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Equity valuation in practice: The influence of net financial expenses

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ABSTRACT

This study investigates the relevance of net financial expenses with respect to equity valuation in an IFRS accounting regime. According to the residual earnings valuation model, income related to balance sheet items that are recorded at fair value is not applicable for valuation purposes. There are no residual earnings associated with these items because the balance sheet provides 'perfect' value estimates for the items in question. In accordance with the contention that under IFRS, aggregate net financial liabilities are recorded at a book value that is close to fair value, this study demonstrates that net financial expenses are not associated with the market prices of stocks. The investigation discusses the empirical findings in light of the enduring controversies regarding the use of fair value accounting.

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1. Introduction

The residual earnings model for company valuation has become substantially more popular over the course of the past decade, and this model now constitutes an integral aspect of the curriculum of valuation courses at business schools throughout the world. The residual earnings model can be simplified to the residual operating income model if net financial liabilities are recorded at fair value. Under the assumption of fair value accounting for net financial liabilities, it is unnecessary to forecast future net financial expenses; instead, all residual earnings can be attributed to operating items, and the fundamental analysis can focus solely on the forecasting of operating income.

Under International Financial Reporting Standards (IFRS), financial assets and obligations are recorded at either their fair values or their amortised historical costs. It may be argued that amortised historical costs will not differ greatly from fair values in the context of slowly changing interest rate regimes (Penman, 2013). If this contention is valid, then in the aggregate, the book values and fair values of net financial liabilities should be similar. This reasoning raises the important empirical question of whether the aggregate value of net financial liabilities is 'close enough' to fair values for residual operating income valuation to serve as an adequate approximation of residual earnings valuation. The purpose of this study is to examine this important question by not only investigating the statistical relationships between accounting information and the market prices of stocks but also relating these findings to the broader discussions about the use of fair value accounting that are occurring in both academic societies and professional circles.

This empirical study reveals that operating income is highly applicable for valuation purposes. This finding is consistent with the widespread use of historical cost accounting for operating items that generate the residual earnings components of operating income. In other words, the balance sheet does not provide sufficient information about the fair value of net

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operating assets. However, this study reveals that net financial expenses are statistically unrelated to stock values. This finding is consistent with the conjecture that net financial liabilities are recorded at values that are close to fair values under IFRS; this result indicates that the residual operating income model may provide an adequate approximation for the residual earnings valuation model.

The study assesses a Norwegian sample. Norway has been relatively unaffected by both the recent financial crisis and the on-going eurozone crisis; thus, this nation features stable economic conditions and non-volatile interest rates. Moreover, Norway provides relatively extensive protections for investors and strict legal enforcement of these protections (La Porta, Lopez de Silanes, Sheifer, & Vishney, 1998); these aspects of the Norwegian economic environment promote low and stable levels of earnings management and disclosures that are more informative than disclosures in EEA countries[1] with less comprehensive protections for investors (DeFond, Hung, & Trezevant, 2007; Leuz, Nanda, & Wysocki, 2003).

This paper is organised as follows. Section 2 presents both the residual earnings model and the residual operating income model and discusses the assumptions under which the former model can be replaced by the latter. Section 3 describes the data and presents the research design for this investigation. Section 4 presents the empirical findings of this study; in Section 5, these findings are placed in a wider perspective and analysed in the context of the broader on-going debate on the general uses of fair value accounting. Section 6 concludes the paper.

2. Theoretical background

The value of a company's equity is equal to the present value of its future dividends. It is initially assumed that the clean surplus relation (CSR) holds. The CSR indicates that a change in book equity is equal to the value of net earnings minus net dividends. Thus, under the CSR, there is no *dirty surplus* (other comprehensive income). If the CSR holds, then the dividend model can be restated as the renowned residual earnings (or income) model (see, e.g., Ohlson, 1995):

$$V_0^E = B_0 + \sum_{t=1}^{\infty} \frac{E(\mathrm{EARN}_t - r_E * B_{t-1})}{(1 + r_E)^t}$$

In the equation above, V_0^E is the value of a firm's equity at time 0, B is the book value of the firm's equity, EARN is the firm's net earnings, and r_E is the required rate of return on the equity (for simplicity, this rate of return is assumed to be constant). The validity of the CSR is not strictly required by this model. Because the model is forward looking, one can always assume that there will be no dirty surplus; any forecast of a dirty surplus can simply be added to net earnings on a future pro forma income statement.

The residual earnings model states that the value of a company's equity is equal to the book value of its equity plus the discounted value of its future residual earnings. Residual (or abnormal) earnings are defined as the difference between a firm's accounting income and the firm's required return on its book value of equity. If the balance sheet is perfect in the sense that all items are recorded at fair value, the equity value will simply be equal to the book value of equity, and the forecasted residual earnings will be equal to zero for all future years. Under these 'perfect accounting' conditions, all values will be provided by the balance sheet, and the income statement will have no relevance for valuation purposes. However, under conservative accounting rules, the book values of assets are typically underestimated and the book values of liabilities are sometimes overestimated; therefore, using these rules, the value of residual earnings will be greater than zero and the income statement will typically provide value-relevant information.

In principle, the residual earnings model can be disaggregated such that residual earnings are computed for every balance sheet item. The equity value will then be equal to the sum of all of these items' book values plus the sum of the present values of the residual earnings that each balance sheet item is expected to generate in the future. The future residual earnings for items that are recorded at fair value (or *intrinsic* value) may be disregarded because all future residual earnings for these items will be equal to zero: "If some assets are measured in the balance sheet at market value and if market value equals intrinsic value, then we know [that] we don't have to forecast the residual earnings that they will produce; their forecasted residual earnings will be zero" (Penman, 2013, p. 438).

In most countries, the accounting that is performed for operating items is generally conservative. For instance, PPE (property, plant and equipment) assets are typically depreciated excessively quickly, generating accounting values that are lower than the fair values of these assets. Moreover, intangible assets are also frequently either underestimated in value or not recognised on the balance sheet at all. In addition, liabilities are often treated conservatively in the context of accounting; in general, operating liabilities and provisions are rarely underestimated. However, many accounting regimes, such as IFRS, have sought to increase the use of fair value accounting for financial assets and liabilities (Hernández Hernández, 2004). The primary argument for this change is that it would allow for more up-to-date and relevant valuations of assets and liabilities to be included on a firm's balance sheet (Gwilliam & Jackson, 2008); these valuations could enable investors and other users of financial statement information to obtain more accurate assessments of the consequences of a firm's financing strategies (Khurana & Myung-Sun, 2003).

[1] The European Union required all exchange-listed firms within the European Economic Area (EEA) to adopt IFRS in their consolidated financial statements on January 1st, 2005. The EEA consists of Norway, Iceland, Lichtenstein and the EU nations.

If net financial debt is recorded at fair value on the balance sheet, then financial items on the balance sheet should not be responsible for any future residual earnings. Thus, financial items can be disregarded in forecasts of residual earnings; this simplification is beneficial because "[w]e always want to carry out valuation efficiently" (Penman, 2013, p. 468). All of a firm's future residual earnings will be related to operating items. Thus, if the fair values of a firm's net financial debts are recorded on the firm's balance sheet, the valuation of the firm is simplified and the residual earnings model can be replaced by the residual operating income model:

$$V_0^E = B_0 + \sum_{t=1}^{\infty} \frac{E(\mathrm{OI}_t - r_F * \mathrm{NOA}_{t-1})}{(1 + r_F)^t}$$

In the above equation, OI is operating income, and NOA is net operating assets. Residual operating income is defined as the difference between a firm's operating income and its required return on net operating assets. The required rate of return on NOA, r_F (where F denotes 'firm' in contrast to E for 'equity'), deviates from the required rate of return on equity if a company has (net) financial liabilities or assets. The reader should note that residual operating income is sometimes referred to as 'economic profit' or as 'economic value added' and that certain consulting firms have adopted these terms as trademarks for their valuation products (Penman, 2013).

In addition to simplified forecasting, another advantage of using the residual operating income model instead of the residual earnings model is related to the discount rate (the required rate of return). As discussed by Penman (2013), if the renowned Miller and Modigliani proposition that a firm's financing does not affect its WACC (weighted average cost of capital), which is denoted by r_F, holds true for the formula above, then a constant discount rate can be applied for all future years (assuming that a firm's operational risk will remain unchanged in the future). By contrast, the discount rate for equity (r_E) varies with leverage; thus, in most situations, this discount rate will have to be re-calculated for every year of a forecast horizon. Therefore, the fair value accounting of financial items may simplify equity valuation both because net financial expenses do not need to be forecasted and because a constant discount rate can be applied for a firm for all future years of interest.

To be completely accurate, it must be noted that an additional assumption to fair value accounting for financial items is necessary for the residual operating income model to be equal to the residual earnings model. In particular, this assumption is that all of the financial markets in which a company operates are efficient. In other words, this assumption states that a firm cannot add value through its financing transactions. For instance, if a company could add value by issuing debt or equity in inefficient markets, it would generate lower net financial expenses and thereby create positive residual income. For the remainder of this study, it is assumed that all financial markets are efficient.

No accounting regime relies solely on the fair values of financial items. However, it is often assumed that the extent of fair value accounting in modern accounting regimes is sufficient for the residual operating income model to constitute an adequate approximation of the residual earnings model (see discussion in Penman, 2013). The notion underlying this assumption is that if the extent of fair value accounting for financial assets and liabilities is significant, then one should use the residual operating income model rather than the residual earnings model because the former model both allows for a constant discount rate to be employed for all future years and provides a substantially simpler forecasting approach for the firm valuation process than the latter model. In this study, I seek to answer the following question: Can the residual earnings model be replaced by the simplified residual operating income model under IFRS conditions, which are the most widely used set of accounting standards in the world?

IFRS approaches generally involve the use of fair values for all financial assets except for investments that are held to maturity (cf. IAS 39). For these investments, historical cost is applied. For the assets for which fair values are used, reliable measurements of the values of the assets must be obtainable. Amortised historical cost is typically used to account for financial debts, whereas fair values are employed to represent various financial instruments, such as options and other derivatives. Thus, it is clear that IFRS utilises a combination of fair values and amortised historical costs. However, amortised historical costs will often be close to fair values, at least in markets with slow interest rate changes (Penman, 2013). Thus, the aggregate accounting values of financial assets and liabilities under IFRS could be close enough to fair values to allow the substitution of residual operating income valuation for residual earnings valuation to constitute a meaningful and reasonably accurate approach. This issue is examined in this study. It is unclear whether in the aggregate, the book values of the financial assets and liabilities under IFRS actually provide an adequate empirical approximation of the fair values of these assets and liabilities; therefore, no hypothesis is formulated prior to the empirical analysis of this study.

The research question of this investigation is examined through the study of the statistical relationship between stock prices and net financial expenses (see Section 3). Several prior studies have empirically assessed the value relevance of income statement items (Barth, Cram, & Nelson, 2001; Carnes, 2006; Ohlson & Penman, 1992). Barth et al. (2001) disaggregate earnings into cash flow and accrual items and do not examine line items of the income statement. By contrast, both Ohlson and Penman (1992) and Carnes (2006) investigate the value relevance of line items on the income statement. However, Carnes (2006) does not study financial income items at all, whereas Ohlson and Penman (1992) include financial items in a category that they refer to as 'all other income items' and do not present separate analyses of these financial items.

3. Research design and data sample

3.1. Research design

In the residual earnings model, a firm's equity value is a function of its book value of equity and its bottom-line accounting earnings. Thus, the price model is often employed to conduct general empirical analyses of the value relevance of accounting information (see, e.g., Collins, Maydew, & Weiss, 1997):

$$P_{i,t} = \beta_0 + \beta_1 \mathrm{BPS}_{i,t} + \beta_2 \mathrm{EPS}_{i,t} + \varepsilon_{i,t}$$

In the equation above, P_{it} is the stock price of company i in year t, BPS is a firm's book value per share, and EPS is a firm's earnings per share. If the balance sheet is 'perfect' in the sense that all items are valued at their fair values, then β_1, the regression coefficient of BPS, will be equal to one, whereas β_2, the regression coefficient of EPS, will be zero. However, under a conservative accounting regime, the BPS of a firm will be lower than the share's fair value. Moreover, the value of the residual earnings will be greater than zero. The residual earnings that are embedded in the EPS will cause β_2, the regression coefficient of EPS, to be greater than zero.[2] For more information regarding how book values and earnings are combined in firm valuation approaches, see, e.g., Penman (1998) or Zhang (2000).

Net earnings consist of net operating income and net financial expenses. In this study, I empirically explore whether net financial expenses are useful for firm valuation. Thus, I disaggregate earnings into its two underlying components and perform the following in-depth price regression (cf. Aboody & Lev, 1998; Barth et al., 2001; Lev & Sougiannis, 1996):

$$P_{i,t} = \beta_0 + \beta_1 \mathrm{BPS}_{i,t} + \beta_2 \mathrm{OIPS}_{i,t} + \beta_3 \mathrm{FINPS}_{i,t} + \varepsilon_{i,t}$$

In the above equation, OIPS is the operating income per share, and FINPS is the net financial expenses per share. If the book value of net financial liabilities differs significantly from the fair value of these liabilities, then a firm's net financial expenses will include components of the firm's residual earnings. Net financial expenses will then be relevant when the equity value is estimated and therefore their regression coefficient of β_3 will be significantly different from zero. By contrast, if net financial liabilities are recorded at their fair value or at a value that is close to this fair value, then there will be no components of residual earnings embedded in the net financial expenses. In this situation, the FINPS will not be relevant to estimations of the value of a firm's equity value, and the regression coefficient for FINPS will be equal to zero.

In the empirical section of this study, I begin by performing a standard price regression to investigate the value relevance of a firm's aggregate book equity and net earnings. Subsequently, to assess the value relevance of a firm's net financial expenses, I apply the alternative price model in which earnings are disaggregated into operating income and net financial expenses.

3.2. Data sample

The research question of this study is addressed through the analysis of a Norwegian sample that includes the firms that are listed on the Oslo Stock Exchange. As a member of the EEA, Norway was required to comply with EU regulations that mandated the introduction of IFRS in 2005. In 2005, for comparability reasons, Norwegian companies had to restate their 2004 financial statements using IFRS as the prevailing accounting regime. This study utilises accounting statements from 2004 to 2009 for its empirical analyses. All of the data for this investigation are collected from Datastream. Prices are measured on the 31st of December each year, whereas a firm's book equity is measured at the end of a firm's financial year, and its earnings are calculated over the course of its financial year. Operating income and net financial expenses for each firm are computed net of taxes. For the allocation of taxes, it is assumed that the effective tax rate for net financial expenses is equal to the marginal rate (which is 28% in Norway). The maximum and minimum percentile of P, BPS, and EPS are excluded from the analysis to avoid the incorporation of outliers that produce an unreasonably large influence on the regression results; the final sample for this study contains 779 observations.

Table 1 displays the distributional characteristics of the data sample. The distributions for both stock prices and accounting data are skewed to the right; in particular, all of these metrics exhibit means that lie between the median and the third quartile of the study data. Note also that the standard deviations for the assessed metrics are relatively large. Table 2 presents the pairwise correlations between the variables of the study. All of the accounting variables are significantly associated with stock price. However, the positive correlation coefficient between stock price and net financial expenses is counterintuitive, given that this correlation appears to indicate that more net financial expenses are associated with higher stock prices. Nonetheless, conclusions based on this bi-variate analysis are premature; thus, further analysis is postponed until the multivariate regressions have been performed.

[2] Christensen and Feltham (2003) demonstrate how the price model can be deduced from the residual earnings model. An important assumption of this deduction is that the previous year's earnings for a firm contain information relevant to the prediction of the firm's future residual earnings.

Table 1
Distributional characteristics.

Variable	Mean	Q1	Median	Q3	StDev	*N*
P	50.21	8.20	26.20	66.16	64.53	779
BPS	26.75	3.58	12.30	31.48	39.76	779
EPS	2.44	−0.33	0.66	3.28	7.87	779
OIPS	3.21	−0.13	0.89	4.21	8.31	779
FINPS	0.77	0.00	0.20	0.93	1.53	779

The table presents the mean, first quartile (Q1), median, third quartile (Q3), standard deviation (StDev) and number of observations (*N*) of the stock price (*P*), book value of equity per share (BPS), earnings per share (EPS), operating income per share (OIPS) and net financial expenses per share (FINPS) for the examined firms. The firms' operating incomes and net financial expenses are computed net of taxes. The tax allocations of this study assume that the effective tax rate for net financial expenses is equal to the marginal rate (which is 28% in Norway). The sample includes firms that were listed on the Oslo Stock Exchange between 2004 and 2009.

Table 2
Correlations.

Variable	*P*	BPS	EPS	OIPS	FINPS
P		0.76***	0.58***	0.61***	0.35***
BPS	0.69***		0.51***	0.59***	0.55***
EPS	0.48***	0.50***		0.97***	0.27***
OIPS	0.52***	0.57***	0.98***		0.41****
FINPS	0.38***	0.56***	0.20***	0.38***	

Pearson and Spearman correlation coefficients are displayed below and above the diagonal, respectively, for the following variables: stock price (*P*), the book value of equity per share (BPS), earnings per share (EPS), operating income per share (OIPS) and net financial expenses per share (FINPS). The sample includes firms that were listed on the Oslo Stock Exchange between 2004 and 2009.

* Significant at 10% level (two-tailed).
** Significant at 5% level (two-tailed).
*** Significant at 1% level (two-tailed).

4. Empirical findings

The empirical analysis of this investigation begins with a traditional price regression, which is presented as Model 1 in Table 3. The regression coefficients equal 0.98 for BPS and 1.47 for EPS; both of these coefficients are highly significant. Commonly, price regressions produce regression coefficients for BPS smaller than one and regression coefficients for EPS larger than one; see, e.g., Collins et al. (1997). The highly significant regression coefficient of EPS clearly suggests that earnings are relevant for equity valuations; thus, with respect to aggregate accounting numbers, there is no support for the contention that the items on the balance sheet are recorded at values that are close to fair values. This result is expected; in particular, the use of conservative accounting principles for the treatment of many operating items creates positive future residual earnings. Thus, the market value of equity is higher than the firm's book value of equity. The explanatory power of this model, as calculated by its adjusted R^2 value, is equal to 50.16%, which is a typical level of explanatory power for price regressions (Collins et al., 1997).

The second analysis, which splits earnings into operating income and net financial expenses, is presented as Model 2 in Table 3. This change in the regression specification has little effect on the regression coefficient of BPS. Moreover, the

Table 3
Value relevance.

Variable	Model 1		Model 2		Model 3	
	Coefficient	*t*-Value	Coefficient	*t*-Value	Coefficient	*t*-Value
Intercept	20.44***	10.39	20.40***	10.28	20.17***	10.24
BPS	0.98***	20.67	0.97***	17.26	0.95***	18.90
EPS	1.47***	6.13				
OIPS			1.47***	6.11	1.45***	6.06
FINPS			−1.24	−0.96		
Adj. R^2	50.16%		50.10%		50.10%	
N	779		779		779	

The table presents the regression coefficients, *t*-values, explanatory power (Adj. R^2) and number of observations (*N*) from the following regression models:
Model 1: $P_{it} = \beta_0 + \beta_1 \mathrm{BPS}_{it} + \beta_2 \mathrm{EPS}_{it} + \varepsilon_{it}$.
Model 2: $P_{it} = \beta_0 + \beta_1 \mathrm{BPS}_{it} + \beta_2 \mathrm{OIPS}_{it} + \beta_3 \mathrm{FINPS}_{it} + \varepsilon_{it}$.
Model 3: $P_{it} = \beta_0 + \beta_1 \mathrm{BPS}_{it} + \beta_2 \mathrm{OIPS}_{it} + \varepsilon_{it}$.
P = stock price, BPS = book value of equity per share, EPS = earnings per share, OIPS = operating income per share, FINPS = net financial expenses per share. The sample includes firms that were listed on the Oslo Stock Exchange between 2004 and 2009.

* Significant at 10% level (two-tailed).
* Significant at 5% level (two-tailed).
*** Significant at 1% level (two-tailed).

regression coefficient of OIPS in Model 2 is equal to the regression coefficient of EPS in Model 1; in addition, these two coefficients have almost exactly the same *t*-values. This finding is consistent with the fact that operating items are not recorded at fair value. The extensive use of historical cost accounting creates residual operating income, rendering OIPS highly relevant for valuation purposes.

The purpose of this study is to evaluate the relevance of net financial expenses for equity valuation. Thus, the coefficient of FINPS is particularly interesting. First, we note that the coefficient is negative. This result is more intuitive than the positive correlation coefficient that was reported earlier. However, the regression coefficient for FINPS is not statistically significant; in fact, it is not even close to being significant. This result supports the contention that on average, net financial liabilities under IFRS are recorded at values that are close (or equal) to their fair values. Thus, fair value accounting produces balance sheet values of net financial liabilities that are sufficient for accurate calculations of firm values; there are no residual earnings from net financial liabilities, and net financial expenses are therefore irrelevant for valuation purposes.[3]

As a robustness assessment, Model 2 is constructed once again using annual data (results not tabulated). This alternative test demonstrates that the coefficient of FINPS is insignificant for all of the individual years of the sample. In fact, the lowest *p*-value for this coefficient during any of the studied years is 0.444.

As an additional test, a price regression is performed exclusive of the FINPS variable; see Model 3 in Table 3. The explanatory power of the price regression models of this study appears to be unaffected by this change in regression specification, further illustrating that net financial expenses appear to have no relevance to the equity market value of exchange-listed companies that utilise IFRS principles to produce their financial reports.

5. Perspectives on fair value accounting

The purpose of this study is to aid equity investors by analysing market-based empirical evidence and providing a description of the influence of a firm's net financial expenses on the value of the firm's equity. Moreover, in general, the valuation consequences of fair value accounting should be of interest to accounting standard setters. However, this study is not normative in the sense of suggesting optimal accounting principles and methods to these standard setters. Nevertheless, the findings of the study can be evaluated in the context of the on-going debate among academics and professionals about the uses of fair value accounting.

Fair value accounting has historically been controversial (Gwilliam & Jackson, 2008; Nissim & Penman, 2008), and the debate regarding fair value accounting has been particularly intense in the aftermath of the recent financial crisis (Arnold, 2009; Heilpern, Haslam, & Andersson, 2009). Certain individuals have claimed that fair value accounting contributed to or even caused this financial crisis (see discussions in, e.g., Hatherly & Kretzschmar, 2011; Laux & Leuz, 2010). A brief example can illustrate this claim. Plummeting stock prices (or, more generally, prices of financial instruments) created severe fair value (accounting) losses for companies that were not originally directly affected by the crisis (cf. Andersson & Haslam, 2012; Heilpern et al., 2009). The dramatic earnings and book equity reductions often caused these companies' market values to drop. If financial markets during the financial crisis were somewhat inefficient and illiquid, undervalued stocks might have contributed to negative spirals in worldwide stock markets. These negative spirals may also have resulted from asset sales that were forced because falling prices depleted banks' stocks of capital (Laux & Leuz, 2010). By contrast, in bubble-like stock market scenarios, fair value accounting may reinforce the bubble by introducing overvalued securities into financial statements. Thus, during both crises and bubbles, financial statement information that could actually have proven useful for challenging potential stock price inaccuracies may be corrupted (because market prices that may result from market inefficiencies are used to challenge other market prices; see discussion in Nissim & Penman, 2008).

The residual earnings model illustrates that firm values originate from both book equity and accounting earnings; for further information regarding this issue, see Penman (1998) and Zhang (2000), who discuss how book values and earnings are combined during firm valuation processes. Similarly to the effects of other fair value revaluations, the revaluation of a financial item will impact both earnings and book equity. This type of revaluation produces earnings effects because it directly causes changes to the fair values that appear on a firm's balance sheet. However, if investors do not accurately comprehend the accounting effects of revaluation, then fair value accounting may affect stock prices during certain situations, such as crises or bubbles. For instance, investors may potentially 'double-count' book value and earnings effects; a firm's stock price may change because a revaluation causes a change in book equity, but these prices may also be altered because investors revise their future earnings forecasts for the firm (cf. Penman, 1998). The possible earnings effects of fair value revaluations are easily illustrated with simple assessments of P/E ratios. However, fair value revaluations are transitory ('random walks') and therefore provide no reason to alter earnings forecasts (Danbolt & Rees, 2008; Ronen, 2008). Nevertheless, prior research has suggested that investors 'fixate' on bottom-line earnings; at least in the short run, investors do not appear to appreciate the varying valuation effects of different earnings components (cf. Sloan, 1996). The empirical results that are presented in

[3] Other comprehensive income (dirty surpluses) that may arise from changes in the values of financial assets and liabilities is not included in the FINPS. The analysis of this study focuses exclusively on earnings items that are reported on the income statement. Note that in any event, these types of 'dirty surpluses' arise from financial items that are recorded at fair value (thus, the discussion of whether the balance sheet values for these items are 'close enough' to fair value is irrelevant).

this study do not support this hypothesis of market inefficiencies. In this study, consistent with the notion that fair value revaluations represent transitory earnings items, net financial items appear to be unrelated to equity values.

It should be noted that possible earnings manipulations that are caused by flexibility in the fair value accounting rules (see, e.g., the discussion in Gwilliam & Jackson, 2008; cf. Barth & Taylor, 2010) might also cause net financial expenses to be unrelated to equity values.[4] However, this explanation is not regarded as the probable driver of the empirical findings in this study because there are limited possibilities for discretion in the reporting of financial items; these possibilities would most likely only be applicable to a small number of observations in the large sample that is assessed in the current investigation (for the average firm, most fair values are obtained from active markets, and fair value accounting provides little room for manipulation in these situations; cf. Laux & Leuz, 2010). Thus, this explanation is not discussed further in this section.

It is generally acknowledged that in contrast to historical cost regimes, fair value accounting involves revaluations that produce increased earnings volatility (Gwilliam & Jackson, 2008; Hernández Hernández, 2004). Thus, ceteris paribus, the use of fair value accounting for financial items will generate less stable earnings. Stable and predictable earnings are considered to be vital by most CFOs (Graham, Harvey, & Rajgopal, 2005; Graham, Harvey, & Rajgopal, 2006). However, bottom-line earnings that are less predictable due to the use of fair value accounting for financial items may not present a problem for equity investors; if investors focus on only the operating portion of a firm's earnings and disregard unsustainable financial income and expenses in their computations of equity values, the volatility in net earnings that is caused by this fair value accounting for financial items will be inconsequential.[5] Ideally, investors are focused on operating income, which has a volatility that remains unaffected by the use of fair value accounting for financial items. The empirical findings of the study are consistent with this conjecture.

Nonetheless, it is important to stress that this study purely focuses on equity valuations; other applications of financial reports, such as stewardship (cf. Gwilliam & Jackson, 2008; Penman, 2007; Ronen, 2008), are disregarded. For example, increases in earnings volatility that are produced by the use of fair value accounting may render it more difficult to evaluate management performance. Moreover, debt contracting may also be severely affected by the use of fair value accounting. For instance, creditors may perceive utility in the fact that relative to historical cost accounting, fair value accounting for financial items produces an aggregate value of a firm's book equity that is more closely related to fair value (Barlev & Haddad, 2003). However, various accounting ratios (e.g., profitability and leverage measures) are severely affected by fair value accounting (Andersson and Haslam, 2012; Andersson, Haslam, Lee, & Tsitisianis, 2007), and it may be more difficult to establish appropriate debt covenants if a firm's earnings and particularly its book equity become more volatile because of an increase in its use of fair value accounting. It should also be noted that ceteris paribus, an increase in the volatility of a firm's book equity has the potential to amplify creditors' perceptions of the riskiness of the firm in question.

Nissim and Penman (2008) present a comprehensive discussion of the conditions that must be satisfied for the use of fair value accounting to be appropriate. Without including all of the details of their discussion, a major component of these conditions is that the values of assets and liabilities must vary on a one-to-one basis with the market prices of those assets and liabilities, with no impact from firm performance. Value cannot be a function of the specific uses of these assets or liabilities, such as the concrete production processes in which the items are involved or any synergies of these assets and liabilities with other assets and liabilities. Thus, net operating items will typically be unsuitable for fair value accounting because "...value is generated in business by purchasing inputs (from suppliers), transforming them according to a business plan, and selling the consequent product (to customers) over cost; in short, value is added by arbitraging input and output markets for goods and services according to a business plan" (Nissim & Penman, 2008, p. 14). The values of certain operating items, such as particular pieces of equipment and machinery, will therefore not only be firm-specific but also vary in accordance with the specific application of these assets within a company. Thus, historical cost accounting will be the preferred method of assessing the values of these assets. Historical cost accounting for these assets will generate balance sheet values that will most likely be poor estimates of fair value; however, the values of these assets will be revealed through earnings figures. The reported earnings will document the degree to which a firm's operating activities are successful in arbitraging its input and output markets for goods and services in accordance with its business plan.

In contrast to operating assets and liabilities, financial items are not utilised directly during the production process. Thus, it is generally meaningless to refer to a value in use with respect to financial assets and liabilities. Financial items are not subject to arbitrage in markets for goods and services (cf. Nissim & Penman, 2008), and one may argue that there is typically a one-to-one relation between the market values of the financial items and the values of these items to a firm's investors. Thus, many argue (see, e.g., the discussion in FASB, 2006; Carroll, Linsmeier, & Petroni, 2003) that financial assets and liabilities satisfy the required conditions for the appropriate use of fair value accounting. In many respects, this perspective is consistent with the empirical results of this study. Operating items are valued at their historical costs; because these items

[4] See, e.g., the study by Danbolt and Rees (2008) that addresses the use of fair value accounting for real estate valuations. Barth and Taylor (2010) argue that possible earnings management should be blamed on the managers and other entities who conduct these manipulations rather than on the accounting system. Moreover, although fair values can be manipulated, accounting values under other accounting regimes may be manipulated even more readily (Barth and Taylor, 2010, p. 32).

[5] In a perfect fair value accounting regime, earnings are not informative about equity value. In this situation, the (exact) value of a firm's equity is provided by its balance sheet (cf. Danbolt and Rees, 2008). However, earnings are informative with respect to a firm's risk. In particular, the P/E ratio under historical cost accounting has clear interpretations for firm valuation, whereas the P/E ratio under fair value accounting becomes a measure of risk. Nissim and Penman (2008) provide a comprehensive description of the valuation consequences of fair value and historical cost accounting.

generate value-relevant operating income, the values of these items are revealed not only through book values but also through earnings. By contrast, net financial liabilities are valued at close to market value; therefore, net financial expenses are irrelevant with respect to equity value calculations because all of the value-relevant information for these expenses is found on a firm's balance sheet.

However, the use of the financial versus operating item dimension to separate fair value accounting and historical cost accounting may not be appropriate. Not all financial items satisfy the one-to-one relationship requirement for the use of fair value accounting. Financial instruments that involve customer relationships constitute one example of an item that does not meet this condition; for more examples, see Nissim and Penman (2008). Moreover, even for financial items, fair values may have to be calculated because they are not observable in a market. The calculation of these values is not necessarily a completely objective exercise, particularly for situations involving highly complex instruments that are unlikely to possess any observable market characteristics (Gwilliam & Jackson, 2008; Hernández Hernández, 2004). However, even for standard financial items, reliable market prices may be difficult to obtain; for instance, prices may be extremely volatile or the market liquidity for these items may have decreased. Many examples of both of these issues were observed during the recent financial crisis (cf. Laux & Leuz, 2010). In these situations, fair value estimates may be less relevant than historical cost estimates with respect to firm value (cf. Khurana & Myung-Sun, 2003). In fact, one may argue that fair value accounting for financial items is least accurate for the scenarios in which it is most required (such as in incomplete markets); this paradox is observed and discussed by Gwilliam and Jackson (2008).

Another potentially problematic concern in addition to these measurement issues is that accounting for financial items currently involves a mixture of historical cost and fair value accounting practices (Carroll et al., 2003; Hatherly & Kretzschmar, 2011; Hernández Hernández, 2004; Laux & Leuz, 2010). Many would consider it unreasonable that closely related items with the same underlying value drivers may be subjected to two different and mutually exclusive accounting treatments. This mixture is a violation of the 'matching principle' that is discussed by Nissim and Penman (2008). Assume, for instance, that a company holds a bond portfolio (financial asset) that is marked to market. Concurrently, the company has a fixed-interest bank loan (financial liability) that is five times as large as the bond portfolio but encompasses the same duration. The bank loan is recorded using (amortised) historical cost accounting. Assume that a dramatic change in interest rates occurs. The effects of this change on the bond portfolio are recorded in the firm's earnings, but the effects of this interest rate change on the bank loan (which is five times larger than the bond portfolio) are not reflected in the firm's earnings. It is sometimes maintained that fair value accounting is associated with higher 'understandability' for the users of accounting information (cf. Barlev and Haddad, 2003; Herrmann, Saudagaran, & Thomas, 2006); however, an inconsistent mix of historical cost data and fair values statistics may potentially be more confusing for users than the consistent use of only one of these methodologies (cf. Hernández Hernández, 2004; Penman, 2007).

The empirical findings of this study suggest that in the aggregate, the net financial items of firms are reported at values that are close (or equal) to their fair values. In practice, these results could be interpreted as an indication that the use of a mixture of accounting methods is not problematic. However, certain caveats are in order. First, in a stable economic environment, such as the environment from which the examined sample was obtained, interest rates change slowly, leading to smaller differences between fair value accounting and historical cost accounting than in cases that involve rapidly changing interest rate regimes.[6] Second, all analyses of this study rest on the premise that the accounting values and market prices of shares are measured at the same time. This condition is not always present in practice; the latest accounting figures for a firm's net financial liabilities may be outdated if financial markets are unstable. Third, the empirical section of this investigation provides average results for the examined firms. Relative to average firms, companies with a higher proportion of net financial liabilities that are valued at amortised historical costs may display book values that deviate more from their fair values.

In principle, standard setters are presented with two possibilities: fair value accounting or historical cost accounting. This study discusses the influence of fair value accounting for financial items if fair values are utilised for a firm's balance sheet and changes in fair value are reported in the firm's income statement. However, an important aspect of the fair value discussion refers to the possibility of disclosing fair values in footnotes even if these values are not used in accounting statements (Barth, Beaver, & Landsman, 1996; Laux & Leuz, 2010; Penman, 2007). Proponents of historical cost accounting may argue that there is no reason to mix historical cost accounting for operating items with fair value accounting for financial items if the fair values of the financial items can be reported in footnotes. Such an approach would prevent that the use of non-reliable fair value measures perturbs income measurements, and it would allow investors themselves to choose which fair value measures (if any) to incorporate into equity valuations (Gwilliam & Jackson, 2008). The degree to which the fair value methodology produces different effects with respect to equity valuation if utilised directly in accounting statements rather than simply being reported in the footnotes of company disclosures is a topic that deserves more attention in future accounting research (although it may be difficult to define a research setting that is appropriate for the examination of this issue).

[6] Notably, economic stability is not consistently present during the entire sample period of this study. For instance, during the recent financial crisis, the stock market plummeted by almost 65% (from 22 May 2008 to 21 November 2008; see Beisland, 2013).

6. Conclusion

The empirical analysis performed in this study suggests that on average, net financial liabilities are recorded at values that are close to their fair values. This finding is in accordance with Penman's (2013, p. 441) contention that "...book value is usually a reasonable approximation to market value". Thus, there are no residual earnings associated with net financial liabilities. The 'true' values of these assets and liabilities can be found on the balance sheet, and net financial expenses do not need to be incorporated into the valuation models. Therefore, the study indicates that the residual operating income model can approximate the residual earnings model. However, it should be noted that this conclusion does not necessarily hold for companies with relatively high quantities of financial items that are measured at historical cost. Moreover, this conclusion may also be invalid in unstable financial markets that feature rapidly changing interest rates. Thus, the conjecture that for certain firms and specific economic states, the residual operating income model is a poor alternative and the 'full' residual earnings model must be used cannot be discounted.

To what extent do accounting rules aid or frustrate equity valuation processes? For standard setters, in general, two broad outcomes may result from debates about accounting principles. With (perfect) fair value accounting, all values are provided by the balance sheet, and no further estimations are necessary. In this situation, earnings have no relationship to equity value but instead serve as a measure of risk (Ronen, 2008). By contrast, under historical cost accounting, the balance sheet does not provide sufficient value information; book values must be combined with a firm's earnings to accurately calculate firm value. On the whole, it is important to acknowledge that both of these accounting treatments can provide the information that is necessary for equity valuation; this conclusion is straightforwardly illustrated by the nature of the residual earnings valuation framework.

If fair values for certain assets or liabilities cannot be easily obtained or are dependent on their specific uses, it is not apparent that fair value accounting eases the firm valuation process for equity investors. Currently, both the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB) appear to have adopted the view that fair value accounting is more appropriate for financial items than for operating items (cf. Hernández Hernández, 2004; Khurana & Myung-Sun, 2003); however, both of these boards have increasingly promoted the utility of fair value measurements for certain operating items (e.g., investment property and certain intangible assets). This study does not seek to be a normative investigation but instead provides an instructive description of the possible differences in investors' uses of accounting information for equity valuation purposes under the two distinct accounting regimes. In addition, as illustrated in Section 5, the findings that have been obtained in this study can be related to many of the controversies that exist in the intense on-going discussion regarding the use of fair value accounting in financial reporting.

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