

An Empirical Assessment Of Reported Intangible Assets Under IAS No.38

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Abstract

Since the European Union (EU) adopted the New Accounting Strategy in 1995, several European countries have passed laws allowing their companies to publish consolidated financial statements in accordance with International Accounting Standards (IAS). As IAS is accepted by more and more countries and stock exchanges, SEC is under increasing pressure to accept IAS-based financial statements from foreign registrants. Recently, SEC indicated its intention to allow the utilization of IAS by foreign issuers on the condition that IAS is comprehensive and of high quality, and calls for the study of the quality of IAS. This study attempts to address the intangible assets controversy surrounding IAS No.38. Under IAS No.38 "Intangible Assets," research and development (R&D) costs are separated. Companies are required to expense the research costs, but capitalize development costs, which must be expensed when incurred under U.S. GAAP. Furthermore, IAS No.38 allows the capitalized intangible assets (including development costs) to be revalued in subsequent periods, which is not allowed under U.S. GAAP. Critics of IAS No.38 argue that separation of R&D and the capitalization of development costs will likely be applied inconsistently across companies and provide an opportunity for management to manipulate the reported accounting numbers. Based on the financial and stock pricing information of 57 companies from eight countries whose consolidated financial statements were prepared using IAS, this study documented significant empirical evidence on investors' assessment of IAS No.38's intangible assets reporting policy. Specifically, using a cross-sectional equity valuation model, evidence is obtained suggesting that intangible assets reported by sample firms under IAS No. 38 reflects the economic value of the underlying intangible assets as perceived by investors. The findings seem to support the use of IAS in preparation of financial statements for cross-border offerings.

Data Availability: All data are from public sources

1. Introduction

The International Accounting Standards Board (IASB) is an independent private sector standards-setting body founded in 1973 by professional accounting organizations in nine countries. The goal of the IASB is to "achieve uniformity in the accounting principles which are used by businesses and other organizations for financial reporting around the world." The IASB now represents more than 120 accounting organizations from over 90 countries. With a remarkably broad base of support, IASB has become the driving force in international accounting standards setting. Now over 50 countries have adopted IAS as their national standards. Furthermore, stock exchanges in London, Frankfurt, Zurich, Luxemburg, Hong Kong, Amsterdam, and Rome, among others, now accept financial statements prepared using IAS.

IAS currently is not an acceptable basis for financial statements filed with the SEC by companies listed on U.S. stock exchanges. As IAS are accepted by more and more countries and stock exchanges, the SEC is under increasing pressure to accept financial statements prepared using IAS by foreign registrants. In responding to such pressure, the SEC took a proactive approach and actively encourages the convergence towards a high quality global

financial reporting standard. However, the SEC set three conditions that must be met for the Commission to accept IAS-based financial statements by foreign registrants (SEC 1996). The three conditions are: (1) IAS must constitute a comprehensive, generally accepted basis of accounting; (2) IAS are of high quality; and (3) IAS can be rigorously interpreted and applied. The SEC further calls for studies assessing the quality of IAS (SEC 2000).

This study attempts to examine the quality of IAS No. 38's provision on accounting for intangible assets. After years of elaboration, the IASB revised its intangible assets accounting standards in 1998 and requires that R&D costs be separated. Under IAS No.38, development costs must be capitalized and amortized. Under the U.S. GAAP, development costs must be expensed when incurred. Furthermore, IAS No.38 allows the capitalized intangible assets (including development costs) to be revalued in subsequent periods, which is not allowed under U.S. GAAP. Critics of IAS No.38 argue that separation of R&D and the capitalization of development costs will likely be applied inconsistently across companies and provide an opportunity for management to manipulate the reported accounting numbers.

Accounting for intangible assets has been one of the most controversial policy issues facing standard setting bodies across the world, and the IASB's requirement of capitalizing development costs has not put this controversy to rest. Significant controversies continue to exist on the appropriate accounting treatment for research and development costs and on the revaluation of capitalized intangible assets in subsequent periods. Instead of making another argument for or against the IASB's intangible assets accounting standards, this study takes a different approach. That is, it simply attempts to document empirical evidence regarding investors' assessment of reported intangible assets by companies whose financial statements are prepared using IAS. Specifically, this study uses a cross-sectional equity valuation model similar to that introduced by Landsman (1986) and subsequently used in numerous recent research studies (e.g., Jennings et al. 1996, Duvall et al. 1992, and Wang 1993, among others). The magnitude of the coefficient estimate for intangible assets from the equity model regression is compared with its theoretical value. An intangible asset coefficient close to its theoretical value would indicate that reported intangible asset is viewed by investors as reflecting its economic value, and, therefore, can be interpreted as a positive evidence for the use of IAS in preparation of financial statements for cross-border listing. On the other hand, an intangible asset coefficient that is significantly less than its theoretical value (and not significantly different from zero) would indicate that reported intangible asset (including capitalized development costs) is significantly overstated and can be interpreted as negative evidence against IASB's intangible asset accounting standards. Given the profession's longstanding convention of conservatism, an overstatement of intangible assets would be of great concern to standards setting bodies.

A number of multinational companies have been preparing consolidated financial statements using IAS. This study collected intangible asset and other financial information from 57 companies representing eight countries. All sample companies prepared their consolidated financial statements using IAS. Based on 2000 data from the sample companies, this study documented empirical evidence supportive of IAS No.38's intangible asset accounting policy. Specifically, both the intangible asset coefficient and the coefficient estimate for non-intangible net assets are very close to their theoretical values suggesting that the accounting numbers under IAS reflect the economic value of the underlying assets and are perceived as of high quality by investors. This evidence is consistent with the claim that the IAS are of high quality and can be rigorously interpreted and applied.

The findings have direct policy implications in that it justifies the widespread acceptance of IASB's standards by its member countries and stock exchanges. The results, however, must be interpreted with caution for two major reasons. First, due to the lack of data availability, the sample used in this study consists of only 57 companies for the year of 2000. The second limitation of this study is its sample composition. Because of concerns over auditing quality and capital market efficiency, companies from developing countries were not included. The final sample consists of mostly large multinational corporations from eight industrialized countries. Future studies may want to find ways to include more companies with varying sizes and stages of economic development. Such studies can provide further insight on the issue of whether IAS can be interpreted and applied equally rigorously by companies of all sizes and from countries with different stages of economic development.

The rest of the study is organized as follows. Section 1 discusses the issue related to intangible asset accounting controversy and develops the model. Section 2 describes the sample selection and the data. Section 3 presents empirical tests and results. Finally, the last section summarizes and concludes the paper.

2. Intangible Asset Accounting Controversy and Model Development

Accounting for Intangible asset has been one of the most controversial policy issues facing accounting standard setting bodies across the world. Some argue that the costs such as development costs have future economic benefits and therefore, should be capitalized and amortized over a certain period of time. The prominent view at the U.S., however, is that the future economic benefits of such costs are so uncertain that they should be expensed when incurred.

After several years of elaboration, IASB issued IAS No.38, "Intangible Assets," in 1998. IAS No.38 requires, among other provisions, that R&D costs be separated and that development costs be capitalized if two criteria are satisfied. The two criteria are: (1) it is probable the future economic benefits that are attributable to the assets will flow to the enterprise, and (2) the cost of the assets can be measured reliably (Paragraph 9). Under the U.S. GAAP, however, development costs must be expensed when incurred. The second major difference between IAS No.38 and the U.S. GAAP relates to the subsequent treatment of capitalized intangible assets. Under IAS No.38, companies are allowed to revalue their intangible assets (provided that an active market for the intangible assets exists). U.S. GAAP does not permit revaluation accounting.

The IASB's new intangible asset policy has not put the intangible asset controversy to rest. Instead, it has stirred up new debate on whether the revised standards enhanced reporting quality (Bean and Jarnagin 2001). Critics of IAS No.38 argue that capitalization of development costs under IAS No.38 provides the possibility for differences in judgment to produce inconsistencies in what costs are capitalized across different companies. Others point out the necessary arbitrariness in separating R&D costs, which provides further opportunities for management manipulation (Bloomer 1999). Proponents of IAS No.38 argue that since development costs meet the asset definition and therefore, should be capitalized (e.g., Woolridge 1988, Lev and Sougiannis 1996. For a summary of this research, see Linsmeier et al. 1998). Instead of making another argument for or against IAS No.38, this study adopts a different strategy in addressing the intangible assets controversy. Specifically, this study attempts to document some empirical evidence regarding investors' assessment of reported intangible assets under the revised IAS No. 38.

Two approaches are available in the literature for addressing similar issues, namely, the income statement approach and the balance sheet approach. The income statement approach, which is based on the traditional cross-sectional valuation model (Miller and Modigliani 1966), decomposes reported earnings into several components to test the differential market reaction to each component. This study adopts the balance sheet approach, which was introduced by Landsman (1986) and was subsequently used in numerous recent research studies. This approach is based on the basic accounting identity, which holds that shareholders' equity is the residual of corporate assets less corporate liabilities. The balance sheet approach has the advantage of permitting intangible assets and the corresponding non-intangible assets to be differently priced by the security markets. The market valuation of reported intangible assets under IAS No.38 will be compared to its theoretical value. Specifically, if we let MVNIA, IA, and MVL represent the market value of the firm's non-intangible assets, intangible assets, and total liabilities respectively, then the market value of the shareholders' equity, MVE is given by:

$$MVE = \beta_1 MVNIA + \beta_2 IA + \beta_3 MVL \quad (1)$$

Market value of shareholders' equity is computed based on price per share and the number of shares outstanding. Analogous to Landsman's approach (1986), book values of non-intangible assets and total liabilities are used in the empirical test of this study. Consequently, the empirical analogue of the theoretical model given by equation (1) is:

$$MVE_i = b_0 + b_1NIA_i + b_2IA_i + b_3TL_i + e_i \quad (2)$$

where NIA and TL represent the book value of non-intangible assets and total liabilities, respectively. The theoretical value of the coefficient estimates for NIA and TL, b_1 and b_3 , are +1 and -1, respectively (see Landsman 1986). The focus of the empirical test of this study is on the magnitude of the coefficient estimate for intangible assets, b_2 . If the capitalized development cost under IAS No.38, among other intangible asset components, reflects its economic value as perceived by investors, the coefficient estimate for intangible assets, b_2 should be close to its theoretical value of +1. Such evidence would support the claim that IASB's intangible asset accounting standards are of high quality. This would also justify the widespread acceptance of IAS-based financial statements by major stock exchanges. On the other hand, if investors view development costs as expenses for the period incurred, the capitalized development costs under IAS No.38 would not be valued by investors, and the coefficient estimate for intangible asset would be significantly less than its theoretical value of +1. Given the profession's longstanding convention of conservatism, it would be of particular concern to standard setting bodies if the coefficient estimate were found to be significantly less than its theoretical value, implying that the reported intangible asset under IAS No.38 is significantly overstated.

3. Sample Selection and the Data

As IAS are accepted by more and more stock exchanges, the number of companies preparing IAS based annual reports has increased steadily during the last decade. Furthermore, in some countries, national standards govern only the preparation of parent companies' annual report (e.g., France, Germany, among others). In these countries, multinational companies are encouraged to prepare their consolidated financial statements using IAS. In order to test investors' perception of reported intangible assets under IAS No.38, companies preparing IAS-based consolidated financial statements were identified and financial and pricing data of these companies were collected. Specifically, a list of about 900 companies preparing IAS-based financial statements was first obtained from IASB's web site (www.iasb.org.uk). Since reporting quality is a function of both the standards quality and the auditing quality, low auditing quality may result in lower reporting quality even if the standard quality is high. Given the concern over auditing quality in developing countries (Choi et al. 2002), 444 companies from developing countries were excluded to eliminate the potential compounding factor of auditing quality. The second reason companies from developing countries were not included in the sample is the lack of empirical evidence regarding the capital market efficiency in some of those countries whereas capital market efficiency is an important assumption of the equity model regression.

To obtain financial information for the remaining companies on the list, the companies' websites were searched first. If the required information is not available on the websites, attempts then were made to obtain hard copies of IAS-based annual reports directly from the companies. This effort resulted in 113 IAS-based annual reports. To be included in the final sample, a company must also report a separate intangible asset number and must have the closing price of its stock available. The final sample consists of 57 companies from eight countries (see Table 1).

Table 1: Sample Composition

Country	No. of Companies	Country	No. of Companies
Canada	5	Hong Kong	3
Finland	2	Japan	1
France	12	Sweden	7
Germany	10	Switzerland	17
Total			57

4. Empirical Tests and Results

Equation (2) is used to assess the market valuation of reported intangible assets for the sample companies. Consistent with the discussion in Section 1, an intangible asset coefficient that is substantially equal to its theoretical value of +1 would indicate that the reported intangible assets under IAS No.38 reflect the economic value of the underlying intangible assets as perceived by investors, and, therefore, support the view that IAS are of high quality. However, an intangible asset coefficient that is significantly different from its theoretical value of +1 would indicate that reported intangible assets are significantly different from their economic value. Specifically, an intangible asset coefficient that is significantly smaller than +1 would indicate that the reported intangible assets are overstated as perceived by investors. Given the profession's longstanding convention of conservatism, this should be of particular concern to the IASB and standard setting bodies across the world.

Before regressing the market value of equity on the book values of assets and liabilities, the data are transformed by deflating all regression variables using net sales to mitigate the heteroscedasticity problem (Park 1966). Specifically, this study adopted the multivariate version of the Park procedure to deflate the regression variables using sales to reduce the problem of heteroscedasticity. Equation 2 was first estimated using untransformed data to obtain the residuals, e_i . Then the relationship between the residuals and sales is estimated using the following equation:

$$\ln(e_i) = \Gamma_0 + \Gamma_1 \text{SALES}_i + \Gamma_2 (\text{SALES}_i)^2 + v_i \quad (3)$$

The estimated values of the Γ 's are then used to transform the regression variables by deflating each variable by the following expression:

$$\text{SALES} (\Gamma_1 + \Gamma_2 \ln(\text{sales})) / 2 \quad (4)$$

The sample descriptive statistics of all regression variables both before and after data transformation are presented in Table 2.

Table 2: Sample Descriptive Statistics

Variables	Untransformed		Transformed	
	Mean	Std. Dev.	Mean	Std. Dev.
TA	7,751	14,571	5,624	9,122
TL	4,897	9,347	2,977	6,490
IA	178	694	115	480
MV	3,954	7,729	3,101	5,714

TA: Book value of total non-intangible assets.

TL: Book value of total liabilities.

IA: Book value of intangible assets.

MV: Market value of shareholders' equity.

The regression results of Equation (2) using the transformed data are presented in Table 3. All coefficient estimates have the predicted signs, and the three independent variables explained 77 percent of the cross-sectional variations in the market value of sample firms' equities. More important, the intangible asset coefficient is 1.21, and is not statistically different from its theoretical value of +1. The null hypothesis that the coefficient estimate for intangible assets under IAS No.38 is equal to its theoretical value cannot be rejected at 0.1 significance level. The result implies that the reported intangible assets under IAS No.38 reflect the economic value of the underlying intangible assets as perceived by investors. The findings seem consistent with the view that IAS No.38's intangible asset provisions are of high quality, and justify the favorable reactions to IASB's new intangible asset accounting policies from many stock exchanges.

Table 3: Regression Summary Statistics

$$\text{Model: } MVE_{i,t} = b_0 + b_1NIA_{i,t} + b_2IA_{i,t} + b_3TL_{i,t} + e_{i,t}$$

$$n = 57$$

	b_0	b_1	b_2	b_3	Adj. R^2
Estimate	617.07	1.07	1.21	-1.04	.77
t-ratio	1.54	4.31	3.02	-3.99	
Prob> t	.10	.01	.01	.01	

MVE: Market value of shareholders' equity
 NIA: Book value of total non-intangible assets
 TL: Book value of total liabilities
 IA: Book value of intangible assets

While the results presented in Table 3 seem supportive to IAS No.38's revised intangible asset provisions, there is a legitimate concern over the test results. That is, the variance inflation factors (VIF) for total assets and total liabilities were high, indicating the existence of a multicollinearity problem. When a multicollinearity problem exists, the ordinary least squares (OLS) estimates tend to be unstable and inflated. One approach frequently used in the literature to mitigate the problem of multicollinearity is to discard some of the highly correlated independent variables. Since the regression model in this study was based on the accounting identity, i.e., total assets minus total liabilities equal net assets, a logical choice would be to use net asset (which is the net of total assets and total liabilities) to replace the two highly correlated independent variables, namely the total non-intangible assets and total liabilities, in the regression. Specifically, the following net asset model was estimated:

$$MVE_i = b_0 + b_1NA_i + b_2IA_i + e_i \quad (5)$$

The regression results using the net asset model are presented in Table 4. The regression coefficient for the intangible assets is consistent with that obtained from the balance sheet model in Table 3. Specifically, the intangible asset coefficient is 1.20 and is not statistically different from its theoretical value. Furthermore, similar result was also obtained for the coefficient estimate for net assets. The regression coefficient for net assets is 1.12. This value is slightly greater than its theoretical value of +1, and is consistent with the literature that the book values of some assets such as plant assets are generally understated under historical cost accounting. Given the profession's longstanding convention of conservatism, the findings that both coefficient estimates are greater than their corresponding theoretical value should be comforting to standards setting bodies.

Table 4: Regression Summary Statistics

$$\text{Model: } MVE_{i,t} = b_0 + b_1NA_{i,t} + b_2IA_{i,t} + e_{i,t}$$

$$n = 57$$

	b_0	b_1	b_2	Adj. R^2
Estimate	617.07	1.12	1.20	.76
t-ratio	1.31	4.47	2.97	
Prob> t	.20	.01	.01	


MVE: Market value of shareholders' equity
 NA: Book value of total non-intangible assets less total liabilities
 IA: Book value of intangible assets

In summary, the evidence in Tables 3 and 4 cannot reject the hypothesis that the intangible asset coefficient equals its theoretical value of +1, implying that reported intangible assets by the 57 sample companies from eight countries reflect the economic value of the underlying intangible assets as perceived by investors. The evidence

seems consistent with the view that IAS No.38's intangible asset provisions are of high quality and can be rigorously interpreted and applied at least by the sample companies. It has direct policy implications in that it justifies the widespread acceptance of IAS-based financial statements by many stock exchanges.

5. Conclusions

International accounting standards have been gaining increasing acceptance from standards setting bodies and stock exchanges across the world since mid1990s. More recently, the SEC also calls for the study of IAS quality to help the Commission in its decision of whether IAS can be used by foreign registrants offering securities in the U.S. This study attempted to document empirical evidence regarding investors' perception of reported intangible assets under IAS No.38. Using data from 57 companies whose financial statements were prepared using IAS, significant evidence was obtained suggesting that the reported intangible asset by sample firms reflects its economic value as perceived by investors. The coefficient estimate for intangible assets from the equity model regression was approximately equal to its theoretical value of +1. This evidence seems to justify the widespread acceptance of IAS in general and the favorable reaction to IAS No.38's intangible asset provisions in particular.

The empirical results should be interpreted with caution because of two limitations of this study. The first limitation is its small sample size. Because of the lack of data availability, the test results of this study are based on a sample of 57 companies for the year 2000. The second limitation of this study is its sample composition. Because of concerns about auditing quality and capital market efficiency, companies from developing countries were excluded and, consequently, the final sample is made up of large multinational companies from eight industrialized countries. Few small companies were included in the final sample because only a few small companies prepared IAS based financial statements and none of them reported significant amount of intangible assets. In light of the positive relationship between multinationality and reporting quality documented in the existing literature, this study's findings, which are based on data from large multinational companies, may not be readily generalizable to all companies. In order to determine the generalizability of the findings, future research studies should employ more creative research designs to include more companies with varying sizes and from countries with varying stages of economic development. Such studies should provide further insight on investors' assessment of IAS quality. 

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