Rules-Based and Principles-Based Accounting
Standards and Earnings Management

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Abstract
We examine the effects that discretionary room in accounting standards has on both the level and nature of earnings management decisions. To this end we design an experiment to test the hypotheses that a rules-based setting induces managers to engage in earnings management through transaction decisions, whilst a principles-based setting induces earnings management through accounting decisions. Manipulations of IAS 32 and 36 are used to represent the rules-based and the principles-based setting, and different analysts’ expectations act as incentives, creating a 2x2 between-subjects design. In the rules-based setting managers more often sell short-term financial assets, whereas in the principles-based setting managers are more prone to taking impairment loss decisions. Combined results show that the rules-based and principles-based treatments lead to comparable levels of earnings management. These results suggest that changing the discretion in accounting standards may affect the nature of earnings management, but is unlikely to prevent earnings management applications.

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I. Introduction

Prior studies provide limited evidence on how reporting standards affect earnings management (see Libby and Seybert 2009 for a recent overview). Libby et al. (2009) discuss the importance of experiments and surveys for studying effects of reporting regulation on earnings management. Hunton et al. (2006) examine the effect of transparency formats on earnings management and conclude that increasing transparency requirements reduce the extent of earnings management. Clor-Proell and Nelson (2006) examine whether principles-based accounting standards, accompanied by implementation guidance, have an influence on managers reporting judgment. Their results show that guidance accompanying less precise standards could reduce earnings management.

Our focus is on the debate concerning rules-based and principles-based accounting standards. The debate started after the ‘Norwalk’ agreement between the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) was signed meant to create more principles-based accounting standards for global financial reporting (Clor-Proell et al., 2006). Archival studies show limited abilities to estimate potential effects that regulatory changes have on encouraging or discouraging earnings management (see Healy and Wahlen, 1999 for a review). Conversely, in an experiment researchers are able to create their own setting, in which independent variables can be manipulated and other potential effects can be controlled for, leading to stronger causal inferences (Libby et al, 2009). Therefore, we use an experiment to test the influence of rules-based and principles-based accounting standards on earnings management.

Although recent research indicates that discretionary room in accounting standards affects earnings management decisions (Libby et al, 2009), findings on the question ‘how’ and ‘to what extent’ remain inconclusive. Nelson, Elliot and Tarpley (2002) examine the effect of the precision of accounting standards related to several types of earnings management. Their survey results show that managers are more likely to engage in earnings management through transaction decisions in a rules-based setting, and similarly that accounting decisions are used more in a principles-based setting. Similarly, Cohen et al. (2008) report that firms switched from accounting decisions to transaction decisions after the passage of the Sarbanes-Oxley Act in 2002. These results suggest that firms may change their earnings management decisions, depending on the discretion given in accounting standards. We use an experiment to investigate this issue further. The first question we seek to answer is whether managers, in a rules-based setting, engage in earnings management through
transaction decisions rather than through accounting decisions. The second question concerns
the opposite relation, whether in a principles-based area managers take accounting decisions
more often for the purpose of earnings management than transaction decisions.

In addition to testing this substitution effect, we reflect on the question how much
earnings management is applied in both a rules-based and a principles-based environment.
Research in this area also remains inconclusive. Nelson (2003) reviews this literature, including
some experimental studies, and concludes that the aggressiveness of reporting decisions
increases with an increase in flexibility in accounting standards. The findings of Psaros and
Trotman (2004), in contrast, show earnings management to be lower if accounting standards
are principles-based. Drawing on these contradictory results, we use our experimental design
to investigate whether the discretionary room in accounting standards has an effect on the
level and nature of earnings management.

For our experiment, 175 financial managers chose between an impairment loss
decision and the opportunity to sell ‘available-for-sale’ securities. The impairment loss
decision refers to an accounting decision, whereas the selling of short term financial assets
refers to a transaction decision. The combined results of these two decisions allow us to assess
the effect rules-based and principles-based accounting standards have on the total degree of
earnings management. IAS 32 (Financial instruments) and IAS 36 (Impairment of assets)
were manipulated to fulfill the rules-based and principles-based requirements. Drawing on
Hunton et al. (2006) we include analysts’ consensus forecast as incentive to either increase or
decrease earnings, resulting in a 2x2 between-subject design. Results show that financial
managers are more likely to attempt earnings management through transaction decisions in a
rules-based setting rather than in a principles-based setting. Moreover, financial managers
engage in accounting decisions more often in a principles-based setting compared to a rules-
based setting. In addition, the combined results reveal that rules-based and principles-based
accounting standards do not differ significantly in the level of earnings management.

Overall, these results suggest that neither rules-based, nor principles-based accounting
standards are able to eliminate earnings management decisions. Confirming our theoretical
proposition, managers tend to adjust their decisions based on the latitude given in the
accounting standards. When standards are precisely specified, managers tend to search for
transaction opportunities to meet the pre-specified expectations. On the other hand, when
standards are imprecisely specified, managers use accounting decisions, such as an
impairment loss decision, to meet their incentives given. Finally, and most strikingly, the
extent of discretion in the standards is found to have a small, statistically insignificant impact on the average amount of earnings management managers include in their financial report.

Our study contributes in the area of rules-based and principles-based accounting standards, and earnings management. First, we provide respondents a potential trade-off between an accounting decision and a transaction decision. Although the relationship between rules-based and principles-based standards and earnings management is commonly accepted (Libby et al., 2009; Cohen et al., 2008; Nelson et al., 2002), this is the first experiment we are aware of to provide this potential trade-off between accounting and transaction decisions. Second, and contrary to most prior studies (inter alia Segovia et al., 2006), our study uses financial managers to participate in the experiment rather than auditors. Third, and most importantly, by means of an experiment, we test whether rules-based or principles-based accounting standards affect the degree to which managers engage in earnings management; providing clarity concerning the contradictory results found in prior research (for example Nelson, 2003; Psaros and Trotman, 2004).

The remainder of this paper is as follows. In section two, background information is provided and we develop our hypotheses. Section three and four describe the experiment used to test these predictions and present the results of our experiment. Section 5 discusses the implications of this study.

II. Background and hypotheses

Earnings management

Earnings management is extensively examined in academic research (See Libby et al., 2009; Cohen et al., 2008 and Ronen and Yaari, 2008 for recent contributions). Commonly used definitions come from Schipper (1989) and Healy and Wahlen (1999). Schipper (1989) broadly defines earnings management as a purposeful intervention in the financial reporting process, to obtain private gains. Healy and Wahlen (1999) are more concrete, finding that earnings management occurs when agents deliberately use judgment and decision making in financial reporting to mislead stakeholders about the economic performance or influence contractual outcomes that depend on the financial report.

Two distinct possibilities to engage in earnings management are accounting decisions and transaction decisions (Libby and Seybert, 2009; Cohen et al., 2008; Francis, 2001). Accounting decisions refer to choices among equally acceptable rules and/or judgment and estimates required to implement GAAP (Libby and Seybert, 2009). Results from prior studies
show that earnings management through accounting decisions may take place, amongst others, in the areas of inventory measurement (Neill et al., 1995), revenue recognition (Bowen et al., 2002) and fair value estimates (Mazza et al., 2007). *Transaction decisions*, on the other hand, refer to choices of structuring transactions and contracts or adjust real production and investment activities that are aimed at engaging in earnings management (Libby et al., 2009). A non exhaustive list of transaction decisions examined in prior studies are strategic security sales (Hunton et al, 2006), strategically use sale and leaseback transactions (Maines et al., 2003; Imhoff and Thomas, 1988), and machinery replacement decisions (Jackson, 2008).

**Accounting standards and earnings management**

After some well-known reporting disasters at the beginning of the 21st century, the FASB and IASB signed the ‘Norwalk’ agreement and started advocating a move towards a more principles-based financial reporting system. This helps avoiding bright-line rules and in this way allows for the exercise of more professional judgment (Clor-Proell et al., 2006). Principles-based accounting standards refer to a system of financial reporting that is based primarily on the fundamentals of accounting (decision usefulness, true and fair view, going concern, substance over form) with an appropriate level of specificity (US SEC, 2002; Bennet et al, 2006; Benston et al. 2006; Schipper, 2003; Psaros and Trotman, 2004); implying extensive opportunities for professional judgment. These principles-based standards allow for additional requirements; however, these requirements must be kept to a minimum and in general are relatively soft. Relatively soft guidance, such as IAS 9.23, is that development costs generally are amortized over a period not exceeding five years (Bennett et al., 2006), leaving much room for professional judgment.

The Institute of Chartered Accountants of Scotland (ICAS, 2006) prefers a principles-based system, amongst others because principles-based standards provide a comprehensive basis and have the flexibility to deal with new and different situations. This flexibility, however, can be used to engage in earnings management through accounting decisions. Therefore, Nobes (2005) tend to prefer rules-based accounting standards. Rules-based accounting standards refer to a system of financial reporting, that is based on detailed provisions of methods for most accounting problems, where it is unambiguously clear how and when it is to be applied. Rules-based accounting standards have very extensive and precise elaborations concerning what is or is not allowed (Alexander and Jermakowicz, 2006). These precise standards hold the advantage of increased comparability between financial reports, and create better opportunities to verify reporting information for auditors (Nelson, 2003; Schipper, 2003).
Moreover, rules-based standards largely eliminate opportunities to engage in earnings management through accounting decisions (Nobes, 2005). A disadvantage, however, is that the precise standards may be used for earnings management via transaction decisions (Nelson et al., 2002). As a result, a trade-off remains between earnings management through accounting decisions and earnings management through transaction decisions due to rules-based and principles-based accounting standards.

Besides this potential trade-off, we reflect on the question how much earnings management is applied in both a rules-based and a principles-based environment. Results in this area remain inconclusive. Several experiments have been conducted to assess whether rules-based or principles-based accounting standards are better able to diminish earnings management. Nelson (2003) reviews some of this experimental literature and concludes that the aggressiveness of reporting decisions increases with an increase in flexibility in accounting standards, i.e. principles-based accounting standards create more earnings management applications. This result is in line with Trompeter (1994). Trompeter (1994) uses audit partners and varies the precision of accounting standards in a marketable security valuation case. He shows that audit partners allow for more income-increasing interpretations in cases with less precise standards.

Contrary to these results, however, Psaros and Trotman (2004) and Segovia and Arnold (2006) show results that principles-based accounting standards perform better in diminishing earnings management. Psaros and Trotman (2004) examine whether rules-based standards or principles-based standards influence preparers’ judgment to consolidate more, i.e. influence preparers’ judgment to combine financial reports of several related companies. One conclusion is that consolidation judgments (whether or not to consolidate) appear to be influenced more in a rules-based setting than in a principles-based setting with regard to their decision beforehand. The preparers use the presented information more aggressively, i.e. select the reporting disclosure that portrays events favorably when the position is not indicated clearly to comply with the rules. With the same incentive not to consolidate, the influence of additional information was larger in a rules-based setting (Psaros and Trotman, 2004). Segovia and Arnold (2006) confirm these results by showing that U.S. auditors are more willing to allow earnings management under rules-based standards.

To conclude, we distinguish between accounting decisions and transaction decisions to engage in earnings management. Our study focuses on the influence discretion in accounting standards has on both the type of earnings management applied as well as the degree to which managers take earnings management decisions.
Hypotheses

For developing our hypotheses, we start with principles-based accounting standards. We expect managers to engage in accounting decisions more in a principles-based setting than in a rules-based setting (Nelson et al., 2002). Principles-based standards leave more room for professional judgment. This flexibility, however, may also be used to engage in earnings management (Nobes, 2005; Schipper, 2003; Nelson, 2003). Managers may use the substance-over-form discussions to convince the auditor concerning the economic reality of the account. Therefore, firms use the accounting policy choices given or estimate opportunities provided to meet their incentives. These opportunities are not included in rules-based standards. As a consequence, Nobes (2005) concludes that rules-based standards reduce opportunities for earnings management through judgment (accounting decisions). To conclude, in the area of earnings management, we expect managers to engage in accounting decisions more in a principles-based setting compared to a rules-based setting.

Hypothesis 1a: Managers engage more in accounting decisions in a principles-based setting than in a rules-based setting.

To ‘solve’ this problem related to principles-based standards, standard setters can decide to add requirements and thereby decrease the opportunities left to engage in earnings management through accounting decisions. By adding requirements, standards become more rules-based (Nelson, 2003). We expect that managers are more likely to use transaction decisions, when accounting standards are rules-based rather than principles-based standards. Nelson et al. (2002) examine the effect of precision of accounting standards on the various types of earnings management. Their survey results show that if structured decisions comply with precise rules, such as numerical thresholds, auditors are less likely to require adjustments, even if financial results deviate from the substance-over-form expectations. Similarly, since principles-based standards lack numerical thresholds, adjusting contracts in a principles-based setting seem useless because auditors may still require material adjustments (Nelson et al., 2002). Consequently, managers are more likely to attempt earnings management using transaction decisions in a rules-based setting than in a principles-based setting.

Hypothesis 1b: Managers engage more in transaction decisions in a rules-based setting than in a principles-based setting.
When we combine these results, we expect no significant differences in the degree of earnings management between rules-based and principles-based accounting standards for three reasons. First, because we hypothesize that managers engage in earnings management anyhow, either via accounting decisions in a principles-based area or via transaction decisions in a rules-based area. Second, prior research suggests that when incentives are sufficient to attempt earnings management practices, neither rules-based, nor principles-based accounting standards are able to fully eliminate earnings management decisions (Nelson, 2003). Third, since prior literature shows contradictory results concerning the effects rules-based and principles-based accounting standards have on earnings management. Inter alia, Gibbins et al. (2001) note that rules-based standards increase auditors’ power when negotiating with its client to diminish earnings management. Segovia and Arnold (2006), however, show greater acceptance of earnings management decisions in a rules-based environment. Therefore, since both theoretical reasoning as well as prior research show ambiguous expectations in this area, we hypothesize that no significant differences will occur in the degree of earnings management when we compare rules-based and principles-based settings.

Hypothesis 2: The degree of earnings management does not differ between a rules-based and a principles-based setting.

III. Research method
In our experiment, 175 financial managers decided on both an available-for-sale security to sell and an impairment loss decision to consider; an opportunity to take an accounting decision and a transaction decision to engage in earnings management. We manipulated IAS 32 and IAS 36 for representing the rules-based and principles-based setting, and manipulated analysts’ expectations creating a 2x2 between-subjects design.

Subject selection
There is a large literature debating whether or not students are appropriate as participants for accounting experiments. Amongst others, Chang and Ho (2004) show that using students is inappropriate for professional decision making. They compare 222 experienced managers with 146 undergraduate students. One of their conclusions is that students show little sensitivity to contextual information. Potters and Van Winden (2000) confirm this expectation. Using a lobbying experiment, they find a significant difference between students and professionals, based on professional rules of conduct. Finally, Hunton et al. (2006) use 62
financial executives for their study because they aim ‘to peer into the minds’ of experienced managers. Comparable to Chang and Ho (2004), Potters and Van Winden (2000), and Hunton, Libby and Mazza (2006) we use experienced respondents. Our goal is to peer into the minds of professional managers (CFO’s), who are aware of the effects of their financial reporting decisions taken.

The participants are ‘Register Controllers’ (RC’s)\(^1\) connected to the ‘Vereniging van Registercontrollers’. Of the 175 participants, 124 (71%) currently work as a controller/CFO. The demographics of our respondents are displayed in Table 1.

\(<\text{Table 1 about here}>\)

**Task**

Appendix 1 gives full details of the experimental task.\(^2\) The case material asks participants to assume they work as CFO for a quoted company. It is December 19, 2009, and before finishing the year-end financial report two decisions must be taken. Before the decisions taken by the participants, net profit of Snilco Inc. ends up at approximately € 50 million. The first decision concerns taking an impairment loss decision. Drawing on Segovia and Arnold (2006) and Riedl (2004) we use this impairment loss decision to proxy for earnings management through an accounting decision. The participants learn that the companies’ building stands on polluted ground. As a consequence, and in conformity with the accounting standard, the value of this fixed asset (including ground), with a carrying value of € 25 million, must be impaired.

For assessing the impairment loss, the company has consulted two appraisal offices. The non-earnings management position in this part would be the assessed impairment loss as stated by the very renowned and domestic appraiser from Appraisal Office A;\(^3\) leading to an impairment loss of € 10 million. Our case provides two opportunities to deviate from the assessment of this renowned assessor. First, a more local appraiser is hired, which assesses roughly that the value of the companies’ building is € 10 million; companies’ financial result would decrease with € 15 million, leading to an attempt in earnings management (decrease) of € 5 million. Secondly, the case includes a statement concerning the previously sold building

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\(^1\)RC’s are highly educated controllers that receive this official title after finishing two or three years of postmaster education combined with at least three years of practical experience; roughly comparable with being a chartered controller. Similarly, RA in Table 1 is an abbreviation for ‘Register Accountant’, which is closely comparable to a CPA.

\(^2\)The case material included in appendix 1 is written in English. The original case for conducting the experiment, however, was in Dutch, because all our respondents were native Dutch.

\(^3\) Although this argument can be debated, we verified in our post debriefing analysis whether participants find the assessment of Appraisal Office A the most "objective". The participants confirmed this statement (74% was neutral to fully agreed).
of their neighbors. Since the selling price was € 20 million, this would result in an impairment loss of € 5 million, i.e. an earnings upgrade with € 5 million.

Our second decision holds an earnings management through transaction decision. Comparable to Hunton et al. (2006), we provide an opportunity to sell short term financial assets. Portfolio Y holds an unrealized gain of 5 million, whereas portfolio Z holds an unrealized loss of 5 million. By selling this portfolio, subjects are able to either increase or decrease net earnings. The non earnings management position is represented by not selling any short term financial assets, because the case explicitly states that selling these financial assets is not necessary to fulfill liquidity requirements. In conformity with IAS 32 and 39, we allow preparers to hold unrealized losses in the owners’ equity part. Hence, the case exposes that realisation of unrealized gains and losses are due after selling the portfolio. For testing our second hypothesis, we combine both results from the accounting and transaction decision. Table 2 summarizes all potential case outcomes.

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Experimental design
Thus far, the possibilities to take earnings management decisions are equal under both a rules-based and a principles-based treatment. To answer the case questions, participants read their analysts’ consensus forecast and their accounting standards to comply with. We manipulate IAS 36\(^4\) (Impairment of assets) and IAS 32 (Financial instruments) for representing the rules-based and the principles-based setting, and use different analysts’ expectations as incentives, creating a 2x2 between-subjects design.

The artificial accounting standards to consider for the impairment loss decision, based on IAS 36, are presented as follows:

Principles-based (PB):
(b) If there is no binding sale agreement or active market for an asset, fair value less costs to sell is based on the best information available to reflect the amount that an arm’s length transaction between knowledgeable, willing parties, after deducting the costs of disposal. In determining this amount, an entity may consider the outcome of an assessment of an expert.

\(^4\) We use the IASB standards as bases and adjusted these standards to fulfill rules-based and principles-based requirements. This choice, however, was quite arbitrary. We could have chosen the FASB-standards equally well as a starting point of our operationalization process. The IASB standards for our issues, however, were easier to adjust. In this way we overcome influential, non-controllable factors, since the accounting standards can convey unintended information about the nature of the underlying theory to be tested (Libby et al., 2002).
(b) If there is no binding sale agreement or active market for an asset, fair value less costs to sell is based on the best information available to reflect the amount that an arm’s length transaction between knowledgeable, willing parties, after deducting the costs of disposal. In determining this amount, an entity must adopt the primary outcome of an assessment of a renowned expert. If the company decides to deviate from this assessment, an entity must disclose why they have chosen this valuation and what the impact was on the financial results.

A first distinction concerns the difference between ‘may consider’ and ‘must adopt’. ‘May consider’ inherently accepts professional judgment whether or not to comply with this standard, referring to the principles-based setting. CFO’s may use their ‘true and fair override’ if in their view the situation deviates from the outcome of the accounting standard. Moreover, we explicitly included ‘renowned’ in the rules-based standard. This phrase is comparable to the case description and emphasizes the form over substance (RB). Finally, we included a ‘disclosure obligation’ for the rules-based setting to deal with; only if a CFO decides to deviate from the renowned expert. This obligatory requirement in the rules-based setting refers to the limited choices CFO’s have in practice due to the stringency of accounting standards.

The artificial standards concerning selling financial assets for the rules-based and principles-based setting are displayed as following:

**Principles-based (PB):**
If necessary or wishful to enhance the insights of financial statement users, the company is allowed to separately disclose the amount that was removed from equity and recognized in profit or loss for the period. An entity may disclose material items of income in profit or loss or as a separate component of equity.

**Rules-based (RB):**
The company should at least disclose all material items for the amount that was removed from equity and recognized in profit or loss for the period. An entity shall disclose material items of income in profit or loss or as a separate component of equity.

The distinction between rules-based and principles-based starts with the phrase ‘If necessary or wishful to enhance the insights of financial statement users’ in the principles-based setting. This phrase, obviously lacking in the rules-based setting, emphasizes the importance of
professional judgment in deciding whether this decision seems useful to financial statement users. In addition, the distinction between the company 'is allowed to disclose' (PB) and 'should at least disclose' (RB) stresses the distinction of professional judgment and flexibility (PB) on the one hand vis-à-vis with what one ought to do on the other hand (RB). Finally, the notions 'may' versus 'shall' again represent a difference in which the situation of what a CFO can do (PB) is compared to the mandatory representation in the rules-based setting.

In addition to these accounting standards, Libby and Seybert (2009) stress the importance of including appropriate incentives when conducting an accounting experiment to increase internal validity. Following Baik and Jiang (2006), Hunton et al. (2006) and Libby and Kinney (2000), we include analysts’ forecast as incentive to influence financial outcomes. Including analysts’ consensus forecast provides us with a neutral yet relevant opportunity to influence CFO’s decision making. Projected earnings for the non earnings management situation are € 40 million. Drawing on Hunton et al. (2006), we vary analysts’ consensus forecast between € 45 million and € 35 million, providing participants an incentive to either increase or decrease net earnings. This 2x2 design is displayed in Table 3, including the number of participants that finished the research (175 participants in total).

<Table 3 about here>

**Procedure**

From the ‘Vereniging voor Register Controllers’ (VRC) we have received a batch of 2,340 email addresses. This batch included all chartered controllers in the Netherlands. We randomly assigned respondents to one of the four treatment level via [http://www.randomizer.org](http://www.randomizer.org). Using this method overcomes problems of researcher interference and thereby contributes to the internal validity of our experiment. To control our budget, and in line with Libby et al. (2002), we used an online application rather than a laboratory for executing our experiment. The online application we used was ‘Netquestionnaire’ ([www.netq.nl](http://www.netq.nl)).

In addition to the provided case, a link was created to inform subjects about their accounting standards; either rules-based or principles-based accounting standards. These accounting standards were accessible via a hyperlink in the case; Appendix (Bijlage). [http://fbw.ruhosting.nl/ferdy/abba67.html](http://fbw.ruhosting.nl/ferdy/abba67.html) presented the obligatory principles-based standards, whereas [http://fbw.ruhosting.nl/ferdy/bastiaan24.html](http://fbw.ruhosting.nl/ferdy/bastiaan24.html) showed the rules-based accounting
standard to comply with. The accounting standards were exposed on less than one page (see Appendix 2 and 3). Moreover, the case displayed analysts’ consensus forecast, either € 45 million or € 35 million depending on the treatment level.

Subjects were allowed to participate in the experiment between September 28, 2009 and October 14, 2009. The introduction included a phrase that the research will last approximately 15 minutes. To thank participants for their cooperation we promised to donate € 5 to a charity fund of their choice. Our application registered IP-addresses; subjects were only allowed to participate once. The application did not allow participants to look back. Hence, they were unable to verify the case when answering the manipulation check questions. Moreover, the application prevented participants to adjust their decisions taken after becoming aware of the research questions.

IV. Results

Hypotheses testing
In section 2 we developed our hypotheses. We expected more accounting decisions in a principles-based setting (hypothesis 1a), whereas we expect more transaction decisions in a rules-based setting (hypothesis 1b). Moreover, we expect similar results for the rules-based and principles-based setting when concerning the total degree of earnings management. (hypothesis 2). Table 4 presents the frequencies of the impairment loss and security sale decisions taken. Table 5 reports on the total effect these both decisions have on reported earnings. Table 6 displays the Anova analyses.

To test our first hypothesis, we compare the number of accounting decisions taken between a rules-based and a principles-based setting. Hence, we compare the number of participants that either chooses € 5 or € 15 million to include as an impairment loss and compare this number of decisions for both the rules-based and principles-based setting. The results from Table 4

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5 We deliberately decided to have very dissimilar links used. By using these links, subjects are unable to ‘guess’ what the website of the other accounting standards might be.
show that 17 participants (out of 83; 20.48%) take an accounting decision in the principles-based environment, whereas 13 out of 92 (14.13%) participants take an accounting decision in the rules-based environment. Using an ANOVA-test, we test whether this hypothesis is statistically confirmed. The results from our Anova analysis are presented in Table 6, Panel A. As indicated in Table 6, the difference between rules-based and principles-based is insignificant ($p = 0.134$). However, when we compare the accounting decisions taken between the rules-based and the principles-based setting (analysts’ forecast 45), the p-value ($p = 0.074$) indicates a significant difference at the 10% level.\footnote{Using one sided testing is used more often in prior literature (for instance Hunton et al., 2006). Turning to the statistical significance of our results, we find the estimates are somewhat imprecise, only reaching significance at the 10% level. Upshot is that we should take some care not to draw too strong conclusions from our experimental findings. On the other hand, our experimental design did not contain the high-powered incentives that are likely to exist in the real world. As such, finding statistically significant differences between the two accounting standards shows how important these standards are likely to be in shaping real world earnings management decisions. Of course, it also resonates with the strong theoretical rationale for expecting differential effects of the two accounting standards on accounting decisions and transaction decisions.}

Comparable to hypothesis 1a, hypothesis 1b is tested by comparing the number of transaction decisions taken under both accounting regimes. Not selling these short term financial assets represents the non earnings management decision. Selling either portfolio Y or Z is considered to be an earnings management through transaction decision. The results from Table 4 show that 30 participants in the rules-based area and 19 participants in the principles-based area (32.61% and 22.89%, respectively) decide to take a transaction decision. Using an ANOVA-test, we find that significantly more participants under the rules-based treatment decided to take a transaction decision compared to transaction decisions taken in the principles-based treatment ($p = 0.076$).

More importantly, we test the trade-off between accounting and transaction decisions taken. Prior research (inter alia Nelson et al., 2002; Cohen, 2008) demonstrate the contribution rules-based and principles-based standards have on the type of earnings management decisions. To test whether trade-offs made deviate between a rules-based and a principles-based setting, we compare the relative proportions of transaction decisions versus accounting decisions taken in the rules-based and principles-based treatments. To measure this relative proportion, we subtract the number of accounting decisions taken from the number of transaction decisions taken. Because we expect more transaction decisions in a rules-based environment and more
accounting decisions in a principles-based environment, our results can be tested one sided; expecting a significantly higher result in the rules-based area. Our results confirm this expectation ($p = 0.053$). To conclude, our results demonstrate that in the rules-based setting, managers tend to take the opportunity to sell short term financial assets more, whereas relatively, in the principles-based setting, managers more often take impairment loss decisions.

Based on the accounting and transaction decision taken, we are able to deduce respondents’ net earnings. The results are displayed in Table 5. The results can ultimately deviate between € 30 and € 50 million (see Table 2), with € 40 million representing the non earnings management situation. The effect of analysts’ forecast has a larger effect when income increasing incentives are involved compared to the income decreasing incentives. Moreover, the average results of rules-based (40.82) and principles-based (41.20) accounting standards suggest that accounting standards have a significant influence on earnings management decisions, which is statistically confirmed for principles-based and rules-based accounting standards ($p = 0.001$ and $p = 0.021$, respectively).

In addition to testing hypotheses 1a and 1b, Table 6, Panel B relates to whether subjects actually engage in earnings management. Participants with an incentive to increase earnings truly attempt in earnings management practices with a significance of $p < 0.01$ for both the rules-based and the principles-based treatment. Surprisingly, however, our participants do not significantly engage in earnings management, when they receive analysts’ forecast 35 as incentive to decrease earnings. Although on average, net earnings are lower than the non earnings management situation (average difference of 0.33), these average results are insignificant ($p = 0.146$).

The more interesting question, however, relates to hypothesis 2. This hypothesis reflects on the question which type of accounting standards is better able to prevent earnings management applications. For testing hypothesis 2 we need a two sided t-test. Results in Table 6 (Panel B) show that neither when income increasing incentives are involved, nor when income decreasing incentives are involved, there is a significant difference between the degree of earnings management under a rules-based and principles-based regime ($p = 0.655$ and $p = 0.526$, respectively).

Overall, when incentives are sufficient to engage in earnings management, neither rules-based, nor principles-based accounting standards are able to eliminate earnings management decisions (see Table 6). This confirms expectations from prior research (e.g. Libby et al., 2009; Nelson, 2003) suggesting that incentives have a bigger influence on
earnings management than accounting standards. When standards are precise, managers tend to search for transaction opportunities to meet analysts’ expectations. When standards are imprecise, managers more often take accounting decisions, such as impairment loss decisions, to meet their incentives given. Most striking, however, is that the discretion in the standards does not have a significant influence on the degree of earnings management managers include in their financial report.

**Manipulation checks**

Manipulation check questions directly relate to the case displayed and verify whether respondents understood the case correctly. This is important to guarantee the internal validity of the case (Libby et al., 2002). In state of the art experimental papers, such as Hunton et al. (2006), manipulation check questions are asked after the provided case. For our study, however, we asked participants to record the correct accounting standards prior to answering on the accounting and transaction decision. Given that we use an artificial accounting standard, we face the risk that participants do not read the provided standard carefully enough, which could harm our results. Participants were only allowed to continue after a correct assessment of the accounting standards provided.

In addition to the manipulation check questions verifying which accounting standards participants had to comply with, we asked three additional questions concerning the exposed case description. First, we verified what the effect would be, if they had chosen to base their impairment loss decision on appraisal office B. Second, we asked participants to record whether the selling of ‘available for sale’ securities provided an opportunity to create both an additional loss and/or a gain. Third, we asked what the analysts’ consensus forecast for 2009 was. Since on average, 93 percent of the participants answered the manipulation checks correctly, we deem the experimental design successful.

**V. Conclusion**

Recent research indicates that the discretion in accounting standards has an influence on earnings management decisions (Libby et al, 2009). By means of our experiment, involving 175 RC’s, we test which effects rules-based and principles-based accounting standards have on earnings management. Confirming our prior expectations (Nelson, Elliot and Tarpley, 2002), managers tend to adjust their decisions based on the latitude given in the accounting standards. Our results show that participants in a rules-based setting are more likely to use
transaction decisions, selling ‘available for sale’ securities. Moreover, participants in the principles-based setting more often use their impairment loss (accounting) decision to engage in earnings management compared to participants in the rules-based setting. Furthermore, our results demonstrate that when incentives are sufficient to attempt earnings management practices, neither rules-based, nor principles-based accounting standards are able to fully eliminate earnings management decisions. Most striking, however, is that the nature of the accounting standards provided does not have a significant influence on the average amount of earnings management participants included in their financial reports. These results suggest that increasing or decreasing the flexibility in accounting standards may hardly be useful to prevent earnings management applications and will only result in a substitution effect; creating different types of earnings management applications.

Our study contributes in the area of rules-based and principles-based accounting standards, and earnings management. First, and contrary to most prior studies (e.g. Nelson et al., 2002), our study uses financial managers to participate in the experiment rather than auditors. Second, we provide respondents a potential trade-off between an accounting decision and a transaction decision. Although the relationship between rules-based and principles-based standards and earnings management is commonly accepted (Libby et al, 2009; Nelson, 2003), this is the first study we are aware of to provide this potential trade-off between accounting and transaction decisions. Third, and most importantly, our study contributes to the question which type of accounting standard is better able to diminish earnings management. In line with contradictory results found in prior research our results demonstrate that neither rules-based nor principles-based accounting standards are better able to reduce earnings management practices.

This study may be useful to the FASB and IASB. Continuing with the convergence project, one of the issues they face is how much discretion to allow for when developing new or adjusting existing accounting standards. Although both boards signed the ‘Norwalk agreement’ with the intention to create more principles-based accounting standards for global financial reporting (Clor-Proell et al., 2006), accounting standards seem to become more rules-based. From an earnings management perspective, however, our results do not show a fundamental difference between rules-based or principles-based accounting standards in their ability to prevent earnings management. Standard setters may contemplate our experimental results when discussing the direction they are heading for developing future accounting standards.
Our study, however, holds several limitations. First, we provide participants with only limited information to take their accounting and transaction decision. Although enriching the study might contribute to creating more external valid results, we believe that leaving participants with a relatively simple design strengthens causal inference. Second, we use artificial standards rather than existing accounting standards. Although we use IAS 32 (Financial instruments) and IAS 36 (Impairment of assets) as a basis for manipulation, our standards remain artificial. Third, we use only two positions on the rules-based and principles-based continuum, whereas we could have chosen intermediary types as well. Such tests could be conducted in future research. Finally, and similar to Hunton et al. (2006) we provide respondents with only one incentive, whereas in daily practice financial managers have various incentives, and we offer respondents only two ways to manage earnings. We recognize that CFO’s in practice may have more than two opportunities for earnings management attempts and perceive various incentives both to increase and decrease earnings. Future researchers may want to include more distinct incentives and earnings management opportunities.
Appendix 1: Snilco Case (English, original in Dutch)

Introduction
You are about to participate in a research which contributes to a better understanding of the
decision-making of financial managers. You will be asked to take decisions, for which there
are no correct or incorrect answers. Although you normally might prefer to receive additional
information for such decisions, the purpose is to take decisions based on the presented
information. Try to answer the questions comparable to decisions during common practice,
i.e. like you would normally do.

This research exists of three parts. In part one a casus is described, which you must read
carefully and thereafter you must answer the two requested decisions. Afterwards you will be
asked to answer questions directly related to the casus and questions concerning individual/
personal characteristics.

The total research will last approximately 15 minutes. To thank your for your cooperation, we
would like to donate € 5, - to a charity fund, which you can indicate at the end of the research.
On behalf of the charity funds and the research group we would like to thank you for your
participation in advance. The data are treated confidentially and will be used for scientific
purposes only.

You are the CFO of Snilco Inc.

Snilco Inc. is a quoted company, which, as a subcontractor, supplies companies with
manufactured steel aid constructions for machinery. The company generally delivers good
financial results and has a stable stock exchange rate.

It is December 19, 2009, and you are currently working on the preparation of the companies’
financial results of 2009. Following current calculations, net profit of Snilco Inc. will end up
on approximately € 50 million. However, as Snilco’s CFO you must first manage two issues.

1. First of all, two months ago, you received a bulletin from the municipality which stated that
Snilco’s building, with a carrying value of € 25 million, stands on polluted ground. After
consultation of the auditor and in conformity with the accounting standard you decided to request an appraisal office to assess the value of the building.

Appraisal office A is very renowned, has a domestic coverage and already looked after several projects for Snilco Inc. in the past. They assess the current value of the building and ground as €15 million, which implies an impairment loss of €10 million. The results will be taken very seriously by the Supervisory Board. However, two months ago, you discovered that the neighbours’ building, a fairly comparable building that also stands on polluted ground, was sold for €20 million. Moreover, you have asked a less renowned appraisal office B. They have assessed that the current value is €10 million.

Schematically this could be presented as following:

<table>
<thead>
<tr>
<th>(€ in millions)</th>
<th>Appraisal office A</th>
<th>Appraisal office B</th>
<th>Neighbours' building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrying value</td>
<td>€ 25</td>
<td>€ 25</td>
<td>€ 25</td>
</tr>
<tr>
<td>Assessment current value</td>
<td>€ 15</td>
<td>€ 10</td>
<td>€ 20</td>
</tr>
<tr>
<td>Impairment loss</td>
<td>€ 10</td>
<td>€ 15</td>
<td>€ 5</td>
</tr>
</tbody>
</table>

2. Beside the impairment loss decision, you can also choose to sell a portfolio of 'available for sale' securities. You may choose between portfolios Y or Z. Portfolio Y holds an unrealized gain of €5 million, whereas portfolio Z holds an unrealized loss of €5 million. Although it will have not a significant influence on the companies’ financial result, selling available for sale securities implies transaction costs. An explicit remark for this purpose is that you do not need the released cash from the selling of the securities to create a balance in your liquidity budget. In accordance with the accounting standards, one is not obliged to include an unrealized loss in the financial statement, if this loss is expected to be of temporary nature. In other words, both the unrealized loss and the unrealized gain will be realized at sale.

As a quoted corporation, it is important to meet the analysts’ and investors’ expectations. Year after year Snilco succeeded in meeting analysts’ forecast, leading to a relatively high share price for the company. A high share price is important to remain 'healthy'.
The analysts’ consensus forecast for your company’s 2009 earnings is € 45 million [€ 35 million].

For audit purposes, it is important that you comply with the financial reporting rules. You must take decisions in accordance with these rules. You must use the rules as given in the appendix. Click on the following link to open your accounting standard:

1. Based on the above given case description and accessory accounting standard, you are asked to assess the impairment loss you consider to include in the annual report. Which amount will you include as impairment loss?
   - 10 million (similar to the assessment of appraisal office A)
   - 5 million (similar to the sold neighbours’ building)
   - 15 million (similar to the assessment of appraisal office B)

2. In addition, you have the opportunity to sell ‘available for sale’ securities. Based on the above given case description and accessory accounting standard, what decision will you take concerning the selling of your portfolio?
   - Sell portfolio Y (5 million additional gain)
   - Sell portfolio Z (5 million additional loss)
   - Don’t sell
Appendix 2: Accounting standard with regard to impairment loss (principles-based)

1. In assessing whether there is any indication that an asset may be impaired, an entity shall consider the following situations:

(a) during the period, an asset’s market value has declined significantly more than would be expected as a result of the passage of time or normal use;

(b) evidence is available of obsolescence or physical damage of an asset.

2. When the fair value less costs to sell is lower than its carrying amount, the assets must be impaired to its’ fair value less costs to sell value. The difference between the fair value less costs to sell and its’ carrying amount must be included as impairment loss in the profit and loss account.

(b) If there is no binding sale agreement or active market for an asset, fair value less costs to sell is based on the best information available to reflect the amount that an arm’s length transaction between knowledgeable, willing parties, after deducting the costs of disposal. In determining this amount, an entity may consider the outcome of an assessment of an expert.

Accounting standard with regard to available for sale impact

1. If necessary or wishful to enhance the insights of financial statement users, the company is allowed to separately disclose the amount that was removed from equity and recognized in profit or loss for the period. An entity may disclose material items of income in profit or loss or as a separate component of equity.
Appendix 3: Accounting standard with regard to impairment loss (rules-based)

1. In assessing whether there is any indication that an asset may be impaired, an entity shall consider the following situations:

(a) during the period, an asset’s market value has declined significantly more than would be expected as a result of the passage of time or normal use;

(b) evidence is available of obsolescence or physical damage of an asset.

2. When the fair value less costs to sell is lower than its carrying amount, the assets must be impaired to its’ fair value less costs to sell value. The difference between the fair value less costs to sell and its’ carrying amount must be included as impairment loss in the profit and loss account.

(b) If there is no binding sale agreement or active market for an asset, fair value less costs to sell is based on the best information available to reflect the amount that an arm’s length transaction between knowledgeable, willing parties, after deducting the costs of disposal. In determining this amount, an entity must primarily adopt the outcome of an assessment of a renowned expert. If the company decides to deviate from this assessment, an entity must disclose why they have chosen this valuation and what the impact was on the financial results.

Accounting standard with regard to available for sale impact

1. The company should at least disclose all material items for the amount that was removed from equity and recognized in profit or loss for the period. An entity shall disclose material items of income in profit or loss or as a separate component of equity.
Table 1: Demographic data

<table>
<thead>
<tr>
<th>Formal Certifications held by participants</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>RC</td>
<td>175</td>
<td>100%</td>
</tr>
<tr>
<td>RA</td>
<td>17</td>
<td>10%</td>
</tr>
<tr>
<td>MSc.</td>
<td>128</td>
<td>73%</td>
</tr>
<tr>
<td>other:</td>
<td>26</td>
<td>15%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Participants employed as controller/ CFO</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>124</td>
<td>71%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>151</td>
<td>86%</td>
</tr>
<tr>
<td>Female</td>
<td>24</td>
<td>14%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Average business experience</th>
<th>Mean*</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10.8</td>
<td>5.6</td>
</tr>
</tbody>
</table>

| Age                          | 40.7  | 6.8  |

* based on Anova testing, response means do not significantly differ across treatment levels

Table 2: Case outcomes

<table>
<thead>
<tr>
<th>Portfolio Z (-5) &amp; (-5)</th>
<th>Appraiser B</th>
<th>€ 30 M.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portfolio Z (-5) &amp; (0)</td>
<td>Appraiser A</td>
<td>€ 35 M.</td>
</tr>
<tr>
<td>No security sale (0) &amp; (-5)</td>
<td>Appraiser B</td>
<td>€ 40 M.</td>
</tr>
<tr>
<td>No security sale (0) &amp; (0)</td>
<td>Appraiser A</td>
<td>€ 45M.</td>
</tr>
<tr>
<td>Portfolio Y (+5) &amp; (+5)</td>
<td>Appraiser B</td>
<td>€ 50 M.</td>
</tr>
<tr>
<td>Neighbours' building</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3: 2x2 operational experimental design (including number of participants)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysts’ forecast 45</td>
<td>44</td>
<td>41</td>
</tr>
<tr>
<td>Analysts’ forecast 35</td>
<td>48</td>
<td>42</td>
</tr>
</tbody>
</table>
### Table 4: Decisions (impairment loss and security sale decisions)

<table>
<thead>
<tr>
<th></th>
<th>Appraiser A</th>
<th>Appraiser B</th>
<th>Neighbours' building</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Impairment loss</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PB (45)</td>
<td>31</td>
<td>0</td>
<td>10</td>
<td>41</td>
</tr>
<tr>
<td>PB (35)</td>
<td>35</td>
<td>4</td>
<td>3</td>
<td>42</td>
</tr>
<tr>
<td>Total</td>
<td>66</td>
<td>4</td>
<td>13</td>
<td>83</td>
</tr>
<tr>
<td>RB (45)</td>
<td>37</td>
<td>1</td>
<td>6</td>
<td>44</td>
</tr>
<tr>
<td>RB (35)</td>
<td>42</td>
<td>4</td>
<td>2</td>
<td>48</td>
</tr>
<tr>
<td>Total</td>
<td>79</td>
<td>5</td>
<td>8</td>
<td>92</td>
</tr>
<tr>
<td><strong>Security sale</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No sale</td>
<td>0</td>
<td>-5</td>
<td>12</td>
<td>41</td>
</tr>
<tr>
<td>Z</td>
<td>28</td>
<td>1</td>
<td>12</td>
<td>41</td>
</tr>
<tr>
<td>Y</td>
<td>36</td>
<td>3</td>
<td>3</td>
<td>42</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
<td>4</td>
<td>15</td>
<td>83</td>
</tr>
<tr>
<td>No sale</td>
<td>0</td>
<td>-5</td>
<td>12</td>
<td>44</td>
</tr>
<tr>
<td>Z</td>
<td>27</td>
<td>4</td>
<td>8</td>
<td>48</td>
</tr>
<tr>
<td>Y</td>
<td>35</td>
<td>8</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>62</td>
<td>9</td>
<td>21</td>
<td>92</td>
</tr>
</tbody>
</table>

### Table 5: Net earnings

<table>
<thead>
<tr>
<th></th>
<th>Rules-based</th>
<th>Principles-based</th>
<th>Effect analysts’ forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysts’ forecast 45</td>
<td>42.27 (2.94)</td>
<td>42.56 (2.98)</td>
<td>42.41 (2.95)</td>
</tr>
<tr>
<td>Analysts’ forecast 35</td>
<td>39.47 (3.14)</td>
<td>39.88 (2.81)</td>
<td>39.67 (2.98)</td>
</tr>
<tr>
<td>Effect Accounting standards</td>
<td>40.82 (3.34)</td>
<td>41.20 (3.18)</td>
<td></td>
</tr>
</tbody>
</table>

### Table 6: Anova analysis

**Panel A**

<table>
<thead>
<tr>
<th>Accounting Decisions:</th>
<th>t-statistics</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.48% (PB) &gt; 14.13% (RB) (one sided t-test)</td>
<td>1.111</td>
<td>0.134</td>
</tr>
<tr>
<td>Transaction decisions:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.61% (RB) &gt; 22.89% (PB) (one sided t-test)</td>
<td>-1.438</td>
<td>0.076*</td>
</tr>
<tr>
<td>Transaction decisions- Accounting Decisions:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RB &gt; PB (one sided t-test)</td>
<td>-1.542</td>
<td>0.053*</td>
</tr>
</tbody>
</table>

**Panel B**

<table>
<thead>
<tr>
<th>Analysts’ forecast € 45 million</th>
<th>t-statistics</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB (45) &gt; non EM 40 (one sided t-test)</td>
<td>5.496</td>
<td>0.000***</td>
</tr>
<tr>
<td>RB (45) &gt; non EM 40 (one sided t-test)</td>
<td>5.120</td>
<td>0.000***</td>
</tr>
<tr>
<td>PB (45) &gt; RB (45) (two sided t-test)</td>
<td>0.448</td>
<td>0.655</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Analysts’ forecast € 35 million</th>
<th>t-statistics</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB (35) &lt; non EM 40 (one sided t-test)</td>
<td>-0.274</td>
<td>0.393</td>
</tr>
<tr>
<td>RB (35) &lt; non EM 40 (one sided t-test)</td>
<td>-1.151</td>
<td>0.128</td>
</tr>
<tr>
<td>PB (35) &gt; RB (35) (two sided t-test)</td>
<td>0.636</td>
<td>0.526</td>
</tr>
</tbody>
</table>

* ** *** significant at the 10%, 5% and 1% level, respectively
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