

The Effect of Fair-value Accounting on the Value Relevance of the Balance Sheet and the Income Statement

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ABSTRACT

The aim of this paper is to examine the value relevance of the balance sheet and the income statement. Specifically, this paper investigates the value relevance of book value of equity compared to the value relevance of earnings in firms that depend more on fair-value accounting. The sample of the study includes all listed firms in the Amman Stock Exchange (ASE), which are classified into two main groups: financial firms and non-financial firms. The results show that the value relevance of the balance sheet for financial firms is higher than that for the income statement. The results also show that firms with lower financial assets depend more on historical accounting and have higher-relevance income statements. The results indicate that the higher the percentage of financial assets, the more the firm depends on fair-value accounting and consequently, the balance sheet becomes more value-relevant to investors compared to the income statement.

Keywords: Book value of equity, Earnings, Value relevance, Fair-value accounting.

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أثر محاسبة القيمة العادلة على مدى ملاءمة قائمة المركز المالي وقائمة الدخل

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ملخص

هدفت هذه الدراسة إلى اختبار مدى ملاءمة قائمة المركز المالي وقائمة الدخل. اختبرت الدراسة مدى ملاءمة القيمة الدفترية لحقوق الملكية مقارنة مع مدى ملاءمة الأرباح، خاصة في الشركات التي تعتمد في تقييم أصولها على القيمة العادلة بشكل أكبر. اشتملت عينة الدراسة على جميع الشركات المدرجة في سوق عمان المالي، وصنفت إلى مجموعتين: الشركات المالية، والشركات غير المالية. وأظهرت النتائج أن قائمة المركز المالي أكثر ملاءمة من قائمة الدخل في الشركات المالية، بينما أظهرت النتائج أن الشركات التي تحتوي على نسب أصول مالية قليلة تعتمد بشكل أكبر على محاسبة التكلفة التاريخية، وبالتالي كانت قائمة الدخل فيها أكثر ملاءمة. وتشير النتائج كذلك إلى أنه مع ازدياد حجم الأصول المالية، تصبح الشركة أكثر اعتماداً على محاسبة القيمة العادلة في تقييم أصولها، وبالتالي تصبح قائمة المركز المالي أكثر ملاءمة مقارنة مع قائمة الدخل.

الكلمات الدالة: القيمة الدفترية لحقوق الملكية، الأرباح، مدى الملاءمة، القيمة العادلة.

1 أستاذ مشارك، قسم المحاسبة، كلية الأعمال، جامعة مؤتة، الأردن.

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INTRODUCTION

The foremost purpose of financial reports is to provide relevant information about the financial position and the financial results of a firm. The two major financial statements are the balance sheet and the income statement. Value relevance is the ability of the disclosed information in the reports to capture the firm's value. As a result, these pieces of financial information are aggregated by investors and used to make knowledgeable decisions.

However, the value relevance of financial information could vary depending on the *category* of the information. Thus, the general purpose of this paper is to examine the value relevance of the balance sheet and income statement. Specifically, this paper examines how much the balance sheet and the income statement are explaining the market value of the company. The key measure for the balance sheet is the book value of equity (*BVE*), while the key measure for the income statement is the net income (*Earnings*).

In literature, there are two main streams of studies; some papers showed that earnings are more value-relevant than the book value of equity, while other papers showed that the book value of equity relevance is in fact increasing, accompanied by a decrease in earnings' value relevance (Adwan et al., 2020; Collins et al., 1997). This paper assumes that the value relevance of each statement varies according to the accounting valuation method used in the financial reporting model. To empirically examine this premise, the paper compares the value relevance of each financial statement based on the market classification of the firm; financial firms and non-financial firms. Financial firms are companies that focus on providing financial services and hold high portions of financial assets and investments. These firms rely more on fair-value measurements for their financial assets (Ferreira et al., 2019; Aladwan & Saaydah, 2015). On the other hand, non-financial firms are companies that either manufacture and/or sell products or provide non-

financial services (*e.g. hotels, education, transportation, ... etc.*). These firms invest heavily in property and equipment and therefore rely on historical cost accounting to measure their assets.

The importance of this paper is to examine the variation in the value relevance of the balance sheet and the income statement, mainly through the effect of a firm's classification in the market. This classification is significant, because it defines the accounting valuation method applied in the financial reporting model, which clarifies the value relevance of each financial statement for investment decisions in listed companies in the ASE. Moreover, this paper argues that neither the balance sheet nor the income statement is becoming more (*or less*) value-relevant over time, but rather the value relevance depends on the context of the firm. Therefore, the general objective of this paper is to examine the value relevance of book value of equity compared to the value relevance of earnings in firms that rely more on fair-value accounting. The percentage of financial assets and investments to total assets is used as a *proxy measure* for fair-value accounting. As the percentage of financial assets increases, the more the firm will rely on fair-value measurements and as a result, the relevance of book value of equity (*i.e., the balance sheet*) will increase, so that the book value of equity becomes more relevant than earnings. Financial firms have a higher percentage of financial assets and rely more on fair-value methods. The expectation of this paper is that the balance sheet for these firms will be more value-relevant for investors than the income statement. On the other hand, firms with a lower percentage of financial assets (*i.e., non-financial firms*) will have higher-relevance income statements.

Literature Review

The Ohlson model (1995) makes a direct link between

accounting numbers and firm value. The model explains this link from the dividend point of view; dividends do not affect current earnings, but reduce current book value. Therefore, the change in book value is explained by earnings after deducting dividends and net of owner contribution. Based on that, the firm's market value relates to future and current earnings, book values and dividends. In other words, the model describes the value relevance of financial statements.

However, several other studies noted that the value relevance of financial statements has decreased over the years. The financial reporting model is failing to keep up pace with the continuous changes in the business environment, as it moves towards a knowledge/ technological era and away from an industrial/capital intensive era. Additionally, the increase in reporting losses and the increase in the importance of intangible assets are rendering the traditional historical cost financial reporting model less relevant (Elliott & Jacobson, 1991; Collins et al., 1997; Lev & Zarowin, 1999; Balachandran & Mohanram, 2011).

On the other hand, Francis and Schipper (1999) showed that the value relevance of financial reports did not decline over the years. The paper showed that the relevance of earnings to the firm value may have decreased, but the relevance of book value of equity to the firm value has significantly increased. Moreover, Barth et al. (1998) found that both the balance sheet and the income statement provide relevant valuation information, but the value relevance of each statement becomes more (or less) depending on the financial health of the firm. The paper showed that as the financial health decreases, the value relevance of balance sheet becomes more important for equity valuation than that of the income statement. In other words, as the firm's financial health deteriorates, the coefficient and explanatory power of book value of equity becomes higher and the earnings will be of an opposite sign.

However, book value of equity alone is insufficient to explain changes in the market value of equity; valuation

must also take into consideration the accrual component of earnings (Barth et al., 1999). Therefore, it's safe to argue that both book value of equity and earnings complete each other or compensate one another in explaining the value of the firm. For example, during quarterly earnings' announcements, managers voluntarily disclose balance sheet information when earnings are less informative and more uncertain (Chen et al., 2002). Moreover, other factors must also be taken into consideration to measure the value relevance of book value of equity and earnings, such as the economic cycle as well as the size and age of the firm. For larger and older firms, book value of equity becomes more dominant than earnings in explaining the market value of the firm. This is because they have more diversified operations and greater internal financing resources (Kane et al., 2015). On the other hand, a firm's characteristics, in addition to its size, determine the level of fair-value measurements, which leads to an increase in value relevance of both book value of equity and earnings (Zhang & Qu, 2020). The size of the board of directors also positively influences the value relevance of book value of equity and earnings (Almujamed & Alfraih, 2020). Black and White (2003) shows that the value-relevance of book value of equity *versus* earnings is affected by the accounting regime of countries. For example, book value of equity is more value relevant in Germany and Japan, while earnings are more value-relevant in the US. Russon and Bansal (2018) showed that assessing the value relevance of book value of equity *versus* that of earnings depends on the sector the firm appears in, but generally, book value of equity is a superior metric to assess over- (under-) valuation. Additionally, as the percentage of institutional investors increases, so does the value relevance of book value of equity over that of earnings (Omran &

Tahat, 2020). On the other hand, Chen et al. (2020) found that accounting comparability among industry peers increases the value relevance of earnings but not that of book value of equity. Also, disaggregated earnings, become even more value-relevant for intangible-intensive firms and banks (Kumari & Mishra, 2020; Burke et al., 2020; Bilal & Abdenacer, 2016). An important element that must be taken into consideration when evaluating earnings' value relevance is the stage of the firm's life cycle; earnings are more (less) relevant according to the stage of the firm's life cycle (Abu Rumman & Al-Debi'e, 2020). Furthermore, Adwan et al. (2020) showed that during financial crises, the value relevance of book value of equity increases, while that of earnings decreases. Moreover, the paper shows that the negative impact of a financial crisis is lower for financial reports that are more exposed to fair-value accounting. However, fair-value measurements are more value-relevant compared to historical valuations only during the crisis, but not before the crisis, where both measures are incrementally value-relevant to each other (Liao et al., 2020).

Hypothesis Development

Both the balance sheet and the income statement provide relevant financial information about the firm. Such information can be incremental or complementary to each other. That is, both statements add relevant cumulative information or complete each other to present all relevant information needed for decision-making. The balance sheet provides relevant information about the resources of the firm and claims on these resources. Specifically, it provides relevant information about liquidation and solvency values. Conversely, the income statement provides relevant information about the recent performance of the firm. However, in situations when firms report negative earnings, the value relevance of earnings decreases as the value relevance of book value of equity increases. Thus, in many situations, the value relevance of earnings and that of book

value of equity are opposite to each other; as one increases, the other decreases and *vice versa* (Collins et al., 1997). Moreover, the relative weight of the value relevance of book value of equity and earnings can be affected by firm characteristics. Book value of equity will be more value relevant than earnings in *financial firms*, because they rely more on fair-value accounting, whereas in capital-intensive firms, the value-relevance of earnings becomes higher, because they rely more on historical-acquisition accounting (Ferreira et al., 2019; Danbolt & Rees, 2008). The underlying reason for this variation is that when all assets are measured based on fair value, such measurement will not capture any abnormal earnings. In contrast, when all assets are measured based on historical cost, earnings capture the *value-in-use* for assets (Barth, 2000).

Based on the above argument, this paper examines the value relevance of book value of equity (*BVE*) and earnings (*E*) and tests how each of them explains the market value of equity (*MVE*). Specifically, the paper examines which of the them will have a higher explanatory significance in explaining the market value. The assumption is straightforward; for firms that rely more on fair-value accounting in their financial reporting model, (*BVE*) will have a higher weight (*i.e.*, *coefficient*) compared to earnings, whereas for firms that rely more on historical-cost accounting in their financial reporting model, earnings will have a higher coefficient.

H₀: *The value relevance of the book value of equity is higher than that of earnings in firms that rely more on fair-value measurements.*

The general hypothesis stated above is empirically tested by comparing two sets of firms. The first set include the financial firms which have a high percentage of financial assets and investments. These assets are measured and valued based on fair-value accounting.

The second set includes the non-financial firms that have a higher percentage of fixed assets, which are measured and valued according to historical-acquisition accounting. Therefore, this paper will test the following two hypotheses:

H1: *The value relevance of the book value of equity is higher than that of earnings in financial firms.*

H2: *The value relevance of earnings is higher than that of the book value of equity for non-financial firms.*

Research Design

The general assumption of this paper is that the value relevance of the balance sheet and the income statement becomes more (less) based on the valuation method applied in a firm's financial reporting model. The value relevance of both statements is measured by their explanatory power of the firm's market value. In order to measure value relevance, market value of equity is regressed on the summary measures from the balance sheet (*book value of equity*) and the income statement (*earnings*) (Collins et al., 1997; Burgstahler & Dichev, 1997; Barth et al., 1998):

$$MVE_{it} = \alpha + \beta BVE_{it} + \gamma E_{it} + \varepsilon_{it}$$

where MVE_{it} is the market value of equity measured as the

share price at the end of the fiscal year multiplied by the number of shares outstanding for firm i in period t . BVE_{it} is the book value of equity for firm i in period t measured as total assets minus total liabilities. E_{it} is the net income after taxes for firm i in period t . All variables are scaled by total assets in order to reduce heteroscedasticity.

The sample of the study includes all listed firms in the Amman Stock Exchange (ASE) over the period from 2002 to 2017. Listed firms are classified into three main sectors: financial, industrial and services firms. This classification is based on the major ongoing operations of the listed firms. Furthermore, the ASE sub-classifies financial firms into four sectors: banking, other diversified financial services, insurance and real-estate firms. In this paper, firms are re-classified into two major groups; financial firms and non-financial firms. The latter include the industrial and services firms. Financial firms rely more on fair-value accounting compared to non-financial firms. Table (1) shows the classification of the sample; data is arranged according to a cross-sectional format (*i.e.*, *without regard to differences in years*).

Table (1)

Sample and data classification of listed firms in the Amman Stock Exchange from 2002 to 2017

Classification type	Number of firms	Firm-year observations*
Non-financial firms		
Industrial	77	1056
Services	60	717
<i>Total</i>	<i>137</i>	<i>1773</i>
Financial firms		
Banks	16	251
Diversified financial services	36	375
Insurance	25	289
Real estate	35	372
<i>Total</i>	<i>112</i>	<i>1287</i>
* Missing firm-year observations are removed from the sample.		

Results

Table (2) displays the descriptive results for the sample. The mean scores for (*MVE*) and (*BVE*) are roughly the same for the financial firms. This shows that the market valuation

of the firm is similar to the book value of equity. The underlying reason is that financial firms rely more on fair value accounting compared to non-financial firms.

Table (2)
Descriptive statistics for financial firms' sample vs. non-financial firms' sample

	<i>Financial firms</i>		<i>Non-financial firms</i>	
	<i>Mean</i>	<i>St. Deviation</i>	<i>Mean</i>	<i>St. Deviation</i>
<i>MVE_{it}</i>	0.5795	0.583	0.858	0.645
<i>BVE_{it}</i>	0.5797	0.318	0.656	0.227
<i>E_{it}</i>	0.0054	0.082	0.013	0.092
<i>MVE_{it} is the market value of equity.</i> <i>BVE_{it} is the book value of equity.</i> <i>E_{it} is the net income after taxes.</i> <i>All variables are scaled by total assets.</i>				

On the other hand, the mean score for *MVE* is higher than that for *BVE* in non-financial firms. This could be explained by the distortion caused by historical-cost valuation and that the market is valuing certain assets that are either not shown in the balance sheet or simply undervalued.

The results for testing hypotheses H1 and H2 and shown

in Table 3. The expectation of this paper is that fair-value accounting will increase the value relevance of the book value of equity compared to that of earnings and *vice versa*; historical valuation will increase the value relevance of earnings compared to that of equity's book value.

Table (3)
Results for hypothesis testing
$$MVE_{it} = \alpha + \beta BVE_{it} + \gamma E_{it} + \varepsilon_{it}$$

<i>Panel 1: Financial firms</i>	<i>Coefficient</i>	<i>p-value</i>
<i>BVE_{it}</i>	0.788	0.000
<i>E_{it}</i>	0.419	0.000
constant	0.121	0.000
R ²	18.52%	
<i>Panel 2: Non-financial firms</i>	<i>Coefficient</i>	<i>p-value</i>
<i>BVE_{it}</i>	0.874	0.000
<i>E_{it}</i>	1.39	0.000
constant	0.266	0.000
R ²	16.6%	

MVE_{it} is the market value of equity measured as the share price at the end of the fiscal year, multiplied by the number of shares outstanding for firm i in period t. BVE_{it} is the book value of equity for firm i in period t measured as the total assets minus the total liabilities. E_{it} is the net income after taxes for firm i in period t. All variables are scaled by the total assets to reduce heteroscedasticity.

**All variables are significant at a 1% significance level.*

Panel 1 shows the results for the financial firms' sample. Results are aligned with expectations; the coefficient for the *BVE* (0.788) is higher than the coefficient for *E* (0.419). This shows that the book value of equity has a higher explanatory power compared to that of earnings. Since financial firms rely more on fair-value valuation in their financial reporting, the book value of equity is closer to the market value of equity. Moreover, as the valuation of net assets depends progressively on fair value, earnings will capture lower amounts of abnormal earnings, thus making earnings less value-relevant than the book value of equity in financial firms. Results for non-financial firms in *panel 2* show that the coefficient for (*E*) is much higher than the coefficient or (*BVE*) (1.39 compared to 0.874). This indicates that earnings in this sample are more value-relevant than the book value of equity. Non-financial firms rely more on acquisition-(historical) cost valuations in financial reports, making equity values less value-relevant and consequently, earnings are capturing abnormal earnings. Therefore, the tests for H1 and H2 show that the value relevance of both book value of equity and earnings is higher (lower) according to the assets'

valuation method. For financial firms which rely more on fair-value accounting in their reporting model, the balance sheet is more value-relevant than the income statement. Conversely, non-financial firms rely more on historical-cost accounting, making the income statement more value-relevant compared to the balance sheet.

Table (4) shows the mean scores for assets that are measured according to fair value. The table also splits the financial firms' sample into four major sub-sectors in accordance with the ASE market classification. The assets that are measured based on fair values are financial assets, short-term investments (*e.g. trading*) and long-term investments. These percentages serve as a *proxy measure* for using fair-value accounting in each sample and in each sector. The table excludes financial assets at amortized costs (*e.g. investments in bonds*) and property investments. The latter are excluded because firms can value them either based on fair value or on cost model in accordance to IAS (40).

Table (4)
Financial assets and investments as percentage to total assets

<i>Panel 1</i>	Mean score
Financial firms	42.7%
Non-financial firms	14.95
<i>Panel 2</i>	Mean score
Bank sector	3.67%
Diversified financial services sector	17.03%
Insurance sector	15.13%
Real-estate sector	6.9%

In *panel 1*, the percentage of financial assets and investments in financial firms is approximately 43% of the total assets. These assets are measured based on their fair

values, which provides additional evidence that the book value of equity has a higher coefficient than that of earnings in financial firms compared to non-

financial firms. Moreover, *panel 2* shows the percentage of financial assets for each sector in the financial firms' sample. The highest scores are in the diversified financial services and insurance sectors and the lowest one is in the banking sector. Bank assets are mostly held in cash, whereas diversified financial services and insurance firms maintain higher percentages of financial assets that can be easily

liquidated to settle any probable contingent payments in the future. These assets must be measured and reported to reflect their fair values. Based on Table 4, the model is applied to each financial sector (sub-sample) in order to compare the coefficients of the book value of equity amongst them. Results are shown in Table (5).

Table (5)
Results for comparing the coefficients of the book value of equity

Financial firms' sub-sectors:	βBVE_{it}^{***}
<i>Banks</i>	0.394
<i>Diversified financial services</i>	0.756
<i>Insurance</i>	0.758
<i>Real estate</i>	0.594
*** Significant at a 1% significance level.	

The highest coefficients are in the insurance sector or and the diversified financial services sector (roughly 0.76). This is consistent with the percentages of financial assets in Table 4, where both sectors show the highest percentages. The lowest coefficient is in banks (0.394), since the percentage of financial assets is the lowest in this sector. Based on the results in Tables 4 and 5 and *assuming* that the percentages of financial assets serve as a *proxy measure* of fair-value accounting, it can be inferred that as the percentage of fair-value accounting increases in the financial reporting model, the coefficient of the book value of equity increases and consequently, the value relevance of the balance sheet increases.

The conclusion of the results indicates that firms that use fair-value accounting measurements in their financial reporting model have a higher (*BVE*) coefficient, producing a higher value-relevant balance sheet statement. When net assets are measured and valued using fair-value accounting, the *BVE* will capture the *value-in-use*. This conclusion is

even more evident in the sub-sectors of financial firms. Conversely, non-financial firms rely more on historical-cost accounting, rendering the loss of *BVE*'s value relevance and consequently rendering earnings to capture the *value-in-use* of net assets and abnormal earnings, thus producing a higher value-relevance income statement. The results of the paper identify a distinct connection between the accounting valuation model and the value relevance of each statement. Historical-cost accounting limits the value relevance of the balance sheet and increases that of the income statement.

Conclusion

The main objective of financial reporting is to provide information that is relevant for decision-making. Both the balance sheet and the income statement provide information that is relevant about a firm's financial position and operating results.

However, the value relevance of the information provided by both reports varies from firm to firm and according to the accounting treatments and measurements applied. Financial firms, which hold higher amounts of financial assets and investments, rely more on fair-value accounting, whereas non-financial firms (*e.g. manufacturing, services*) investing heavily in fixed assets rely more on historical-acquisition accounting. Therefore, the value relevance of the balance sheet and the income statement will increase or decrease accordingly. The book value of equity, the main measure for the balance sheet, will be dominant in explaining the market value of the firm if net assets are assessed according to fair value. However, if the firm relies more on historical-cost accounting, net assets will not be able to capture the *value-in-use*. Consequently, the value relevance of earnings will increase and will have a higher explanatory power for the market value of the firm. Thus, the accounting measurement treatment used in the financial reporting model for any firm determines which of the financial reports is more value-relevant.

In this paper, financial assets (as percentage to total assets) are assumed to be a proxy measure for the use of fair-value accounting measurements. The results show that financial firms have a higher percentage of financial assets and consequently rely more on fair-value measurements. Therefore, the balance sheet in these firms has a higher proportion of value-relevant information for investors compared to that of the income statement. In situations where fair-value accounting is less used (*i.e., nonfinancial firms*) the value relevance of earnings becomes higher, because abnormal earnings are captured.

This paper adds several contributions to literature; firstly, the value relevance of the balance sheet and the income statement is determined by the sector/industry classification

of the firm. Since a sector will include similar firms, the value relevance of one financial report will be higher than that of another for all firms in the same sector. Secondly, value relevance is also influenced by the accounting valuation method applied in the financial reporting model. Fair-value measurements increase the value relevance of the balance sheet. Conversely, historical-cost accounting fails to capture the *value-in-use*, making the balance sheet less value-relevant. Thirdly, the value relevance of each financial statement depends on the sector/firm characteristics and the accounting measurement/valuation methods applied. Therefore, there is no clear cut-point of determining the value relevance of each statement in absolute terms. Finally, the paper adds practical applications for investors in the ASE when valuing listed firms. Investors must consider the valuation method used and the market classification in order to determine which financial report provides the most value-relevant information about the firm's true and real value.

A main limitation of this paper is that it compared the value relevance of only the balance sheet and the income statement. Also, the paper focused only on fair-value measurements to compare the value relevance of the financial statements. Thus, future research should incorporate the measure of the value relevance of the cash-flow statement in addition to the balance sheet and the income statement. Moreover, future studies might measure the value relevance of each element of information from each statement to measure the reaction of the market with the different components of financial reports and to determine which of these components are valued the most by investors.

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