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# THE SHIFT OF ACCOUNTING MODELS AND ACCOUNTING QUALITY: THE CASE OF NORWEGIAN GAAP

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## Abstract

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This paper investigates the change in accounting quality when firms shift from a revenue-oriented historical cost accounting regime as Norwegian GAAP (NGAAP) to a balance-oriented fair value accounting regime as International Financial Reporting Standards (IFRS). Previous studies have demonstrated mixed effects on the accounting quality upon IFRS adoption. One possible reason is that the investigated domestic GAAP to a large extent has been adjusted to IFRS prior to IFRS adoption. This is not the case in NGAAP where IFRS adoption led to significant changes in the recognition and measurement rules. To investigate the change in accounting quality, the paper makes use of a panel design with 640 firm-year observations from 2001 up to the financial crisis year 2008, including four years of pre-IFRS NGAAP observations and four years of IFRS-observations. The paper employs four commonly used approaches to investigate accounting quality: test of value relevance of net earnings and book values, accrual quality of net earnings, incidence of small positive net earnings and test of timely loss recognition. The paper demonstrates that the adoption of IFRS increases the relevance accounting information has for valuation purposes. IFRS requires recognition of intangible assets and off-balance sheet liabilities not allowed under NGAAP. Moreover, IFRS allows the use of fair value to a larger extent than NGAAP. The paper also demonstrates that NGAAP leads to timelier recognition of losses than IFRS. This supports the notion that historical cost accounting, which is the basic accounting principle under NGAAP, provides more conservative accounting numbers. Overall, this suggests that IFRS provides information more useful for valuation purposes, but to a lesser extent stewardship purposes which generally favours conservatism. NGAAP on the other hand, provides information less relevant for valuation purposes, but more relevant for stewardship purposes.

**Keywords:** Accounting Quality, Value Relevance, Financial Accounting, IFRS

## 1. INTRODUCTION

### 1.1. Accounting models and accounting quality

This paper investigates the effect on accounting quality when the accounting model shifts from a revenue-oriented historical cost model under Norwegian GAAP to a balance-oriented fair value model under IFRS. In 2002, the European Union (EU) decided that listed firms in Europe (within the European Economic Area (EEA)) should prepare consolidated financial reports according to IFRS. Since Norway is part of the EEA,

this requirement also concerns listed firms in Norway. As this shift represents significant changes in recognition and measurement of accounting numbers, it is reasonable to believe that the adoption of IFRS will have significant effects on the accounting quality. A study published by Gjerde, Knivsflå, and Sættem (2008) has investigated the value relevance of accounting numbers under NGAAP compared to IFRS. These authors find little evidence of increased value relevance when comparing these two regimes. On the other hand, when investigating the restatement

adjustments from NGAAP to IFRS, they find that these adjustments are marginally value relevant.

### 1.2. Purpose and contribution

In contrast to Gjerde et al. (2008), the present study demonstrates a significant increase in value relevance by using a larger sample of firm-year observations. This paper also makes use of additional tests of accrual quality (Dechow & Dichev, 2002; Francis, Nanda, & Olsson, 2008; McNichols, 2002), the incidence of small positive net earnings (Barth, Landsman, & Lang, 2008; Christensen, Lee, Walker, & Zeng, 2015) and timely loss recognition (Barth et al., 2008; Christensen et al., 2015; Lang, Raedy, & Yetman, 2003). The results suggest reduced accrual quality under IFRS compared to NGAAP. By contrast, loss recognition seems timelier under NGAAP than IFRS. The frequency of small positive net earnings, however, is unchanged.

### 1.3. Structure

This paper is structured as follows: Section 2 presents a short review of prior literature on accounting quality and IFRS, outlines the main differences between NGAAP and IFRS, and presents the hypotheses. Section 3 presents the data and descriptive statistics. Section 4 highlights the paper's contributions and policy implications, as well as discusses limitations and directions for future research.

## 2. CONCEPTUALIZATION & PRIOR LITERATURE

Several streams of literature are investigating accounting quality. One stream focuses on investigating the value relevance and the information content of accounting information, a second stream is testing the association between cash flows, accruals and net earnings, and a third stream is investigating abnormal (discretionary) accruals as an indicator of earnings management. All of these streams of research might be relevant for this paper. However, some limitations are made. As this study focuses on accounting quality and IFRS, the review below will be limited to extant studies investigating IFRS adoption and accounting quality.

### 2.1. Accounting quality

Accounting quality is considered a metric against which accounting information should be assessed<sup>35</sup>. The concept seems to have a meaning close to "faithful representation", "validity" and "true and fair view". Thus, a piece of accounting information is believed to hold high accounting quality if it represents the economic fundamentals it purports to represent. Barth et al. (2008) argue that firms with higher accounting quality exhibit less earnings management, more timely loss recognition and higher value relevance of net earnings and book equity values. This suggests that accounting numbers of higher accounting

quality better reflect economic fundamentals. Two elements are essential to determine accounting quality: (1) the risk of opportunistic earnings management and (2) significant measurement errors.

The first element is closely related to the fundamental problem of accounting. Managers of a firm have superior information, their interests are generally not aligned with those of external stakeholders, and they are responsible for the preparation of financial reports. In general, the risk of opportunistic earnings management is high when three conditions are met: (i) there exists interest conflicts between managers and outside stakeholders, (ii) there is an information asymmetry in favour of the management team and (iii) there is sufficient discretionary freedom to make accounting choices. The second element of accounting quality is non-opportunistic measurement error. For accounting information to hold high accounting quality, the information must be fairly free from systematic and unsystematic measurement errors.

The overriding criterion for standard setting is not accounting quality, but decision usefulness. A piece of accounting information is considered decision useful if it assists accounting users in making decisions. The concept of accounting quality differs somewhat from the concept of decision usefulness. For accounting information to be decision useful, the information has to be relevant and faithfully reported. If the information lacks any of these two qualities, it is not considered decision useful. Still, accounting information might be perfect depictions of the firm's underlying economics, but lack decision usefulness because the information is irrelevant for the decisions made.

Two demands for accounting information are emphasized in the Conceptual Frameworks of IASB and FASB: the demand for information useful for valuation purposes and stewardship purposes. The demand for valuation relevant information is believed to be met if the financial report provides valuation estimates or information that is useful as input in valuation models. The demand for stewardship information is believed to be met if the financial report provides information that is useful to assess the performance of the management team. This study is intended to give a response to accounting users, preparers and standard setters on the change in accounting quality when shifting from revenue-oriented historical cost accounting regime (here: NGAAP) to a balance-oriented fair value regime (here: IFRS). As decision usefulness is the overriding criterion for standard setting, accounting quality should be interpreted as the extent to which accounting numbers provide decision useful information for valuation and stewardship purposes.

To be able to investigate these two demands for accounting information, it is considered necessary to employ a set of alternative test methodologies. Four different approaches to accounting quality will be employed in this paper: tests of value relevance, accrual quality, incidence of small positive net earnings, and timely loss recognition. Value relevance studies generally examine the association between stock prices and

<sup>35</sup> In this paper the terms "accounting quality", "earnings quality" and "accruals quality" are used as synonyms.

accounting numbers (Barth, Beaver, & Landsman, 2001; Beaver, 2002; Kothari, 2001). If significant associations are found, they are interpreted as evidence of accounting numbers reflecting information in stock prices, which means that the accounting numbers are relevant for valuation purposes (Barth et al., 2001). Accrual quality studies are generally investigating the size of abnormal accruals (Dechow, Sloan, & Sweeney, 1995; Jones, 1991; Kothari, Leone, & Wasley, 2005) or the extent to which accruals map into cash flows (Dechow & Dichev, 2002). More abnormal accruals and weaker mapping between accruals and cash flows, are both seen as indications of earnings management and, thus, less decision useful accounting numbers. The incidence of small positive net earnings are seen as an indication of target accounting, which may lead to impaired decision usefulness (Barth et al., 2008). And finally, timely loss recognition is seen as favourable when accounting numbers are used for stewardship purposes (Barth et al., 2008; Watts, 2003).

## 2.2. Accounting quality and IFRS

The literature investigating accounting quality and IFRS can be structured along various dimensions. Studies have examined the accounting quality of voluntary IFRS adopters (Barth et al., 2008), accounting quality and mandatory IFRS adopters (Christensen et al., 2015; Daske, Hail, Leuz, & Verdi, 2008), accounting quality and IFRS across countries (Barth, Landsman, Lang, & Williams, 2006; Barth et al., 2008; Daske et al., 2008), accounting quality and IFRS within given countries (Christensen et al., 2015; Gjerde et al., 2008; Horton, Macve, & Serafeim, 2007) and the consequences of IFRS adoption (Daske et al., 2008).

In this section, the focus will be on accounting quality of IFRS versus domestic accounting standards. Studies investigating the accounting quality upon IFRS-adoption are found in almost every country in Europe. For instance, studies have been conducted on Spanish listed firms (Callao, Jarne, & Laínez, 2007), British listed firms (Horton et al., 2007), German listed firms (Hung & Subramanyam, 2007) and Swedish listed firms (Paananen, 2008). In the literature, German firms are most frequently been used as comparison in studies of IFRS and accounting quality. German GAAP has traditionally been conservative with a strong legal system in terms of rule of law and efficiency of the juridical system (Soderstrom & Sun, 2007). Hung and Subramanyam (2007) compare value relevance of German GAAP and IFRS by regressing stock prices on net earnings and equity book values. They fail to find that  $R^2$ -estimates differ significantly between German GAAP numbers and IFRS numbers. Book values of equity are found to have a higher coefficient under IFRS and net earnings have a higher coefficient under German GAAP. In contrast, Bartov, Goldberg, and Kim (2005) demonstrate evidence that is inconsistent with those of Hung and Subramanyam (2007). They find a higher coefficient of net earnings under IFRS than under German GAAP. This inconsistency could be caused by the omission of the book

equity value in the regression model employed by Bartov et al. (2005).

Barth et al. (2008) make use of an international sample of listed firms. They find that early IFRS-adopters exhibits lower levels of earnings management and more timely loss recognition than a matched sample of firms using domestic GAAP. Daske et al. (2008) focus on the heterogeneity in the consequences of IFRS adoption and find that on average, capital markets respond modestly to voluntary IFRS reporting. However, consistent with their predictions, they find that serious adopters experience stronger effects on their cost of capital and market liquidity than rhetorical (label) adopters, suggesting that for some firms the quality of financial reporting improves upon IFRS adoption. As these studies are focusing on voluntary adopters, which generally have strong motives for IFRS-adoption, others have investigated mandatory adoptions of IFRS. For instance, Christensen et al. (2015) compare earnings management and timely loss recognition for firms that mandatory adopt IFRS with those that voluntarily adopt IFRS. They find that voluntary adopters are associated with decreased earnings management and more timely loss recognition. In contrast, they find no evidence of such improvements for firms that are forced to adopt IFRS. Gjerde et al. (2008) investigate the change in value relevance when shifting from NGAAP to IFRS. They compare the value relevance before and after IFRS adoption, along with an investigation of the value relevance of IFRS adjustments. Their results provide modest support for IFRS adoption increasing the value relevance of NGAAP-numbers. The IFRS adjustments are marginally value relevant caused by increased relevance of the balance sheet numbers.

Overall, the evidence on the association between IFRS adoption and accounting quality is mixed, although studies applying more recent data generally find higher accounting quality under IFRS. A common feature of a significant fraction of these studies is that they are investigating voluntary adopters. This raises the question as to whether we can assign the improved quality to the application per se. This justifies further investigation of firms mandatory adopting IFRS. Moreover, investigation of accounting quality effects in a given country provides a setting that can offer a more careful investigation of the effects of IFRS adoption. Finally, an extension of Gjerde et al. (2008) employing other test methodologies and a larger and updated sample may provide further insight into the accounting quality effects of IFRS adoption of NGAAP firms.

## 2.3. NGAAP and IFRS

The recognition of earnings and balance sheet items may follow one of two approaches: a revenue-orientation approach to which NGAAP belongs and a balance-orientation approach to which IFRS belongs. Under the revenue-orientation approach the recognition of accounting items is determined by principles of revenue recognition and matching (Dichev, 2008; Kvifte, 2003). The aim is to report earnings and book equity values which ensure that the firm's accounting return on equity

maps the firm's internal rate of return (Hendriksen & Van Breda, 1992). Under the revenue-orientation approach the balance sheet will include items which meet conventional definitions of assets and liabilities, but also accruals (accrued costs and revenues) and deferrals (deferred costs and revenues) that do not meet such definitions (Kvifte, 2003). Under the balance-orientation approach, definitions of assets and liabilities are the starting point for accounting recognition (Elling, 2001; Kvifte, 2003).

There are some major differences between IFRS and NGAAP. The use of fair value as measurement attribute is excessive under IFRS. Under NGAAP, however, historical cost is the default measurement attribute. Fair value is restricted to some financial instruments generally hold for sale and where fair value estimates are easily accessible. IFRS is different. Under IFRS, property, plant and equipment (IAS 16), investment property (IAS 40) and intangible assets (IAS 38) are all allowed to be measured at their fair values. Moreover, fair value is the default measurement attribute for financial instruments (IAS 39/IFRS 9) and biological assets (IAS 41). But there are also other major differences. Under NGAAP, goodwill and all intangible assets are amortized over their useful lives. Under IFRS, however, goodwill and some intangible assets that have indefinite useful lives, are not amortized but tested for impairment losses at least annually. Moreover, IFRS requires more intangible assets (IAS 38) and leases (IAS 17/IFRS 16) to be capitalized than NGAAP. Compared to NGAAP, IFRS will probably have book equity values that are closer to the firms' market values.

## 2.4. Hypotheses

Based on the literature review in the previous sections, we suggest that the use of IFRS as basis for financial reporting will lead to book equity values that are more value relevant than book equity values under NGAAP. There are three arguments supporting this hypothesis. IFRS is based on a balance-oriented accounting regime, which implies that assets and liabilities recognized on the balance sheet reflect real economic assets and liabilities. NGAAP, however, may require elements not meeting the asset and liability definition to be recognized on the balance sheet in order to meet revenue-oriented accounting principles. Moreover, IFRS requires the recognition of intangible assets and liabilities not allowed to be capitalized under NGAAP. And finally, IFRS requires and allows for a more excessive use of fair value measurement than NGAAP. Taken together, it is reasonable to believe that book equity values are more strongly associated with stock prices under IFRS than NGAAP. This leads to the following hypothesis (stated in alternative form):

*Book equity values under IFRS are more value relevant than book equity values under NGAAP.*

According to a balance-oriented accounting regime, such as IFRS, changes in asset values and liability values are included as income or losses in the profit or loss account. Somewhat simplified,

increases in asset values or decreases in liability values are reported as income whereas decreases in asset values or increases in liability values are reported as losses. This leads to the following hypothesis (stated in alternative form):

*Net earnings reported under IFRS are more value relevant than net earnings reported under NGAAP.*

Other metrics than stock market prices might be useful to assess the quality of earnings and accruals. One such metric is accrual quality. Accrual quality is defined as the extent to which current accruals are associated with cash flows. Accruals are adjustments to cash flows made to improve the measurement of economic income. These accruals might be the result of the use of revenue-oriented accounting principles and/or balance-oriented accounting principles. Since IFRS allows for more extensive use of fair value measurement, and in particular unverifiable fair value estimates, than NGAAP, it could be argued that IFRS provides more opportunities for earnings management than NGAAP. Besides, unverifiable fair value estimates will probably suffer from significant measurement errors even under the assumption of faithful reporting. In both cases, the association between current accruals and cash flows will probably be impaired. This suggests the following hypothesis (stated in alternative form):

*Current accruals reported under IFRS will have lower accrual quality than current accruals reported under NGAAP.*

Barth et al. (2008) report evidence suggesting that accounting numbers prepared under IFRS are less exposed to earnings management than accounting numbers prepared under domestic accounting standards. This study, however, investigates voluntary IFRS-adopters across a numbers of European countries. As argued above, IFRS will probably allow more discretionation due to more fair value accounting than NGAAP. This suggests that the probability of earnings management will increase rather than decrease when shifting from NGAAP to IFRS. Following, Barth et al. (2006), Barth et al. (2008) and Christensen et al. (2015), the incidence of earnings management (i.e. target accounting) is believed to be captured by the frequency of small positive earnings numbers. The following hypothesis is suggested (stated in alternative form):

*Small positive earnings numbers appear with a higher frequency under IFRS than under NGAAP.*

The last hypothesis is based on the assumption that conservatism and the use of historical cost will lead to more frequent reporting of large losses. As NGAAP is believed to be more conservative than IFRS, it is reasonable to believe that NGAAP will lead to an earlier reporting of losses than IFRS. This leads to the following hypothesis (stated in alternative form):

*Large losses appear with a higher frequency under NGAAP than under IFRS.*

## 2.5. Test models

The first and second hypotheses above concern the change in value relevance of net earnings and book equity values. Value relevance is generally tested by a price-book earnings regression model (Barth et al., 2001). The following model is used to test the first and second hypotheses:

$$P_{i,t} = a_0 + a_1 EARN_{i,t} + a_2 EQ_{i,t} + \varepsilon_{i,t} \quad (1)$$

$P_{i,t}$	=	Stock price of firm i, time t;
$EARN_{i,t}$	=	Net earnings firm i, time t;
$EQ_{i,t}$	=	Book equity, time t;
$\varepsilon_{i,t}$	=	Residual i, time t.

$R^2$  is used as a metric of value relevance. The higher the  $R^2$ , the more will accounting numbers explain variations in stock prices and thus, the higher is the value relevance and the accounting quality.  $R^2$  from this model run on NGAAP numbers are compared with  $R^2$  when run on IFRS numbers.

In order to test the third hypothesis, an accrual quality model is employed. A model that has gained much support is the working capital accrual model developed by Dechow and Dichev (2002). This model says that working capital accruals (current accruals) should be mapped into operating cash flows the year before the accruals, the current year or the next year. Any current accruals that are not mapped into operating cash flows are considered as noise and collected in the residuals. A modified version of this model was developed by McNichols (2002) and further tested by Francis, LaFond, Olsson, and Schipper (2005), Ball and Shivakumar (2006), and Givoly, Hayn, and Katz (2010), which included change in revenues and book value of property, plant and equipment as additional explanatory variables. The following model is tested:

$$WC_{i,t} = a_0 + a_1 CFO_{i,t-1} + a_2 CFO_{i,t} + a_3 CFO_{i,t+1} + a_4 \Delta REV_{i,t} + a_5 \Delta PPE_{i,t} + \varepsilon_{i,t} \quad (2)$$

$\Delta WC_{i,t}$	=	Changes in working capital accruals (current accruals) firm i, time t;
$CFO_{i,t-1}$	=	Operating cash flow firm i, time t-1;
$CFO_{i,t}$	=	Operating cash flow firm i, time t;
$CFO_{i,t+1}$	=	Operating cash flow firm i, time t+1;
$\Delta REV_{i,t}$	=	Change in revenues firm i, time t;
$PPE_{i,t}$	=	Book value of property, plant and equipment firm i, time t;
$\varepsilon_{i,t}$	=	Residual i, time t.

The standard deviation of the residuals along with the  $R^2$  are used as metrics of accrual quality. The higher the standard deviation, the less accruals are explained by operating cash flows, which suggests lower accrual and accounting quality.

The third hypothesis concerns the incidence of small positive net earnings and is tested by a model used by Barth et al. (2008). The model is specified as follows:

$$IFRS(0,1)_{i,t} = a_0 + a_1 SPOS_{i,t} + \varepsilon_{i,t} \quad (3)$$

$IFRS(0,1)_{i,t}$	=	Indicator variable that equals 1 for firm-year observations under IFRS, 0 otherwise;
$SPOS_{i,t}$	=	Indicator variable that equals 1 for observations with net earnings scaled by total assets between 0,001 and 0,01, 0 otherwise;
$\varepsilon_{i,t}$	=	Residual i, time t.

A significant positive coefficient  $a_1$  suggests that there are more small positive net earnings reported under IFRS than NGAAP, which may indicate more target accounting and earnings management and less accounting quality. In addition to the indicator variable, SPOS, several control variables used in previous literature are included, such as stock return, firm size, sales growth, sales turnover, financial leverage and change in total liabilities (Barth et al., 2008).

The fourth hypothesis concerns timely loss recognition indicated by the frequency of large losses. The following regression model used by Barth et al. (2008) is employed:

$$IFRS(0,1)_{i,t} = a_0 + a_1 LNEG_{i,t} + \varepsilon_{i,t} \quad (4)$$

$IFRS(0,1)_{i,t}$	=	Indicator variable that equals 1 for firm-year observations under IFRS, 0 otherwise;
$LNEG_{i,t}$	=	Indicator variable that equals 1 for observations net earnings scaled by total assets less than -0,20, 0 otherwise;
$\varepsilon_{i,t}$	=	Residual i, time t.

A significant negative coefficient  $a_1$  suggests that there are more large losses under NGAAP than IFRS, which may indicate more conservative accounting under NGAAP. As a certain degree of conservatism is considered necessary for accounting numbers to be useful for stewardship purposes (Watts, 2003), a negative coefficient may suggest that NGAAP numbers are better at serving stewardship needs than IFRS numbers.

## 3. DATA AND DESCRIPTIVE STATISTICS

### 3.1. Sample

This study is set up as a panel study with firm-year observation for the period 2000 to 2008. Firms within the bank and insurance industry sectors are removed from the final sample along with firms not shifting from NGAAP to IFRS in 2005. Firms are also excluded when accounting data and/or stock market data are incomplete for the investigation period. The final sample consists of 640 firm-year observations (720 with the lead-2000-observations) for 80 firms listed at the Oslo Stock Exchange. This provides an equal number of firm-year-observations pre and post the IFRS-adoption year 2005. The sample does not include observations for the financial crisis years (2009 and so forth).

### 3.2. Descriptive statistics

differences in mean and median-values are reported.

In Table 1 below descriptive statistics and tests of

**Table 1.** Descriptive Statistics

Descriptive Statistics										
	NGAAP (2001-2004) (N=320)					IFRS (2005-2008) (N=320)				
	Mean		Median		Standard Deviation	Mean		Median		Standard Deviation
<b>Test variables</b>										
P	44.426	***	19.235	***	125.714		82.814		38.379	174.220
EARN	3.190	**	0.500	***	23.285		12.523		1.728	70.640
EQ	51.605		16.640		77.114		60.062		22.451	120.710
TCA	-0.009	***	-0.007	***	0.117		0.030		0.013	0.160
CFO <sub>t-1</sub>	0.002		0.040	***	0.529		0.059		0.067	0.248
CFO <sub>t</sub>	0.045		0.069		0.200		0.065		0.077	0.247
CFO <sub>t+1</sub>	0.064		0.074		0.345		0.029		0.081	0.418
ΔREV	0.027	***	0.028	***	0.278		0.116		0.084	0.347
PPE	0.348		0.243		0.295		0.323		0.252	0.290
SPOS	0.059		0.000		0.237		0.050		0.000	0.218
LNEG	0.141	***	0.000		0.348		0.066		0.000	0.248
<b>Control variables</b>										
GROWTH	20.802		6.260	***	94.514		484.32		13.864	7421.002
LEVERAGE	2.451		1.415		12.698		1.923		1.483	3.804
TURNOVER	0.840		0.765		0.670		0.794		0.658	0.629
DEBTISSUE	21.289	**	0.895	***	173.430		95.520		18.773	569.560
RETURN	0.501	***	0.100	***	1.834		0.077		-0.057	0.759
SIZE	20.118	***	19.930	***	1.884		21.202		21.062	1.683

P is stock price of firm i three months after fiscal year-end; EARN is net earnings scaled by number of outstanding shares, EQ is book equity at year-end scaled by number of shares outstanding; TCA is total current accruals (working capital accruals) scaled by average total assets; CFO<sub>t-1</sub> is operating cash flow the previous year scaled by average total assets; CFO<sub>t</sub> is operating cash flow the current year scaled by average total assets; CFO<sub>t+1</sub> is operating cash flow the next year scaled by average total assets; ΔREV is changes in annual sales scaled by average total assets; PPE is the book value of property, plant and equipment at year-end scaled by average total assets; SPOS is an indicator variable that equals 1 for net earnings scaled by average total assets between 0.00 and 0.01, otherwise 0; LNEG is an indicator variable equals 1 for net earnings scaled by average total assets less than -0.20, 0 otherwise; GROWTH is annual percentage changes in sales; LEVERAGE is year-end total liabilities scaled by year-end book equity; TURNOVER is sales scaled by year-end total assets; DEBTISSUE is annual percentage changes in total liabilities; RETURN is annual stock returns; SIZE is the natural logarithm of firm market value at year-end.

Note: Differences in mean-values and median-values are tested by two-sample t-test (assuming different variances) and Mann-Whitney-test.

\* indicates significant difference in mean/median-values at 1% level (two-tailed).

\*\* indicates significant difference in mean/median-values at 5% level (two-tailed).

\*\*\* indicates significant difference in mean/median-values at 1% level (two-tailed).

Table 1 provides descriptive statistics on mean and median and standard deviation for all test and control variables. Differences in mean and median-values are tested by two-sample t-test (assuming different variances) and Mann-Whitney non-parametric test. The table shows some interesting differences between the pre- and post-IFRS period. The sample firms have significantly lower stock prices, lower firm market values (SIZE) and higher stock returns under the NGAAP-period than under the IFRS-period. The lower stock returns under the IFRS-period is to some extent driven by the financial-crisis year 2008. If this year is excluded, the difference in stock returns is lower, but still significant (p-value 0.000).

The other variables will probably be influenced by economic conditions, opportunistic earnings management and/or the shift from NGAAP to IFRS. For instance, total current accruals are on average significantly higher under IFRS than NGAAP. This might be the result of faithful reporting of current accruals or it might be the result of increased estimation errors in accruals

under IFRS. When the year 2008 is excluded, the results remain almost the same. The average difference in current accruals, change in total sales, large losses, growth (difference in median-values), return and size are still significant.

Table 2 provides Pearson correlations between variables in the test models.

Table 2 reveals that both net earnings and book equity are positively correlated with stock prices, which suggests that they are value relevant. There are also significant correlations between some of the test variables in the accrual quality model such as between current accruals (working capital accruals), operating cash flows the year before and book value of property, plant and equipment. There is also a significant negative correlation between the IFRS indicator variable and the variable indicating large losses in net earnings, suggesting that large losses are more frequent for NGAAP numbers.

Table 2. Correlations

Pearson Correlations - test variables													
		1	2	3	4	5	6	7	8	9	10	11	12
1	P	1											
2	EARN	0.1704#	1										
3	EQ	0.6151#	0.2868#	1									
4	TCA	-0.0111	0.1015*	0.0150	1								
5	CFO <sub>t-1</sub>	0.0602	0.0546	0.1065#	0.0680*	1							
6	CFO <sub>t</sub>	0.0626	0.8379#	0.1237#	-0.0480	0.1688#	1						
7	CFO <sub>t+1</sub>	0.0536	0.0544	0.1194#	0.0497	0.1959#	0.1754#	1					
8	ΔREV	0.0057	0.5926#	0.0159	0.0901*	-0.597#	0.5975#	0.0156	1				
9	PPE	0.0857*	0.2217#	0.2898#	0.0191	0.4431#	0.4785#	0.4628#	0.0529	1			
10	IFRS	0.1214#	0.0896*	0.0467	0.0644	0.0626	0.0512	0.0561	0.0080	0.0174	1		
11	SPOS	0.0028	-0.0313	0.0157	-0.0021	-0.0294	-0.0222	-0.0212	0.0075	-0.0101	-0.0206	1	
12	LNEG	-0.0547	-0.113#	-0.160#	-0.0639	-0.0475	-0.0580	-0.0524	-0.0208	-0.094*	-0.123#	-0.082*	1

P is stock price of firm *i* three months after fiscal year-end; EARN is net earnings scaled by number of outstanding shares, EQ is book equity at year-end scaled by number of shares outstanding; TCA is total current accruals (working capital accruals) scaled by average total assets; CFO<sub>t-1</sub> is operating cash flow the previous year scaled by average total assets; CFO<sub>t</sub> is operating cash flow the current year scaled by average total assets; CFO<sub>t+1</sub> is operating cash flow the next year scaled by average total assets; ΔREV is changes in annual sales scaled by average total assets; PPE is the book value of property, plant and equipment at year-end scaled by average total assets; IFRS is an indicator variable that equals 1 for firm-year observations under IFRS, 0 otherwise; SPOS is an indicator variable that equals 1 for net earnings scaled by average total assets between 0.00 and 0.01, otherwise 0; LNEG is an indicator variable equals 1 for net earnings scaled by average total assets less than -0.20, 0 otherwise. GROWTH is annual percentage changes in sales; LEVERAGE is year-end total liabilities scaled by year-end book equity; TURNOVER is sales scaled by year-end total assets; DEBTISSUE is annual percentage changes in total liabilities; RETURN is annual stock returns; SIZE is the natural logarithm of firm market value at year-end.

Note: Pearson correlations are estimated on all observations (both NGAAP and IFRS observations).

# indicates significant difference in mean/median-values at 1% level (two-tailed).

\* indicates significant difference in mean/median-values at 5% level (two-tailed).



### 3.3. Test results and analysis

#### 3.3.1. Value relevance tests

Table 3 presents the results from the price-book-earnings regressions. Three different regressions are run for each period. The two first regressions are conventional price-book-earnings regressions with or without the control variables growth, turnover and size. The third regression makes use of unstandardized residuals from a regression of price on control variables for size and economic fundamentals. Next, these unstandardized residuals are regressed on earnings per share and

book equity per share. This test design is supposed to provide strong control for the effects driven by size, economic position and performance. As demonstrated by the descriptive statistics and the tests of differences in mean-values and median-values under NGAAP and IFRS, stock returns, size measured as natural logarithm of firm market value, growth and operational cash flows are on average significantly different in these two periods. This highlights the importance of controlling for the effects driven by these factors before addressing any difference in value relevance to the shift of accounting regime.

**Table 3.** Tests of Value Relevance

Value relevance												
	NGAAP (2001-2004)						IFRS (2005-2008)					
	Without control variables (N=318)		Inclusive control variables (N=318)		Residuals (N=318)		Without control variables (N=312)		Inclusive control variables (N=312)		Residuals (N=312)	
Test variables	Coef.		Coef.		Coef.		Coef.		Coef.		Coef.	
INTERCEPT	33.822	***	18.371		-9.674		8.439		1.826		-74.237	***
EARN	0.040		0.025		0.010		-0.063		-0.072		-0.071	
EQ	0.118	**	0.107	**	0.134	**	0.880	***	0.886	***	0.884	***
<b>Control variables</b>												
GROWTH			0.018						0.002			
TURNOVER			-0.022						0.018			
SIZE			0.519	***					0.038	***		
Adjusted R <sup>2</sup>	0.012		0.278		0.013		0.745		0.744		0.749	
Diff. adjust R <sup>2</sup> (IFRS-NGAAP)							0.733	***	0.466	***	0.736	***
P>F-value	0.047	**	0.002	***	0.019	**	0.000	***	0.000	***	0.000	***

Note: Dependent variable: *P* is stock price of firm *i* three months after fiscal year-end; EARN is net earnings scaled by number of outstanding shares, EQ is book equity at year-end scaled by number of shares outstanding; GROWTH is annual percentage changes in sales; TURNOVER is sales scaled by year-end total assets; SIZE is the natural logarithm of firm market value at year-end.

Coefficient (Coef.) is standardized.

\*indicates significant at 10% level (two-tailed)

\*\*indicates significant at 5% level (two-tailed).

\*\*\* indicates significant at 1% level (two-tailed).

The results demonstrate that book equity value per share is significantly positively associated with stock prices. These results are consistent across the NGAAP and IFRS-period using different test models. The price-book-earnings regression without control variables reveals a significant coefficient of book equity both under NGAAP and IFRS. The coefficient of net earnings is insignificant under both NGAAP and IFRS. Moreover, the intercept is significant, which suggests that the regression model is underspecified. The coefficient estimate of book equity has increased from 0.118 under NGAAP to 0.880 under IFRS. As for coefficients of book equity, R<sup>2</sup>-estimates have also increased upon IFRS-adoption. The R<sup>2</sup>-estimate has increased significantly from 0.012 to 0.745.

Although these results seem convincing, they are only indicating that the shift from NGAAP to IFRS is what drives the improved value relevance. Changing economic conditions and size-effects are other possible explanations for the increase in value relevance. The inclusion of control variables for growth, turnover and size leads to some, but not dramatic changes in the test results. Book equity is still significant under NGAAP and IFRS and the intercept-estimate turns insignificant

under NGAAP. The control variables growth and turnover are insignificant. Size, however, is highly significant, which may suggest that the number of shares outstanding has not been effective in removing the scale effect. This may lead to biased regression coefficients, R<sup>2</sup>-estimates and test-statistics something that calls for a more careful control for size (Barth & Clinch, 2009).

The last regression model is believed to provide a strong control for size and for changes in economic position and performance. First, stock prices are regressed on stock returns and size measured as natural logarithm of firm market value. This regression is run for observations from the NGAAP- and the IFRS-period. Firm market value is believed to provide information about size and current economic position. Given reasonable market efficiency, current market values reflect the current expectations about the firm's future prospects. In a similar vein, changes in market values measured as stock returns represent changes in these expectations and thus economic performance. Both market values and stock returns are believed to be little affected by a change in accounting regime if the stock market is reasonably efficient. This suggests that removing the effects of size, economic position and

economic performance, provides a strong control for other effects explaining the change in value relevance. The results of running the unstandardized residuals on earnings per share and book equity per share remain the same. The coefficient of book equity value is substantially higher for IFRS than NGAAP. The coefficient of net earnings is still insignificant. Moreover, the increase in R<sup>2</sup>-estimates is highly significant suggesting that IFRS does provide more value relevant information than NGAAP after controlling for size and economic conditions. For robustness reasons, all the tests for the IFRS-period are rerun excluding firm-observations for 2008. As the financial crisis had a major negative effect on the overall world economy in 2008, this may influence the results for the IFRS-period significantly. The R<sup>2</sup>-estimates increase upon the exclusion of 2008 firm-observations (0.867; 0.867 and 0.868), but the increase is non-significant when compared to R<sup>2</sup>-estimates including year 2008 observations. Moreover, the book equity coefficients are highly significant (0.929; 0.928 and 0.935). Net earnings, however, remain insignificant.

### 3.3.2. Accrual quality tests

Table 3 reports the results from the accrual quality regressions. These regressions are similar to the accrual quality model tested by McNichols (2002) and Francis et al. (2008). Accrual quality is measured as to what extent total current accruals maps into last year, current year and the next year operating cash flows. As an extension of this model, argued for the inclusion of changes in total sales and book value of property, plant and equipment as additional variables. He demonstrates that the inclusion of changes in total sales and book equity value of property, plant and equipment improves the explanatory power as measured by R<sup>2</sup>. The metric to assess accrual quality is the standard deviation of the unstandardized residuals. An increase in this standard deviation suggests lower accrual quality. A similar measure is the R<sup>2</sup>-estimate. In contrast to the standard deviation of the residuals, R<sup>2</sup> is measured as the proportion of total variation that is explained. This suggests that increased R<sup>2</sup> should be interpreted as evidence of increased accrual quality.

**Table 4.** Tests of Accrual Quality

Accrual quality								
	NGAAP (2001-2004)				IFRS (2005-2008)			
	Without control variables (N=316)		Inclusive control variables (N=316)		Without control variables (N=315)		Inclusive control variables (N=315)	
Test variables	Coef.		Coef.		Coef.		Coef.	
INTERCEPT	-0.003		-0.006		0.020	*	0.014	
CFO <sub>PRE</sub>	-0.056		-0.057		0.279	***	0.270	***
CFO <sub>CURRENT</sub>	-0.519	***	-0.518	***	-0.693	***	-0.699	***
CFO <sub>POST</sub>	0.190	*	0.188	*	0.102	*	0.105	**
Δ REV	0.222	***	0.218	***	0.491	***	0.490	***
PPE	0.046		0.046		0.042	*	0.027	**
Control variables								
RETURN			0.065				0.127	***
SIZE			0.022				0.083	*
RESIDUAL	0.065		0.065		0.113		0.116	
Adjusted R <sup>2</sup>	0.293		0.293		0.531		0.552	
Diff_adj R <sup>2</sup> (IFRS-NGAAP)					0.238	**	0.259	***
P>F-value	0.000	***	0.000	***	0.000	***	0.000	***

Note: Dependent variable: TCA

TCA is total current accruals scaled by average total assets; CFO<sub>PRE</sub> is operating cash flows the previous year scaled by average total assets; CFO<sub>CURRENT</sub> is operating cash flows the current year scaled by average total assets; CFO<sub>POST</sub> is operating cash flows the next year scaled by average total assets; ΔREV is changes in annual sales scaled by average total assets; PPE is the book value of property, plant and equipment at year-end scaled by average total assets; RETURN is annual stock returns; SIZE is the natural logarithm of firm market value at year-end.

Coefficient (Coef.) is standardized.

Residuals are unstandardized.

\*indicates significant at 10% level (two-tailed)

\*\*indicates significant at 5 % level (two-tailed).

\*\*\* indicates significant at 1% level (two-tailed).

Table 4 reports evidence suggesting that accrual quality has increased upon the adoption of IFRS. Total current accruals are to a larger extent associated with last year, current year and next year operating cash flows when the regressions are run on IFRS observations. Under NGAAP current accruals are associated with current operating cash flows and to some extent next year's operating cash flows. In contrast, current accruals under IFRS are mapped into last year's, current year's and next

year's operating cash flow. This result is also supported by the significant increase in the R<sup>2</sup>-estimate upon the adoption of IFRS. This suggests that the variation in operating cash flows to a larger extent explains variation in total current accruals under IFRS than under NGAAP. The results for the standard deviation of the residuals are more puzzling. The standard deviation has increased upon IFRS adoption suggesting the opposite of increased accrual quality. The standard

deviation of residuals is an unscaled measure as  $R^2$  is scaled. Moreover, no simple one-to-one relationship exists between these measures. This suggests that the standard deviation of residuals might well increase as the  $R^2$ -estimate decreases. As  $R^2$  controls for the total variation in current accruals, this measure is believed to be better suited to evaluate accrual quality. As for the value relevance tests, it is important to control for changes in economic conditions that may explain changes in accrual quality in these two periods. Firm market values and stock returns are used to control for economic conditions. As demonstrated in Table 3, the inclusion of these control variables have no effect on the overall results.

### 3.4. Small positive net earnings

The frequency of small positive earnings is believed to indicate earnings management and in particular target accounting. Graham, Harvey, and Rajgopal (2005) present results from a survey of managers which suggests that meeting and beating earnings targets are extremely important. Managers describe a trade-off between the short-

term need to deliver earnings and the long-term objective of making value-maximizing investment decisions. DeGeorge, Patel, and Zeckhauser (1999, p. 1) present a hierarchy of targets: It "(...) is important first to make positive profits, second to report quarterly profits at least equal profits of 4 quarters ago, and third to meet analysts' expectations." The first target, to report positive earnings, arises from the psychologically important distinction between positive earnings numbers and negative earnings numbers. This is the target investigated in this paper. Following recent work by Barth et al. (2008) and Christensen et al. (2015), a logistic regression is run where the categorical variable IFRS equals 1 for IFRS and 0 for NGAAP is regressed on an indicator variable equals 1 for small positive net earnings and 0 otherwise. The control variables are supposed to control for changes in economic conditions (stock returns, firm market values, growth and turnover) and reporting incentives (leverages and debt issuance). Both IFRS and NGAAP-observations are included in the regression. The results are reported in Table 4.

**Table 5.** Tests of Small Positive Net Earnings

<i>Small positive net earnings</i>				
Test variables	Without control variables (N=640)		Inclusive control variables (N=640)	
	Coef.		Coef.	
INTERCEPT	0.010		-7.691	***
SPOS	-0.182		-0.211	
Control variables				
RETURN			-0.458	***
SIZE			0.368	***
GROWTH			0.001	
TURNOVER			0.165	
LEVERAGE			-0,002	
DEBTISSUE			0.001	
Pseudo $R^2$	0.000		0.104	

*Note: Dependent variable: IFRS is an indicator variable that equals 1 for firm-year observations under IFRS; 0 otherwise; SPOS is an indicator variable that equals 1 for observations with annual net earnings scaled by average total assets between 0.00 and 0.01, 0 otherwise; RETURN is annual stock returns; SIZE is the natural logarithm of firm market value at year-end; GROWTH is annual percentage changes in sales; TURNOVER is sales scaled by year-end total assets; LEVERAGE is year-end total liabilities scaled by year-end book equity; DEBTISSUE is annual percentage changes in total liabilities.*

*\* indicates significant at 10% level (two-tailed)*

*\*\* indicates significant at 5 % level (two-tailed).*

*\*\*\* indicates significant at 1% level (two-tailed).*

Table 5 demonstrates that the incidence of small positive net earnings numbers cannot be explained by NGAAP or IFRS. Overall, only 35 of 640 observations of this variable takes the value of 1 suggesting that target accounting (at least towards small positive earnings) is a reporting activity of low frequency among the sample firms. For robustness reasons, the 2008-observations are excluded to control for the effect of financial crisis. The overall results are not affected.

### 3.5. Timely loss recognition

The timeliness in losses is investigated by the incidence of large negative losses under NGAAP and IFRS. This measure has been employed by for instance Barth et al. (2008) and Christensen et al.

(2015). As large losses could be affected by economic conditions as well as reporting incentives, control variables believed to proxy for these factors, must be included. A logistic regression is run where the categorical variable IFRS is regressed on an indicator variable equals 1 for large losses and 0 otherwise.

Table 6 reveals that loss recognition is timelier under NGAAP than IFRS. The regression coefficient of LNEG is negative suggesting that timely loss recognition is more likely if the firm is reporting under NGAAP than IFRS. As this result could be affected by the 2008-observations, the regressions are rerun excluding these firm-observations. The overall results are unaffected.

**Table 6.** Tests of Timely Loss Recognition

<i>Timely loss recognition</i>				
	Without control variables (N=640)		Inclusive control variables (N=640)	
Test variables	Coef.		Coef.	
INTERCEPT	0.082		-7.323	***
LNEG	-0.846	***	-0.776	**
<i>Control variables</i>				
RETURN			-0.491	***
SIZE			0.355	***
GROWTH			0.001	
TURNOVER			0.126	
LEVERAGE			-0.002	
DEBTISSUE			0.001	
Pseudo R <sup>2</sup>	0.011		0.110	

Note: Dependent variable: IFRS.

IFRS is an indicator variable that equals 1 for firm-year observations under IFRS; otherwise 0; LNEG is an indicator variable equals 1 for net earnings scaled by average total assets less than -0.20, otherwise 0; RETURN is annual stock return; SIZE is the natural logarithm of firm market value at year-end; GROWTH is annual percentage changes in sales; TURNOVER is sales divided by year-end total assets; LEVERAGE is year-end total liabilities scales by year-end book equity; DEBTISSUE is annual percentage changes in total liabilities.

\*indicates significant at 10% level (two-tailed)

\*\*indicates significant at 5 % level (two-tailed).

\*\*\* indicates significant at 1% level (two-tailed).

## 4. CONCLUSION

### 4.1. Contributions

This paper investigates how accounting quality is affected by the adoption of IFRS for firms previously reporting under NGAAP. The motivation for this paper is two-fold. First, the shift from NGAAP to IFRS represents a significant change in accounting principles. NGAAP is revenue-oriented using historical cost as main measurement attribute. IFRS, on the other hand, is balance-oriented and requires and permits an excessive use of fair value. This suggests that the adoption of IFRS will lead to significant changes in accounting quality. Second, the paper seeks to replicate and extend a previous study by Gjerde et al. (2008) which investigated changes in value relevance upon IFRS-adoption for NGAAP-reporting firms.

Accounting quality is tested in four different ways: (1) value relevance, (2) accrual quality, (3) frequency of small positive losses and (4) large negative losses. The first of these is believed to capture the valuation usefulness of accounting information. The second is believed to capture estimation errors in accruals, while the third is supposed to be indicative of target accounting (towards small positive net earnings numbers). The fourth is supposed to be indicative of conservatism. The results demonstrate that both value relevance and accrual quality are improved upon the adoption of IFRS. However, the recognition of large losses is less frequent under IFRS, which supports the notion that IFRS provides less conservative accounting numbers.

### 4.2. Policy implications

Overall, the results suggests that IFRS provides information more useful for valuation purposes, but to a lesser extent stewardship purposes. NGAAP on the other hand, provides information less relevant for valuation, but more relevant for stewardship purposes. This finding might of

interest to accounting producers following current NGAAP (for non-listed firms) and IFRS (optional for non-listed firms and required for listed firms). However, it may also be interesting in a broader perspective outside NGAAP. It demonstrates that a revenue-oriented historical cost based model, such as the one found under NGAAP, may lead to accounting numbers that more useful for stewardship purposes, whereas a balance-sheet orientered fair value model, may provide information more useful for valuation purposes. Standard-setters should take these findings into consideration when deciding on which accounting model to use as the basis for accounting standard setting.

### 4.3. Limitations and future work

A potential weakness of this research design is the lack of direct control of other factors that may explain changes in accounting quality. Two potential candidates explaining changes in accounting quality are economic conditions and reporting incentives. In this study, we have only been able to provide an indirect control for these factors by including proxies of them as control variables. In the study by Barth et al. (2008) firms that voluntary adopted IFRS were matched on size and industry with firms not adopting IFRS. This matched-sample design makes it possible to conduct difference-in-difference tests, which provide a strong basis for addressing differences in accounting quality to the shift of accounting regime. At the Oslo Stock Exchange almost every listed firm (except banks and insurance companies) adopted IFRS in 2005. This makes it infeasible to conduct a difference-in-difference test based on a matched-sample design. Further research should try to investigate more carefully the extent to which changes in accounting quality upon adoption of a new accounting regime, might be influenced by economic conditions and reporting incentives.

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