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Audit of Highly Uncertain Accounting Estimates

A Field-based Study of Auditors' Attitudes Towards Proposed Audit Responses in ISA 540

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Abstract

Current audit standards (IAASB 2008b, para. 13) provide auditors with four potential responses to the assessed risks of material misstatements in the audit of highly uncertain accounting estimates. Although research on the audit of such account balances is limited (Griffith et al. 2013, Nusbaum 2007, Martin et al. 2006), several previous studies have advocated that the auditor should more often undertake the *Audit response Develop estimate* in order to evaluate the reasonableness of management's estimate as it is argued to place auditors in a better position to detect management bias and inconsistencies in the account balance (Griffith et al. 2013). Nevertheless, the limited field- based research available indicates that practicing auditors predominantly undertake the Audit response *Test management's estimate* (Griffith et al. 2013, Cannon & Bedard 2014). The purpose of this study is to shed light on this phenomenon and investigate experienced auditors' attitudes towards these Audit responses in general and the Audit response Develop estimate specifically. Therefore we conduct interviews with 16 experienced auditors and valuation experts often engaged in the audit of such account balances. Our findings suggest that auditors prefer Test management's estimate mainly due to a higher perceived efficiency and conversely, that the suggested benefits of Develop estimate does not justify the additional effort required. Additionally, we identify a confusion of concepts related to the Audit response Develop estimate and therefore we initiate a more nuanced discussion of what is to be considered to undertake the Audit response Develop estimate.

Keywords: External audit of financial statements, ISA 540, Accounting estimate, Fair value, Estimation uncertainty

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1 Introduction

The role of the auditor is to provide reasonable assurance that the financial statements are free from material misstatements. This includes providing an objective and independent opinion on the appropriateness of management's assertions about the true state of the financial reports (e.g. Eilifsen et al. 2013, pp. 5-14 & p. 48). The development of the last decades towards increased use of fair values in financial reporting standards have recently been additionally solidified through the completion of the Norwalk agreement (Whittington 2005) and the convergence project of fair value standards between the FASB and the IASB through the issuance of IFRS 13 and ASU 2011-04, respectively (Zyla 2009). As a consequence of the shift towards more fair value measurement in financial accounting the assurance given by the auditor will be even more important as these fair values include subjective assumptions (Bell & Griffin 2012).

Ironically, in the audit of highly uncertain accounting estimates[1] this will result in an extremely challenging task for the auditor. Some argue it is one of the greatest challenges currently facing auditors (Griffith et al. 2013). Consequently, researchers (e.g. Martin et al. 2006, Copeland Jr 2005, Bratten et al. 2013, Christensen et al. 2012) and regulators (e.g. PCAOB 2010, IFAC 2011, European Commission 2010) alike have posed serious concerns whether auditors will be able to meet these growing challenges and to provide the level of assurance currently required by contemporary audit standards. Christensen et al. (2012) argue that it is impossible to provide a reasonable assurance as the estimation uncertainty in some accounting estimates exceeds the overall materiality. These challenges stem from the fact that the highly uncertain accounting estimates by their very nature can never be truly verified as they rely on expectations about uncertain future events and the valuations therefore depend on highly subjective underlying assumptions (Lundholm 1999).

Consequently the importance of finding valid approaches to audit the highly uncertain accounting estimates is crucial to the audit industry (Nusbaum 2007). The purpose of this study is to examine the attitudes and views of professional auditors towards the proposed Audit responses to the assessed risks of material misstatements in ISA 540, which are used to challenge the management's accounting estimate (IAASB 2008b, para. 13). There is a fundamental difference in the task of auditing account balances for which the value is measured at historical costs, i.e. essentially a task of verification, versus the audit of highly uncertain accounting

[1] Examples of such highly uncertain accounting estimates include: impairment tests of goodwill and tangible assets, financial instruments classified at level 3 in the fair value hierarchy, unlisted holdings in associated companies, investments properties etc., that are valued using a valuation model and unobservable input data.

estimates which requires the auditor to assess the reasonableness of susceptible accounting estimates (IAASB 2008b, para. 6). Nevertheless there is a dearth of research analysing the process and methods used by audit firms and there has been numerous calls for further research into the audit of accounting estimates (e.g. Nusbaum 2007, Martin et al. 2006, Bratten et al. 2013).

Furthermore, closely related studies conducted by Griffith et al. (2013) and Cannon & Bedard (2014) have both highlighted the need for further understanding of which Audit responses are used and how they are used. More specifically the authors of these studies have found somewhat contrasting evidence on the use of the Audit responses and the authors thus call for further research on the matter. Cannon & Bedard (2014, p. 32) conclude that the variation in findings and the important implications for audit practice command further research to investigate how auditors conduct Audit responses related to accounting estimates. This study is a first step towards answering those calls by shining further light on the use of the Audit responses. While Griffith et al. (2013) focus on mapping out the audit process and describing how it is conducted, our study aim to further nuance this picture by explaining why auditors choose to undertake certain Audit responses.

The purpose of this study is to elucidate how auditors perceive the Audit responses provided in ISA 540. The overall purpose is to examine how the auditors carry out the audit of highly uncertain accounting estimates and more specifically, to examine why the auditors undertake each of the Audit responses during such audits. The general research question of the study is therefore:

> *How is the audit of highly uncertain accounting estimates carried out and what are the auditors' attitudes towards the Audit responses provided in ISA 540?*

Special attention is given to the Audit response Develop estimate as it is discussed as a favourable, but rarely used Audit response in audits of highly uncertain accounting estimates. More specifically we thereby examine:

> *What are the auditors' attitudes towards the Audit response Develop Estimate?*

In this paper we examine auditors' attitudes and views towards the available Audit responses outlined in ISA 540 (IAASB 2008b, para.13). These Audit responses target assertion level risks (IAASB 2008b, para. A52). However, as this study does not consider all such assertions additional specificity is needed. This paper focus on those Audit responses undertaken to respond to the assessed risk of material misstatements for management's valuation assertion, i.e. the auditor's efforts to assess the reasonableness of the recorded value of account balances. The reason for this delimitation is that the valuation assertion is the most crucial assertion and the main focus of audits of highly uncertain accounting estimates[2]. As a consequence classifications and judgments related to presentation in accordance with the applicable financial reporting framework is of secondary importance.

A further delimitation or at least a matter of emphasis, is that the main focus of this study is attributed to two of the four Audit responses available in ISA 540, mainly Test management's estimate and Develop estimate. We apply this delimitation as these Audit responses are most commonly undertaken in practice, indicated by findings in earlier studies by Griffith et al. (2013) and Cannon & Bedard (2014), as well as indicated in our contextual interviews.

Through interviews with 16 experienced auditors and valuation experts we find that they predominantly describe undertaking the Audit response Test management's estimate to evaluate the appropriateness of the valuation assertion of the account balances. A majority of the respondents describe that the Audit responses Test internal controls and Consider subsequent events are seldom undertaken in the audit of highly uncertain accounting estimate as there rarely exist such controls or events. These descriptions are in line with previous studies by Griffith et al. (2013) and Cannon & Bedard (2014). For the fourth Audit response, Develop estimate, the respondent's views are more diverse. Some of the respondents argue that it is extremely costly or even impossible to Develop estimate in audits of highly uncertain accounting estimates such as impairments tests of goodwill mainly because the auditor lack entity-specific information related to the client's business. Others indicate that they acknowledge a potential benefit of Develop estimate, but describe that they seldom undertake the Audit response. And some of the respondents describe that they frequently undertake the Audit response to evaluate management's estimate. However the overwhelming majority of the respondents maintain that to Test management's estimate often is the primary Audit response and that the others are used as complements if they are considered appropriate in the audit engagement. These views align with the findings of previous studies (Griffith et al. 2013, Cannon & Bedard 2014) and thus there is nothing in our empirical material that would contradict these previous findings.

Our contribution in relation to previous studies is the focus on the auditors' attitudes towards the Audit response Develop estimate, which has been advocated to maintain the independence of the auditor when challenging highly subjective assumptions and to help identify external information not incorporated by management's estimate (Griffith et al. 2013). Several respondents indicate that they do not undertake the Audit response as often as they Test management's estimate due to their view on the auditor's role. These respondents stress that it is the client's role to carry out

[2] At least in our opinion as well as in the opinion of the respondents in the contextual interviews.

the valuation and make necessary assumptions. Instead the auditor should challenge these assumptions. In addition several respondents describe that the potential benefit of Develop estimate does not justify the cost of doing so. Finally, several respondents argue that they often do not possess the necessary information to Develop estimate effectively, although these responses are mostly related to impairment tests of goodwill where the information asymmetry in favour of the client is greater.

However, several respondents find the Audit response more appropriate for high-risk situations. The respondents highlight certain factors contributing to this risk as being important for their propensity to Develop estimate. Several respondents describe characteristics of high estimation uncertainty, such as complex estimations and subjective assumptions. Several respondents also describe an increased propensity to Develop estimate when the client exhibits a limited valuation expertise. Additionally, although some respondents have differing views on this issue, a few respondents highlight the risk of management bias and being influenced by the client as a factor that would increase their propensity do Develop estimate. As a consequence these respondents recognise the potential benefit of the Audit response in certain high-risk audit engagements. Nevertheless, for some accounting estimates, which require detailed entity-specific information such as impairment tests, this is also the least favourable situation to undertake the Audit response due to the increased costs and lower degree of independence in doing so.

During the interviews several respondents voiced concerns over the definition of Develop estimate, indicating a confusion of concepts. Therefore we further explore potential dimensions of Develop estimate by observing that it could be undertaken using differing precision and dependence. Based on descriptions provided by the respondents we formulate four approaches to Develop estimate. The approaches indicate that variants of Develop estimate could be more appropriate under certain circumstances, we therefore connect the respondents' descriptions to the purpose of why the auditor would Develop estimate and find appropriate situation where the Audit response could be undertaken. As a result we provide a more nuanced description to what is to be regarded to Develop estimate and stipulate an alternative way to challenge management's estimate under certain circumstances. Griffith et al. (2013, p. 52) encourage future researchers to examine the costs and benefits, by suggesting efficient ways to Develop estimate. We believe that the typology we provided is a first step towards such suggestions as it provides a framework that might aid future researcher in designing future studies as well as analysing the benefits of potential ways to Develop estimate.

2 Background

2.1 The role of the auditor

The fundamental role of the auditor is to reduce agency costs stemming from the separation of ownership and control by reducing the information asymmetry between shareholders and management (Eilifsen et al. 2008, p. 6-7). In contemporary corporate governance structures the management team is charged with managing the resources controlled by the firm on behalf of the shareholders. Management updates the shareholders on the progress and results of their stewardship through the financial reports. Still management has a significant information advantage and might use this lack of control to act opportunistically. The purpose of auditing is to evaluate the explicit and implicit *assertions*[3] made by management in the financial reports about the financial position of the firm. As a result the auditor reduce the information asymmetry, the agency costs and consequently the cost of capital (Eilifsen et al. 2008, pp. 6-7, Broberg 2013, pp. 37).

In this role the auditor is expected to operate as an independent, objective and critical reviewer of management's assertions. In order to scrutinise and challenge management, the auditor should practice *professional judgment*, referring to the ability to apply relevant training, knowledge and experience in making decisions relevant to an audit, and *professional scepticism*, implying that auditors should have a questioning mind-set and critically assess *audit evidence*[4] (Eilifsen et al. 2008, p. 53, Broberg 2013, p. 48).

An audit engagement does not guarantee that the financial statements will be free from misstatements as the efforts required would be too costly. An *absolute assurance* would require the auditor to *reperform*[5] the entire process of assembling the financial statement. Instead is the assurance provided by an audit engagement referred to as *reasonable assurance*, indicating a high but not absolute level of assurance (Eilifsen et al. 2008, p. 21). Consequently the auditor might not detect immaterial misstatements and still be able to provide a reasonable assurance that the financial statements are free from material misstatements.

[3] Management assertions are the representations made by management that are explicitly or implicitly embodied in the financial statements.
[4] Audit evidence is all the information used by the auditor in arriving at the conclusions on which the opinion is based. It includes the information contained in the financial statements and other information.
[5] Reperformance is the auditor's independent execution of procedures or controls that were originally performed as part of the entity's internal controls e.g. the client's accounting process.

2.2 The audit process

During the audit process the auditor systematically gathers and evaluates audit evidence. The process of gathering evidence may vary in both timing and extent depending on the specificities of the particular engagement. Each audit firm adapt their internal firm methodology to better fit the engagement at hand. Further, the process becomes somewhat iterative as the process of a particular engagement is adjusted during the course of the audit. However, in a stylistic view three general stages may be identified, the *planning stage*, the *fieldwork stage*, and the *final review stage* (Broberg 2013, p. 47).

2.2.1 Planning stage

During the planning stage the auditor assess risks, determine audit materiality and develop an audit plan. Current audit standards require auditors to apply a *risk-based approach* to ensure efficient and systematic audits (Eilifsen et al. 2008, p. 96). A risk-based approach implies that procedures carried out by the auditor should be focused on areas in the financial statements that run the highest risk of being materially misstated. This approach implies that during the risk assessment process a key objective for the auditor is to gain an understanding of the entity and its environment in order to identify these high-risk areas.

There are numerous concepts related to risk and risk assessment that are central to the audit process. *Audit risk* refers to the risk that the auditor expresses an inappropriate opinion when the financial statements are materially misstated. The audit risk constitute the product of two related risk factors, first the *detection risk* which correspond to the risk that the auditor despite the audit efforts fails to detect material misstatements and secondly, the *risk of material misstatement* (RMM)[6], the risk that the unaudited financial statements are materially misstated to begin with. The RMM is the risk that auditors generally focus on during the planning stage via the risk assessment (Eilifsen et al. 2008, pp. 76-80, IAASB 2008c, para.7).

During the planning stage the auditor determines the *materiality* level of the audit engagement. The audit materiality represents the level at which misstatements or omissions in the financial statements are expected to influence the economic decisions taken by users of those statements. Thus the materiality level determines the minimum level of a misstatement or omission that

[6] The risk of material misstatement is sometimes further divided into two additional risk factors: the *inherent risk,* which is the risk that the financial statements might be materially misstated assuming that the client has no internal controls and the *control risk,* which is the risk that internal controls put in place by the client fail to detect and correct misstatements.

would result in an adverse or qualified audit opinion. Thus, the materiality level determines the "acceptable" level of misstatements or omissions (Eilifsen et al. 2008, p. 13).

During this stage the auditor also considers the requirements of team member's competence (Broberg 2013, p. 48), or whether the use of experts will be required during the audit, e.g. IT- or valuation experts (Eilifsen et al. 2008, ch. 5).

2.2.2 Fieldwork stage

To evaluate the assertions made by management the auditor gathers audit evidence through conducting various Audit procedures. Based on the risk assessment, the auditor develops an *Audit plan* for the audit in which it is specified what mix of *Audit procedures*[7] are deemed necessary to complete the engagement and to reach an audit opinion. The RMM will be the central aspect in determining the audit plan, as engagements of higher risk require a larger audit effort, which Audit procedures are carried out is therefore dependent on the individual characteristics of the account balance. Some examples of Audit procedures include, inquiries, reperformance, inspection of records, recalculation, observation etc. (Eilifsen et al. 2008, p. 123).

The Audit procedures can be divided into three categories; 1) Audit procedures designed to assess risks, or 2) Audit procedures designed to evaluate the operating effectiveness of the internal controls[8] of the client, or 3) substantive audit procedures which are designed to detect misstatements in the financial statements directly (IAASB 2008c, para. 4). The audit plan is dependent on the particular engagement, the tested assertions and the identified risks. In general the risks assessment procedures are carried out in the planning stage as described above.

To test effectiveness of internal controls is generally an efficient approach if there are a large number of similar transactions where the client has established an internal control system. Substantive tests, on the other hand, are generally conducted if there is a limited amount of similar transactions. Additionally, the substantive procedures are further divided into either 1) substantive test of details, i.e. verifications of actual transactions such as checking the invoices received, or 2) as substantive analytical procedures[9] (Eilifsen et al. 2008, ch. 5). Substantive analytical procedures are used to detect misstatements by evaluating financial data through an

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[7] Audit procedures are action carried out by the auditor to collect, create of evaluate audit evidence.

[8] Internal controls refer to mechanisms put in place by the client to prevent, detect and correcting material misstatements in the financial reports.

[9] When carrying out a substantive analytical procedure the auditor 1) form an expectation, 2) define a tolerable difference and 3) compare the expectation to the recorded amount. If the difference is greater then the tolerable difference the auditor should 4) investigate the differences and if they are not adequate the auditor should 5) conduct other audit procedures. (IAASB 2008a, para. 5)

analysis of plausible relationships among both financial and non-financial information. Substantive analytical procedures may be used for all types of account balances, however the test will be more efficient at detecting omissions rather then providing detailed information about the client's transactions (Eilifsen et al. 2008, p.168).

2.2.3 Final review stage

The audit engagement is completed when the audit risk is considered small enough. I.e. when the risk of expressing an inappropriate opinion when the financial statements are materially misstated is considered comfortably small. The auditor's formal opinion is expressed by issuing an audit report. The audit report is a highly formalised document which state whether the auditor considered the financial report to be free from material misstatements or not (Eilifsen et al. 2008, pp. 553-554). When finalising the audit the auditor also review subsequent events that have occurred after the date of the report that might affect the financial reports (Eilifsen et al. 2008, p. 531).

2.3 Standards, regulation and internationalisation

The audit process described above is a simplified version of the process used by audit firms globally and stem from the International Standards of Auditing (ISA). The regulation and standard setting surrounding auditing has gone through a similar development as the accounting standards. The international standards are issued by the International Auditing and Assurance Standards Board (IAASB) and their American counterparts issued by such bodies as the U.S. Auditing Standards Board (ASB) and the Public Company Accounting Oversight Board (PCAOB) have largely converged with the completion of the IAASB and ASB clarity projects completed in 2009 (Christensen et al. 2012).

The purpose of the ISA is to assist the auditor in arriving at reliable conclusions through a systematic audit process. The ISA are principle-based and thus require auditors to practice their professional judgment whilst performing the audit (Broberg 2013, pp. 50-51). Nonetheless, all standards include certain requirements that must be fulfilled, which are expressed in the standards by the wording "shall" or "required". (Eilifsen et al. 2008, p. 52)

Over the last decades the auditing industry has undergone a considerable consolidation. The four largest firms are referred to as "The Big 4" and include Deloitte, PwC, EY and KPMG. These firms audit most of the public corporations in the world and thus dominate the international market for large company audits (Eilifsen et al. 2008, p. 55). The Big 4 expand their individual audit methodologies using the ISA as a global base and then add additional requirements and increase the specificity in their internal audit guidelines[10], thus the internal audit guidelines provide additional comfort for the auditor compared to the ISA on a stand-alone basis (Broberg 2013, p. 81). For audits performed within American regulation the companies further add additional procedures to address requirements imposed in the U.S. by the ASB and PCAOB (Christensen et al. 2012). Swedish audit firms' methodology is in general strongly influenced by their international counterparty's methodology (Broberg 2013).

2.4 Accounting estimates

2.4.1 Accounting estimates and estimation uncertainty

There is vast variety of accounting estimates in contemporary financial reporting but the common denominator is an inherent lack of precise measurement. Some accounting estimates aim to forecast the future outcome of transactions or events, and thereby give rise to a need for an estimate[11]. Other account balances, most notably items measured at fair value, have a different measurement objective, i.e. to estimate the value of a current transaction between two market participants or to value a account balance based on conditions prevalent at the measurement date.

ISA 540 acknowledges that there is a significant variance in terms of reliability in different accounting estimates; this is referred to as the degree of *estimation uncertainty*. Estimation uncertainty is defined as *"the susceptibility of an accounting estimate and related disclosures to an inherent lack of precision in its measurement"* (IAASB 2008b, para. 7(c)). Estimation uncertainty is often described in terms of *input subjectivity* and *output imprecision*. Input subjectivity refers to the validity or measurability of the inputs used to determine the estimate, i.e. whether they are observable. Whereas output imprecision corresponds to reliability of estimate measurement indicated by the width of the range of output values (Nelson et al. 2005, Griffin 2011).

The estimation uncertainty and complexity inherent in financial statements have increased in the past decades (Christensen et al. 2012). This is to some extent a consequence of the development towards more principle-based accounting standards and an increased use of fair value measurements. However, the intention of standard-setters has certainly not been to introduce unnecessary uncertainty; rather it is to increase the decision-relevance of the financial statement items. In IFRS 13 the standard-setters advocate a fair value hierarchy that maximise the use of observable inputs and minimise the use of unobservable ones, which reduce input subjectivity

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[10] Internal audit guidelines often refer to the internal audit manual, which is an internal interpretation of ISA and the complementing firm-specific requirements.
[11] E.g. warranty claims or pending litigations.

and thus estimation uncertainty (International Accounting Standards Board (IASB) 2011, para. 67). Despite standard-setters' intention to limit estimation uncertainty, contemporary standards still tolerate considerable estimation uncertainty in the financial statements.

2.4.2 Highly uncertain accounting estimates

The measurement objective as well as the nature and reliability of data available to management when making accounting estimates differ substantially and are ultimately what determines the degree of estimation uncertainty. In this paper the object of interest are those accounting estimates that exhibit a high degree of estimation uncertainty, henceforth *highly uncertain accounting estimates*[12] (HUAEs).

ISA recognise multiple sources of estimation uncertainty. Throughout the application guidance there are numerous references to characteristics of high estimation uncertainty[13] of which the most prominent are accounting estimates based on unobservable data[14], highly specialised entity-specific models, complex measurement methods, sensitive and/or subjective assumptions, non-routine transactions, poor previous estimation track-record of management and lack of reliable external data.

These characteristics can be summarised into the following dimensions; a high sensitivity to key assumptions and/or inputs, inputs are subjective and that there is no standardised or generally accepted procedure of making the estimate, essentially making that choice subjective as well. Such conditions thus include a large number of individually uncertain components, all of them adding to the total estimation uncertainty of the account balance. Typically such estimates are forward looking values calculated using valuation models, i.e. level 3 fair value estimates, such as complex financial instruments, defined benefit pension obligations and similar accounting estimates such as impairment tests of goodwill. As previously mentioned, it is this type of HUAEs that are the focus of this paper.

2.5 The difficulties to audit highly uncertain accounting estimates

There are a number of factors that adds to the challenge of auditing HUAEs. First and foremost, an increasing degree of estimation uncertainty causes difficulties for auditors to provide the assurance required and additional factors such as information asymmetry, illiquidity and financial

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[12] The concept of highly uncertain accounting estimates used in this paper is very similar to concepts used in related papers. However, the choice of terminology differs. Other papers have used the terms fair values estimates, fair values and other estimates, complex accounting estimates, challenging fair value measurements etc.

[13] ISA 540, paragraphs A2-4, A36, A45, A47, A60, A83.

[14] Similar to fair values of level 3 in IFRS 13.

turmoil, need for valuation expertise, cognitive limitations and the unstructured nature of the task contribute as well. These will be outlined in the following section.

2.5.1 The degree of estimation uncertainty

Ironically, the very nature of estimation uncertainty in HUAEs, adds to the difficulty auditing them. Pannese & DelFavero (2010) highlight that under the historical cost principle, an auditor would be able to verify the value simply by inspecting a receipt. However, under the new accounting regime auditors need to abandon their experience of historical cost and instead rely more heavily on professional judgement (Pannese & DelFavero 2010, p. 47).

In 1961, Mautz & Kuhn (1961) raised similar concerns and bluntly stated, *"unless financial data are verifiable, auditing has no reason for existence"*. The input subjectivity and output imprecision increase the difficulty of the auditors' task to verify the correspondence between management's estimates and the requirements in the financial reporting frameworks. Thus, a higher level of estimation uncertainty implies an enhanced difficulty to audit HUAEs.

Christensen et al. (2012) provides a striking example of the degree of estimation uncertainty inherent in some accounting estimates in relation to audit materiality. The valuation of mortgage-backed securities by Wells Fargo in 2008 were heavily dependent on an unobservable, and therefore estimated, interest rate. While experts and auditors deemed a variation in the estimated interest rate of 50+ basis points as a completely reasonable range, Christensen et al. demonstrate that such a range affects the valuation by 2 200 million dollars or roughly 13 times the overall audit materiality[15]. Similar experiences, where estimation uncertainty in accounting estimates result in an output imprecision many times materiality has been exemplified in other studies (Cannon & Bedard 2014, Menzefricke & Smieliauskas 2012).

2.5.2 Information availability

The difficulties to audit HUAEs gets additionally accentuated when estimates contain subjective inputs that are entity-specific and consequently the client has a significant information advantage compared to the auditor, thus putting the auditor in a problematic position to challenge the client's judgments.

A common account balance that exhibits this characteristic is goodwill. The impairment testing of goodwill requires substantial understanding of the business and operations of the firm, arguably a domain dominated by the client. The accounting treatment of impairment tests of

[15] The materiality was estimated at the "rule-of-thumb" 5 % of EBT.

goodwill according to IAS 36 involves numerous of such judgments having a considerable effect on the final outcome of the impairment test and in all of which management will have a significant information advantage. These assumptions or judgments are attributable to the determination of the recoverable amount[16], which include to determining cash generating units (CGU)[17] (International Accounting Standards Board (IASB) 2013, para. 6) allocating the goodwill to these CGUs[18] (International Accounting Standards Board (IASB) 2013, para. 80) and ultimately determining the value-in-use[19] (International Accounting Standards Board (IASB) 2013, para. 18). These and other judgments in accounting for goodwill caused European Financial Reporting Advisory Group (EFRAG) to express major concerns over the implementation of IFRS 3, arguing that the standard would introduce unreliable measurements of the recoverable amount of goodwill (Petersen & Plenborg 2010).

Adding to the difficulty to audit HUAEs is indicated in previous studies on impairment testing of Danish listed companies that firm application of impairment testing varies considerably among firms in these dimensions (Petersen & Plenborg 2010), adding to the discretion available.

2.5.3 Illiquidity and financial turmoil

Turbulent macroeconomic conditions add further uncertainty to estimated values and increase the difficulties faced by auditors. The value of an account balance measured at fair value is verifiable if there is an open market available. But due to illiquidity the fair value of an account balance might become unobservable.

The financial turmoil surrounding the global financial crisis and the use of model values in such conditions troubled regulators (IAASB 2008e, IAASB 2008d). Primarily as when markets become inactive, reliable market price information might become unavailable and estimates need to be made on the basis of other information. What may in the past have been a routine valuation problem instead becomes highly problematic and will require the use of a valuation model to assess the value of the account balance. Secondly, financial turbulence and illiquid markets

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[16] The recoverable amount is defined as the lower of fair value less cost of disposal (net realisable value) and the value in use (IAS 36, para. 6).

[17] A CGU is the smallest group of identifiable assets that generates cash flows independent of cash flows from other assets or groups of assets (IAS 36, para. 6). If CGUs are broadly defined the likelihood of impairment becomes smaller as superior performing units within a CGU is able to neutralise the impact of a poor performing units within the CGU. The allocation of corporate assets according to IAS 36 (para. 102) provides considerable leeway to group CGUs or include the entire firm in the impairment test.

[18] Purchased goodwill must be allocated to the respective CGUs that benefit from synergies of the acquisitions (IAS 36, para. 80)

[19] IAS 36 suggests that the discounted cash flow model is applied in estimating value in use (IAS 36, para. 30). Discounted cash-flow models are exceptionally sensitive to small changes of the inputs (Bell & Griffin 2012, Christensen et al. 2012).

implies substantial problems for model valuations as the forward-looking inputs become increasingly uncertain. Illiquidity therefore triggers the use of models and results in increased difficulties for the auditor in its task to verify the reasonableness of estimated values (Pannese & DelFavero 2010).

2.5.4 Valuation expertise

In order to adopt the process prescribed by current audit standards and to effectively apply professional judgment in audits of HUAEs the auditor must possess a considerable valuation expertise (Martin et al. 2006). However, such expertise in valuation is not normally part of the auditors' core competence and requires considerable knowledge within finance and economic modelling (Martin et al. 2006). Further, new innovative and increasingly complex financial instruments are becoming available which might demand application of new and increasingly complex valuation models. Thus, the valuation expertise required to audit the HUAEs causes audit teams to rely more heavily on valuation experts (Smith-Lacroix et al. 2012).

To underscore the difficulty of the task set forward by current audit standards, a recent study by Carpentier et al. (2008) show that even well intended experts can disagree on the value as well as suitable valuation method. In their study 43 licensed valuation experts were asked to provide a valuation of the same small high-tech firm at a pre-revenue stage preparing an initial public offering (IPO). Even though the valuation experts were provided with the same guidelines, they used different methods and their valuations differed significantly. The average value provided by the experts was $6.75 million and the sample standard deviation was $4.7 million.

2.5.5 Risk of management bias

The estimation uncertainty and subjectivity contained in HUAEs makes them more susceptive to management bias (IAASB 2008b, para. A45 & A9). Such bias can be intentional as well as unintentional. For example, managers might use available discretion to act opportunistically and engage in earnings management (Ramos 1998).

The trend towards a use of more fair value measurements, allowing for further estimation uncertainty and subjectivity in financial statements, has provided management with additional tools aiding such opportunistic behaviour (Benston 2006). Recent findings from earnings management research suggest that those tools are put to use. For example, a study by Ramanna & Watts (2012) indicates that managers motivated by bonuses and reputation incentives use their discretion to avoid impairment tests of goodwill. Another study by Johnston (2006) investigate earnings management in employee stock options and find that firms choose valuation assumptions that reduce reported option values when stock options are expensed instead of only disclosed in the footnotes. Further, Li & Sloan (2011) report that management uses its discretion to delay impairments of goodwill. Thus, there is ample evidence supporting the notion that management might intentionally bias HUAEs.

Unintentional management bias could stem from management being overly optimistic of their strategies and the future development of their business. Through drawing on primarily psychological and cognitive research on human judgment and decision making, Martin et al. (2006) suggest that unintentional preparer bias stemming from management overconfidence in their estimation precision and predictive ability as well as susceptibility to motivated reasoning might result in biased accounting estimates. HUAEs are often heavily dependent on predictions of future events and Martin et al. (2006) further note that psychological research provide indications of significant limitations in the human ability to make such predictions in an effective manner could possibly result in unintentional bias of HUAEs.

In the audit of HUAEs management might intentionally or unintentionally bias estimates, thereby adding to the difficulty auditing HUEAs.

2.5.6 Unstructured task

When evaluating audit evidence the auditor tend to place larger reliance on verifiable over unverifiable evidence. However as many accounting estimates are invariably affected by subsequent events they will never become fully verifiable (IAASB 2008b, para. 4). According to Bonner (1994) "ill-structured" tasks increase task complexity and subsequently have a negative effect on auditors' professional judgment. Typically, "ill-structured" tasks are defined as tasks for which there is no objectively "correct" solution and for which no algorithm or problem-solving strategy is readily available (Earley 2002). During the audit of HUEAs, auditors are required to solve such complex, unstructured audit problems for which there is limited feedback to facilitate learning (Earley et al. 2008). Bratten et al. (2013, pp. 16-17) précis that there is often substantial lag between the observable cues, i.e., assumptions used in making the estimate, and feedback, i.e. subsequently realised values, and that this lack of objective verifiability makes it difficult to audit HUAEs.

2.5.7 Remedies to mitigate current issues suggested in contemporary research

The difficulties discussed above are a testament to the challenge facing auditors in the new financial accounting regime. Numerous previous studies have acknowledged the increasingly challenging task to audit HUAEs (e.g. Martin et al. 2006, Bell & Griffin 2012, Christensen et al.

2012). International audit standards require that auditors offer a positive form assurance that the financial statements are not materially misstated. However, multiple previous studies have acknowledged that the degree of estimation uncertainty included in some HUAEs imply that the reasonable variation in its valuation is larger than the overall audit materiality. In light of these challenges, academic research has questioned whether the auditing profession is able to cope with the burden bestowed upon them (Bell & Griffin 2012, Christensen et al. 2012). Consequently, previous studies offer a range of suggestions to alleviate the difficulties faced by auditors including reformation of the current audit report, changes to audit standards, raising awareness of difficulties and increased auditor training.

Christensen et al. (2012) together with Bell & Griffin (2012) argue that regulatory bodies should give auditors the possibility to address HUAEs via the audit report. As mentioned above, Christensen et al. (2012) argue that in extreme cases auditors are unable to provide the reasonable assurance required by current standards. Instead they argue that auditors should be able to offer limited assurance, i.e. in negative form, and the opportunity to specifically comment on HUAEs. However, the findings of Griffin (2011), presented in the next section, indicate that any additional disclosure might reduce the auditor's propensity to propose adjustments to the financial report. Bell & Griffin (2012) further expand on this topic and argue that additional disclosure will have to be precise to be decision-relevant, but in situations of extreme estimation uncertainty such additional disclosures would add to the auditor's value creation.

Pannese & DelFavero (2010) argue that the difficulty to audit HUAEs might stem from auditor-specific factors, such as the level of valuation expertise among junior auditors. Their recommendations are to impose a more structured approach to audit regulation, to reduce the reliance on professional judgment. Martin et al. (2006) signal a need for supplementary valuation training as much of the actual audit tasks are performed by junior auditors which may lack the specific valuation expertise for complex valuation models and inputs. This suggestion receives further support from other studies such as Pannese & DelFavero (2010) and Christensen et al. (2012).

On the other hand, studies by Maksymov et al. (2012), Backof et al. (2013), Earley et al. (2008) and Griffin (2011), all presented in the next section, rather indicate that the first step should be to raise awareness of auditor-specific and individual limitations, i.e. cognitive limitations, in order to improve the audit quality.

2.6 ISA 540 – Auditing accounting estimates

2.6.1 Overview and content

Among the ISA there is one standard of particular interest to this paper, ISA 540, which regulates the audit of accounting estimates and related disclosures (IAASB 2008d, p. 1). According to ISA 540, the auditor's objective is to obtain sufficient appropriate evidence about whether accounting estimates are reasonable, and related disclosures are appropriate (IAASB 2008b, para. 6). More specifically ISA 540 builds on the risk-based approach of ISA 315 and ISA 330 by detailing how the auditor should identify and assess risk, and ultimately how to respond to these risks when dealing with accounting estimates.

2.6.2 The process of auditing accounting estimates according to ISA 540

In exhibit 1 and 2 we provide two versions of the process prescribed by ISA 540 for auditing accounting estimates that differ in their degree of detail. The condensed version, exhibit 1, was used as interview aid during the interview process[20] and depicts the parts of the standard most central to this paper.

The overall process prescribed by ISA 540 requires the auditor to focus audit efforts on areas of higher risk and possible bias in line with the overall risk-based approach promoted in ISA.

In the planning stage of ISA 540 the auditor is required to obtain an understanding of the nature of the client's accounting estimates and how these are developed through risk assessment procedures (IAASB 2008b, para. 8-9). Based on that understanding the auditor identifies and assess the RMM in order to focus audit efforts on those identified risks. The assessment of RMM is effected by factors such as estimation uncertainty and magnitude of accounting estimates as well as reviews of management's prior period estimates. (IAASB 2008b, para. 10 & A44-45).

In the fieldwork stage, the auditor design and implement appropriate *Audit responses*[21] to handle the identified risks and to obtain sufficient audit evidence (IAASB 2008b, para. 13). As these Audit responses constitute the main focus of this paper, they are dealt with specifically in the next section.

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[20] The more detailed version, exhibit 2, was also available during the interviews if the respondents requested a more thorough illustration of the standard.

[21] The term *Audit response* is used in this paper as an expression to indicate the four responses to assessed risk of material misstatement in ISA 540. We differentiate the Audit response from the Audit procedure, as the latter is the actual procedure carried out by the auditor. E.g. when the auditor chose to undertake the Audit response Test management's estimate he/she may carry out the Audit procedures "recalculate the client's estimate" or "inspect the client's record or documents".

In the final review stage, the auditor evaluates whether the estimate is reasonable or misstated based on the audit evidence obtained through conducting Audit procedures.

2.6.3 Audit responses in ISA 540

ISA 540 suggests four principal Audit responses that the auditor can undertake to respond the assessed RMM:

- Determine whether events occurring up to the date of the auditor's report provide audit evidence regarding the accounting estimate. (*Consider subsequent events*)
- Test how management made the accounting estimate and the data on which it is based. (*Test management's estimate*)
- Test the operating effectiveness of the controls over how management made the accounting estimate, together with appropriate substantive procedures. (*Test internal controls*)
- Develop a point estimate or a range to evaluate management's point estimate. (*Develop estimate*)

(IAASB 2008b, para. 13)

To Consider subsequent events entails that the auditor determines if events occurring after the balance sheet date and up to the date of the auditor's report provide audit evidence that confirms or contradicts management's estimate (IAASB 2008b, para. A62-67). One example of such an event, provided in the application guidance, is the sale of a complete inventory of a superseded product shortly after the period end, indicating the net realisable value at balance sheet date (IAASB 2008b, para. A63).

Test management's estimate involves evaluation of the method of measurement and the assumptions used by management in making the estimate. Evaluating the method of measurement could for example include assessing the appropriateness of the used valuation model in relation to the financial reporting framework and the industry of the entity, testing the relevance and validity of underlying data, checking accuracy of potential calculations and evaluating the review and approval process. Conversely, evaluating the reasonableness of management's assumptions could include evaluating them individually, in conjunction with other assumptions, in relation to the general economic environment, in relation to assumptions used in previous periods and evaluating consistency with external market data and comparable market transactions. (IAASB 2008b, para. A68-83)

Test internal controls implies that the auditor tests the effectiveness of controls that the entity has put in place to identify, prevent and correct possible misstatements in the accounting estimates included in the financial statements. Such controls could include review and approval procedures of accounting estimates or the segregation of duties related to accounting estimates (IAASB 2008b, para. A84-86, A27-28).

Develop estimate implies that the auditor develops a point estimate or range to evaluate management's estimate. Such an estimate can be formed through multiple ways, using a valuation model, through engaging specialised expertise, by further developing management's consideration of alternative assumptions or referencing comparable transactions or events (IAASB 2008b, para. A87-95).

2.6.4 Guidance in the choice of appropriate Audit responses in ISA 540

The standard however, offers limited guidance on the choice of appropriate Audit responses to the assessed RMM (Bratten et al. 2013, p.17), an issue that was also raised in response to the exposure draft of the standard (IAASB 2008d, p.6). On an overall level the current application guidance of the standard refers to a few general factors that *may* have implications on the decision such as the nature and risk of the accounting estimate, expected audit evidence resulting from those audit procedures (IAASB 2008b, para. A59), and that higher estimation uncertainty or subjective inputs might call for a combination of Audit responses (IAASB 2008b, para. A60 & A82).

The application guidance provides further indications of situations where specific Audit responses may be appropriate (IAASB 2008b, para. A62, A68, A84, A87). However, the overall guidance on the choice of Audit response is rather vague (Griffith et al. 2013, p. 10), as exhibited by seemingly straggly indicators and extensive use of cautious wording such as *"may"*. Therefore, the standard leaves the decision of which Audit responses to undertake much to the professional judgment of the auditor. A summary of the given application guidance is provided in exhibit 3.

On an overall level however, there is no clear recommendation in the application guidance on the selection of suitable methods to respond to the RMM stemming from HUAEs, as the prime characteristic of such estimates, the degree of estimation uncertainty, commonly referenced elsewhere in the standard, is not directly included in any of these indicators.

3 Previous research

In this section we present contemporary research on the audit of highly uncertain accounting estimates. The presentation is divided into two subsections where the first constitute experimental studies on the effect of different features of HUAEs to the auditor's professional judgment and professional scepticism. The second subsection presents studies on the process of auditing HUAEs in general, and on the Audit responses specifically.

3.1 Experimental studies on how professional judgment is affected by HUAEs

The audit of highly uncertain accounting estimates represents an unstructured task (Earley 2002) that involves subjective assumptions, judgements and considerable estimation uncertainty, where the outcome of the audit is not a matter of objective right or wrong. Auditor judgment is central in evaluating the reasonableness of management's estimates and therefore the professional judgement and professional scepticism auditors rely on in such audits has received significant research attention and studies focusing on auditor judgement constitute the majority of the research related to the audit of HUAEs. Numerous studies have through controlled experiments investigated how a variety of features, present in the typical audit of accounting estimate, influence the auditor's judgement.

In the planning stage of the audit process, the auditor plans the extent of audit efforts and various Audit procedures in response to the observed RMM of the engagement; this is referred to as the audit plan. Maksymov et al. (2012) investigate the effect of three factors – task framing, e.g., varying whether auditors assess whether management's assumptions are appropriate or if they are not appropriate, audit efficiency pressure, i.e. high or low, and the extent to which audit quality of the Audit procedures can be verified ex-post – on the auditors planning judgments. More specifically, how these factors affect how auditors determine the scope of efforts across 15 suggested Audit procedures, measured in hours spent on each procedure. In the experiment, 49 auditors are faced with an audit task, which involves asserting the value of a fair value estimate. By modifying the formulation of the audit task in terms of the aforementioned factors, the authors conclude that the planned effort vary from 26 hours up to 41 hours. The allocated time spent on the different audit procedures is affected by; 1) The audit efficiency pressure, where higher pressure results in less planned efforts 2) the task framing, when the authors implementing a negative task framing instead of a positive framing[22] this result in that the auditor plans a larger effort 3) the latter effect is further accentuated by audit quality verifiability, i.e. when verifiability

[22] I.e. the auditor is instructed to search for evidence that the management is *not* correct.

of audit quality of the Audit procedure ex-post is low the effect of task framing is approximately three times stronger. The authors also report that auditors seem to be unaware of these effects on their planning judgments.

Griffin (2011) investigate auditors' professional judgment in the final review stage of the audit process when estimation uncertainty is high, i.e. when the auditor is required to either accept or require adjustments to management's estimate. By dividing estimation uncertainty into input subjectivity and output imprecision the author find that the two factors interact and affect auditors' tendency to propose adjustments to management's reported estimates. Subjectivity together with imprecision has a positive effect on proposed adjustments. However these effects are interestingly mitigated when auditors are given the possibility to elaborate on the uncertainty involved in the reported numbers through supplemental disclosures. Thus, the authors conclude that "*the SEC's [(Securities and Exchange Commission)] preference for supplemental disclosure may have the unintended consequence of changing, rather than merely explaining, fair values recognized in the body of the financial statements"* (Griffin 2011, p. 26).

Earley et al. (2013) investigate auditor's professional scepticism when assessing a fair value classification made by management. The authors hypothesise that since the market tends to discounts level 3 securities more than level 2 securities, management would likely prefer a level 2 classification. In an experiment with 114 general auditors, the authors find that auditors are sceptical towards classifications made by management in general, and in particular when it is aligned with management's reporting incentives, that is, the auditors were more sceptical towards the classification in cases where management chose to classify the fair value account balance at level 2.

Backof et al. (2013) examine whether the presentation format of evidence provided by management, in support of their assumptions to derive the fair value of an asset, influence the auditor's propensity to allow aggressive assumptions. Through an experiment with 154 audit partners and managers the authors predict and find that a graphical representation of the evidence will result in that the auditors assess aggressive assumptions as less reasonable compared to the same evidence presented in written format. The authors further find that graphic presentations of management's evidence together with a framework that question *how* the management arrived at an estimate, rather when *why,* will decrease the auditor's impression of reasonableness.

Montague (2010) investigate the effect of task framing, i.e. oppose, confirm or form independent opinion, and estimation uncertainty, i.e. high or low, on auditor's judgment through examining susceptibility to confirmation bias[23] and the auditors' level of professional scepticism. In an experimental setting, 27 professional auditors and 75 undergraduate audit students face a case in which they were instructed to review the assumptions made by management in deriving the fair value estimate of acquired franchise rights. The authors find that auditors exhibited confirmation bias in accordance with the task framing and that this confirmation bias is strongest when participants were prompted to oppose management's estimate. Thus, these results are in line with the results of Maksymov et al. (2012). However, increased estimation uncertainty did not uniformly increase this bias and thus no clear correlation between estimation uncertainty and confirmation bias was found.

Our study supplements these experimental studies by adding to the limited field-based research and shed further light upon the findings of these studies. The majority of the experimental studies focus on studying the auditor's professional judgement in the final review stage of the audit process as the final decision is the ultimate mark to whether the auditor will have an unmodified opinion about the financial reports or not. However, the auditor faces decision issued throughout the audit process and we will consequently examine previous studies on the decision making in the fieldwork stage of the audit process.

3.2 Field-based research on the audit process of HUAEs

The experiment-based research presented in the previous section mainly examines auditor judgement and professional scepticism throughout different stages of the audit. In this section however, we present studies that collect field-based data[24] and focus on the overall audit process as such. However, as indicated by previous literature, studies on the actual process of auditing HUAEs are scarce (Martin et al. 2006, Bratten et al. 2013). The available research mainly constitute two contemporary studies by Griffith et al. (2013) and Cannon & Bedard (2014) which centre on mapping the sequence, the evidential decisions and the experienced problems in auditing HUAEs. These studies more closely relate to this study as they explore similar aspects in the audit of HUAEs, more specifically they both provide some indications on the use of the different Audit responses. Even more so, their findings have partially motivated the research question in this study and consequently influenced the method and analysis used as well. Therefore they are presented in more detail than the former section of previous literature. In this section we first present these studies in their full scope and in the second part we focus

[23] Confirmation bias refers to the potential bias of auditor judgement caused by how the task is presented (i.e. the framing of the task).
[24] Through in-depth interviews and experiential questionnaires respectively, as opposed to experimental research.

specifically on the insights they provide on the Audit responses as such, adding insights from other authors as well.

Griffith et al. (2013)[25] intend to map out the process of auditing HUAEs[26] and the problems encountered during such audits. The authors conduct semi-structured telephone interviews with 24 experienced auditors in which the respondents were asked to describe the audit process by breaking it down into the key steps performed. Additionally, the auditors were asked to describe the main decision problems encountered. Finally, the authors complement these responses with PCAOB inspection reports to corroborate findings on the problems faced.

On an overall level, the authors find that the process described by the auditors is broadly consistent with the process prescribed in auditing standards (Griffith et al. 2013, p. 25). The authors specifically report the relative frequency of the different Audit responses, the specificity of which will be discussed in the next section, however, the authors specifically highlight that auditors most commonly choose to Test management's estimate and only rarely Develop estimate, Consider subsequent events or Test internal controls. The authors further stress that none of the auditors mentioned considering if other relevant factors or assumptions were missing from the client's model, which is one of the steps they identified in the audit standard. They also notice a lack of valuation expertise as discussed by other studies (Martin et al. 2006, Christensen et al. 2012, Pannese & DelFavero 2010). In terms of the problems faced, Griffith et al. specifically highlight a failure to notice inconsistencies and an overreliance on valuation experts, whether the latter really is a problem, can however be debated[27].

In interpreting these results, the author's mainly stress their finding that auditors overwhelmingly choose to Test management's estimate rather than using the other potential Audit responses and that the language used by the auditors in describing the methods indicate that auditors use an approach that focus on verifying individual elements of management's estimate and underlying assertions rather than critically analysing the overall estimates, thus resulting in a over-dependence on management's process. According to the authors, the main problems that the auditors identify are a direct consequence of this approach and the lack of valuation expertise.

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25 It should be noted that this study is based on US conditions and thus the audit is regulated by the American audit standards, in particular AU 328. AU 328 slightly differs from ISA 540. More specifically Test internal control is not considered an isolated Audit response in AU 328 as oppose to in ISA 540. However, as described above, the internal audit manual governing the audit process adopted by Big 4 firms is based on the ISA standard on a global level.

26 Griffith et al. use the term complex accounting estimates that corresponds to our term HUAEs.

27 Another point of view could be that it is simply a reasonable division of labour with respect to their respective core competence.

Be relying on institutional theory (e.g. Pfeffer 1981, DiMaggio & Powell 1983) Griffith et al. suggest the audit firms through mimetic and coercive isomorphism have adopted the same approach that have been legitimised in the audit of account balances measured at historical cost, also for the audit of HUAEs. Griffith et al. stress that such a method is unsuitable for HUAEs, as they by their nature cannot be verified.

The study by Cannon & Bedard provides supplemental empirical data to the experimental studies (e.g. by Maksymov (2012), Griffin (2011), Montague (2010) etc.) and has numerous connections to the paper by Griffith et al. (2013). While Griffith et al. (2013) mainly focus on the overall process and the auditor's use of different Audit responses in the fieldwork stage of the audit process, Cannon & Bedard (2014) expand the audit process research by studying three closely related research topics; 1) which characteristics of accounting estimates pose challenges during audits 2) evidential decisions taken during an audit, including what factors explain auditor assessments in evaluating inherent risk, whether experts should be enlisted and the choice of Audit response, and 3) the specificities of the final audit outcome, including when auditors propose audit adjustments and the final outcome of such proposals.

The authors collect 99 auditor experiences from 80 highly experienced auditors through an experiential questionnaire asking the respondents to recall a specific situation during a recent engagement in which auditing a accounting estimate was among the most challenging and important issues in the audit. The responses are subsequently analysed using multivariate- and correlation analysis.

In relation to the first topic, the authors find that the challenge of accounting estimates are associated with high input subjectivity and estimation uncertainty, more specifically requiring significant and/or complex assumptions, the challenging accounting estimates are mainly fair values level 3, complex financial instruments and impairment tests of assets (Cannon & Bedard 2014, p. 43). Among the qualitative responses many auditors mentioned the lack of available information as one of the main concerns.

On the second topic they find that a high inherent risk assessment is primarily positively associated with the degree of estimation uncertainty. They further find that the choice to enlist valuation experts is more common for the audit team than for the client, but the choice to do so is primarily driven by the client's choice to enlist a valuation expert, additionally there is also a positive relationship of using valuation experts when the accounting estimate is an impairment test of assets. Their findings on the choice of Audit response, being the focus of this paper are discussed specifically in the next section.

Lastly, in relation to the third topic, they find that audit outcome discussions or negotiations with the client are more common in cases where the estimates exhibit higher magnitude and imprecision. Additionally, Cannon & Bedard also find that the auditor rarely (35.4 %) discuss potential changes to management's estimate. Out of those there is only 51.4 % that lead to an actual proposed adjustment but that it is more common that adjustments are proposed when the audit team Develop estimate and/or enlist a valuation experts.

Cannon & Bedard report that the qualitative responses indicate that these low proposed adjustment rates are often not due to the auditor's satisfaction with the valuation, but rather due to large ranges of estimation uncertainty and a lack of objectively verifiable data. The authors argues that the HUAEs pose a significant obstacle for the auditor to challenge management's estimate even if the auditor would be better positioned to estimate the value of the item and conclude that "…*[o]ne of the largest challenges facing the auditing profession with regards to auditing FVMs may not be a lack of professional scepticism on the part of audit professionals […] but the existence of situations in which the auditor is required to provide positive assurance on irreducible inherent risks that by their nature might allow only for negative assurance*" (Cannon & Bedard 2014, p. 37). This is in line with the argumentation by Christensen et al. (2012) and Bell & Griffin (2012).

3.2.1 Previous research related to the Audit responses

The Audit responses have received some attention in previous research as well, although not as in-depth as in this paper. In terms of the relative frequency of the Audit responses, one of the main findings by Griffith et al. (2013, p. 44) is that auditors "*overwhelmingly choose to audit the details of client's estimate rather than use other allowable [Audit responses]*". More specifically, the proportion of auditors describing that they had undertaken each respective Audit response was, Consider subsequent events (9,5%), Test management's estimate (90,5%), Test internal controls (9,5%) and Develop estimate (38,1%). A noteworthy critique related to the validity of these figures, also noted by the authors themselves, is that the respondents might not give a complete description of all the steps performed given the constraints of the interviews[28]. However, the authors argue that they expect that the steps will be *"mentioned roughly in proportion to their importance to the auditor"*. Griffith et al. (2013, p. 22) report that those auditors describing undertaking the Audit response Develop estimate varied considerably in the conditions that required this Audit response and conclude from the auditors' descriptions that the developed estimate may not be truly

[28] Another more general critique would be to question the figures on the back of the small, non-random sample.

independent, as they use the client's assumptions or inputs, indicating that truly independent Audit procedures are uncommon.

The findings of Cannon & Bedard (2014) contrast these results somewhat. In their study the auditors report to have conducted all Audit responses in a majority of the cases, more specifically: Consider subsequent events (59,6%), Test management's estimate (87,9%[29]) and Develop estimate (51,5%) (Cannon & Bedard 2014, table 5)[30]. A note to their findings is that they have specifically investigated highly *challenging* audits of accounting estimates, indicating that the auditors in their study most likely invested considerable audit efforts and in doing so conducted multiple Audit responses, possibly contributing to the difference. Additionally, one should note that Griffith et al. coded these frequencies themselves based on the general descriptions of the audit process provided by the respondents, while Cannon & Bedard let the respondents themselves indicate what Audit responses were undertaken during a specific audit.

Overall, these studies indicate that the Audit response Test management's estimate is the main Audit response used. Thus, while previous research have provided some valuable insights into *how* the overall audit process looks and which Audit responses are undertaken in audits of HUAEs, our study adds to these studies by providing an more in depth view of *why* auditors undertake these Audit responses.

In addition to the relative frequency of the Audit responses, a number of researchers have focused on the specific findings and potential benefits related to the Audit response Develop estimate. As discussed earlier, a large amount of the experimental research have focused on the auditor's judgement, professional scepticism and reasonableness assessments in relation to the client's estimate. These studies are often motivated by hypothesises formed on the basis of observed cognitive limitations caused by well-documented psychological heuristics and biases such as *anchoring*[31] (Tversky & Kahneman 1974), *motivated reasoning*[32] (e.g. Kunda 1990) and *the curse of knowledge*[33] (Fischhoff 1977), causing the auditor's judgment to be biased by task framing (Maksymov et al. 2012, Montague 2010), the presentation format of supporting evidence (Backof

29 Cannon & Bedard (2014) report their figures somewhat differently as the Audit response Test management's estimate is divided into three sub-responses [Model tested (87,9%), Assumptions tested (85,9%) & Testing underlying data (84,8)] of which the highest reported figure is reported above.

30 Cannon & Bedard do not provide any relative frequency of Test internal controls, as it is not considered an individual Audit response.

31 Anchoring is a cognitive bias that describes the human tendency to rely too much on the first piece of information offered (the "anchor") when making decisions.

32 Motivated reasoning is a cognitive bias that focus on the role of a previously held belief or desire in cognitive processes such as decision-making.

33 The curse of knowledge is a cognitive bias that makes it extremely difficult to ignore previously processed information.

et al. 2013) and prior knowledge of management's estimates (McDaniel & Kinney 1995, Kinney Jr & Uecker 1982) or management's assessment (Earley et al. 2008). Numerous researchers indicate that the Audit response Develop estimate can potentially mitigate such bias effects (Griffith et al. 2013, Martin et al. 2006, Earley et al. 2008).

Griffith et al. (2013, p. 44) argue that the verifying approach adopted by auditors leads to an implicit acceptance of management's estimate that place auditors in a position where it is harder to notice process inconsistencies, to identify external information not incorporated by management's estimate, and conversely easier to overlook conflicting evidence. This could possibly allow management to *"lead auditors down the garden path"* (2013, p. 4), i.e. allowing management to opportunistically bias estimates. Griffith et al. (2013, p. 53) further highlight the importance of the chronology by arguing that the Audit response Develop estimate or other measures to develop an expectation should be undertaken *before* reviewing management's estimate to avoid anchoring on management's estimate or model.

Another study by Earley et al. (2008) provides further nuances to the chronological issue. Earley et al. study the cognitive bias that constrain our ability to ignore previously processed information, the curse of knowledge, a phenomenon first introduced by Colin et al. (1989) and later studied in numerous audit settings (e.g. McDaniel & Kinney 1995, Kinney Jr & Uecker 1982, Biggs & Wild 1985). Earley et al. add to this research by studying how the auditor's professional judgement is affected by receiving summary information or conclusions from management prior to making their own assessment. In such situations, Earley et al. refer to management as being the "first-mover" and the auditor being the "second-mover". Through a controlled experiment including 97 auditors, Earley et al. investigate how auditors are affected by prior knowledge of management's severity classification of internal control deficiencies. The results show the auditors' judgments were biased by prior knowledge of management's classification and that auditors' judgments were influenced by management's classification even in the situation where auditors should have been most sceptical, i.e., when management's classification were in line with their incentives. Earley et al., in line with Kennedy (1995), thus conclude that the first-mover influence on auditors' judgments is an unintentional cognitive effect and argues that auditors do not intentionally use the information from management but rather that they cannot avoid being affected by it once they have been exposed to it, despite efforts to remain sceptical.

Earley et al. suggest *"while auditors might believe that starting with management's classifications helps them to reduce their audit hours (i.e., improves their efficiency), it is likely that it also biases their judgments, thereby reducing their audit effectiveness"* (Earley et al. 2008, p. 1464). Earley et al. further suggest that their findings might have important implications for auditor's professional judgment when auditing HUAEs. These implications are especially interesting in relation to the choice of Audit response, as the Audit response Develop estimate conducted before the review of the client's estimate, as suggested by Griffith et al. (2013), would eliminate such potential bias. Further, although not documented in previous research, it would seem plausible that the curse of knowledge bias would be more severe for unstructured tasks involving considerable judgment in an area outside of the auditor's primary expertise, such as the audit of HUAEs, as objective information to support the decision is harder to obtain.

In summary, these findings indicate a potential improvement of audit effectiveness through increased use of the Audit response Develop estimate.

4 Method

4.1 Overall study design and implementation

The purpose of this study is to add to the limited field-based research[34] conducted on the process of auditing HUAEs. More specifically, to provide insights into the auditor's views and attitudes towards the Audit responses suggested by ISA 540 and how these affect the *choice* of Audit responses, primarily the choice between the responses Test management's estimate and Develop estimate. This study use an inductive approach, were conclusions are drawn based on empirical data collected via semi-structured interviews.

In order to fulfil this purpose we used semi-structured in-depth interviews as our primary data collection instrument as in-depth interviews is a recommended data collection method for capturing rich, detailed data from a limited number of respondents and to explore thoughts, attitudes, behaviour and preferences (Boyce & Neale 2006). The in-depth interview provided detailed data, a flexible frame and allowed us to deeply explore the respondent's thoughts and experiences with the Audit responses. The main limitation of using the in-depth interview is that it provides a limited ability to make generalisations about the result because of a small and non-randomised sample. The overall process to develop interview guides and to conduct the interviews followed the seven-stage process of conducting in-depth interviews[35] suggested by Kvale (2009).

All interviews were conducted in the native tongue of the respondents, i.e. Swedish, and by the same two interviewers, the authors of this paper, except for one interview that was conducted in the respondent's native tongue, i.e. English. During the interviews one interviewer was in charge of the interview process and validated that the interview followed the interview guide. The other interviewer assisted with additional follow-up questions based on the responses whilst taking notes throughout the interview. In general, each topic covered during the interviews was initially explored using open-ended questions in order to allow the respondent to speak freely on the topic. Throughout the interview the specificity of the questions increased, as the topics are further explored. Paraphrasing was repeatedly used during the interviews in order to validate the responses and to make sure we understood the respondent's intended message. Additionally, the most crucial questions were asked on multiple occasions in different wording to ensure validity and further avoid misinterpretations.

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[34] As opposed to experiment-based research.
[35] Thematising, designing, interviewing, transcribing, analysing, verifying, and reporting.

The overall data collection and data processing can be divided into three separate phases, each of which will be further detailed in the following sections by order of chronology. First, we conducted contextual interviews where we interviewed three very experienced auditors. The main purpose was to investigate the overall feasibility of our study, the relevance of our research question and to develop an interview guide that effectively allowed us to get distinct responses and maintain consistency across the following interviews. The second phase was the focused interviews. Interviews were conducted with 16 auditors and valuation experts often engaged in the audit of HUAEs. All respondents had experiences dealing with HUAEs, however to a varying extent. Lastly, the material was thoroughly and systematically analysed and coded to allow us to accurately portray our findings.

4.1.1 Contextual interviews

Before initiating the focused interviews we conducted contextual interviews to investigate the overall feasibility of the study and to further nuance our understanding of the issues from a practitioner's perspective. Thus complementing the picture presented in academic research papers. More specifically we wanted to investigate the feasibility of our study design and data collection method, relevance of the research question, investigate confidentiality issues and ultimately to develop an effective interview guide.

In order to do so we conducted three interviews with very experienced auditors. These respondents were chosen on the basis that they matched the profile of auditors that we wanted to interview during the focused interviews, i.e. that they were experienced auditors in a Big 4 firm. Additionally their specialisation matched the theme of the corresponding interview well. An overview of all the interviews conducted during this study is provided in exhibit 3. The contextual interviews were conducted between 24th October and 27th November 2013, a period of less intense workload for the respondents. Their combined audit experience at the time was roughly 50 years and all of them were authorised public accountants. The total time was 3 hours and 10 minutes.

Each of these three interviews had a different theme. The first interview focused the audit process, the use of internal audit guidelines, audit tools and confidentiality aspects. The second interview focused on the difficulties involved in the audit of HUAEs and the use of valuation experts in such engagements. The third interview was designed to best align with the subsequent interviews in the focused interviews and therefore focused on the ISA 540 and the process of auditing HUAEs.

Our main concern related to the data collection was to determine a suitable degree of structure i.e. were to position the interviews within the range of unstructured interviews to fully structured interviews. We wanted to structure the interviews in an effective manner to obtain relevant information to our research question whilst at the same time not force too much structure onto the respondents and thereby influencing them or hinder them from speaking freely. On the basis of contextual studies it became clear that the audit firms did not alter the structure of the ISA to any great extent. I.e. they do not develop highly detailed audit guidelines for every specific example of HUAEs as the process varies significantly between different engagements. Rather, they typically add additional details and specificity to the general ISA 540 standard in their internal audit manuals[36]. Thus, with reliance on the responses from the contextual interviews we decided to adopt the process outlined in ISA 540 as our empirical description model, meaning that we structure the interviews following the process outlined in ISA 540 making it the foundation of our data collection efforts.

The logic of this choice can be summarised into two reasons. First, since ISA 540 provide the starting point for the audit firms internal audit guidelines it provides a universal frame that will be well-known for all respondents irrespective of audit firm. Second, ISA 540 is an integral part of the overall international audit standards that provide an overall logic, a set of concepts and a way of thinking about how to conduct audits. As such, the ISA standards provide us with a set of common concepts and a common terminology that is well known by the audit firms and allows us to communicate more effectively about the audit process and to avoid misunderstandings during the interviews.

4.1.2 Focused interviews

During the focused interviews we interviewed 11 experienced auditors and two valuation experts engaged by audit firms in audits of HUAEs. The respondents in the focused interviews were given the opportunity to prepare before the interviews were conducted. All respondents were initially contacted via telephone in connection to booking the interviews and a few days before the interview they were provided with a short introduction to our study, a description of the questions we intended to ask and our illustration of the audit process outlined in ISA 540, exhibits 1 and 2, via e-mail. The interviews were conducted during two separate periods 4th December – 18th December and 16th April – 25th April. We choose this timing in order not to

[36] In line with indications from previous research (Broberg 2013).

interfere with periods of high workload for the auditors, as we wanted them to be able to prepare before the interviews and to avoid having to cut interviews short due to time constraints.

The main considerations of this phase will be provided in the following sections. As previously mentioned, the process of planning the interviews, developing interview instruments and conducting the interviews followed the process suggested by Kvale (2009).

4.1.3 The selection of respondents

Three main criteria was used to select respondents: experience with HUAEs, employed by a Big 4 firm and either working as an auditor or as a valuation expert often engaged in audits of HUAEs. We did not specifically select the individual respondents, instead representatives of the audit firms recommended these respondents on the basis of these criteria. An overview of all the interviews conducted during this study is provided in exhibit 3. The number of appropriate interviews was determined based on the response saturation, i.e. we conducted interviews until no new responses, topics and themes emerged during the interviews. The total time of the interviews conducted with auditors was 12 hours and 57 minutes and the average interview length was 67 minutes.

Although we generally requested experienced respondents our criteria was not to have respondents with the highest possible level of experience, rather we desired a mix in terms of experience as previous studies indicate that auditors in different positions are typically involved in different tasks in the process of auditing HUAEs (Griffith et al. 2013, Table 3, Cannon & Bedard 2014, Table 5). The experience of the respondents varied between four and 30 years with an average experience of eleven years. However, the purpose of this study is not to present the prevailing or most common views and attitudes towards the different Audit responses, as projecting the results upon a population is not within the capabilities of this qualitative research design, but to add on to the different attitudes towards the Audit responses.

Respondents were selected from Big 4 audit firms as these firms dominate the audit market for middle and large sized companies audits. We expect HUAEs to be most commonly audited in such companies. As previously mentioned the Big 4 audit the majority of the largest and most complex corporations. Further, our aim was to conduct interviews with respondents from each of these firms, as we expect that the homogeneity of audit process was higher in the intra-firm compared to an inter-firm perspective. The final sample of respondents represented all of the Big 4 audit firms.

Lastly, previous academic research (e.g. Griffith et al. 2013, Cannon & Bedard 2014, Smith-Lacroix et al. 2012) and our contextual interviews indicate that valuation experts are often engaged to assist the audit team in the audit of HUAEs and that they have a considerable influence on the audit process. Additionally, previous research suggests auditors' limited valuation expertise as a challenge in the audit of HUAEs (e.g. Martin et al. 2006, Griffith 2014). Therefore we also conducted interviews with two valuation experts with considerable experience from assisting auditors in conducting audits of HUAEs. The total time was 1 hour and 49 minutes.

The total time of all 16 interviews was 17 hours and 56 minutes with an average time of 67 minutes.

4.1.4 The development of the interview guide

To ensure consistency between interviews and to keep focus on the topics most important to explore we developed an interview guide based on the results of the contextual interviews. An abbreviated version of the interview guide is provided in exhibit 4 and provides more specifics than the recollection presented here. The final interview guide consists of five sections including the introduction of our study. The logic behind the development of the interview guide will be presented in this section.

A logical first step in developing any interview guide is to specify the key information the interviews aim to gather (Boyce & Neale 2006, Kvale & Brinkmann 2009). In order to fulfil the objective of this study such key information is the views and attitudes towards the different Audit responses and which factors shape the choice of Audit response, but also additional information that help provide a context to these views and attitudes e.g. an overall grasp of the audit process, how these Audit responses are undertaken and what the respondents perceive particularly challenging in auditing HUAEs.

The overall development of the interview guide followed two important principles. First, structure and specificity was gradually added over the span of the interviews. This is an expression of the balance of not wanting to influence the respondents answers while at the same time making sure that the most important topics are explored in full and thus that the interview time is allocated efficiently. For example, as will be explained further below, we expect from our contextual interviews and previous research that some Audit responses will be more interesting to compare and contrast. However, at the same time we want to confirm this view from the interviews in the focused interviews rather than imposing it upon the respondents ourselves. Secondly, in some respects the questions were shaped by the respondents experience and expertise. For example, during the interviews we focused the interview on account balances that each respondent felt that they are more experienced and comfortable with. Further, the respondents were asked to elaborate on the process of the respective responses they are more experienced with and that they more frequently undertake.

Sections 1-2 of the interview guide are the introductory sections. In the first section we introduce the respondents to the study, e.g. explain purpose of the study, the overall outline of the interview and obtain their consent to audio-record the interviews. The main purpose of this section is to put the respondents at ease and create a comfortable atmosphere for the interview. The second section conversely, aims to introduce the respondent and to explore their experiences with HUAEs. In particular, this section serves to identify the 1-2 types of HUAEs that the respondents are more experienced with to be uses as reference points and to exemplify answers provided throughout the interview. To identify the account balances we present the respondent with a list of potential HUAEs. This list is generated by comparing the responses from the contextual interviews with the commonly used definitions of HUAEs and similar terms in other papers (e.g. Cannon & Bedard 2014, table 1).

In the 3rd section the focus of the questions is turned to the overall audit process and specifically the different Audit responses and their application. In this section the respondents are presented with our outline of the audit process according to ISA 540, exhibit 1. The purpose is to make sure that we understand the concepts and procedures they discuss and that we have interpreted their responses correctly. We are aware that introducing the respondent with the overview of the process might impose a structure upon them that might affect the responses. In particular, in this case the respondents are presented with a process of an audit standard that they are obligated to follow. Therefore it would seem reasonable to assume that they might shape their answers somewhat to better align with the prescribed process we present to them. However, given the responses in the contextual interviews [37] we believed that the benefit of more precise communication in the interviews outweigh the potential drawback. Additionally, all respondents were upon presentation of the process asked whether they perceived that the process we presented matched the audit process they used.

An important finding from the contextual interviews that fundamentally shaped our interview guide was that the respondents indicated that the Audit responses Consider subsequent events and Test internal controls seldom provide significant audit evidence in the audit of HUAEs. This

[37] During one of the contextual interviews, we were shown an outline of the ISA 540 process from the firm's internal audit guidelines, which closely resembled the one we developed and presented during the interviews.

finding appears to corroborate the findings of Griffith et al. (2013, Figure 1). Based on these findings and the large interest paid to the latter two Audit responses in the previous research, we opted to focus the second half of the interviews on the respondent's views on these Audit responses in order to get more in-depth descriptions of how the respondents undertake and view these Audit responses. This decision was also influenced by the fact that we wanted to be able to conduct the interviews within an hour if necessary.

Further, from the contextual interviews and the findings mentioned above we expected that some respondents would only undertake the Audit response Develop estimate on rare occasions or possibly not at all. Thus, to leverage the time allocated to questions aimed at the detailed application of the Audit responses, we opted to alternate the focus of implementation-based questions between respondents. More specifically, on the basis of their response in the third section we introduced a cross road in the interview guide. Those respondents that indicated that they seldom or never undertook the Audit response Develop estimate were in the following section posed with the questions from section 4 i). Conversely, those respondents that indicated that they considered that the Audit response Develop estimate was important and thus frequently undertook that response were in the following section posed with the questions from section 4 ii). This decision was taken during the process of the interviews as it is based in the answers provided in the preceding sections.

Section 4 i) contains questions that first, identify the main Audit response undertaken by the respondent, secondly, how that Audit response is undertaken and thirdly, why that Audit response was considered to be the primary Audit response and why other potential Audit responses was not selected the primary Audit response. It should be noted already at this stage, that all respondents uniformly identified Test management's estimate as the primary Audit response. Section 4 ii) conversely contains questions that target how the respondents implement the Audit response Develop estimate.

The 5th section focuses on the respondent's views and attitudes on the Audit responses Develop estimate and the primary Audit response they identified in section 3, i.e. Test management's estimate. Thus this section focused on mapping the important factors or aspects that affect the respondents' decision to undertake the Audit responses. After the respondents had been given the option to elaborate on their views and attitudes towards the choice to undertake the Audit responses or not, we prompted the respondents with additional factors asking them to elaborate if these factors have any implication on their decision. The presented factors were indicated during the contextual interviews and have been advocated in previous research as significant to the audit of HUAEs. Ultimately, we asked the respondents themselves to summarise their views on the Audit responses in order to better assess whether any factors or aspects we prompted them with truly had any significance.

4.1.5 Recording, organising and analysing the data

The final phase of recording, organising and analysing the data consist of three steps, the interview, the transcription and the final analysis.

The interviews were documented through audio recording complemented with field notes taken by the interviewers. Audio recording interviews, especially interviews on highly personal or confidential topics might induce cautious or reserved responses from the interviewees (Kvale & Brinkmann 2009). Such critique probably have merit on our study as well, however, one of the key objectives of the contextual interviews was to explore which information was considered sensitive or confidential. Ultimately our assessment was that the added benefit of accurately capturing the responses including accentuations, pauses and tone would outweigh the risk of such drawbacks. The field notes was taken to document immediate reflections and interpretations by the interviewers during the interviews and to keep track of communication from the respondent not captured by the audio recording such as pointing, gestures etc. Immediately following the interviews, both interviewers independently wrote post-interview comments. These were reflections on the respondent's answers and a documentation of the overall feelings that arose during the interview.

When transcribing the interviews, the notes taken during the interviews were also incorporated into the transcriptions. All data processing and analysis was done in the language used during the interview, only the respondent's answers that was provided in Swedish and that were ultimately quoted were translated into English. Additionally, a general rule used when analysing the data have been to preserve original notes taking during different phases of the data analysing process. A second set of such notes, i.e. the first being the field notes, was written during the transcription phase. Thereby, during the transcription phase we created a draft overview of the emerging themes from the respondent's answers. This first draft was conducted independently and was thoroughly documented by both researchers.

During the final analysis the overall tendencies were again sketched out by re-listening to the interviews in full. We believed that this was the best way to accurately capture the attitudes, ideas and views of the respondents, as we believe that a response to an isolated question is a product of the preceding part of the interview. Further by referring to the original recording instead of the transcriptions, we get the benefit of capturing accentuating, tone etc. that convey additional information. Finally, all emerging themes and topics from all data processing documentation were re-evaluated to form an overall picture of the responses received. This process subsequently provided an initial coding scheme. The coding scheme was used to go through the transcripts and to code all responses relevant to each theme, both supporting and contradicting indicators, in order to validate the findings.

4.2 Limitations, potential biases and measures taken

A general limitation of qualitative research is the inability to generalise the results, this drawback is inherent in the method as such and not specific to this study. However, a related limitation, is the limited sample. Interview-based audit research typically has a higher number of respondents (Griffith et al. 2013, p. 11) compared to the 16 interviews of this study. Consequently we cannot aim to project the responses onto a larger population; instead we are limited to only provide indications of general tendencies and a discussion based on the individual responses.

The methodological choice to determine the focus of the interview on the basis of the respondent's experience with Develop estimate, implies that questions on the practical implementation of Develop estimate are asked to potential proponents of the Audit response. Such an approach can be questioned, e.g. one could argue that the description might not be a representative recollection of the actual implementation. However, we consider it to be more beneficial to get less, but more detailed recollections of the implementation from respondents with considerable experience of an Audit responses, compared to more but brief explanations from respondents with limited experience of an Audit responses.

Furthermore, there is a certain risk that the respondents provided inaccurate or polished answers. E.g. it would be reasonable to assume that respondents might want to convey a picture of acting more rational, perhaps resulting in a tendency to describe more structured behaviour ex-post. Factors possibly strengthening such tendencies could be the fact that the respondents might not want to let on suspicion that they were not following audit guidelines and the fact that the interviews were audio-recorded. However, we assessed that the benefits of recording outweighed the drawbacks. In addition we made efforts to minimise such tendencies by providing anonymity to all respondents and emphasising this during the introduction of the interview.

In addition, as we might misinterpret the responses given or the respondents might have misinterpreted our questions. E.g. audit firms sometimes use a different terminology than the one used in ISA for internal communication potentially causing confusion or misinterpretations. As explained earlier, we sought to minimise such risks by consistently utilise paraphrasing and control questions to ensure the validity of the most important responses.

Initially we considered structuring the interviews around one particularly challenging audit engagement related to accounting estimates, similar to the method used by Bedard and Cannon (2014). However, their study design, i.e. anonymous survey, allowed an even stricter anonymity and could therefore be more suitable in that setting. The benefits of such an approach would have been to have received responses related to cases of extreme uncertainty and that auditors therefore could be given the possibility to refer to their audit documentation before the interviews thereby enabling them to provide a more detailed answer. However, our main concerns with this approach were that the auditors due to confidentiality might be unable to speak freely about their specific audit engagements. Due to the feedback we received in relation to this issue and to the extra effort it would require by the respondents, we opted not to use this "mini-case" structure on the interviews.

5 Empirical findings and analysis

In this section we present the findings from 16 semi-structured interviews with experienced auditors and valuation experts. We initially report findings on how the audit of HUAEs is performed to provide an overall context; we specifically focus on aspects that differ from the audit process compared to other account balances and the Audit responses in general. In the second part the focus is turned towards the auditors' attitude towards the Audit response Develop estimate. In the last part we provide an analysis of different configurations to undertake Develop estimate.

5.1 The process of auditing HUAEs

As presented in the background to this paper the audit process is rather iterative as adjustments to the process are made during the audit to fit each individual audit engagement. Adjustments are made if the response to an identified risk is not considered adequate and if the auditor re-evaluates the perceived risks. One of the respondents specifically stressed this limitation:

> *"Well we could discuss if it's really a linear flow, if it's a sequence of steps. If we find additional risks along the process then we adjust the audit accordingly." (Auditor, Senior Manager)*

Therefore extensive generalisation of the audit process can prove misleading, as the art of auditing should preferably be evaluated on an engagement-by-engagement basis.

When asked to reflect upon our interpretation of ISA 540 provided in exhibit 1, the overall impression was that the illustration well represents the respondents' views of the audit process. However, a few respondents point out the aforementioned problem of theorising the process in terms of steps due to the necessity to include iterations in the process:

> *"Yes, you will have to have an initial assessment, an analysis and a final opinion about the reasonableness. But I think we mix up the process, we don't think about it like that […] I understand what you are illustrating, but we do everything at once, there are no steps." (Auditor, Partner)*

In the fieldwork stage all respondents reported recognising the Audit responses. However, some respondents found it difficult to connect all of the Audit responses to the audit of HUAEs:

> *"Yes I think it covers what we do, but I'm not sure what [Develop estimate] mean in relation to these account balances." (Auditor, Manager)*

> *"Often it's really hard to find internal controls that are connected to the estimation process." (Auditor, Manager)*

Similarly, a few respondents also remarked that the some Audit responses presented in the illustration were less relevant in the audit of HUAEs. Primarily this reaction was related to the Audit responses Consider internal controls and Develop estimate. As ISA 540 regulates the audit of all accounting estimates and not only HUAEs where such Audit responses might be more appropriate, this will be further discussed later in this section, i.e. section 5.1.2.

Additionally it should be noted that some of the respondents found it somewhat troublesome to discuss the use of the Audit responses on a general basis as the ultimate selection of Audit responses in practice are based on the specific context, previous experiences with the client etc.:

> *"You adjust the audit plan in order for it to fit the individual engagement. How do we gather sufficient evidence? It will depend on what type of item it is, as it's heavily dependent on the situation, what kind of tools you've got, what time you got and what data is available." (Auditor, Director)*

In the contextual interviews two respondents described how auditors use internal audit manuals and work programmes in the audit process. The internal manuals are described as clarifications of ISA on how to undertake Audit procedures. One respondent describe the support given by the internal guidelines as:

> *"The standard says one thing, but in practice our manual clarifies that we should for example take 16 samples in this situation, and in another situation you should test that many. The standard is more generic. The manual will provide a support, but in the end it's all about how you interpret the information and make the judgments." (Auditor, Partner)*

> *"Well the work tool is constructed so that if you follow it you will end up in a reasonable opinion, but if you follow it too strictly it would take too much time." (Auditor, Manager)*

The internal audit manual is incorporated into the audit work programme and supports the auditor through the audit process. Based on the auditor's assessments and documentation, the work programme prompts follow-up questions to aid the audit process. E.g. one respondent described that if an account balance is classified as an accounting estimate this will result in a number of additional questions or suggestions for further assessment. Nevertheless the reliance on the work program differs between auditors and individual engagements and the respondents describe it as a reference point rather then the main driver of the work process. However the external view on the influence of work programs differs as one valuation expert suggested that the internal guidelines not only provide support but also guide much of how the actual process was carried out.

In this study we have not undergone further discussions on the influence from internal guidelines. However, these views indicate that auditors perceive that the internal guidelines may provide a more effective support for structured audit tasks e.g. objectively verifiable account balances, but are less helpful in unstructured audit tasks such as the audit of HUAEs, requiring more judgement.

5.1.1 The planning stage

In the planning stage of the audit the auditor makes an initial risk assessment. One auditor highlighted that this initial risk is continuously updated throughout the audit process. In connection to the audit of HUAEs the auditors emphasise certain risk assessment procedures more than others. The most commonly described Audit procedure is testing the client's historical track record of estimates and prognoses:

> *"These estimates re-appear every year. The first indication will then be to look at how well, given their prior estimate, they have been hitting their estimates." (Auditor, Manager)*

> *"We often look at a evaluation of the historical track record. What we know about the outcome of the estimate and the management's precision in making the assumptions. There is a lot of focus on that." (Auditor, Senior Manager)*

In the risk assessment, the respondents tend to highlight indicators of past misassumptions and compare the outcome to the last year's estimate. The prevailing view is that the auditors consider the client's previous performance to be a highly effective procedure to assess the RMM in HUAEs.

The task of auditing HUAEs is a challenge often mitigated by the use of valuation experts. Some firms also use auditor specialisation e.g. towards financial instruments for similar reasons. In the planning stage of the audit the auditor assess whether valuation experts will be needed during the engagement. The role of the valuation expert will vary and depends on the characteristics of the engagement. All of the respondents describe enlisting valuation experts during audits of HUAEs but we notice that the relative tendency to enlist valuation experts may vary between audit firms. One respondent summarise the importance of valuation experts to the audit of HUAEs:

> *"Take goodwill for example. In large company audits we practically always enlist expertise for these estimates. If you think about the input into these calculations, the WACC, the terminal value and so on, that's something that the valuation experts can have a look at. They can find relevant benchmarks and assess the industry outlook and so on." (Auditor, Manager)*

Depending on what account balance is evaluated the auditor might need to find so-called triggers. In auditing impairment tests of goodwill the auditor typically first evaluate whether the balance account will have to be tested at all. These assessments generally can be relatively straightforward when the headroom is vast.

Most respondents also discussed other risk assessment procedures, e.g. gaining an understanding of the client's business, conducting preliminary analytical procedures, identification of internal controls, and the assessment of materiality. But as such procedures are undertaken in all audit engagements they are not further discussed in this paper.

Nevertheless one respondent highlighted the importance of the planning stage as such, as the risk assessment of the engagement and the initial audit plan will shape the following stages of the audit process:

> *"This stage [planning stage] is 70 % of the audit. Before you understand auditing you won't know that, but this is where the actual audit is done." (Auditor, Manager)*

5.1.2 The fieldwork stage

In the fieldwork stage the auditor gathers audit evidence to evaluate management's assertions about the true state of the financial statements. ISA 540 suggests four Audit responses to the assessed RMM in the financial statements. We ask the respondents to describe when, how and why they undertake each of these Audit responses. The findings relating to the Audit response Develop estimate are isolated to a following section, i.e. section 5.2, as that Audit response is given more attention in this study.

The studies by Griffith et al. (2013) and Cannon & Bedard (2014) both conclude that the auditors in the overwhelming majority of HUAE audits undertake the Audit response Test management's estimate. In this study we initially ask the auditors to describe how the audit of HUAEs is carried out. None of the respondents indicate that they generally would undertake other Audit responses than Test management's estimate. The general rationale described by a majority of respondents is that the role of the auditor is not to conduct the valuations, but rather to critically evaluate the client's assertions about the value of the account balance:

> *"It's not the auditor who should do the valuation, instead we should review the client's assumptions and assess their valuation. They will have to motivate their assumptions, they can't just present a value and leave it like that. We have to demand that the client provides us with evidence that support their estimate." (Auditor, Manager)*

Another respondent extend this interpretation of the auditor's role and how it affects audit practice:

> *"We will start off in the client's estimate and then we try to question or confirm its reasonableness." (Auditor, Manager)*

Thus, their view on the auditor's role as a reviewer rather than an appraiser might explain the auditors' attitude towards Test management's estimate as the primary Audit response.

After the auditors have been given the opportunity to present their initial interpretation they are asked to comment on the illustration of the Audit responses, which is depicted on exhibit 1 and 2. As discussed, the respondents found the illustration to be representative of the general audit process, but there were indications that not all Audit responses were undertaken during audits of HUAEs. Although the respondents descriptions indicate that Test management's estimate is undertaken more often, a common attitude towards the Audit responses presented was that all Audit responses *should* be undertaken, or at least considered. One respondent elaborated on this:

> *"I consider it as if all [Audit responses] should be undertaken. Although for most of these steps this can be assessed relatively quickly and you can move on. But for others this work may be more extensive." (Auditor, Director)*

Further, during one of the interviews one of the auditors presented us with their internal guidance used for auditing accounting estimates. The guidance included the three Audit responses Test management's estimate, Develop estimate and Consider subsequent events. The respondent stressed that all Audit responses should be undertaken, but all are not always considered to be effective in each individual engagement.

The respondents overwhelmingly indicate that the Audit response Test management's estimate is the starting point of the audit of HUAEs. The other represent supplemental Audit responses that are undertaken when they are applicable and more efficient or when the auditor assesses there is a significant RMM. In such situation a combination of several Audit responses is applied, thus giving the audit team greater comfort and reduce the overall audit risk.

Therefore, we have not found any indications that the relative frequency Audit responses undertaken during audits of HUAEs differ from what has been suggested in previous studies. If anything our findings could lend some indicative support to Cannon & Bedard's (2014, p. 24 fn. 23) suggestions that more frequent use of Develop estimate, could be explained by the fact that their sample include audits where the accounting estimates have been a particularly challenging part of the audit engagement.

5.1.2.1 In which situations are each of the Audit responses undertaken

To identify the typical application of each Audit response, the respondents are asked to describe for which situation each Audit response is undertaken. Once again, responses related to Develop estimate is isolated and presented in section 5.2.

The overall tendencies of the responses is that Test internal control is often given minor attention in the audit of HUAEs, but the respondents describe that the importance of Test internal controls is heavily dependent on the specific engagement. A common response during interviews, relating to impairment tests of goodwill, was that effective internal controls might not exist. One respondent describe this as:

> *"If it's an impairment test of goodwill, then it is often a one-man-show and there are few controls to test. Then it is often one person who has done this and collected all the information from different sources. […] Although I wouldn't say that there are NO controls, as there is often one person who reviews the estimate." (Auditor, Director)*

Another respondent pointed out the irregularity of the impairment tests as one of the main reasons to why the auditors tend not to Test internal controls in such audits:

> *"If it's a company with a large amount of estimates then there might be more of a reliance approach, but there are normally no internal controls as these are items that are estimated once a year or so." (Auditor, Manager)*

Thus, the general tendency is that the Audit response Test internal controls is not undertaken due to the infrequency of impairment tests of goodwill. However, this Audit response might be efficient in audits of financial instruments. One respondent, that worked mainly towards the financial industry, stress that the Audit response Test internal controls is generally the most efficient Audit response:

> *"Internal controls are used to cover the main part of the audit, and if additional procedures are required we assign valuation experts to look into individual transactions. […] It's important that there is a separation of duties to evaluate the effectiveness of the internal controls. Large banks might have a 1st, 2nd and 3rd line of defence,[38] and in those cases we can initially consider their internal controls, […] however on impairment tests of goodwill and in defined benefit plans of pension such internal controls might not exist." (Auditor, Manager)*

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[38] 1st, 2nd and 3rd line of defence is often used in the financial industry to assess the internal control system.

Thus, the general attitude towards the Audit response Test internal control is that its appropriateness is highly dependent on the specificities of the engagement and, perhaps less surprising, the existence of effective internal controls.

The overall impression from the interviews is that the Audit response Consider subsequent events is seldom relevant to the audit of HUAEs. A large majority of the respondents also emphasise that subsequent events should always be considered and is not exclusive to the audit of HUAEs:

> *"Before signing the final opinion in the audit report I always consider subsequent events, if there has been any events that could affect the account balance or the result. If there has been any event up to the audit report that might confirm conditions existing on the balance sheet date, then that should also be included in the financial reports." (Auditor, Director)*

However, several respondents have difficulties recalling previous experiences relevant to HUAEs, questioning what is meant to Consider subsequent events in terms of HUAEs and rather explain testing the client's track record of previous estimates or provide examples of other accounting estimates where a "final tally" can be observed before the audit report is signed:

> *"That depends on what you mean by a subsequent event, often these estimate are updated once each year. A first indication is to look at how good they have been in hitting their estimates. That will also indicate how accurate this year's estimate will be." (Auditor, Manager)*

> *"But if we don't have to sign the report before seeing the actual outcome, this is the best Audit response. If it's an litigation charge or bonus plan, this will be the main audit procedure." (Auditor, Manager)*

Our interpretation is that the Audit response is primarily undertaken in the fieldwork stage or possibly in the review stage where the auditor consider if additional information has become available after the audit up to the signing of the audit report. Consequently we interpret the Audit procedure to test the historical track record as a risk assessment procedure.

A few auditors also question the use of subsequent events to evaluate HUAEs such as impairment tests of goodwill:

> *"It depends on if the account balance could be followed-up. Goodwill is difficult to follow-up after one month, but if there is an account balance that could be followed-up then it would be used." (Auditor, Manager)*

These comments might be a result of the measurement objective of most HUAEs, typically requiring that the value should reflect the conditions prevailing on the balance sheet date. Thus creating a difficult task of distinguishing if any subsequent events truly are a reflection or past conditions or simply a change in conditions. Overall, the interviews indicate that auditors perceive that Consider subsequent event is rarely an effective Audit response as such events are uncommon or provide limited audit evidence in the case of HUAEs.

All respondents describe that the primary Audit response in the audit of HUAEs is to Test management's estimate.

We therefore ask the auditors to describe why they primarily carry out this Audit response. The majority conclude that one of the main reasons being related to the audit efficiency of the Audit response:

> *"It's because of the audit efficiency [that we Test management's estimate]. In an audit we aim to do as little as possible, but still get as much as possible out of the procedure." (Auditor, Manager)*

However, as the interview are carried out in Swedish[39], we ask the respondents to elaborate whether it is the effectiveness or the efficiency of the Audit procedure that is most important to the selection of Audit response. On this follow-up questions responses are somewhat ambiguous. The absolute majority conclude that Test management's estimate generally is the most effective Audit response and it is therefore primarily undertaken. The effect from efficiency pressure is however dubious as some respondents mention that the audit should never be affected by the cost of the audit:

> *"If there is a real uncertainty and it's a material account balance then the cost of auditing should not have any affect [on whether they undertake a certain procedure]." (Auditor, Director)*

But on the other hand some of the respondents point out that the audit team always strive to increase the efficiency of the audit process and that they consider audit efficiency to be synonymous to cost efficiency and consequently will affect the choice of Audit response.

Besides the audit efficiency the auditor stress the importance of information in HUAE audits. As model-based valuations include numerous assumptions on future cash flows from the asset, discount rates, growth etc. Entity-specific information is typically not available or difficult to obtain for external observers. Consequently an Audit procedure that does not include the test of the information that the client has used is not considered to generate as relevant audit evidence.

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[39] In Swedish the auditors use the term "*revisionseffektivitet*" which could both be interpreted as audit efficiency and audit effectiveness.

5.1.2.2 How the fieldwork stage is typically described

To understand how auditors approach the task of auditing HUAEs we ask the auditors to guide us through how they carry out the fieldwork stage, i.e. how they undertake the Audit responses and collect audit evidence. All respondents describe that their initial procedures start in management's estimate; consequently these descriptions are essentially recollections of Test management's estimate. Common Audit procedures described include checking the calculative accuracy of the model, evaluation of choice of valuation model and valuation method, inquires with key personnel[40] and discussions about significant assumptions. One respondent summarise the Audit procedures as:

> *"Impairment tests are all about looking at the assumption of the future cash flows. What are important are the critical assumptions about growth, margins, upcoming investments, WACC and to evaluate whether these are reasonable. We also evaluate the owner's required returns and assumptions about the interest rates, are they reasonable given the market outlook? In the case of tangible fixed assets we also evaluate additional critical factors. For airlines it would be such things as lead times, cost efficiency programmes included in the cash flows or if there are any other strategic company-specific matters to include in the prognosis." (Auditor, Senior Manager)*

All respondents describe ways to assess the reasonableness of assumptions, but such tests are described in many different ways in terms of effort and precision. Several respondents also describe that they typically stress test the client's valuation model, the interpretations and the use of such tests however differ. Most respondents interpret this Audit procedure as Test management's estimate, however during the interview a few respondents mentioned some confusion whether this could be interpreted as the Audit response Develop estimate. This distinction and its implications will be discussed in section 5.3.

As described by Cannon & Bedard (2014) and Smith-Lacroix et al. (2012) the audit team often employ valuation expertise in the audit of HUAEs, a view additionally confirmed by the interviews we conducted during this study.

On an overall level, the valuation experts describe a similar approach i.e. that the client's valuation model constitutes the starting point of their assessment. However, one valuation expert indicate that they often take on a more quantitative starting point in assessing reasonableness of assumptions compared to the auditors, although the approach of testing the accuracy of the model is generally the same:

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[40] Which might not only include accounting staff but also line managers etc.

> *"When it comes to the forecast I think our approach is much more commercial than the auditor's approach. The auditors tend to be 'lets find a business plan that's written on paper, that hopefully the board has seen, which we can use'. They often wouldn't go much further than that. They might look at some of the assumptions and say 'ok, well that's a little bit high growth rate there' and they might get some documentation on that. Our approach would be a bit more quantitative, we would look at listed companies that are in a similar industry, look at their forecast and their margins and we would try to make some benchmarking analysis. We would also take into consideration what the multiple of earnings implied by the answer is, as sort of a way to see if the forecasts are reasonable. I think those are the extra steps that we would take that the auditors often wouldn't do." (Valuation Expert, Senior Manager)*

Auditors often describe enlisting valuation experts to make an overall assessment or to carry out specific tasks. Therefore the auditor is the primary assessor of risk and the valuation expert is primarily the one that carries out the actual test of the management's model. The auditor may include guidance in the assignment whether the accounting estimate is highly significant to the engagement or if it is a minor standard procedure. One of the respondents summarise the main starting point of the valuation expert's work process:

> *"The auditor sends us an e-mail with an attached model. Depending on the client, we ask them to set out the scope, if they want us to look at it for 2 or 20 hours. We recalculate the client's model and communicate any calculative misstatements to the auditor. If anything looks unusual they might ask us to do more and we may develop our own WACC and so on." (Valuation Expert, Senior Manager)*

Thus, in audits of HUAEs enlisting valuations experts is an important way to mitigate task difficulty and to utilise the respective core competencies of auditors, and valuation experts.

5.1.3 The final review stage

In the audit process for other account balances the auditor would simply revisit the audit evidence and form a final opinion. However, the process for HUAEs differs from the general audit as it includes an evaluation of outputs that are imprecise, implying that that there might be a range of reasonably acceptable estimates and often, neither the auditor nor the client can provide factual evidence that their valuation is objectively correct.

In HUAEs, some respondents have described that the auditor will instead enter into a discussion with the client about what would constitute a reasonable value. In some cases the respondents refer to this as a negotiation and the auditor will have to apply a professional judgement and integrity in evaluating the audit evidence rather then a structured approach of summing up discrepancies. One respondent exemplified the difficulties of the discussions:

> *"But even if we have a view on the forecast, it's difficult for us to kind of argue that view to the client in a way that you convince them that you're right, if you take a different position. So it's in some sense almost a negotiation because you have one view and they have another. There's no factual evidence to support the assumptions, it's more of a reasonableness test. It might not make sense to have 40% growth in one year. Perhaps we think it would have been more reasonable to have 5 %. So it's shades of grey and ranges that we talk about. That's probably when it becomes the most challenging, when we get into that area of reasonableness." (Valuation Expert, Senior Manager)*

In such situations where neither party's view can be truly verified it seems reasonable to assume that the outcome of the negotiation is to a higher extent affected by the relative power balance of the parties involved in the negotiation. Thus, in situations where the auditor and the client might have differing views of what value should be reported, and that value to a great extent is a matter of judgement the relative power balance of the auditor-client relationship is likely to have an effect on the outcome of the negotiation, indicating that the issue of auditor independence might be even more important in the audit of HUAEs than in the general audit engagement, making auditor integrity a critical issue for audit quality.

Several auditors stressed, the need for common sense, integrity and not getting lost in the valuation models:

> *"In my opinion this is all about common sense, integrity and judgment. In the case of goodwill and similar impairment tests, the only thing we know is that we are 100 % wrong, but we are also 100 % certain that there is no one else that knows the correct number because these numbers are based on expectations about the future, the only thing we do know is that we cannot foresee the future." (Auditor, Partner)*

5.1.4 Overall comparison to the general audit

We have focused on presenting the differences from the audit of other account balances and have found that the audit of HUAEs often follows less structured paths. E.g. the auditors do not discuss checklists in connection to the audit of HUAEs and few envision an effective audit outcome if the internal guidance would be strictly adhered. One respondent explain this as:

> *"Some things could logically be checked through checklists, but when it comes to projections about the future, this could never be achieved by applying a checklist, in that case you will have to sit down and look the management in the eyes, get written confirmation and so on." (Auditor, Partner)*

Furthermore, one of the fundamental difficulties in the audit of HUAEs is the inherent difficulty to factually support the valuation assertion of the account balances. Upon describing the main difficulties the respondents describe a dual-level of complexity in the audit of HUAEs. One responded illustrated this as:

> *"It's the combination of complexity. In the first step it's difficult for the client to account for the item, and in the second step it's difficult to audit the item. I mean, take a rent payment for example, then it's easy to say what is right or wrong, but in these cases it's a lot of judgments. We as an auditors are in the 2nd or 3rd bench row on these audits." (Auditor, Partner)*

Thus, the audit of HUAEs will involve a higher level of professional judgement then the general audit process. During one of the interviews one respondent provided us with one of their internal guidelines. Once again we were not allowed to obtain the actual internal guideline but we will comment on one model that was illustrated in the document, as the model is also made public in the textbook by Eilifsen et al. (Eilifsen et al. 2013). The model, *KPMG professional judgment framework,* is used to improve the auditor's professional judgment. Judgement is a matter of evaluating which one of a number of possible solutions will be the most suitable. For the audit of HUAEs the respondent emphasise the step *consider alternatives* in the professional judgment framework. Even if the auditor tend to end up in undertaking the Audit response Test management's estimate when evaluating which Audit response will be the most effective, the auditor should always consider if there could be any other favourable approach.

5.2 Why is the Audit response Develop estimate not undertaken more often

In this section the attention is turned towards the remaining Audit response, Develop estimate. As described in section 3.2, previous research have indicated that it might be beneficial to Develop estimate in order to more effectively challenge the client's estimate and the underlying assumptions. Previous research has also provided indications that this response should be undertaken before delving into the details of management's estimate to avoid anchoring and similar cognitive limitations potentially affecting auditor scepticism and limiting the auditors ability to develop alternative assumptions and to identify omitted inputs and or assumptions. Still, previous research report rather low usage of this Audit response (Griffith et al. 2013, Cannon & Bedard 2014).

Therefore we ask the auditors why or why not they would Develop estimate to evaluate management's estimate. The overall impressions can be summarised through three different stances. The respondents varied from 1) indicating a theoretical opportunity to undertake the Audit response in extreme cases but that they did not generally Develop estimate, 2) being absolutely sure that they often undertook the Audit response, to 3) that they never had, nor saw the possibility to Develop estimate. The relative large continuum of the responses indicates that the auditors' attitude towards the Audit response varies significantly and will be discussed in the following section.

These are some of the initial attitudes towards the Audit response, highlighting these impressions:

> *"No, [Develop estimate] is practically never done for these items. To think that we would be able to estimate the future better [then the client] that's not really viable. There might be some extreme cases with very special circumstances and high values, but I don't think that's the general situation." (Auditor, Partner)*

> *"We basically always [Develop estimate], but you don't have to do it for impairments if you can conclude that there's headroom or if the misstatements would be immaterial." (Auditor, Director)*

> *"No, I wouldn't say that we develop own estimates, at least not in my engagements. We rather start with the client's estimate and try to question it or conclude if it's reasonable." (Auditor, Manager)*

5.2.1 Why the auditors do not Develop estimate

Over the course of the interviews the respondents have provided numerous reasons why they did not undertake the Audit response Develop estimate more often. The most frequently occurring arguments can be summarised into the perceived low efficiency, information availability and the auditors' view of themselves as primarily reviewers of the client's assertions.

5.2.1.1 Audit efficiency

Most respondents described that Develop estimate is an Audit response that requires substantial efforts and resources from the audit team essentially making it less efficient to undertake in comparison to solely relying on Test management's estimate or, if applicable, other Audit responses:

> *"It's more efficient to look at the client's model. You start there and ask: Do they know this, do they get it? Does this work out? Is it realistic? Then you quite quickly will have evaluated if it's reasonable. To develop an own estimate using a valuation expert who gather information and makes judgments, that would be maybe a day's work." (Auditor, Director)*

> *"No, it's better to let the client give their thoughts about the future and then you question them and make your own judgments. But to sit down and have two parallel estimation processes, in my opinion that's a waste of time." (Auditor, Partner)*

A few respondents put additional focus on the cost, as they describe perceiving a pressure to be more efficient, both from the signing auditor and clients:

> *"The cost of the audit is always done on a current account, but there's always a discussion in the audit team. Then the client question whether it's worth the effort and then there will be a discussion about that as well." (Auditor, Manager)*

The effect of efficiency pressure on auditors' planned effort has been studied in an experimental setting by Maksymov et al. (2012), which indicated that the planned of audit hours will decrease if the auditor experience efficiency pressure. However, the study by Maksymov et al. did not include any Audit procedures similar to the Audit response Develop estimate. The respondent's indication that audit efficiency is one of the main reasons that they do not tend to undertake the Audit response might indicate that the results from Maksymov et al. could be extended to include Audit procedures related to Develop estimate as well.

It should however be highlighted that most auditors stress that if they assess that there is a material risk, the audit cost is irrelevant:

> *"If there's a real uncertainty and it's a material account balance, then the cost will not matter." (Auditor, Senior Manager)*

5.2.1.2 Information availability

Another frequent issue described by the respondents, particularly for impairment issues but also to some extent for unlisted stocks and pensions, is that it would be very difficult to Develop estimate with a reasonable precision, as it would require entity-specific information and an in-depth understanding of the client's business on a level that the auditors generally do not have:

> *"In the case of impairment tests, we will need full insight into what they have done, and what their strategies are and how their business develops. For example, 'if competition increases on the route between X and Y then we will scale down on that route'. We would never be able to have such information. […] We always have full access to the information they have, but some information is not documented, the intentions and so on. That we would be able to do an estimation and get it right, that seems a little too far-fetched." (Auditor, Senior Manager)*

> *"It would be very difficult to develop our own prognosis for the future of a certain business area of the client's business. How does their budget look like, will they make investments, how much marketing will they put in, are they going to lay off people or hire more?" (Auditor, Senior Manager)*

One respondent highlight that it is not necessarily the lack of information but rather the information asymmetry in favour of the client that would cause them to refrain from Develop estimate.

Along these lines but with even more emphasis, a lot of the respondents described that if they would in fact develop an estimate with their limited information, they might be overestimating their competence or that it would almost be an insult towards the client and the resources they spent coming up with their prognosis:

> *"We will need a detailed understanding of the business as well. If we would believe that we know their business better then the client that would not be a realistic approach. That would be putting ourselves on too high horses." (Auditor, Senior Manager)*

> *"I mean if the client is a large corporation and put in thousands of hours into the budget process and I would come and start all over again. That would be ridiculous to have such an approach, it would be impossible." (Auditor, Senior Manager)*

One respondent argued that of course they could to it, referencing that analysts do external valuations all the time. However, the auditor concluded that such efforts would provide little additional comfort anyways.

In evaluating highly entity-specific information the auditor is often unable to find external confirmation for the information. As in the case of strategies and objectives that have not been made public. In these cases, the respondents often describe confirming the internal consistency between the information used in the valuation model and other internally available documentation. For example, reviewing minutes of meetings of the board with internal budgets etc.:

> *"Budgets and prognoses are important sources of information, sometimes companies have set up 3 or 5-year plans for their business. For impairment tests we might look at the board meeting minutes to find internal inconsistencies with the budgets in order to detect possible misstatements. Are the budgets presented to the board the same ones that are used in the forecasts, or are they using something different in the valuation model? There might potentially also exist risks that they have presented to the board but not included in the calculation." (Auditor, Senior Manager)*

However, a few respondent argue that internally used information should not necessarily be considered as reliable audit evidence due to that budgets and forecasts need to be evaluated on the background to how good the client has been in meeting its forecast in the past:

"An industry comparable is often much more reliable, as a budget might often be used as a source of internal motivation rather then a reasonable assessment of the future. We know that they never hit their budgets and therefore we can't use it as an audit evidence." (Auditor, Manager)

The difficulty of obtaining entity-specific information in the audit if HUAEs is however mitigated by the fact that in the case of highly material account balances the auditor will most often have direct access to the CFO and consequently have a better access to information then in the audit of other less uncertain account balances. One of the respondents describe this as:

"Generally we have direct access to the CFO for these issues. So we have access to how they have reasoned. However these strategies might be intended as a vision rather then a realistic forecast." (Valuation expert, Director)

5.2.1.3 The auditor's role

Most of the respondents voiced a clear preference towards primarily relying on the Audit response Test management's estimate and argued that the auditor's role is to review the client's provided estimate and not to carry out the valuations:

"The client is the one that's responsible for the valuation. Our role as an auditor is, to review the valuation and the data they have used. To critically evaluate if it's relevant and if it's complete in a sense. There's no requirement that we have to develop an own estimate if we can obtain confirmation in other ways." (Auditor, Director)

"It's not my estimate, I should not make the assessment, that's up to them. I evaluate the estimate. It's the client that should make the estimate and I will evaluate it, that's an important difference. The client will make assumptions and come up with a value, then they will have to motivate their reasoning." (Auditor, Manager)

Further, some respondents also expressed a preference towards audit engagements where the client had done a thorough job in motivating their assumptions, making it easier for the auditor to assess their reasonableness:

"The easiest estimates to challenge is the ones where the client has made a good job documenting their views, 'why do I assess the growth rate this way' and so on. Those engagements lead to the best discussions." (Auditor, Manager)

The issue at hand, however, is that this type of situation might put the auditor in a bad position to remain sceptic as he is essentially faced with evaluating the reasonableness of assumptions or inputs that the client has supported with documentation, which if stemming from a opportunistic client might be biased. As will be discussed shortly, the auditors view on this matter differs a bit.

5.2.1.4 Other factors

Several respondents reported that they often opt not to undertake Develop estimate as other Audit responses provide sufficient comfort, underscoring their view on Develop estimate as a supplemental procedure in high-risk situations, rather than the most efficient Audit response. This argument was often presented in relation to Goodwill impairment as several respondents described assessing the "headroom"[41], i.e. checking the overall reasonableness of the assumptions and then conclude that no further testing is required:

> *"We don't need to do it if it isn't a fair value item and the excess value, 'head-room', as we like to call it, is so large that it doesn't matter." (Auditor, Director)*

A few respondents also question the overall effectiveness of the response. As discussed by Christensen et al. (2012) and Griffin (Griffin 2011) discounted cash flow models and other valuation models are often extremely sensitive to certain inputs, resulting in imprecise model output. Griffin describes output imprecision as when the valuation model generates a range of reasonable valuations rather then a precise value, making it difficult for the auditor the reperform the client's estimate in order to arrive at the same value. One respondent discuss this in connection the difficulties to Develop estimate:

> *"The problem is that input data is constantly changing. You could use an interest rate as of now or as off an hour ago. But what's the right timing? There are no set of rules governing what's the right timing anywhere. […] Typically there are a number of Bloomberg observations that goes in and you create an integrated curve, but how do you interpolate it? Because there are several theories on that as well. All of theses assumptions make it unlikely that we would reach the same value as the client." (Auditor, Director)*

The argument put forward here is that the output imprecision of the Audit response Develop estimate makes it ineffective as they would not normally expect their estimate to match the client's estimate and consequently the auditor thus rather Test management's estimate or undertake another Audit response. However, as will be explained later, this argument mainly targets the use of Develop estimate in order to reperform the estimate. This is not necessarily the only use an auditor could have of Develop estimate; the estimate could also aid in evaluating assumptions by mapping them onto the client's model and to identify external information not incorporated by management's estimate.

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[41] The "headroom" is a concept used in auditing impairment tests and corresponds to the difference between the recoverable amount, most often value in use, and the carrying amount.

Another respondent however question the effectiveness of using Develop estimate to avoid influence from the client. The respondent argued that the auditor would invariably be influenced by the client's view anyway. This view was presented in relation to HUAEs that rely heavily on entity-specific information, such as impairment tests of goodwill:

> *"The assumption we would have to make in such an estimate would be based on what we know about the client and what the client has told us. Therefore I still wouldn't call it independent from the client." (Auditor, Manager)*

The auditor's argument is therefore closely connected to the relative availability of information, as the auditor argue that they will have to use information that is either developed or provided by the client to Develop estimate.

A related argument questioning the effectiveness of Develop estimate, put forward by a one respondent, was that he/she did not perceive a real risk of being influenced by the client to begin with due to the structured approach of the audit:

> *"Of course there is a risk, but I consider it to be small in these cases. As there is a 'step-by-step' approach to these estimates." (Auditor, Director)*

In addition one respondent also point out the importance of providing an additional service for the client:

> *"You will also have to think about the value for the client. You can't set up an estimate and simply conclude that they are wrong. If you instead start out in their estimate you can have a discussion that they could benefit from." (Auditor, Manager)*

When the auditors Test management's estimate they also provide a service for the client as the client's estimation process is also scrutinised and improvements can be suggested.

5.2.2 Why the auditors would Develop estimate

As the auditors generally describe relying on the Audit response Test management's estimate we ask them about the circumstances that would lead them to Develop estimate. As initially noted, some respondents do not consider the Audit response a favourable way to audit HUAEs, or describe that they seldom undertook the Audit response. As a result for some of the interviews the respondents provided somewhat hypothetical reasons as to why they would chose to Develop estimate.

In these cases the respondents close to exclusively describe doing so through enlisting the expertise of their internal valuation experts:

> *"Well you won't do it on your own. In that case I would enlist a valuation expert. I wouldn't consider myself sufficiently skilled when it comes to these complex cases." (Auditor, Manager)*

> *"In these cases we enlist the 'quantifiers' that knows how to calculate these things. They have their own models that we have developed here at [name of audit firm]. So that's an example of when we develop our own estimates." (Auditor, Director)*

The overall descriptions provided by the respondents could be summarised into a larger propensity to undertake the Audit response Develop estimate when the RMM of the HUEA increases.

The respondents often describe this RMM using terms such as uncertainty:

> *"For situations when there's a substantial uncertainty and a risk. That's when you benefit from [Develop estimate]." (Auditor, Director)*

> *"If there's something that doesn't seem to be right and it's different from our general opinion and consequently feels uncertain, then we would have a look at it." (Valuation Expert, Director)*

For the audit of any account balance, i.e. not only for the audit of HUAEs, an increased RMM would result in a larger audit effort. However, the RMM might have a more distinct link to the Audit responses in the audit of HUAEs. As previously noted, the respondents generally describe Develop estimate as an inefficient Audit response. Nevertheless, as uncertainty and risk increases, the auditors' propensity to undertake Develop estimate also appears to increase, indicating that the risk does not only affect the effort spent on each Audit response but also the use of different Audit responses.

Several respondents describe undertaking Develop estimate as an alternative in case of increased estimation uncertainty and risk, often when other Audit responses have been undertaken but there is such a large uncertainty involved that auditors want another opinion from their internal valuation experts or sometimes also from external parties. Thus, these are the cases where the resources required are justified as this Audit response is considered to add additional comfort, i.e. in this situation Develop estimate is mostly undertaken due to effectiveness concerns, rather than efficiency concerns.

A few respondents describe Develop estimate in certain critical situations that are crucial to the overall audit opinion or situations that pose threats to the client's ability to continue as a going concern, indicating a extreme RMM:

> *"If it would be such a significant issue, that we really had to get it right. Then we might say 'ok, we want to develop our own clean assessment and see whether it fits theirs." (Auditor, Manager)*

> *"If it was crucial for the company's survival. That's if the whole asset side would be complex estimates, but then we're talking going concern assessments. That would imply that we would do anything we could do, basically all of these [Audit] responses." (Auditor, Manager)*

Additionally, a few respondents described that Develop estimate is undertaken in situations of high uncertainty and risk where the client and the auditor is fundamentally in disagreement, in order to get a "third opinion" from an independent party:

> *"If the client says one thing, and we say something else. We might think that it should be impaired and they say, 'we think it's right'. Then we would perhaps ask a third party to have a look at the estimate. Then we can use that estimate as well, and if we still don't agree we can settle with the third party's estimate." (Auditor, Manager)*

> *"In some cases we are assigned to carry out valuations for other audit firms. These are those cases were it's really crucial to get it right, when the situation is bad. That's when it's really complex and involves large values." (Valuation expert, Director)*

5.2.2.1 High estimation uncertainty and client's low level of valuation expertise

In terms of RMM, the respondents also highlight certain drivers of RMM that might increase their propensity to Develop estimate. For example, several respondents describe indicators of estimation uncertainty such as valuation complexity and subjective assumptions as being factors that would lead them to Develop estimate:

> *"If there are highly complex estimates, then we would develop our own estimates. We take samples of a number of financial instruments and we compare those to the client's estimates. Generally it is the valuation experts that do the calculations. And then we compare them to evaluate if there are any significant differences in our evaluations. […] This is when it's difficult to value and there's a great risk involved so that we would do this additional procedure. […] If an actuary[42] has set up a valuation he/she would use the client's situation but include our assumptions. That would give us a value that we could use to challenge the client if there's a discussion about any of the inputs. We do not necessarily have to have exactly the same output, the important thing is that we get them to explain why they have other assumptions. […] This could be for level 3 assets when it involves the management's assumptions. The first thing would be to ask them to assess if there are any alternative outcomes and what those would be, then we would develop our own estimate. This is to get our own idea if we don't agree with the client's estimate. This is typically for level 3 assets and pension obligations." (Auditor, Director)*

[42] Actuaries are commonly used for pension obligations.

RMM is closely linked to the underlying estimation uncertainty, indicated both by audit standards (IAASB 2008b) as well as by Cannon & Bedard's study on audits of challenging accounting estimates (2014, table 4).

Another indicator of RMM described by several respondents is the client's valuation expertise and indications of an unreliable estimation process. In cases where the auditor perceive that the client might be lacking the skills necessary to establish a correct valuation model and to make accurate assumptions the auditor will become more sceptical towards the client's estimate, resulting in an increased use of the Audit response Develop estimate:

> *"When we don't feel that we can trust the client's estimate, that it's correct and so on, and we feel uncertain. That is when we start moving over to develop our own estimates." (Valuation expert, Director)*

> *"To develop an own estimate that will be used when they have a low level of expertise, when their estimate is a little 'sketchy', in my opinion. When all the variables might not be in place, it's not entirely coherent. In those cases we send it over [to the valuations experts] for a second opinion." (Auditor, Director)*

However these respondents often indicate that when the client's valuation expertise is considered inappropriate or there is a high level of estimation uncertainty, this will result in the auditors performing more Audit responses, where Develop estimate could be one of the additional Audit responses:

> *"On the most complex account balances that's where we want to do the most work. It's easy to audit the verifiable items, but it's on those cases where we should focus our effort. Many might get fooled into focusing on the 80 % that are easiest to verify, but it's the other 20 % were the complexity is and that's where we should put in the most effort." (Auditor, Director)*

5.2.2.2 Maintain independence and detect management bias

One additional factor influencing the RMM[43] and the propensity to Develop estimate described by a few respondents was to maintain independence and to avoid being influenced by the client's estimate. However, it should be noted that there are varying opinions on this risk. As this risk has received a larger focus on this study, a more nuanced discussion on this issue is provided here.

In the planning stage of the audit, the auditor always assess whether there is a risk of fraudulent behaviour in the company, additionally, ISA 540 prescribes that the audit team should be aware

[43] Technically, one could argue that it is rather a factor influencing the detection risk rather than the RMM.

of indicators of bias (IAASB 2008b, para. 21). One respondent described considering Develop estimate to avoid being influenced by the client:

> *"Because as soon as you have looked at what they have done, I believe that you could get influenced by that." (Auditor, Manager)*

In a few of the interviews the respondents generally refer to the risk of being influenced by the client's estimate as difficulty in the audit of HUAEs. But none of the respondents indicated that they would specifically use the Audit response Develop estimate in order to refrain from the client's estimate. However, in describing the potential benefits of undertaking Develop estimate, several respondents describe that the main benefit is that they get an independent evaluation of the client:

> *"It's a great approach to maintain complete independence. But it's a question of money as well. It would be extremely costly to carry out the audit this way. In the US there are totally different levels of audit fees. We don't have that opportunity in Sweden. But it would most likely increase the independence and help you challenge them better." (Auditor, Senior Manager)*

> *"It's fairly easy to get influenced by what someone else has done, and others' input. You get a little bit 'locked in' by what you have seen. If I would use [Develop estimate], I could perhaps get another angle, 'this is reasonable from my point of view'." (Auditor, Manager)*

One respondent also highlight the necessity to avoid delving into the details of the client's model and assumptions to avoid being influenced by the client's view:

> *"The benefit of making an estimate, which can't be denied, is that you will get a totally untainted view on things. The own estimate will be an undistorted picture. It will be a totally independent assessment of what they have done. […] Sometimes it could give you something extra, as you won't get fooled. Often their motivations sound reasonable. So in those cases it would be good to develop an own estimate." (Auditor, Manager)*

Another respondent instead stresses that auditors during these types of audits try to make sure that they do not fall into the trap of trying to confirm the client's model and assumptions:

> *"Well one large trap you might fall into is that you look at what the client has provided and you try to prove it's correct. And as we are ambitious and intelligent people we often tend to find evidence that supports it." (Auditor, Senior Manager)*

Thus, this respondent seems to be aware of the task-framing effect on the auditor's judgement investigated by previous researchers such as Montague (2010) and Maksymov (2012) in audits of

HUAEs. The respondent describes that they always try to take a step back and to evaluate other alternatives in order not to get "trapped" within the client's view:

> *"So you don't get trapped, because what's written on a paper will get very concrete so you start of evaluating that and then you take a step back and ask yourself, 'could I do it in a another way?' Then you start collecting your information, what support are there?" (Auditor, Senior Manager)*

A few respondents are also asked whether they perceive a risk of being influenced by management's valuation model and expectations, however the responses are mixed. Some respondents acknowledge that there is a risk of being influenced by the client, but that, they still often refrain from Develop estimate:

> *"Yes I can see that, there is definitely a risk that you might get influenced by what the client has done, it puts you in a context. However, in practice we seldom to that." (Auditor, Partner)*

One of the respondents was well aware of the anchoring concept, calling it an "old trick", but again highlighting that he/she perceive their task to be focused on reviewing the client's estimate:

> *"Yeah anchoring, I mean that's sort of an old trick. Not just for audit clients but any clients that want to steer the discussion, they will come up with their own way of doing it. And often they might try to avoid moving away from that calculation because they think that as long as they stick to their guns it's difficult for us to start debating other things. But at the same time it's important that we keep it as a review. Yes, you can be anchored but I think if there's to be any kind of judgment or opinion it has to start with their judgment and opinion and we review rather than form our opinions and then present it to them. If a client is being particularly insistent about sticking to their way of doing things, and we disagree, we would typically run some 'shadow' calculations for the benefit of the auditors so that the auditors can make a judgement about what difference it makes to do it our alternative way." (Valuation Expert, Senior Manager)*

The overall impression however, is that the auditors do recognise the theoretical benefit of Develop estimate, but do not use the Audit response in order to utilise that benefit, primarily due to efficiency concerns and their view on the role of the auditor as a reviewer.

5.2.2.3 Level 2 financial instruments

In describing audits of financial instruments, a few respondents provide somewhat contrasting examples of undertaking Develop estimate when auditing interest rate swaps and similar fair value level two items for which the RMM was significantly less pronounced compared to those situations discussed above. Although these estimates include a rather low level of estimation uncertainty and consequentially cannot truly be said to constitute HUAEs, they provide an interesting contrast to the responses described above:

> *"It's an alternative, but it's dependent on what type of item it is, as we will need a lot of information. If it's a derivative, then it's a viable alternative. In that case we wouldn't normally use their estimate but make our own estimate to see if they have gotten it right. If you have a future contract then you can make an own estimate, but if it's a pension liability, then you will need all the information." (Auditor, Manager)*

> *"If it's a derivative and a relatively widespread valuation model, then I would have an valuation expert look at it. And he would get his own data and use his own model and independently arrive at a value. Then I could use it to compare the values against each other." (Auditor, Manager)*

> *"It could be used as an external confirmation, if it's a level 2 fair value I could do it on my own. I could just gather market data, do the calculation myself and see if I end up with the same value. […] This could be derivatives or futures that is not publicly traded but rather a two-party contract." (Auditor, Senior Manager)*

During the interviews this use of Develop estimate was often described in two scenarios. In audits where the client held a few financial instruments with a lower level of estimation uncertainty, e.g. interest rate-swaps or other derivate and were Develop estimate was considered easier than to Test management's estimate:

> *"I've done it for a interest rate-swap, or rather through enlisting a colleague, in order to see were we end up in relation to theirs. For those items we have our own tool that we use and in that case it's easier than to look at their estimate and their model. For such derivatives it's often easier." (Auditor, Manager)*

The other scenario described was engagements involving large quantities of financial instruments and where effective internal controls where in place. The audit approach in those cases primarily included Test internal controls complemented with testing of a sample of instruments through enlisting internal valuation experts:

> *"We always aim for the most efficient procedures. Sometimes it's just easier to calculate it on your own. If there are large volumes then we would look at the internal controls and take some samples to recalculate." (Auditor, Director)*

5.2.3 Develop estimate – the effectiveness case and the efficiency case

In an effort to provide a more systematised presentation of our overall view of the respondent's descriptions we will in this section present a stylised description of which factors seem to describe the use of the Audit procedure Develop estimate. However, in doing so, we will inevitably trim some nuances from the descriptions provided above.

In essence, as described above auditors primarily refrain from Develop estimate due to the perceived low efficiency, their view of the auditor's role as a reviewer rather than an appraiser, and the lack of information although the latter is primarily related to estimates requiring entity specific information such as impairments.

However, during high risk situations the respondents describe a more favourable view towards Develop estimate, indicating that these are cases where the efforts required are justified as it provides additional comfort. Thus, in this situation the Audit response Develop estimate is mostly undertaken due to of effectiveness concerns, rather than efficiency concerns, as efficiency is rather described as the primary downside. The respondents also highlight some specific drivers of RMM that thus might be more important for the use of Develop estimate i.e. they reference indicators of high estimation uncertainty, describe undertaking Develop estimate when there are indicators of low client valuation expertise and, although somewhat less pronounced, describe that Develop estimate could potentially aid in detecting management bias through providing a more independent view. Thus, in a stylised view, 1) if auditors assess that the client's level of valuation expertise is low and thus that there might be deficiencies in the model and/or insufficiencies in the documentation, and/or 2) if auditors perceive a high risk of client bias or of being influenced by the client's estimation we would expect a higher propensity to Develop estimate.

The estimation uncertainty, however, seem to have a more intricate relationship to the propensity to Develop estimate. Firstly, a high estimation uncertainty, primarily if driven by input subjectivity, will most likely also affect the other two factors. A high estimation uncertainty, will often add complexity to the valuation process affecting the level of expertise required of the client. Additionally, a high input subjectivity is perhaps the most important component driving the risk of bias in estimates.

The estimation uncertainty is also closely linked to the efforts required to the Develop estimate and thus it is also linked to aspects that negatively influences the propensity to undertake Develop estimate i.e. the costs involved but also the information availability. High input subjectivity in the most basic sense, indicate that the inputs needed to develop the estimate are not directly observable. In effect this means the appraiser must explore other plausible relationships that could provides indications of the fair state of the unobservable input, thus essentially increasing the overall task complexity and efforts required. Depending on the input needed, there might be more or less established methods. For example in forecasting future cash flows of an entity, there are certain techniques and data points that are commonly used to provide a sense of the fair state of the unobservable input such as publically available forecasts of overall industry development (although, these of course are estimates of unobservable data themselves).

In a stylised view we would expect that a high estimation uncertainty would contribute to a high RMM thus increasing the auditors propensity to undertake Develop estimate. However, especially for cases where the input subjectivity is high, the information asymmetry in the client auditor relationship becomes very important for the auditors propensity to Develop estimate, and the auditor's only describe Develop estimate for extreme risk situations for such account balances.

As for HUAEs such as impairment tests, the valuation[44] will be dependent on a high degree of entity-specific information, which will often have to be obtained from the client. Consequently the auditor will want to Develop estimate when the input subjectivity is high as it drives the RMM, but in those situations the auditor is the least suitable to do so. We refer to this as the information availability effect. In essence, the efforts required gathering data in order to Develop estimate with reasonable precision for impairment issues would be to costly in relation to the potential gain of doing so, especially as several respondents argue that that information would come from the client anyways, reducing the independence of Develop estimate.

This also highlights a contrast among the respondent's descriptions. From the interviews, where some interviews are focused on impairment issues and others on financial instruments, we also notice a pattern that auditors describe being more positive towards the use of Develop estimate for financial instruments. One respondent more explicitly described this very view:

> *"If we move away from the impairments tests, but focus on the financial instruments. In those cases we have totally different possibilities to develop our own estimate. We do that from time to time."* *(Auditor, Senior Manager)*

Thus, during audits of financial instruments, it's not predominantly in the extreme uncertainty cases that the respondents describe undertaking the Audit response Develop estimate.

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[44] Assuming that value in use is higher than the net realisable value.

A few respondents also described Developing estimate for financial instruments that in contrast to these high risk and high uncertainty cases, represented quite the opposite, i.e. estimates that instead are characterised by a low level of estimation uncertainty, and where the risks involved are substantially lower. This difference might be explained by the availability of non-subjective easily accessible information, essentially limiting required effort and increasing expected procedure precision, making the Audit procedure *reperformance* an efficient alternative.

Thus, in a wider perspective, including also the less uncertain accounting estimates, the relationship between estimation uncertainty and the propensity to Develop estimate gets even more entangled, resulting in a non-linear relation to the overall estimation uncertainty and the input subjectivity in particular. In some cases, where the information required for the estimation is publically available and observable and where the precision of the output is high, indicating a low overall estimation uncertainty, auditor's often describe Develop estimate as a way to reperform the client's estimation process as just described. On the other end of the scale, where estimation uncertainty instead gets high, contributing to the overall risk, we note that some respondents again describe undertaking Develop estimate as the valuation complexity increase for certain high-risk cases where the high cost of Develop estimate is warranted to manage that risk.

5.3 Are there different levels of Develop estimate

During the interviews some respondents voiced concerns towards the delimitation of the Audit response Develop estimate. Several respondents highlighted demarcation issues and discussed potential interpretations of what could be considered Develop estimate. One of the respondents showed frustration in the attempt to categorise whether the auditor generally undertook this Audit response:

> *"What is our own estimate? If I start with the client's model, I react to some of the assumption and change the growth from 4 % to 2 % and save a new file, have I then developed an estimate? We end-up splitting hairs about what is really [Develop estimate] and what's a test of the client's model." (Auditor, Manager)*

The example indicates there might be a confusion of concepts related to the Audit responses, especially the distinction between Develop estimate and Test management's estimate. During the interviews we observe a number of different descriptions of Develop estimate and several respondents discuss potential interpretations of Develop Estimate. These are provided below:

- A few respondents describe estimates in connection to risk assessment procedures. In such cases various preliminary analytical procedures are commonly carried out. The definitions of such an estimate varies, e.g. respondents refer to "ball-park figures", "something to hold on to", "initial assessments" etc. These are primarily developed with limited effort and primarily used to assess risks.
- A few respondents describe that they use multiples or comparables to develop a "quick" estimate of the value to identify a reasonable range of expected values.
- One respondent suggested that internal publications, containing benchmarks or guidelines developed by internal valuation experts and provided to the auditors, could be viewed as Develop estimate.
- A few respondents discuss headroom assessments as a potential interpretation of Develop estimate, as they generally look for headroom in order to assess the potential range of acceptable differences that would not result in impairment.
- Several respondents describe different ways of using sensitivity tests to evaluate the client's estimate. Generally the respondents refer to this as stress tests of the client's model.
- Some respondents indicate that they employ a valuation expert to Develop estimate as a complementing Audit response when they consider the client's estimate to be highly uncertain and as a result Test management's estimate does not provide sufficient comfort.
- The valuation experts further broadened the scope of the Develop estimate concept by describing developing a specific estimate for individual components or inputs to be used in the valuation model. Most often such estimations could include estimations of the discount rates used for impairment testing or similar components.
- One auditor provided an theoretical interpretation by arguing that through the Audit procedures conducted throughout the audit process the audit team continuously develop and narrow down a hypothetical range until it's sufficiently small to conclude whether the client's estimate is reasonable.

In the application guidance of ISA 540 we also find suggestions of how auditors could Develop estimate. More specifically, the standard mention four potential ways to undertake Develop estimate:

- *"Using a model, for example, one that is commercially available for use in a particular sector or industry, or a proprietary or auditor-developed model.*

- *Further developing management's consideration of alternative assumptions or outcomes, for example, by introducing a different set of assumptions.*
- *Employing or engaging a person with specialised expertise to develop or execute the model, or to provide relevant assumptions.*
- *Making reference to other comparable conditions, transactions or events, or, where relevant, markets for comparable assets or liabilities."*

(IAASB 2008b, para. A91)

These various explanations and descriptions serve to highlight the fact that there is a large variation in how auditors undertake Develop estimate and adds to previous research by highlighting that Develop estimate is a multifaceted Audit response, with several important dimensions.

Further, previous studies have focused on the relative usage frequency of each Audit response individually, we instead suggest a categorisation of different variations of the Audit response Develop estimate, describe their characteristics in terms of these dimensions, their potential application in the Audit of HUAEs and their use in relation to other Audit responses.

It should also be noted that ISA 540 provide a definition of the auditor's point estimate or auditor's range:

- *"The amount, or range of amounts, respectively, derived from audit evidence for use in evaluating management's point estimate."*

(IAASB 2008b, para. 7(b))

This definition is not very restrictive and consequently most of the descriptions provided by the auditors could align with the provided definition. The delimitation of what constitutes developing an estimate according to this definition is perhaps mostly of academic importance. Still as will be demonstrated, different variations are more frequently discussed and in addition they vary considerably in efforts spent, expertise required and the purpose for which they are conducted. Ultimately this will affect the efficiency and effectiveness in response to different levels of RMM.

5.3.1 Four approaches to Develop estimate

The respondents' suggested variations of how an estimate may be developed could in a stylistic way be interpreted to vary in two dimensions, dependence and precision. The ways to Develop estimate suggested in ISA 540 indicate that the precision of the estimate and how the estimate is developed may vary, whereas previous research has indicated the importance of starting from a clean slate in order to maintain the auditor's independence. The respondents' examples highlight that these factors could be combined to formulate different approaches to undertake the Audit response. More specifically, the approaches have individual characteristics as they vary in dependence and precision.

In the precision dimension, the estimate will vary in terms of the range of the output. A narrow range will imply a higher precision and a wider range will result in a lower precision. In terms of dependence the main focus in previous studies is if the estimate is developed from a clean slate or if it starts in the management's model.

This simplification of the dimensions is determined by a number of underlying characteristics, which sum up to the relative precision and the dependence in each respective approach, but also the underlying estimation uncertainty inherent in the estimation process. The characteristics could be looked upon as considerations that will have to be determined by the auditor when forming its Audit procedures that he/she will carry out. Therefore drawing from the responses in the interviews and the application guidance of ISA 540 we observe that the two dimensions are functions of the following overall considerations:

- Starting point – whether the estimation process starts from management's model or from a clean slate. A clean slate could also refer to a standardized model used by the audit team. This consideration has a close connection to the dependence dimension.
- Having seen management's model – whether the person making the estimate have seen the account balance or the details of management's estimation process i.e. if that person risk being influenced or anchored. This consideration has a close connection to the dependence dimension.
- Time – in terms of hours used to develop the estimate. A higher number of hours spent indicates that the audit team is developing an estimate with higher precision. This consideration has a close connection to the precision dimension.
- Amount of collected data – how extensive is the effort to collect information to be used in the valuation. A higher precision implies that the audit team considers alternative sources of information and search for both external as well as internal sources of information. This consideration has a close connection to the precision dimension.
- By whom – if it is an enlisted valuation expert or an auditor that develop the estimate.
- Type – if it is assessed using a valuation model or a market comparable. However, this is dependent of the existence of relevant comparables.

- Specificity – if it is the account balance as a whole, one single item or one of the single inputs to be used in the model. The estimate does not only have to involve the account balance as a whole, but could also relate to one single item or an individual input of the valuation model, e.g. the discount rate.

Through the respondents indications we observe that the combination of the two dimensions will establish four approaches, which are depicted in exhibit 6. These approaches are defined by their combinations of the two dimensions, nevertheless there might be an infinite amount of potential variations of theses approaches as the auditor determine the different considerations, these should be referred to as individual Audit procedures. As auditor do not carry out approaches but rather specific Audit procedures the approaches serve as a systematisation of the general characteristics of the Audit procedures described by the respondents. E.g. when the respondents discuss undertaking Develop estimate using the Audit procedure sensitivity analysis the starting point will be the management's model and therefore be dependent on management's estimate. In addition the Audit procedure analysis will not require a high amount of collected data or time spent and therefore likely result in a low precision of the output. Therefore we map out the most significant consideration associated with each Audit procedure that has been described by the respondents in exhibit 7.

By illustrating the Audit procedures and examining the considerations made by the auditors we observe that the auditor have carried out similar Audit procedures in some cases but with slightly different considerations. These are examples of where the purpose of carrying out the Audit procedure will affect the considerations made. We therefore observe that the main distinction between what the auditor has done will be determined by the purpose of undertaking the Audit procedure. The purpose of the Audit procedure therefore describes different situations when the different approaches to Develop estimate may be appropriate and consequently also describe *why* rather then *how* the auditor has undertaken Develop estimate.

5.3.2 Assess appropriate Audit procedure using the purpose to Develop estimate

By providing a more nuanced discussion of what is to be regarded as the Audit response Develop estimate into the four approaches we are able to indicate under what circumstances an auditor would carry out each of the approaches. As described in in exhibit 7 the respondents' considerations, essentially determining how they have carried out the Audit procedures will be closely connected to why they have chosen to Develop estimate. These purposes add on to the distinction of the Audit procedures, as there is an obvious connection between why the auditor would carry out an Audit procedure and how it will be formed, i.e. the precision and dependence of the Audit procedure. Depending on what the auditor aims to achieve the considerations made will make each approach prove more suitable under certain circumstances. Therefore we provide an extended discussion on the purpose of carrying out the Audit procedures.

5.3.2.1 To increase the efficiency or effectiveness

When the purpose of the Audit procedure is to increase the audit efficiency in low estimation uncertainty cases or to increase audit effectiveness of high-risk cases by adding additional comfort, as described in section 5.2.3, it would be appropriate to Develop estimate using the Audit procedure reperformance of the management's estimation process. However this is conditioned on the fulfilment of a number of criteria.

A reperformance of the client's work is one of the most reliable forms of audit evidence the auditor may obtain (Eilifsen et al. 2013, p. 140). In the audit of HUAEs the auditor can through the Audit procedure reperform the estimation process and if the outcome of the auditor's reperformance is the same as the client's estimate the auditor will have obtained highly reliable audit evidence in its evaluation of the client's estimate. In addition, the Audit procedure reperformance is theoretically more efficient compared to other substantive tests (Eilifsen et al. 2013, p. 141).

To Develop estimate through the Audit procedure reperformance is however challenging in the audit of HUAEs. During a majority of the interviews the discussion on the Audit response Develop estimate is centred on the Audit procedure reperformance of the management's estimation process. I.e. the respondents argue that to be able to reperform the management's estimation process the auditor will need reliable and available information. Therefore to Develop estimate through the Audit procedure reperformance when the purpose of the test is to increase efficiency will be dependent of the following criteria; first, the purpose of the Audit procedure reperformance is to arrive at the exact, or close to exact, same outcome as the client. Therefore there will have to be a low output imprecision in order to execute the Audit procedure. Secondly, the possibility to develop such an estimate will be dependent on the availability of information, as if there is a substantial information asymmetry due to the requirement of entity-specific assumptions the auditor will not be able to carry out the Audit procedure effectively without reducing the information asymmetry, essentially decreasing efficiency through higher costs. Under the circumstance where the auditor would have access to input data and the outcome of the process will be precise the Audit procedure reperformance will be both the most efficient as well as a highly reliable Audit procedure to carry out.

This Audit procedure is the most closely related to our discussion in section 5.2. The respondents indicate that they do carry out this Audit procedure for financial instrument, i.e. the efficiency case, but will only carry it out for impairment tests of goodwill in extreme-risk situations, i.e. the effectiveness case. Nevertheless, in the situation where the criteria are fulfilled the Audit procedure reperformance could therefore be used as a substitute to the Audit response Test management's estimate in the audit plan, if the purpose is increase the efficiency. In addition it could be used as a complement to Test internal controls, as the client in such cases might potentially have effective internal controls.

5.3.2.2 To alienate from management's estimate

Some of the auditors recognise the potential benefit of Develop estimate to handle RMM. These respondents prominently describe that they would undertake Develop estimate in two separate cases. When they would want to maintain their independence and when there are deficiencies in management's estimation process.

When the RMM stem from the risk of being influenced by management's estimate previous research has advocated that Develop estimate is a preferable way to maintain the auditor's independence (Griffith et al. 2013). Therefore it would be favourable to Develop estimate when the purpose of the Audit procedure is to alienate oneself from the management's estimate to prevent being influenced by their assumptions. To achieve this purpose the auditor will have to Develop estimate before having seen the client's estimate. This will result in that the auditor will have to develop an independent, but not necessarily a precise estimate as the central consideration is to establish the estimate from a clean slate. A few respondents describe that they would carry out the Audit procedure independent range in such situation.

Moreover if the purpose is to alienate oneself from the management's estimate because the client's valuation expertise is insufficient, the auditor could follow the same train of thought and carry out the Audit procedure independent range. For this purpose several respondents indicate that they often use this Audit procedure, especially for individual inputs.

However, the Audit procedure independent range is generally developed through enlisting a valuation expert to carry out the Audit procedure. As described by the respondents the auditors typically send over a valuation model together with a comment about the scope of the assignment to the valuation expert and describe whether they feel uncertain about the management's estimate. To extend the potential problem setting, this could theoretically result in a second level of complexity, as the auditors will have a potential influence over the task framing of the valuation experts' assignment. Therefore if the Audit procedure independent range is developed using the help of a valuation expert the auditor will, in the case of an alienation from the client's potential influence, have to avoid transmitting potential bias to the valuation expert.

5.3.2.3 To add comfort in high-risk situations

To Develop estimate may also prove useful when the auditor has identified a high level of RMM and consequently would like to carry out more Audit procedures to add comfort. This is the most commonly described situation where the auditors indicate that they would undertake the Audit response in connection to HUAEs. To do so the auditors describe using the Audit procedure second opinion to focus on the inputs that contain most risk by establishing a point estimate starting from the client's model. Generally this is carried out using an internal valuation expert, but in certain extreme high-risk situations the auditor would also assign an external valuation expert to get a third opinion.

As the Audit procedure second opinion is carried out using the client's model it will most frequently be used as a complement to Test client's model after having assessed that additional Audit procedures are needed. And consequently the potential risk of being anchored by the client's estimate is still in play as it is developed using the client's model as starting point.

5.3.2.4 To assess risks and determine additional Audit procedures

In the audit of HUAEs, especially in the case of impairment tests of goodwill, the auditor will want to identify risky inputs and decide whether additional Audit procedures will have to be performed. A few of the respondents refer to different uses of the Audit procedure stress tests to do so, mainly in the two forms of headroom assessments and sensitivity analyses. These could be argued to be the most basic Audit procedure associated with Develop estimate and are also one of the main sources of confusion the Audit procedure stress test could also be interpreted as being used as a risk assessment procedure in the planning stage of the audit, or as a procedure included in Test management's estimate. As indicated by the respondent in the initial presentation of this section there will be a subjective interpretation of what is to be considered to Develop estimate when using the Audit procedure sensitivity analysis. However, based on the application guidance in ISA 540 we interpret *"Further developing management's consideration of alternative assumptions or outcomes, for example, by introducing a different set of assumptions.*" (IAASB 2008b, para. A91) as a way to Develop estimate using the Audit procedure stress test, but this could be argued to mark the outer boundary of what is to be regarded as the Audit response Develop estimate and the distinction towards the Audit response Test management's estimate.

The respondents mentioned using the Audit procedure headroom assessment in connection to impairment tests of goodwill primarily to detect RMM and to assess whether additional Audit procedures had to be carried out. However the Audit procedure sensitivity analysis is mainly mentioned to identify the most risky inputs. To carry out the Audit procedures headroom assessments or a sensitivity analysis is therefore used in combination with Test management's estimate in order to increase efficiency of that Audit response. Nevertheless to Develop estimate using the Audit procedure stress test could be an efficient way to Develop estimate to challenge the client's estimate as the auditor may start off from the management's valuation model and develop an imprecise estimate and therefore it is similar in that regard to the Audit procedure of using a market comparable.

Compared to the reperformance of the management's estimation process the Audit procedure stress test is not affected by a potential information asymmetry, as it primarily adds on external information to challenge the client's assumptions. When carrying out the Audit procedure stress test the auditor or valuation expert will start off in the client's model and use its own experiences and other external sources of information in order to detect risks or assess if additional Audit procedure are required. The Audit procedure stress test may therefore be appropriate when the input subjectivity and the information asymmetry are considered to be high as in the case of impairments tests of goodwill. Nevertheless will the Audit procedure stress test still be a dependent approach as the starting point is set in the client's model.

5.3.3 Implications

When discussing the relative frequency of undertaking the Audit response Develop estimate one should remember that the auditor do not carry out the Audit procedures individually. Rather the audit plan is dependent of a set of various Audit procedures where the primary Audit procedures are indicated to be associated with the Audit response Test management's estimate. The respondents indicate that they would Develop estimate if they have the possibility to do so and when it is highly important to the audit engagement. Consequently, the auditors undertake Develop estimate as a complementing Audit response.

Closely related studies (Griffith et al. 2013, Cannon & Bedard 2014) have found contrasting evidence on the use of the different Audit responses suggested in ISA 540 and thus called for future research on the matter. Cannon & Bedard (2014, p. 32) concluded that the variation in previous findings and the important implications for audit practice commanded further research to investigate how auditors conduct Audit responses related to accounting estimates. Griffith et al. (2013, p. 52) similarly encourage future researchers to more fully theorising the problem and to examine the costs and benefits to suggest cost efficient ways to develop independent estimates.

In relation to these calls we believe that our study has contributed to previous research in two ways. Firstly, our findings suggest that there's no obvious distinction between the two Audit responses Test management's estimate and Develop estimate which might help explain the conflicting findings since there appears to exist a confusion of concepts. Secondly and most importantly, the typology we have provided in this study is a first step towards such cost efficient suggestions sought by Griffith et al. (2013) as it provides a framework that might aid future researchers design studies or internal audit firm methodology departments to formulate potential methods as well as analysing the benefits.

6 Conclusion

The overall impression of the auditors' attitudes towards the Audit responses provided in ISA 540 is that Test management's estimate constitute the main starting point in the audit of HUEAs and is typically described as the most efficient Audit response. Consequently, other Audit responses are primarily undertaken in certain audits were they are deemed more efficient or as complementary procedures in order to add further comfort when the RMM is high, i.e. on the basis of perceived added audit effectiveness. The other Audit responses are described to be more efficient in certain audits of financial instruments. Primarily this is related to audit engagements with large volumes of similar transactions. In those cases Test of controls is complemented with other responses such as Develop estimate. Secondarily in cases where the estimation uncertainty is low and information is publically available such that Develop estimate through a reperformance of management's estimation process requires less effort than directly reviewing the client's calculation, i.e. Test management's estimate. However, the latter does not qualify as an example of HUAEs but merely serves as an interesting source of contrast.

Even though the attitudes towards Develop estimate vary, there are some recurring views. The respondents most commonly describe preferring other Audit responses than Develop estimate due to the perceived high cost of undertaking the Audit response, their view on the auditor's role as a reviewer rather than an appraiser and the lack of available information. The latter primarily being the case for HUAEs, which require entity-specific information, such as impairment tests of goodwill that increase required effort to Develop estimate and reduce the perceived independence in doing so. However, the respondents describe having a more favourable attitude towards Develop estimate when the RMM is particularly high indicating that a high assessed RMM might not only affect the efforts allocated to the individual Audit responses, but also the selection of Audit responses. The RMM is primarily described as resulting in the auditor doing more Audit responses, of which the Develop estimate could be one. The respondents more frequently describe specific sources of risk that would increase their propensity to undertake Develop estimate such as estimation uncertainty, a low level of valuations expertise or deficiencies in the estimation process, as well as the risk of being influenced by the client. Estimation uncertainty more specifically comprise input subjectivity and output imprecision, although both these factors contribute to the propensity to Develop estimate, input subjectivity instead appears to have a negative effect on the propensity to undertake Develop estimate in cases where the information asymmetry favours the client, a phenomenon labelled the information asymmetry effect.

During the interviews we interpret a confusion of concepts in the discussion whether the auditors' generally undertake the Audit response Develop estimate or not. The respondents provide a variety of examples to how they interpret the definition of what is to be regarded to undertake Develop estimate. Therefore we provide a stylistic model of how the frequently mentioned dimension of how the Audit response may vary. We suggest that Develop estimate can be undertaken using varying precision and dependence. Drawing from the respondents described experiences of Develop estimate we establish four approaches from combinations of precision and dependence. These approaches of Develop estimate nuance the discussion of what is to be regarded to undertake the Audit response.

By combining these four approaches with different purposes to why auditors describe undertaking Develop estimate we define appropriate circumstances under which it would be beneficial to utilise these approaches. For example if the purpose is to alienate oneself from the client's estimate, either to maintain its independence or if the client's valuation expertise is assessed inappropriate the auditor will have to carry out the Audit procedure with maintained independence. Therefore we observe that it would be beneficial to carry out the Audit procedure independent range as it is established using less amounts of precision compared to the Audit procedure reperformance. When the purpose is to assess which inputs to focus additional Audit procedure on or whether additional Audit procedures will have to be performed the auditor commonly describe that they carry out different types of the Audit procedure stress test, where a lighter form is referred to as a headroom assessment. As introducing a new set of data is to be regarded to undertake the Audit response Develop estimate we argue that the Audit procedure stress test of the client's model is an approach of Develop estimate, but it is probably to be regarded the outer boundary of what is included in the definition of the Audit response.

In summary, we hope to have provided a more nuanced discussion on the challenges in the audit of highly uncertain accounting estimates. The discussion is centred on the auditors' attitude towards the responses to assessed risk of material misstatements where we primarily have intended to shed further light on why the auditors undertake each of the Audit responses in general and why they would undertake Develop estimate specifically.

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8 Exhibits

Exhibit 1 - Overview of audit process according to ISA 540 (condensed version)

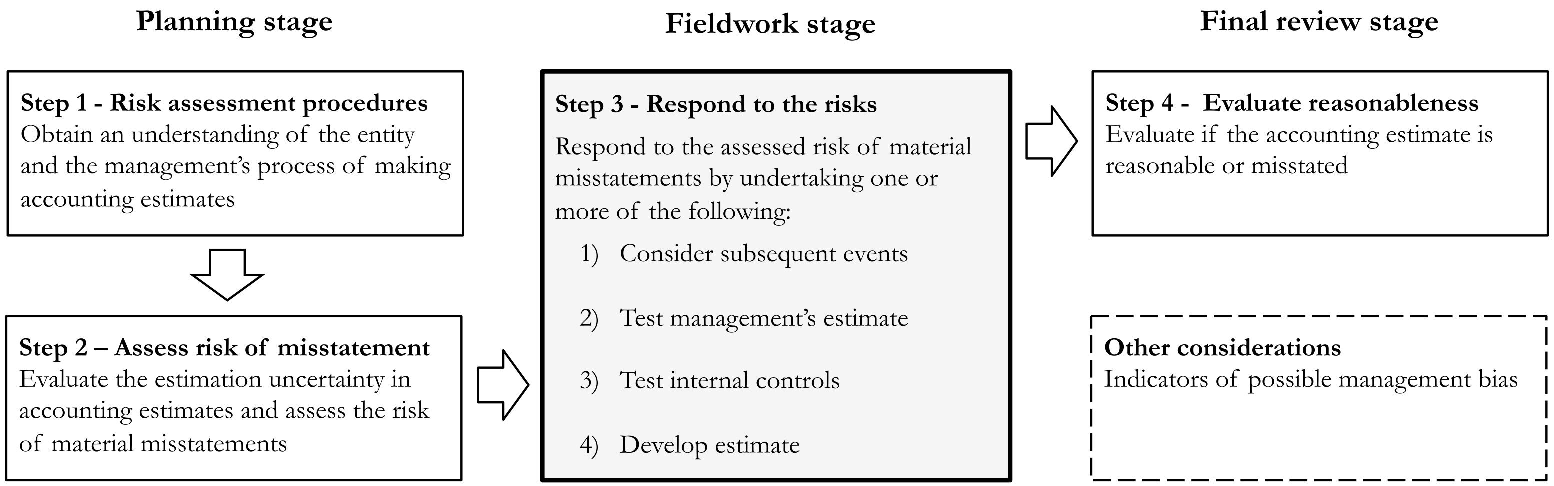

Exhibit 2 - Overview of the audit process according to ISA 540 (detailed version)

Step 1 - Additions to the overall audit risk assessment procedures
+ Obtain an understanding of the following to provide a basis for assessing the risk of material misstatement of accounting estimates:

1) Requirements of applicable financial reporting framework

2) How management identifies conditions that give rise to accounting estimates in the financial statements

3) How management makes the accounting estimates and an understanding of the data it is based on (methods of measurement, controls, use of experts, assumptions, changes in methods, estimation uncertainty)

4) Outcomes of estimates included in the prior period for the purpose of the current period

Step 2 - Additions to the process of identifying and assessing risk of material misstatements
+ Evaluate the degree of estimation uncertainty associated with an accounting estimates

+ Determine if any estimates with high estimation uncertainty give rise to significant risks

Step 3 - Additional responses to the assessed assertion level risks of material misstatement
+ Consider the need for specialised skills or knowledge for this step
+ Based on the risk of material misstatement determine appropriateness of:

1) Management's application of the financial reporting framework and

2) Method for making accounting estimate

+ In response to the risk of material misstatement and the nature of the estimate undertake one or more of the following:

1) Determine whether subsequent events provide audit evidence

2) Test how the management made the accounting estimate and the data on which it is based (evaluate appropriateness of methods and assumptions)

3) Test the operating effectiveness of the controls over the accounting estimate

4) Develop a point estimate or a range to evaluate management's point estimate (evaluate any significant differences from management's estimate)

Step 3 b - Additional procedures when responding to significant risks
+ For accounting estimates that give rise to significant risk, evaluate the following:

1) How management has considered alternative assumptions and addressed estimation uncertainty

2) Whether significant assumptions are reasonable

3) Where relevant to the reasonableness of significant assumptions, management's intention to carry out specific courses of action and its ability to do so

+ If management has not adequately addressed the estimation uncertainty, if necessary, develop a range to evaluate reasonableness of accounting estimate

Step 4 - Evaluate reasonableness
Evaluate on the basis of the audit evidence if the accounting estimate is reasonable or misstated

Other considerations – Indicators of possible management bias
Review the judgments and decisions of management to identify indicators of possible management bias

Exhibit 3 - Summary of application guidance on the choice of appropriate Audit responses in ISA 540

Audit response	Consider Subsequent events	Test management's estimate	Consider internal Controls	Develop estimate
Characteristics	When expected to: Occur and, To provide audit evidence that confirm or contradict the accounting estimate	For HUAEs developed through a valuation model that uses observable and unobservable inputs when: The estimate is derived from routine processing of data by the entity's accounting system Reviews of the client's previous estimates indicate that the client's process is efficient, and/or When the estimate is based on a large population of similar items that individually are not significant.	When: The estimate is derived from routine processing of data by the entity's accounting system Management's process for making the estimate is well-designed, implemented and maintained, for example suitable approval processes and/or	When: The estimate is not derived from routine processing of data from the accounting system Reviews of the client's previous estimates indicate that the client's process is not efficient Controls over the process is not well designed or properly implemented Subsequent events contradict management's estimate, and/or There are alternative sources or relevant data available to the auditor to which can be used to develop an independent estimate
Paragraph	A62	A68	A84	A87
Comment	Limited use for audits of HUAEs unless the subsequent event is a realisation of the estimated value in close connection to the measurement date as subsequent changes in conditions will invariably affect the value[45].	Thus, this Audit response seems suitable for audits of HUAEs according to the application guidance.	These indicators are not typically associated with HUAEs, however this will be dependent on the entity and account balance in question.	Notice, that the first four indicators are direct opposite compared to the indicators provided for the first three Audit responses, and they all indicate a poorly implemented estimation process.

[45] IFRS 13 for example prescribes "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date"

Exhibit 4 - Overview of the respondents

CONTEXTUAL INTERVIEWS

Respondent	Experience (y):	Title:	Authorised:	Valuation expertise:	Interview focus:	Length (min):
1	20-25	Director	Yes		The use of experts in audits	65
2	10-15	Partner	Yes		Audit processes & confidentiality	55
3	10-15	Senior Manager	Yes		ISA 540 & audit methodology	70

FOCUSED INTERVIEWS

Respondent	Experience (y):	Title:	Authorised:	Valuation expertise:	Interview focus:	Length (min):
4	7-10	Manager	Yes		Financial instruments	121
5	25-30	Director	Yes		Goodwill & Financial instruments	67
6	7-10	Director		Yes	Goodwill & Financial instruments	39
7	4-6	Manager			Goodwill & Financial instruments	59
8	4-6	Manager	Yes		Goodwill	51
9	4-6	Manager	Yes		Goodwill & Financial instruments	76
10	10-15	Director	Yes		Financial instruments	87
11	4-6	Manager			Goodwill & Financial instruments	56
12	10-15	Senior Manager	Yes		Goodwill & Financial instruments	73
13	4-6	Manager	Yes		Financial instruments	57
14	25-30	Partner	Yes		Goodwill & Financial instruments	69
15	10-15	Senior Manager		Yes	Goodwill	70
16	10-15	Senior Manager	Yes		Goodwill	61
Average:	11					67

Exhibit 5 - Interview guide (condensed version)

Section	Description
1) Study introduction	The purpose of this section is to present the study to the respondent. We initially introduce ourselves and clarify the purpose of the interview, how highly uncertain accounting estimates (HUAEs) are defined, the objective of the interview, how the responses will be processed and how their responses will be kept confidential, the overall interview disposition, the type of questions asked and the expected length of the interview. We emphasise that any given response will only be shared with research team members and we will ensure that any information we include in our report does not identify the respondent. We obtain the respondents consent to audio-record the interview. Further, the respondents are encouraged to refer to specific experiences during the interview to make the responses more vivid. Lastly, any questions the respondent might have are answered.
2) Introductory questions	The respondents is asked about their background (e.g. current and past engagements, years of experience, title, authorisation etc.), experience with HUAEs and to identify 1-3 account balances[1] which they have audited and where these have been important in the audit engagement. We explain that these account balances will be used as references throughout the interview. The respondents are also asked to provide their view on the main challenge in the audit of HUAEs.
3) Questions on the audit process of ISA 540 and the Audit responses	The -are presented with the overview of the audit process (Exhibit 1). The respondents are asked if they agree with our illustration of the process, any comments in this stage were discussed to make sure that we agreed upon the structure and how they perceived it. For each of the Audit responses the respondents were asked if they normally undertake that Audit response in the audit of HUAEs. Respondents were then asked to explain the Audit response and to provide an example of how it could be implemented. Numerous follow-up questions on the implementation were asked in this section. Finally respondents were asked to indicate how they estimated frequency and importance of the different Audit responses.
Cross-road:	If respondent during 3) indicate that they <u>do not</u> undertake the response *Develop estimate* we proceed with section 4 i) If respondent during 3) indicate that they <u>do</u> undertake the response *Develop estimate* we proceed with section 4 ii)
4 i) Questions on the primary Audit response	Questions about the respondent primary Audit response to respond to the risk of material misstatement (e.g. which Audit response, how that Audit responses is undertaken, who undertakes it, if any valuation experts are used, if there are any differences between account balances[2] in terms of implementation or Audit response etc.) The respondents are encouraged to exemplify using their experiences from past audit engagements. Respondents are subsequently asked why they undertake that Audit response and why they did not undertake another Audit responses, this section often result in numerous follow-up questions.
4 ii) Questions on Develop estimate	Questions on the implementation of the Audit response Develop estimate (e.g. how it is developed, by whom, when, if any valuation experts are used, which information they use or tend to be unavailable, how precisely they Develop estimate, how they use the estimate etc.)
5) Questions centred on the views and attitudes towards Develop estimate	Questions about their views and attitudes towards the Audit response Develop estimate (e.g. why they do/do not Develop estimate). We present the respondents with a number of factors and ask if, and if so how, these factors affect their propensity to Develop estimate instead of their primary Audit response[3] (e.g. the degree of estimation uncertainty, the cost of undertaking the Audit response, the auditor's level of valuation expertise, the client's level of valuation expertise, information availability, the perceived audit efficiency and effectiveness, the time required to undertake the procedure, the guidance provided in internal audit guidelines). Lastly, respondents were asked how they think about the Audit response Develop estimate (followed by the pros and cons they identify)

[1] A list of HUAEs is provided to the respondent.
[2] The account balances identified during section 2).
[3] All respondents identified Test management's estimate as the primary Audit response. Consequently Develop estimate is discussed in relation to this Audit response.

Exhibit 6 - Illustration of the four approaches of Develop estimate sorted by relative Precision and Dependence

		Dependence	
		Independent	Dependent
Precision	Greater	Independent Precise	Dependent Precise
	Smaller	Independent Imprecise	Dependent Imprecise

Exhibit 7 - Detailed considerations of the four approaches of Develop estimate

	Reperformance (effectiveness case)	[Reperformance (efficiency case)]	Independent range	Using market comparable	Second opinion	Sensitivity analysis	Headroom assessment
Common example given	High-risk financial instrument	Level 2 financial instrument	Individual component (WACC etc.)	Any account balance	High-risk impairment test of goodwill	Any account balance	Impairment test of goodwill
Precision							
Precision (high or low)	High	High	Low	Low	High	Low	Low
Dependence							
Dependence (high or low)	Low	Low	Low	Low	High	High	High
Considerations							
Starting point (clean slate or management's model)	Clean slate	Clean slate	Clean slate	Clean slate	Management's model	Management's model	Management's model
Having seen management's model (before or after)	Before	Before	After	Before/After	After	After	After
Time (high or low)	High	Low	Low	Low	High	Low	Low
Amount of collected data (high or low)	High	Low	Low	Low	High	High/Low	Low
By whom (auditor or expert)	Valuation expert	Valuation expert	Valuation expert	Valuation expert	Valuation expert	Auditor/valuation expert	Auditor
Type (valuation mode or market comparable)	Valuation model	Valuation model	Valuation model	Market comparable	Valuation model	Valuation model	Valuation model
Specificity (account balance, single item or single input)	Single item	Single item	Single input	Account balance/Single item	Account balance	Single item	Single item
Interpreted approach	Independent Precise	Independent Precise	Independent Imprecise	Independent Imprecise	Dependent Precise	Dependent Imprecise	Dependent Imprecise