accounting variables and market value. Second one is to test the lack of reliability of goodwill and intangibles by decomposing book value of equity into detailed sub accounts of balance sheet. Findings of the study lead to conclude that abnormal operating earnings is the main market value driver which is a result of future cash flow expectations. Net operating assets minus intangibles is the next effective value driver which shows us the value generation power of net operating assets. The salient result of this study is the negative effect of net financial assets. The negative effect might be a result of opportunity cost of keeping more financial asset than liabilities. Other findings are related to second objective which indicate that there is lack of reliability on financial reporting of goodwill and intangibles. Results related to intangibles and goodwill are relevant to Ibrahim et al. [31] and Dahmash et al. [22]. Moreover high R^2 values indicate the reliability of FOM.

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