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IAS 39 and Biases in the Risk Perception of Financial Instruments

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IAS 39 and Biases in the Risk Perception of Financial Instruments

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There is a wide variety of reporting choices when presenting and disclosing financial instruments under IFRS. Behavioural theory suggests that the label under which a financial instrument is presented affects the risk perception of investors. We analyse in an experimental setting how and why the European reporting practice of presenting financial instruments by measurement categories affects non-professional investors' risk perception. We find that risk perception depends on management's choice of a measurement category and not solely on the dimensions of the underlying cash flows. This bias results from an interaction of availability and representativeness effects and calls into question the acceptability of a presentation by measurement category as allowed by IFRS 7.

JEL-Classification: C91, G11, K22, M41

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1 Introduction

This study examines accounting information on financial instruments presented in accordance with IFRS 7 and IAS 39. As accounting for financial instruments under IFRS leaves management with a substantial degree of discretion in the choice of a reporting format and most managers choose to report the instruments by measurement categories, we seek to identify biases in investors' risk perception that are caused by this discretion. In this context bias means that a specific economic underlying such as a cash flow is perceived to be of different risks if presented in different ways. On the one hand, our study is motivated by analytical research on financial statement presentation, which models the effect of the presentation format on risk perception as if investors were either not fully rational (Hirshleifer & Teoh (2003)) or only asymmetrically informed (Dye & Sridhar (2004)), as well as by archival research measuring differences in the effects of informationally equivalent forms of disclosure (e.g., Riedl & Srinivasan (2007) and Aboody (1996), see Koonce & Mercer (2005) for an overview). On the other hand, our study is motivated by behavioural research on the effects of accounting information on investors' judgments and decisions (e.g., Elliott (2006), Koonce, Lipe, & McAnally (2005), and Hopkins (1996), see Kachelmeier & King (2002) for an overview). Our study shares the use of the experimental method with this latter stream of literature.

A common characteristic of previous literature that dealt with presentation of financial instruments is that it analyses reporting formats that are either not allowed or not applied under IFRS. Weber, Siebenmorgen, & Weber (2005) find that presentation of financial investments by asset names causes familiarity effects, which bias investors' expected risk assessment. Koonce, McAnally, & Mercer (2005) analyse the risk perception of different financial items presented by product types. Their findings suggest that product-specific labels affect risk perception and that the presentation of a specific cash flow as a financial derivative increases the risk investors associate with that cash flow. Product-specific presentation is, however, a reporting format that is not widely applied in Europe. A majority of European banks (51%) rather uses the measurement categories provided by IAS 39 as line items on the balance sheet. In extension of

Koonce, McAnally, & Mercer (2005), our study therefore tests the effect of actual reporting practice on risk perception so that we are able to apply those prior findings to a setting which is close to European accounting practice. We construct a theoretical framework that explains how measurement bases affect risk perception in a way similar to product labels. Our study is also related to Hirst, Hopkins, & Wahlen (2004) since it also analyses the effect of the presentation of the fair value category on risk judgment. Unlike Hirst, Hopkins, & Wahlen (2004), however, our study refers to the effects of fair value measurement via the presentation format of the financial statement instead of its effects via the income statement.

The first main result of this study is that investors infer a different level of risk from financial reports of economically identical investments in financial instruments if different measurement categories are applied and presented. In particular, a company's use of the fair value option (FV) or of the loans & receivables (L&R) category is perceived to be of the highest risk. The presentation of a financial derivative in the held-for-trading (HFT) category also increases perceived risk. This latter effect, however, is partly offset by the off-balance-sheet approach in accounting for certain derivatives and more specifically by the corresponding improvement in the debt-to-equity ratio. When investors receive footnotes along with the balance sheets and learn about the actual financial instruments contained in the reported category, they significantly change their risk assessment. A regression analysis reveals that the direction and the extent of this change are associated with behavioural variables describing the familiarity with investment decisions or the ease with which negative or positive outcomes of particular investments are recalled.

Behavioural explanations for individual risk assessment of measurement categories are the second main result of the study. We find that cognitive availability of information about the recent subprime crisis increases the perceived risk through the use of the L&R category and that availability of information about catastrophic derivative losses increases the perceived risk through the use of the trading category, even though in both cases no investor has any information on the financial product actually accounted for in the respective category. This result suggests that investors, in the absence of footnotes, intuitively infer the type of financial products contained in the reported measurement categories and that they base their risk assessment

on this inference. The availability effect identified in previous literature on product-specific risk assessment therefore also indirectly explains biases in the risk perception of those two measurement categories. Risk assessment of the fair value option is, however, not affected by the availability of product-specific information. This finding suggests that natural cognitive availability of negative information on fair value measurement directly causes a bias in the risk perception of the use of the fair value option.

We contribute to the literature about behavioural aspects of accounting in several ways. Firstly, we are able to construct a framework based on behavioural theory that explains how the presentation of measurement categories can result in a biased risk perception in a way that is similar to the presentation of product-specific information. Secondly, we find potentially negative effects of actual European accounting practice on risk perception in an experimental setting. More specifically, our findings suggest on the one hand a general upward bias in investors' risk perception of assets measured at fair value. On the other hand they suggest an upward bias in risk judgment of the L&R category if information on the recent subprime crisis is cognitively available.

The results are of academic as well as practical importance. In the case of IAS 39 and IFRS 7, there is an ongoing and controversial debate on the standard (Armstrong, Barth, Jagolinzer, & Riedl (2007) and Spooner (2007)). Accounting for financial instruments is one of the IASB's core projects that will result in at least one more major revision of the accounting principles (International Accounting Standards Board (2008) and International Accounting Standards Board (2006)). Experimental findings on the effect of the disclosure format as prescribed by the extant standard on investor's risk perception are therefore of the utmost importance to the improvement of the standard. Since the standard allows the use of accounting procedures that result in ambiguous or misleading information, it is not apt to achieve the theoretical objective of financial reporting because reporting such information is at least contradictory to the IASB's main objectives of comparability and decision-usefulness (IFRS F.12). Generally speaking, the identification of such shortcomings is the first step in improving the information content of financial reports. Furthermore it is a call for standard-setting activity to prohibit the European practice

of presenting financial instruments by measurement categories. Besides, both inherently ambiguous and deliberately managed information might induce wrong investment or divestment decisions by individuals and thereby affect market prices wrongfully. Our research therefore also contributes to the understanding of the individual reception of accounting information.

The remainder of the paper is organized in four more sections. In Section 2 we develop our theoretical approach with respect to extant literature on behavioural research in accounting and derive hypotheses from it concerning the effect that measurement categories of financial instruments have on the risk perceived by investors and concerning the factors that drive these risk judgments. Section 3 presents the design of our study and the procedures we applied and in section 4, we present and discuss our results. Conclusions and implications of our study are laid out in section 5.

2 Theoretical Framework and Hypotheses Development

Choices in the Disclosure of Financial Instruments under IFRS

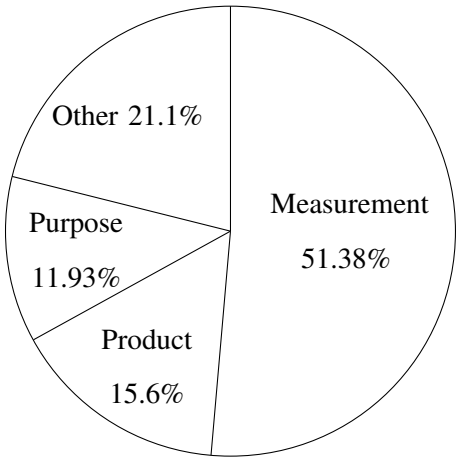
Virtually all balance sheet items of any bank's financial statement set up in accordance with IFRS are affected by the accounting principles underlying IAS 39 and so is a substantial proportion of any industrial company's line items. Thus hardly any other single accounting standard has a comparable impact on the way a financial statement is presented to investors. It is widely accepted that IAS 39 provides management with a substantial variety of accounting and reporting choices (Gebhardt, Reichardt, & Wittenbrink (2004); Walton (2004)). One of these is the choice of the classification that is used to present financial instruments on the face of the balance sheet.

In the case of financial institutions such as banks, three general possibilities for presenting financial instruments in a financial statement can be identified. The first possibility, though not widely applied in IFRS financial statements of European banks (Figure 1), is a presentation by investment purpose that distinguishes, e.g., between a hedging and a trading instrument or

between a long-term and a short-term investment. The second possibility is a presentation by type that distinguishes, for example, between stocks, bonds, and derivatives. This presentation format was advocated by the Joint Working Group of Standard Setters which aimed particularly at a distinction between derivative and non-derivative instruments. It later recommended the application of this format in the draft standard on accounting for financial instruments (Joint Working Group of Standard Setters, 1997, BC 5.1-5.5). The detail of information about derivatives usage provided by banks indeed seems to have improved in the 1990s – at least in the US (Edwards & Eller (1996, 1995)). There is some convincing evidence that a distinction of financial instruments exclusively by their type will result in a biased risk perception by investors (Koonce, Lipe, & McAnally (2006, 2005); Koonce, McAnally, & Mercer (2005)). This may be one reason why less than one-fourth of European banks apply this format in their IFRS financial statements (Figure 1) and why disclosure of derivatives usage by banks is still considered to be incomplete (Woods & Marginson (2004)).

Figure 1:

Presentation formats used in financial statements of European banks
Source: Own data (sample of 109 banks from 28 European countries, 2006)



The third possible format, used by a majority of European banks, is a presentation by measurement category. IFRS 7 allows a bank to use those measurement categories as line items on the financial statement so that the choice of an instrument's measurement base does not only

affect the company's income but also presentation and disclosure. As the choice of a measurement base for non-derivative financial instruments is also left to the management's discretion even virtually identical companies, holding financial instruments of identical economic characteristics, could present financial statements that differ both in the measurement and in the labels of the individual line items. In the financial industry, economic identity can be established by exploiting the replicability characteristic of non-contingent financial derivatives such as interest-rate swaps or forwards. A company engaged in a derivative financial contract is obliged to categorise this contract as a trading instrument and to measure it at fair value through profit or loss even if it was actually acquired for hedging purposes (IAS 39.9). In order to circumvent this obligation, a company might enter into non-derivative lending and borrowing contracts that exactly replicate the future cash flows of the non-contingent derivative.[1] If a company opts for the use of non-derivative contracts, there is an accounting choice between three different measurement categories. A company can apply the fair value option, it can use the available for sale category (AFS) or it can classify the instruments as loans and receivables.

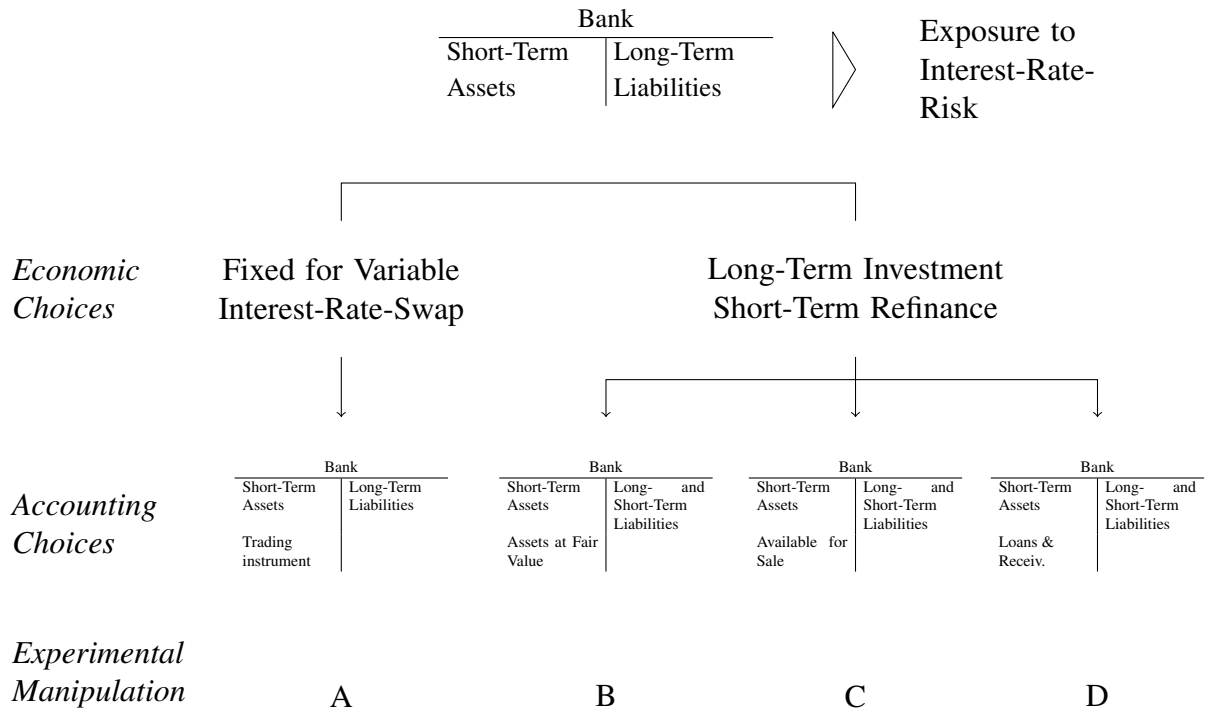
If the presentation by measurement categories in accordance with IFRS 7 is applied, this setting results in two major differences between the financial statements of economically identical companies. The first difference is the label of the balance sheet item presenting the financial contract. The second difference results from the accounting principle that the notional amount of the derivative is not recognised on the balance sheet since the company has to make only a relatively low (net) upfront payment whereas the lending and borrowing contracts are fully recognised on the balance sheet. This accounting principle is also known as the off-balance-sheet approach in accounting for financial derivatives. A real-world analogon to this setting is the asset & liability management of a commercial bank that is exposed to the risk of changing interest rates on the money market. The economic and accounting choices of such a bank, which we later exploit for our experimental manipulations, are summarised in Figure 2.

Biases in the Risk Perception of Financial Instruments Based on the Balance Sheet

[1] In fact, the economic risk is not exactly identical for the two different positions as the counterparty risk is somewhat lower for a non-contingent derivative than for a lending contract, see Hull (2006); Minton (1997). We do however neglect this finding in the due course of our analysis.

Figure 2:

Economic and accounting choices in the A&L management of a commercial bank



The disclosure choices identified above would not cause any harm if investors were able to recognise the economic identity of different companies. We do, however, seriously doubt such an assumption and we attempt to falsify it in our experimental analysis. Prior research shows that variation in presentation format and description of financial contracts affect investors' risk judgments by accentuating certain economic characteristics of the reported items. Therefore financial reporting principles have the potential to result in a biased risk perception of investors if they do not assure that economically like situations are reported alike (Gramlich, Mayew, & McAnally (2006); Koonce, Lipe, & McAnally (2005); Hodder, Koonce, & McAnally (2001); Kennedy, Mitchell, & Sefcik (1998); Hopkins (1996)). Our analysis refers to a framework of risk perception which is based on behavioural theory and that explains a bias that is caused by the disclosure of measurement categories under IAS 39. Thereby, a bias is defined as a difference in the perceived risk of economically alike companies which only differ in the accounting

and disclosure procedures applied.

In our framework, we expect investors to use two heuristics when judging the risk of a company that presents financial instruments by measurement categories. The two heuristics are representativeness and availability. Both heuristics are necessary for explaining risk assessment and potential biases. We expect representativeness to be used when investors translate measurement categories into types of financial instruments and availability to be used when investors judge the risk of these financial instruments. In prior research, availability is found to be employed when an individual evaluates the probability of a certain event by the instances of this event or by outcomes associated with this event that come to mind (Tversky & Kahneman (1973)). Observation of the application of this heuristic is complicated by the fact that individuals tend to rely on their subjective recall experience only they are sufficiently assertive of their knowledge, i.e. when these instances and associations are recalled easily (Schwarz & Vaughn (2002)). Ease of recall is also more likely to be used as a heuristic if the judgment task is of relatively low personal relevance to an individual (Grayson & Schwarz (1999)).

Our reference to the availability heuristic is motivated by prior accounting research suggesting that the perceived risk of financial instruments does not necessarily correspond to their economic risk alone but also to the labels attached to them. Koonce, Lipe, & McAnally (2005) for example show that a portfolio of financial instruments containing a swap is perceived to be riskier than a portfolio without a swap which generates exactly the same cash flows if it is explicitly stated that the first portfolio does contain a swap and that the latter does not. This effect is mitigated when cash flow and fair value exposures are made available. If, however, the swap in the first portfolio is described as being used as a hedge, the perceived risk significantly decreases as compared to an identical swap portfolio without this additional label. This effect is not mitigated after revealing economic exposure. Labels of financial instruments therefore affect perceived risk significantly by making different associations cognitively available.[2] The rather general association of derivatives usage with high risk is said to be due to investors'

[2] Koonce, Lipe, & McAnally (2005) argue that the label "hedge" emphasises the qualification of swaps as a means of insurance against risk.

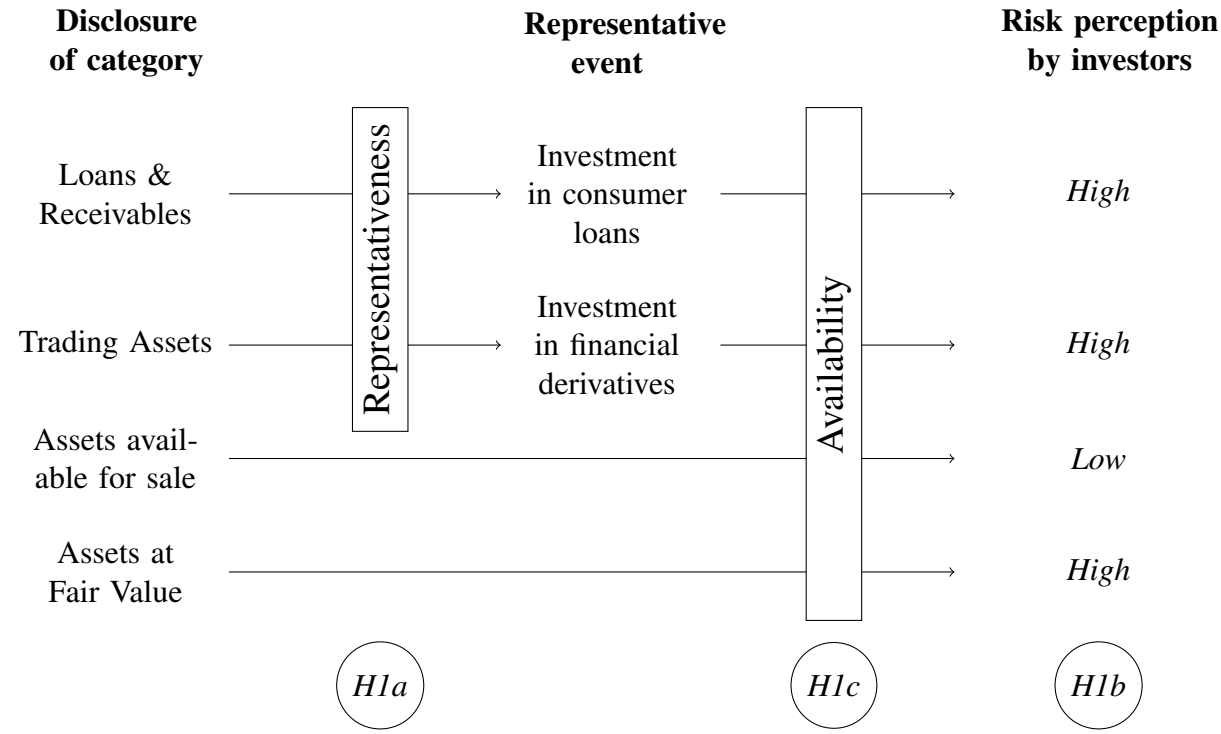
cognitive availability of substantial losses in derivative transactions as a result of broad and negative media coverage (Koonce, Lipe, & McAnally (2005)) and it finds further support in Chalmers & Godfrey (2004), Bodnar & Gebhardt (1999), and Vietze (1997). Still today the use of derivatives in speculative trading strategies is a regular topic of investment magazines. A recent example are the loss announcements by Fannie Mae, a US mortgage bank, that were broadly covered in the news. With respect to the balance sheet classification of hybrid financial instruments, Hopkins (1996) obtains the similar result that a labelling effect exists in the individual perception of financial information.[3]

Besides a replication of those results within the institutional setting of IAS 39, our contribution to this stream of accounting literature is an analysis of the effect of the recent international subprime crisis on the risk associated with consumer loans. Mortgage loans to private consumers are widely regarded as having triggered the international bank crisis in 2007 (Greenlaw, Hatzius, Kashyap, & Shin (2008) and Ryan (2008)). We argue that the extensive negative media coverage on the banks investing in this kind of contracts will result in the same effect which the negative media coverage of miscarried investments in derivatives had on the risk associated with financial derivatives. Cosequently we expect investors to associate a higher risk with investments labelled as consumer loans or derivatives than with other investments because both derivatives and consumer loans, due to extensive media coverage, are likely to be associated with negative outcomes (Figure 3). Whether individuals thereby rely on ease of recall or on content of recall, as it is distinguished in psychological theory (Schwarz & Vaughn (2002)), will not affect their judgments in this case since both the ease of recall and the content of recall are more likely to make the negative investment outcomes available than the positive ones.

The link to the actual disclosure scheme under IFRS, however, is still missing. That link is established by the heuristic of representativeness. This heuristic was first identified by Tversky & Kahneman (1974) and later applied by numerous studies in the field of behavioural finance to model the behaviour of individual investors (see, e. g., Brav & Heaton (2002), Shleifer (2000),

[3] Albeit without reference to behavioural explanations, Gramlich, Mayew, & McAnally (2006) show that balance sheet classification, in their natural setting the choice between "short-term" and "long-term" debt, is used by market participants to infer underlying economic characteristics of the reporting firms.

Figure 3:
Relationship between disclosure and risk perception



Barberis, Shleifer, & Vishny (1998)). The concept refers to the observation of investors basing their judgment of new information on its representativeness for certain events. If the given information is highly representative for an event, investors might overestimate the probability that this event occurred and, accordingly, underestimate the probability of other events which could produce the same information (Kahneman & Frederick (2002)). Applied to our setting, the concept predicts that, if a measurement category is regarded to be representative for an investment in a certain type of financial instruments, investors infer information about the company's risk exposure from the balance sheet disclosure of this category. Representativeness allows them do so even though they do not associate the category itself with a specific degree of risk.

In particular, we expect the HFT category to be representative for an investment in financial derivatives and the L&R category to be representative for an investment in consumer loans. An

investor, for example, upon learning that some company reports trading assets (HFT) assigns a high probability to this company using financial derivatives. He does so even though financial derivatives will in fact regularly constitude only a fairly low proportion of assets categorised as HFT. The reasons why we expect a balance sheet category labeled as "Held for Trading" to be representative for a company's use of financial derivatives are at least twofold. Firstly, although the categorisation of financial instruments is mostly left to the management's discretion, this is not the case for derivatives. Instead all derivatives have to be categorised as trading assets without exception. All other financial assets can be assigned to this category by choice. Investors might, however, tend to neglect that normally the proportion of non-derivative assets a company has invested in exceeds the proportion of derivative assets by far.[4] Therefore investors will overestimate the probability of derivative assets although non-derivative assets are the most probable financial instruments found in the trading category. Secondly, from research in mental accounting individual investors are known to be well aware of specific instruments being used as speculative investments (Shefrin & Statman (2000)). Trading assets are regularly associated with speculative purposes (Young (1996)) and financial derivatives are probably the most prominent financial instrument used for speculative investments (Trombley (2003)). Investors might therefore easily neglect that the financial instruments most widely used for speculative investments are non-derivative in nature so that the overall probability of a company's engagement in derivatives is still relatively small if a trading asset is presented.

Likewise we expect the use of the L&R category to be representative for an investment in consumer loans. The label of the L&R category indicates that it is exclusively introduced for loan-like products. This is misleading for at least two reasons. Firstly, consumer loans can generally be classified in any category, i.e. as available for sale, as designated at fair value or as held to maturity.[5] As we argue below, however, we do not expect the available for sale and the fair value category to be representative for any particular financial instrument, because both are intentionally designed as to be applied to a wide range of different financial instruments.

[4] In other terms, the base rate of non-derivative assets is substantially higher than that of derivative assets.

[5] The held to maturity category is hardly used by financial institution and for reasons of materiality not considered in our analysis, see Nelson, Wohlmannstetter, Ferron-Jolys, & Labuschagne (2008) for details.

Secondly, financial products that are not loan-like can be classified in the L&R category as well. This is true at least for all interest-linked securities and trade receivables that are not traded on any active market. Investors will therefore be likely to neglect the probability of a company that does not present the L&R category to be engaged in consumer loans and, at the same time, to overestimate the probability of a company that does present the L&R category to have invested in consumer loans.

As it is summarised in the left section of Figure 3, we further hypothesise that representativeness is not used as a heuristic in the risk assessment of a company opting for the available for sale category or the fair value category. Neither one indicates a particular purpose or is subject to particular restrictions. The fair value option allows companies a broad application of this category for a wide range of different financial instruments, and the available for sale category is applied to those financial instruments which are not put into any other category. It is thus hardly possible to theoretically derive a specific kind of instrument that investors consider to be representative of either category. The fair value category, though, requires more careful attention. Fair value in general was discussed in the context of both the measurement of financial derivatives and the measurement of subprime loans. We can only more generally hypothesise that investors will associate the fair value category itself with certain events covered in the media so that risk assessment does not need to rely on the link via representativeness. Cognitive available current information on fair value measurement is very likely to be negative since over the last years the practice of fair value measurement has continuously been facing public criticism from different sides (Sunder (2008); European Central Bank (2004)). Lacking such particular associations with the available for sale category we expect it to be perceived as comparatively low risk.

We are now able to summarise this framework under three hypotheses.

H1a: Risk perception of economically identical companies varies with the measurement categories used to present financial instruments.

H1b: Measurement categories presented on the face of the balance sheet will be perceived to

be representative for specific financial instruments. In particular, a category labeled as "Held for Trading" will be viewed as representative for financial derivatives and a category labeled as "Loans & Receivables" as representative for loans to private consumers.

H1c: The differences in the risk perception of the companies depend on the cognitive availability of negative events in conjunction with financial derivatives and consumer loans in particular and with fair value measurement in general.

Biases in the Risk Perception of Financial Instruments Based on the Footnotes

The perception of financial instruments that are presented in accordance with IAS 39 and IFRS 7 does not only rely on the line items on the face of the balance sheet but also on extensive explanation in the footnotes. Corresponding experimental evidence is provided for example by Dietrich, Kachelmeier, Kleinmuntz, & Linsmeier (2001) and Bloomfield & Libby (1996) who analyse the effect on market prices of easily accessible information (on the balance sheet) versus less easily accessible information (in the notes) about the same underlying situation. They find a correspondance between footnote information and market prices (albeit a weaker one than between balance sheet information and market prices). When financial instruments are presented by measurement categories, an effect of footnote disclosure might result from the heterogeneity among investors in the association of a balance sheet category with a type of financial instrument. In the absence of notes investors rely on representativeness in the judgment whether a category labeled as "Trading Assets" contains financial derivatives or whether the category labeled as "Loans & Receivables" contains consumer loans. This will very likely result in at least some degree of variability in the individual associations of financial instruments with balance sheet categories. Since hypotheses H1a-c suggest that the type of financial instrument which a particular category is viewed to be representative for causally explains the perception of a company's risk (in lieu of the balance sheet category itself), there will be a corresponding degree of variability in perceived risk.

This indirect link between the availability of negative outcomes of investments in a type of financial instrument to the perceived risk of a measurement category turns into a direct link via

the notes. In other words, we expect investors to adjust their individual associations of balance sheet categories with financial instruments upon studying the notes since the types of financial instruments are then directly at their disposal. In consequence, the perception of a company's risk is likely to change if the instruments actually accounted for in the categories differ from those formerly believed to be in there. The risk perception of a company is now mainly driven by the types of financial instruments listed in the notes and thus directly by the availability of investment outcomes experienced or broadly covered in the media. It is therefore plausible that the risk perception resulting from the indirect link, i.e. from an individual and therefore imperfect association, will be altered when the link between a balance sheet category and the type of financial instrument is directly explained in the footnotes.

Among all investors some will be more prone to adjust their judgment than others. Therefore, we further strive to identify the explanatory factors of the individual adjustment decision. With respect to the risk perception of different types of financial instruments, the findings of Koonce, Lipe, & McAnally (2005) and Koonce, McAnally, & Mercer (2005) suggest that individual judgment is based on behavioural risk dimensions as identified by Slovic (1987). Those dimensions, *Unknown* and *Dread*, capture notions of familiarity with a risk and possible consequences of this risk, respectively (Hodder, Koonce, & McAnally (2001)). They translate into behavioural variables such as an investor's prior knowledge about a risk or controllability, observability and immediacy of potentially catastrophic effects of a risk on one's own welfare. As Slovic (1987) points out, these variables are regularly intuitively estimated and rely heavily on external factors such as media coverage, personal experience or distance, be it temporal or spatial, to certain events. According to that theory, differences in risk judgement might be caused by differences in personal experience in investment decisions. When analysing the risk perception we capture this factor that is innate to investors via a personal questionnaire.

In summary, our second research question asks how further explanations of financial instruments in the footnotes alter the perception of a company's risk as opposed to a perception solely based on the balance sheet categories. In order to answer this question, we will test two hypotheses:

H2a: The perception of the companies' risk alters when companies are not only judged on the basis of their balance sheet items but also on the basis of footnotes explaining which type of financial instrument is accounted for in each category.

H2b: This change in risk perception is associated with personal investment experience.

3 Experimental Design

The two experiments conducted to test the hypotheses differ in the manipulation of participants' availability of media coverage of particular financial instruments.

3.1 Participants

Participants were 302 (Experiment 1) and 129 (Experiment 2) graduate students in business. All students voluntarily participated in the experiment. We chose graduate students to proxy for non-professional investors. There is some evidence that this choice is a good proxy at least in experimental settings of relatively low complexity (Elliott, Hodge, Kennedy, & Pronk (2007), Kadous, Krische, & Sedor (2006) and Harper, Mister, & Strawser (1987)). Our study is of low complexity as participants were asked to judge the risk of companies that only differed in very few line items or footnotes. The quality of the proxy particularly relies on the facts that graduate business students have in general already completed a core curriculum of accounting and finance lectures and that they have some personal experience in capital market investments. We have controlled for these factors and found that all participants had indeed successfully completed at least one course in finance (on average 1.79 in Experiment 1 and 2.16 in Experiment 2) and at least two courses in financial accounting (on average 2.76 in Experiment 1 and 2.93 in Experiment 2). Only 37.97% (42.42%) of the participants however stated that they had some practical experience with financial market investments. The relatively low rate is due to the organisation of the graduate business studies in Germany which does not require professional experience or internships per se. This is taken into account when analysing the results at a

later point. We conducted the study at three different public universities in order to exclude effects from the particular curriculum of any university and to consider students in different stages of their graduate studies. The necessity of observations from two different experiments is another reason why we considerered the use of professional participants to be inappropriate and inefficient (Libby, Bloomfield, & Nelson (2002)).

3.2 Procedure

Experiment 1

We were able to test H1a, H2a, and H2b in a joint experimental setting in which we used a 4×2 within-participants design. The first independent variable of interest is the balance sheet category under which a financial instrument can be presented. In accordance with IAS 39, we named these categories "Held for Trading", "Measured at Fair Value through Profit and Loss", "Available for Sale", and "Loans & Receivables". The second independent variable is the extent of the disclosure. It is varied between pure balance sheet disclosure and disclosure of balance sheets with accompanying footnotes. Only the latter option reveals the type of financial instruments accounted for in the reported measurement categories. As dependent variable, we use a measure of a company's relative risk as perceived by the participants. More precisely, participants were asked to rank the companies according to their risk in descending order (with rank 1 indicating the highest and rank 4 indicating the lowest risk). The study consists of two parts and a final survey on personal characteristics. The three parts were conducted subsequently during a single session of about 25 minutes. In order to ensure the correct sequence we explained the procedure beforehand.

In the first stage of the experiment, each participant was provided with four balance sheets of seemingly different companies and was asked to order the companies with respect to their risk. In fact the four companies are economically identical just as shown in Figure 2 and only differ in the manipulation of the first independent variable (balance sheet category). Since ties were explicitly allowed in the ordering procedure, a participant recognising the economic identity of

the four companies could reflect this in his answer.

In the second stage of the experiment, each participant was provided with the same four balance sheets now supplemented by footnotes explaining the type of the financial instrument the company is engaged in as well as the measurement base chosen. Information about the intended use of these instruments within the company (such as hedging or speculation), however, was withheld. Participants were then again asked to order the companies with respect to their risk. The participants did not learn until the second stage that the one company presenting a better debt-to-equity ratio had entered into a derivative contract whereas the other three companies had not. The difference in labels used for the measurement categories on the face of the balance sheet persisted but, in addition, the measurement base (fair value or amortized cost) arising from a category's application under IAS 39 was disclosed. The balance sheets and the footnotes used in the experiment are included in the appendix to this paper.

We opted for a within-participants design for this setting because previous experiments on the evaluation of alternatives have shown that participants might find it difficult to make *absolute* risk judgements of financial instruments since risk is a *relative* measure and therefore difficult to evaluate independently (Koonce, Lipe, & McAnally (2005) and Hsee (1996)). A relative risk judgement requires knowledge of several alternatives which can only be provided in a within-subjects design. The internal validity of the within-subjects design depends on how well the effect of external factors on the dependent variable is controlled. By counterbalancing the order of the four conditions in each stage using a Latin square design, we prevent effects based on presentation sequence in the experiment. We did conduct all experiments without previous notice at the beginning of class to ensure high concentration and task focus.

Experiment 2

Since participants' natural availability of associations with certain financial instruments, which hypotheses H1b and H1c refer to, cannot be directly observed, a slightly different experimental design was necessary for the second stage of research. Using the same experimental setting and the same task of ranking companies according to their risk, we now manipulated the availability

of negative associations with either derivatives or consumer loans in a between-participants design so that overall a $4\times2\times2$ design results. We did so by providing the students with excerpts from popular press articles by Warren Buffett in the *Fortune* magazine and by Larry Summers in the *Financial Times*. The Buffett article dramatises the dangers and risks for the capital market resulting from derivatives usage in general and hedge funds in particular. We expected this article to enhance the availability of negative associations with derivatives. The Summers article concerns the recent subprime crisis in the US and predicts additional write-offs of housing loans as well as a spread of the crisis to other credit segments. We expected this article to enhance the availability of negative associations with loans. In order to ensure that our manipulations worked we asked participants to answer four questions regarding the content of the respective article received.

4 Results

4.1 Risk perception of financial instruments with and without footnotes (H1a and H2a)

In the first situation where availability is not manipulated and participants judge the risk of the four companies solely based on information from the balance sheets, the results indicate that a presentation by measurement categories does not reveal the economic identity of the four companies but rather causes a bias in individual risk perception. As shown in Table 1, Company B, using the fair value category (with a mean of 2.26), and Company D, using the loans category (2.19), are perceived to be of the highest risk. Company C, using the available-for-sale category (2.59), is perceived to be of average risk. Company A, which presents the trading category and which has, due to the off-balance-sheet approach in accounting for financial derivatives, the best debt-to-equity ratio, turns out to cause the lowest risk perception (2.96). All differences except for the one between Companies B and D are significant at the 1% level in a Wilcoxon signed-rank test (Table 2, Panel A). We therefore clearly fail to reject hypothesis (H1a) that

differently labeled measurement categories are perceived to be of different risk.

Table 1:

Analysis of risk judgements by measurement category and additional disclosure [a]

Panel A: Descriptive statistics - *Mean Rank (Standard Deviation)*

Accounting treatment	**Without notes**	**With notes**	**Difference** (p-Value)
A Held for trading (n=284)	2.96	2.64	$< .0001$
	(1.27)	(1.32)	
B Fair value through P&L (n=284)	2.26	2.49	$< .0001$
	(.88)	(.89)	
C Available for sale (n=284)	2.59	2.6	ns
	(.87)	(.88)	
D Loans & Receivables (n=284)	2.19	2.27	ns
	(1.02)	(1.07)	

Panel B: ANOVA (Interaction)

Source	**df**	**Sum of squares**	**Mean square**	**F-statistic**	**p-Value**
Measurement category	3	109.9	36.63	33.99	< .001
Measurement category $\times$ notes	4	24.16	6.04	5.6	< .001
Error	2331	2512.31	1.08		
Total	2338	2647.75	1.13		

[a] Table 1 shows the results of Experiment 1 which investigates how participants rank investment alternatives that differ only in the disclosure of financial instruments (Rank 1 $\widehat{=}$ highest risk). Panel A shows summary statistics by category and exposure to additional information in the form of notes plus the results of Wilcoxon signed-rank tests on changes in the distribution of ranks by exposure to the notes. Panel B shows the interaction of measurement category and exposure to the notes. 'ns' indicates non-significant results.

The spread between the minimum and the maximum mean decreases in the second situation from .77 to .37 after participants are exposed to the additional disclosure in the footnotes. The order of the ranks, however, remains unchanged (Table 1, Panel A). An analysis of variance

(ANOVA) indicates that the differences between the mean ranks are highly significant in both situations ($p < .001$). Since the sum of the ranks assigned to the companies is constant across participants, we are dealing with ipsative data and cannot account for within-subjects variation. Even though we need to interpret those results conservatively (Steenkamp, Allenby, Gupta, & Verducci (2001)), we can conclude that the disclosure choices left to management's discretion by IAS 39 and IFRS 7 do not allow investors to unambiguously recognise economically identical risks if companies apply different disclosure options. Additional disclosure can reduce this bias but it does not disappear. As shown in Table 1, Panel B, exposure to the footnotes, i.e. to additional information indicating the type of financial instrument, has an effect on the relative risk assessment of the companies that interacts with the effect of the measurement categories ($p < .001$). Again due to the analysis of ipsative data where the sum of the ranks assigned to the companies does not vary between the situation before and the situation after additional disclosure, an individual effect of exposure to footnotes cannot be identified.

Besides this overall analysis, it is insightful to compare the effect of additional disclosure on the perception of the different measurement categories individually. Table 1 gives test statistics for this finding in Panel A. In particular, we test for a change in the mean ranks of companies after participants were exposed to the footnote indicating that Company A is party to a derivative contract whereas the other three companies are not. We find these individual differences to be significant for the trading category and for the fair value category ($p < 0.001$ for both). With notes, participants rank Company A significantly lower, i.e. as being of higher risk, and Company B significantly higher, i.e. as being of lower risk, than without the notes. We therefore also fail to reject hypothesis (H2a) that footnotes have an effect on the risk perception of financial instruments. Given that the notes for Company A only state that the category "Held for trading" does contain derivatives and that the notes for Company B merely state that the fair value category does contain securities measured at fair value, the shift in relative risk could have been caused by either the realisation that Company A unexpectedly has derivatives in its portfolio or by the realisation that Company B unexpectedly has not. Either way, the shift suggests that the label "derivative" triggers an increase in risk perception. This switching behaviour will be

Table 2:

Analysis of risk judgements by measurement categories before disclosure of footnotes [b]

Panel A: Contrasts without notes - *Statistic*, *adjusted p-value*

Comparison	**t-Statistic**	**p-value**
FV vs. HFT	-8.37	.0000
AFS vs. HFT	-4.50	.0000
L&R vs. HFT	-9.30	.0000
AFS vs. FV	3.88	.0007
L&R vs. FV	-0.92	ns
L&R vs. AFS	-4.80	.0000

Panel B: ANOVA (Measurement category without notes)

Source	**df**	**Sum of squares**	**Mean square**	**F-statistic**	**p-Value**
Measurement category	3	112.57	37.52	26.96	< .001
Error	1184	1235.93	1.39		
Total	1187	1348.5	1.14		

[b] Table 2 shows the results of our experiment which investigated how participants ranked investment alternatives which differed in reporting treatment of financial instruments (Rank 1 $\widehat{=}$ highest risk). Panel A shows the results of multiple comparisons of means (Linear Tukey contrasts) in an ANOVA. Panel B shows the results of an ANOVA on the observed ranks before exposure to the notes. 'ns' indicates non-significant results.

subject to a more detailed analysis in section 4.3.

Our hypotheses are however not only directed towards the perception of derivatives but also towards consumer loans. In this respect, the relative risk-ranking of Company D where the lending contracts replicating the financial derivative are presented as "Loans and Receivables" is of interest. Financial instruments in this category are measured at cost and thus cause little volatility. Participants, however, perceive Company D as the most risky investment opportunity notwithstanding the exposure to footnotes. While exposure to the notes eliminates significant

differences between the other companies' rankings (Table 3, Panel A), Company D remains to be ranked significantly lower, i.e. as being of higher risk, than all other companies. One potential explanation is again an availability effect, i.e. that the current crisis in the worldwide credit market and the ensuing negative media coverage has sensitised participants for counterparty risk associated with consumer loans. Due to its recentness, this effect has not been observed in prior research. Verification of this interpretation is left to Experiment 2.

Table 3:

Analysis of risk judgements by measurement categories after disclosure of footnotes [c]

Panel A: Contrasts with notes - *Statistic*, *adjusted p-value*

Comparison	**t-Statistic**	**p-value**
FV vs. HFT	-1.72	ns
AFS vs. HFT	-0.45	ns
L&R vs. HFT	-4.13	<.001
AFS vs. FV	1.27	ns
L&R vs. FV	-2.41	.0757
L&R vs. AFS	-3.67	.0014

Panel B: ANOVA (Measurement category with notes)

Source	**df**	**Sum of squares**	**Mean square**	**F-statistic**	**p-Value**
Measurement category	3	22.87	7.62	6.85	< .001
Error	1147	1276.38	1.11		
Total	1150	1299.25	1.13		

[c] Table 3 shows the results of our experiment which investigated how participants ranked investment alternatives which differed in reporting treatment of financial instruments (Rank 1 $\widehat{=}$ highest risk). Panel A shows the results of multiple comparisons of means (Linear Tukey contrasts) in an ANOVA. Panel B shows the results of an ANOVA on the observed ranks after exposure to the notes. 'ns' indicates non-significant results.

4.2 Behavioural explanations for the risk assessment of financial instruments (H1b and H1c)

In the analysis of experiment 2, we can concentrate on the differences that are caused by the availability manipulations. In order to ensure that the manipulations work, we only include observations of participants who answered at least three of the four control questions correctly and thereby eliminate 20 observations. With respect to hypothesis (H1c), Table 4 reveals that availability of associations with derivatives and with consumer loans alters the risk participants assign to the individual companies when compared with the risk assigned in experiment 1 in which availability is not manipulated. We therefore fail to reject hypothesis (H1c). Specifically, this effect occurs for companies that present trading assets or the L&R category. Since the information by which associations are made available is product-specific and the alteration varies with the type of product-specific information, there seems to be some link between availability of product-specific associations and risk perception of measurement categories. In the development of hypothesis (H1b), we have argued that this link can be established via the representativeness heuristic. The further results of experiment 2 allow us to test (H1b) to some degree.

Trading assets

Participants being confronted with the Buffett article on the potential threats of usage of derivatives and the concrete example of the LTCM breakdown do perceive the L&R category as significantly less risky than participants who are not manipulated accordingly (2.48 vs. 2.19, $p < .05$). Awareness of the risks from loans seems here to be suppressed by the ease of recalling the risks from derivatives. Since risk assessment in the experiment is in relative terms, this is tantamount to a relatively higher risk perception of the trading category. This observation suggests on the one hand that the use of the L&R category is not viewed to be representative for engagement in financial derivatives. On the other hand the finding is in conformity with our hypothesis (H1b) that it is the trading category that is viewed to be representative for derivatives usage.

Those findings also shed some light on the puzzlingly low risk perception of trading assets in

Table 4:

Analysis of risk judgements by measurement category and availability effects [d]

Panel A: Relative Risk Judgment (Standard Deviation) before Exposure to Footnotes

Accounting treatment	**Buffett** (n=45)	**Summers** (n=64)	**Difference** (p-Value)
Held for trading	2.82	3.19*	.0631
	(1.29)	(1.17)	
Fair value through P&L	2.26	2.19	ns
	(1.01)	(.92)	
Available for sale	2.44	2.44	ns
	(.92)	(1.01)	
Loans & Receivables	2.48**	2.18	.0448
	(.88)	(.91)	

Panel B: Relative Risk Judgment (Standard Deviation) after Exposure to Footnotes

Accounting treatment	**Buffett** (n=45)	**Summers** (n=64)	**Difference** (p-Value)
Held for trading	2.13***	2.76	.0067
	(1.31)	(1.21)	
Fair value through P&L	2.54	2.44	ns
	(.86)	(.99)	
Available for sale	2.66	2.55	ns
	(.73)	(.97)	
Loans & Receivables	2.67**	2.43	.0288
	(1.08)	(1.11)	

[d] Table 4 shows the results of Experiment 2 which investigates how participants rank investment alternatives that only differ in disclosure of financial instruments (Rank 1 $\widehat{=}$ highest risk) by manipulating the availability of certain events involving corporate engagement in financial instruments. In the 'Buffett' situation, participants are confronted with a press article pointing to the potential threats of derivatives usage. In the 'Summers' situation, participants are confronted with a press article pointing to the counterparty risk of consumer loans as observed during the latest subprime crisis. Panel A shows summary statistics for both situation before exposure to footnotes. Panel B shows summary statistics for both situations after exposure to footnotes. All differences are calculated in one-sided t-tests assuming unequal variances. 'ns' indicates non-significant results. ***, **, and * indicate a significant difference from the corresponding rank observed in Experiment 1 as summarized in Panel A of Table 1 at the 1%, 5%, and 10% level respectively.

Experiment 1 when availability is not manipulated. Tables 2 and 3 show that the mean rank of Company A is higher than the average ranks of all other alternatives before additional disclosure ($p < .01$) and that it is still higher than the mean rank of the loans category after additional disclosure ($p < .01$). >From the experimental setting, we can identify two possible explanations since the balance sheet of the four companies vary both in the measurement category used in labeling the financial instruments and (in the specific case of Company A) in face value. Initially, the low risk ranking of Company A observed in Experiment 1 can be attributable to either factor.

The results of Experiment 2 now show that participants, when being easily aware of Buffett's warnings on the use of derivatives, rank this category as the riskiest one after the exposure to footnotes revealed the company's engagement in derivatives (Table 4, Panel B). This finding suggests that the observation from Experiment 1 cannot be due to the labeling effect, i.e. to a low risk that investors might associate with derivatives usage and thereby with the trading category the use of which is viewed to be representative for an investment in derivatives. If the labeling effect fails as explanation, only the difference in face value between Company A and the other companies remains as a causal factor. The difference in face value results from the off-balance-sheet approach in accounting for financial derivatives and it finds its expression both in a lower debt-to-equity ratio and in a lower ratio of financial assets to total assets of Company A.[6] If we accept that the counterparty risk of derivatives is indeed lower than the one of non-derivative replications, participants' low risk perception of Company A in Experiment 1 is economically correct. We can thus conclude that negative effects arising from the representativeness of a company's use of the trading category for investments in financial derivatives are offset by the off-balance-sheet accounting of derivatives. This finding can then be regarded as a further justification of the general off-balance-sheet approach in accounting for derivatives.

Loans & Receivables

Participants being confronted with the Summers article on the latest subprime crisis that was

[6] The latter does only explain the relative ranking if participants perceive financial assets to be contributing more to a company's risk than other assets.

mainly triggered by investments in consumer loans do perceive the held for trading category containing the derivatives as significantly less risky than participants who are not manipulated accordingly (3.19 vs. 2.96, $p < .10$). Awareness of the risks from derivatives seems here to be suppressed by the ease of recalling the risks from loans. Since risk assessment is again in relative terms, this is tantamount to a relatively higher risk perception of the L&R category. We can thus conclude that a company's use of the trading category is not viewed to be representative for investments in consumer loans whereas the L&R category is. This finding also conforms to our hypothesis (H1b).

Our hypothesis (H1b) is also supported by evidence from the cross-group analysis in the last column of Table 4, Panel A. The difference in the mean rank of the L&R category between the two manipulations is significant in the hypothesised direction and so is the difference in the mean rank of the trading category (albeit at a lower level of significance). It is striking that even after exposure to footnotes only these two categories are affected by the manipulations and that the same two differences remain significant (Table 4, Panel B). With respect to the L&R category, this is again in conformity with our hypothesis (H1b) which expects the use of the L&R category to be viewed as representative for an investment in consumer loans. Participants obviously neglect the probability of consumer loans being classified in another category and overestimate the probability that a company that presents the L&R category has invested in consumer loans.

Fair value category

The interpretation of the findings on the fair value category is more complex since the ranking of Company B is not affected by the manipulations. In all cases, however, company B is perceived to be of relatively high risk. Participants obviously regard fair value measurement as a severe risk factor independent of the kind of financial instrument they are easily aware of. This suggests that fair value measurement is viewed to representative for at least not only financial derivatives. The category can indeed be widely used both for financial innovations and for traditional consumer loans. These findings are in conformity with our hypothesis (H1c) that fair value measurement in general is associated with certain negative events which, however, can

not be exactly identified in our study. Generally speaking, we can only speculate that this is what investors have learned from the current debate on the economic causes of the subprime crisis which is centering right around fair value measurement (Greenlaw, Hatzius, Kashyap, & Shin (2008) and Ryan (2008)).

4.3 The impact of investor characteristics on the perception of footnote disclosure (H2b)

Model

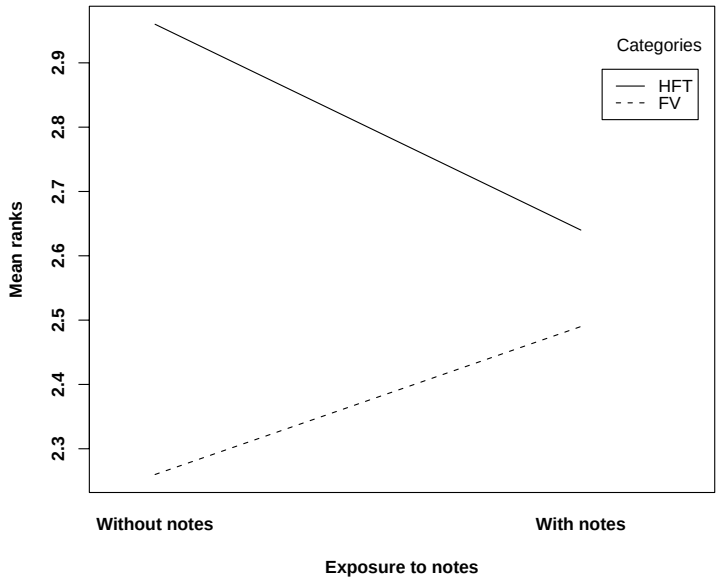
Our findings in Experiment 1 suggest that the disclosure of derivatives usage has an impact on the risk perception of both company A and company B. Whereas company A (HFT) ranks significantly higher in relative risk after exposure to the information that a financial derivative is indeed classified in the trading category, company B (FV) ranks significantly lower after exposure to the information that the company is not engaged in financial derivatives. These opposite effects are visualised in Figure 4.

In the analysis of risk perception before exposure to footnotes, it is striking that the distribution of company A's ranks is U-shaped as shown in the first histogram of Figure 5. The company is thus considered to be of an extreme (i.e. either of the highest or of the lowest) risk by a vast majority of participants. This U-shape is due to the offsetting effect of the two factors manipulated in the experiment and identified in section 4.2: Company A's use of the trading category has a negative effect on participants' risk perception and off-balance-sheet accounting for the derivative has a positive effect. Rankings for company A remain U-shaped after participants are exposed to the footnote stating that company A has been using financial derivatives (Figure 6). The number of participants assigning an extreme rank is almost unchanged (235 before and 221 after footnote disclosure). A more thorough analysis however reveals that the number of participants ranking company A as the one of highest risk increases after exposure to footnotes whereas the number of participants ranking company A as the one of lowest risk decreases.[7]

[7] In χ^2-tests both before and after footnote disclosure, we are in fact able to reject the hypotheses that the ranks

Figure 4:

Interaction of category and exposure to the notes



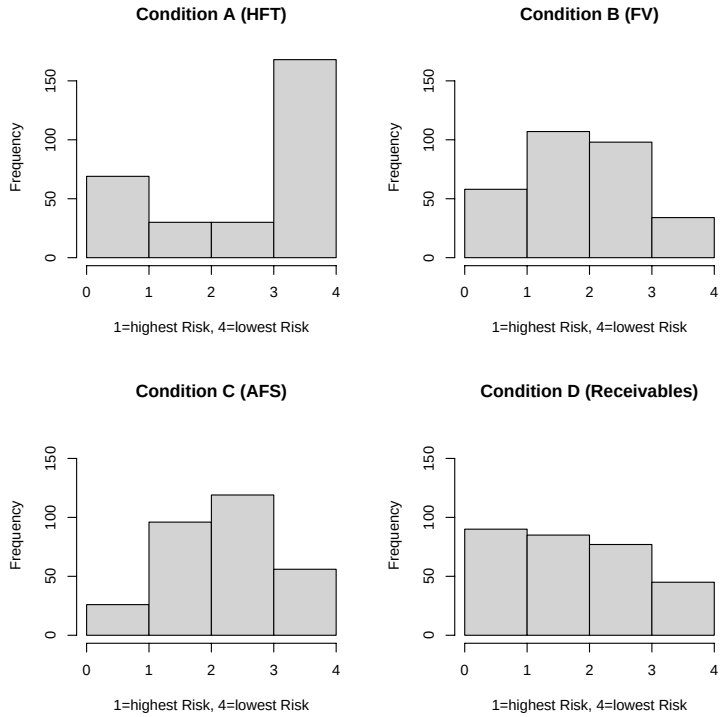
As pointed out in section 2, some degree of heterogeneity in participants' association of financial derivatives with the trading category will account for this adjustment of individual risk assessment. Those participants who initially have not viewed the trading category as representative for engagement in financial derivatives and have therefore associated a low risk with company A are likely to alter this judgement after unambiguously learning about the company's derivatives usage if they attach a greater weight to the general risk of financial derivatives than to the company's favorable debt-to-equity ratio. The substantial number of participants continuously ranking company A as the one of lowest risk results, as before, from the positive effects on the debt-to-equity ratio of off-balance-sheet accounting for the derivative, which causes participants to merely disregard the risk of derivatives.[8]

are uniformly distributed and that the two distributions are identical ($p < .001$ for all tests).

[8] There will also be individual participants associating financial derivatives with some notions of insurance and thus deliberately assigning a high rank (i.e. a low risk) to company A.

Figure 5:

Company rankings without notes

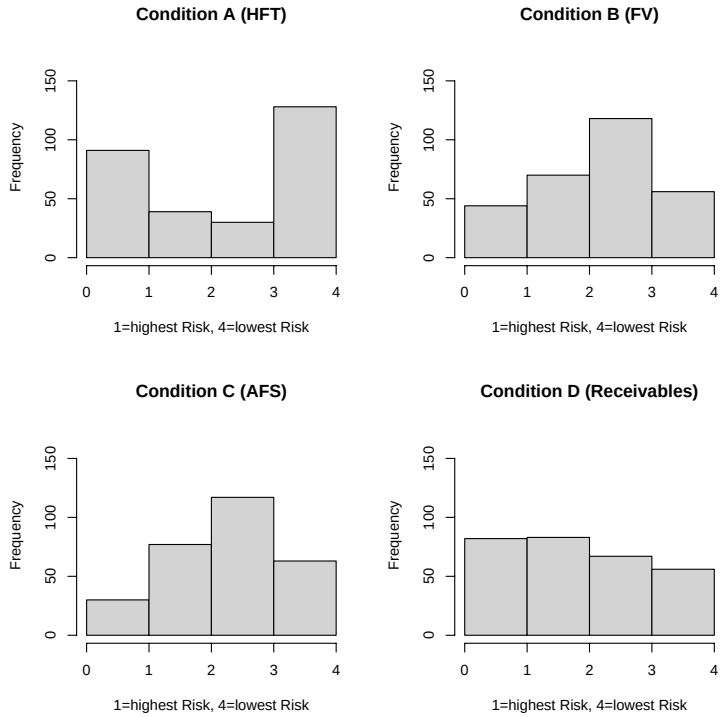


The weight that investors attach to these two offsetting factors is a function of their individual risk perception. The literature summarised in section 2 suggests that risk perception is explained by behavioural risk variables and is thus associated with natural characteristics of investors, in particular with personal investment experience. In order to examine these associations we capture the effect of an increasing risk perception for company A with a binary variable for those individuals that ranked company A as the company of lowest risk in the first stage. We will refer to this dependent variable as ASWITCH. It takes a value of 1 if the ranking of company A decreases by more than two ranks, i.e. the perceived risk increases considerably, and a value of 0 otherwise. In terms of the histograms shown in Figures 5 and 6, ASWITCH captures a switch from the very right to the very left bar for company A.

When assuming normality in the distribution of the error terms, the probability of a participant

Figure 6:

Company rankings with notes



adjusting the risk assessment can then be described as

$$Pr(Y_i = 1|X_i) = \Phi(X_i'\beta)$$

for participants $i = 1, 2, \ldots, n$ where Y_i denotes individual i's scores on ASWITCH and X_i denotes a vector of individual-level variables. In this vector, a participant's investment experience (EXPER) is the behavioural risk factor used as explanatory variable. In order to capture only the marginal effect of investment experience on risk judgement, we further include several control variables in the vector X which varies in scope and content between model I and model II.

To begin with, an adjustment of the risk assessment can be caused by a participant's erroneous assumption, before exposure to footnotes, that another company than A is using financial derivatives. DERNHFT indicates whether a participant associated another category than "Held

for Trading" with the use of derivatives. This variable is measured at the very beginning of the experiment when participants are asked which types of financial instruments they expect to be contained in the four relevant categories. Secondly, risk judgement is influenced by availability effects as it is demonstrated in experiment 2. Since availability of media coverage on the use of derivatives is not manipulated in experiment 1, we have to control for differences in the participants' given availability of negative media coverage on derivatives usage. MEDIANEG and MEDIADIF are the variables chosen to proxy for the availability of such media coverage. MEDIANEG, measuring the absolute availability of negative media coverage, is used in model I and MEDIAREL, measuring the relative availability of negative media coverage when compared to the availability of positive media coverage, is used in model II. Both variables are inquired about in a short questionnaire at the very end of the experiment.

In addition, model II includes two other variables that potentially explain risk judgement in general. CONFJUDG reflects a participant's confidence in his own judgement in particular and TRUSTFR reflects individual trust in risk assessments solely based on a company's financial reports. Together they shall control for the noise in the risk judgement that is due to a participant's individual difficulty in risk assessment on the basis of the provided information. These variables are also inquired about in the questionnaire at the end of the experiment.

Descriptive statistics for all variables are summarised in Table 5. As a first indicator of the validity of our assumptions regarding the drivers of ASWITCH and to test for multicollinearity, Table 6 shows the Spearman correlation coefficients. It shows no collinearity between the independent variables with the exception of MEDIANEG and MEDIAREL, which is hardly surprising since the latter is constructed from the former. Moreover, it gives preliminary support to our hypothesis H2b for it shows statistically significant correlations between ASWITCH and EXPER, MEDIANEG and MEDIAREL respectively.

Statistical tests

The results of the two probit regressions, i.e. of the regressions of ASWITCH on model I and on model II, are summarised in Table 7. Our hypothesis H2b focuses on investment experience

Table 5:

Binary regression models: Descriptive statistics[e]

Variable	Mean	StdDev	Minimum	Maximum
ASWITCH	0.2601	0.4400	0	1
EXPER	0.3797	0.4862	0	1
DERNHFT	0.3311	0.4722	0	1
MEDIADIF	20.2025	38.4222	-100	100
MEDIAREL	39.9385	40.6076	0	100
CONFJUDG	23.5226	20.7310	0	100
TRUSTFR	45.7850	23.3233	0	100

[e] Definition of the regressors:

ASWITCH	1 if *Rank of Company A with notes - Rank of Company A without notes* ≥ 2; 0 otherwise
EXPER	1 if participant has private or professional experience with investment decisions
DERNHFT	1 if participant associates any category other than "Held for Trading" with derivatives; 0 otherwise
MEDIANEG	ease with which participant can remember negative media coverage of derivatives (0 not at all; 100 very easy)
MEDIAREL	difference between ease to recall negative and ease to recall positive media coverage of derivatives
CONFJUDG	participant's confidence in own risk judgment based on the information provided (0 not confident; 100 completely confident)
TRUSTFR	participant's trust in financial reports as a tool to assess risk (0 not suitable; 100 completely suitable)

as the explanatory behavioural variable. In an individual test for the ASWITCH regression, the positive coefficient of EXPER differs from zero at a 5% (1%) level of significance in model I (model II). There is thus quite robust evidence that the switch in the risk assessment of company A after exposure to footnotes describing the company's derivatives usage is associated with the behavioural risk variable used in our model and we finally fail to reject hypothesis H2b. The size of the coefficient suggests that professional familiarity with financial investments in derivatives increases the probability of such a switch by approximately 25-30% if all other variables are set to their mean values. A higher familiarity thus comes along with a higher sensitivity to the label "derivative". This is in conformity with behavioural theory since investment experience is

Table 6:

Correlation matrix of the dependent and independent variables[f]

	ASWITCH	EXPER	DERNHFT	MEDIANEG	MEDIAREL	CONFJUDG
EXPER	0.2527	1.0000				
	(0.0362)					
DERNHFT	0.1830	-0.0089	1.0000			
	(0.1323)	(0.9421)				
MEDIANEG	0.2907	-0.0625	0.1892	1.0000		
	(0.0154)	(0.6098)	(0.1194)			
MEDIAREL	0.2607	-0.0837	0.0855	0.7977	1.0000	
	(0.0305)	(0.49439	(0.4850)	(0.0000)		
CONFJUDG	-0.1781	-0.0759	0.1604	0.0426	-0.1175	1.0000
	(0.1433)	(0.53559	(0.1880)	(0.7282)	(0.3364)	
TRUSTFR	0.0574	-0.0934	-0.1099	-0.2009	-0.1228	0.1440
	(0.6393)	(0.4452)	(0.3685)	(0.0979)	(0.3147)	(0.2377)

[f] Reported are Spearman correlation coefficients, which account for the fact that some variables (ASWITCH, DERNHFT) are by nature not normally distributed. p-values are reported in parentheses. For a description of the variables see Table 5.

tantamount to a higher familiarity with the risks arising from derivatives usage.

With respect to the controls, the coefficients of MEDIANEG and MEDIADIF suggest that a higher natural availability (in absolute or relative terms) of negative media coverage of derivatives is associated with a higher probability of substantially altering the risk judgement. This is also exactly what behavioural theory predicts and it underlines our findings from Experiment 2. Even when availability effects are not manipulated, individual awareness of media coverage is a strong external factor associated with the sensitivity of a participant's reaction to a company's usage of derivatives.

Table 7:

Binary regression models: Coefficients and average derivatives (Probit)[g]

Dependent variable	ASWITCH			
Model	I		II	
N	70		69	
	(#)	(+)	(#)	(+)
Test Variable				
EXPER*	.7970	.2592	1.0149	.3236
	(.3504)		(.3954)	
Control Variables				
DERNHFT*	.4290	.1405	.8647	.2815
	(.3532)		(.3897)	
MEDIANEG	.0103	.0033	-	-
	(.0042)		-	
MEDIAREL	-	-	.0102	.0032
	-		(.0047)	
CONFJUDG	-	-	-.0209	-.0064
	-		(.0119)	
TRUSTFR	-	-	.0164	.0051
	-		(.0094)	
CONSTANT	-1.6233	-	-1.9370	-
	(.3765)		(.6831)	
ln L	-35.39		-32.85	
% correctly predicted	72.86		76.81	
χ^2 (p-value)	12.97 ($< .01$)		17.37 ($< .01$)	

[g] (#) The coefficients of the probit regression are reported with the standard errors in parentheses.
(+) dy/dx is evaluated at the mean of the independent variables. For binary variables marked with an asterisk (*), dy/dx is equal to the difference in the probability of y=1 between values of x of 1 and 0.
For a description of the variables see Table 5.

5 Implications and Conclusions

This study demonstrates that the discretion offered by IAS 39 and IFRS 7 with respect to balance sheet classification has the potential to bias non-professional investors' judgements about the risk of the reporting company. By means of an experiment we show that a presentation of financial instruments by measurement categories (as applied by a majority of European banks) causes investors' risk perception to vary with the balance sheet classification of financial instruments. Because it has been shown that information in the footnotes receives considerably less attention than information in the balance sheet or the profit and loss statement (Hodge, Kennedy, & Maines (2004) and Harper, Mister, & Strawser (1987)) we consider this effect to severely impair the decision usefulness of financial reports based on IFRS, although it is partly mitigated when non-professional investors are provided with footnotes about the underlying financial instruments. Thus, distortions in perceived risk induced by balance sheet category are unlikely to be fully corrected by the footnotes and may result in non-optimal investment decisions.

In particular, we observe on the one hand that both the "Loans and Receivables" and the "Fair Value Instruments" are perceived to be of particularly high risk regardless of their underlying economics. This holds especially in comparison with instruments "Available for Sale". A company using derivatives and presenting those as instruments "Held for Trading" is on the other hand considered to be of particularly low risk which is mainly due to the off-balance-sheet approach in accounting for derivatives. If however, derivatives usage is made explicit in the footnotes, the risk of this company as perceived by investors significantly increases.

These results can be explained by both the availability and the representativeness heuristic. When information about losses from corporate engagement in derivatives is easily available to non-professional investors, a company presenting trading assets is judged to be particularly risky even if investors have no information about the type of financial instruments actually classified as trading assets. When information about the recent subprime crisis is easily available, a company presenting "Loans and Receivables" is judged to be particularly risky. In both cases, a company presenting "Fair Value Instruments" is judged to be particularly risky. The

presentation of trading assets is obviously seen to be representative for derivatives usage just as the presentation of "Loans and Receivables" is seen to be representative for investment in consumer loans whereas fair value measurement is regarded to be a risk factor regardless of the information that is easily available.

Generally speaking, in the absence of footnotes non-professional investors seem to base their risk judgement on the type of financial instruments a category is regarded to be representative for. As a result, cognitive availability of events related to those types of instruments distorts individual risk judgement that is based on information about a company's use of measurement categories. The distortion stems from the fact that IAS 39 allows a high degree of discretion in the choice of a measurement category. By discretion, we mean that any reporting category provided by IAS 39 can in fact contain a wide range of different financial instruments not at all similar to the financial instrument typically inferred from the category's label.

This study also contributes to the literature on individual perception of derivatives usage. We identify two opposite effects that influence risk perception of derivatives relative to economically identical non-derivative contracts. The effect of the classification of derivatives as trading assets on risk perception is negative but the effect of the general off-balance-sheet approach in accounting for derivatives is positive. If we accept that financial derivatives are not used as risk-enhancing but as risk-reducing instruments as it was suggested by Guay (1999), this finding is a justification for the extant off-balance-sheet approach that substantially improves a company's debt-to-equity ratio and thereby reduces the distorting impact of the labeling effect already identified by Koonce, Lipe, & McAnally (2005).

Overall, this study is a call for standard-setting activity. Just as a presentation by product, a presentation of financial instruments by measurement categories causes significant biases in the risk perception of non-professional investors. Those biases could be reduced either by a reduction of management's discretion in the choice of measurement categories or by the introduction of a uniform presentation format that is neither based on measurement categories nor on products but, for instance, on a company's investment purposes. Such an approach would be a further step towards a true management approach in the disclosure of financial instruments.

References

Aboody, D. (1996). Recognition versus disclosure in the oil and gas industry. *Journal of Accounting Research* 34(Supplement), 21–32.

Armstrong, C., Barth, M. E., Jagolinzer, A. D., & Riedl, E. J. (2007). Market reaction to the adoption of IFRS in Europe, wharton School Working Paper.

Barberis, N., Shleifer, A., & Vishny, R. (1998). A model of investor sentiment. *Journal of Financial Economics* 49(3), 307–343.

Bloomfield, R. & Libby, R. (1996). Market reactions to differentially available information in the laboratory. *Journal of Accounting Research* 34(2), 183–207.

Bodnar, G. M. & Gebhardt, G. (1999). Derivatives usage in risk management by US and German non-financial firms: A comparative survey. *Journal of International Financial Management and Accounting* 10(3), 153–187.

Brav, A. & Heaton, J. B. (2002). Competing theories of financial anomalies. *The Review of Financial Studies* 15(2), 575–606.

Chalmers, K. & Godfrey, J. M. (2004). Reputation costs: The impetus for voluntary derivative financial instruments reporting. *Accounting, Organizations and Society* 29(2), 95–125.

Dietrich, J. R., Kachelmeier, S. J., Kleinmuntz, D. N., & Linsmeier, T. J. (2001). Market efficiency, bounded rationality, and supplemental business reporting disclosures. *Journal of Accounting Research* 39(2), 243–268.

Dye, R. A. & Sridhar, S. S. (2004). Reliability-relevance trade-offs and the efficiency of aggregation. *Journal of Accounting Research* 42(1), 51–88.

Edwards, G. A. & Eller, G. E. (1995). Overview of derivatives disclosure by major U.S. banks. *Federal Reserve Bulletin* 81(9), 817–831.

Edwards, G. A. & Eller, G. E. (1996). Derivatives disclosure by major U.S. banks. *Federal Reserve Bulletin* 82(9), 792–801.

Elliott, W. B. (2006). Are investors influenced by pro forma emphasis and reconciliations in earnings announcements? *The Accounting Review* 81(1), 113–133.

Elliott, W. B., Hodge, F. D., Kennedy, J. J., & Pronk, M. (2007). Are M.B.A. students a good proxy for nonprofessional investors? *The Accounting Review* 82(1), 139–168.

European Central Bank (2004). The impact of fair value accounting on the European banking sector - A financial stability perspective. In *Monthly Bulletin February*, ECB, Frankfurt, 69–81.

Gebhardt, G., Reichardt, R., & Wittenbrink, C. (2004). Accounting for financial instruments in the banking industry: Conclusions from a simulation model. *European Accounting Review* 13(2), 341–371.

Gramlich, J. D., Mayew, W. J., & McAnally, M. L. (2006). Debt reclassification and capital market consequences. *Journal of Business Finance & Accounting* 33(7-8), 1189–1212.

Grayson, C. E. & Schwarz, N. (1999). Beliefs influence information processing strategies: Declarative and experiential information in risk assessment. *Social Cognition* 17(1), 1–18.

Greenlaw, D., Hatzius, J., Kashyap, A. K., & Shin, H. S. (2008). Leveraged losses: Lessons from the mortgage market meltdown, uS Monetary Policy Forum Conference.

Guay, W. R. (1999). The impact of derivatives on firm risk: An empirical examination of new derivative users. *Journal of Accounting and Economics* 26(1-3), 319–351.

Harper, R. M., Mister, W. G., & Strawser, J. R. (1987). The impact of new pension disclosure rules on perceptions of debt. *Journal of Accounting Research* 25(2), 327–330.

Hirshleifer, D. & Teoh, S. H. (2003). Limited attention, information disclosure, and financial reporting. *Journal of Accounting and Economics* 36(1-3), 337–386.

Hirst, D. E., Hopkins, P. E., & Wahlen, J. M. (2004). Fair values, income measurement, and bank analysts' risk and valuation judgments. *The Accounting Review* 79(2), 453–472.

Hodder, L., Koonce, L., & McAnally, M. L. (2001). SEC market risk disclosures: Implications for judgment and decision making. *Accounting Horizons* 15(1), 49–70.

Hodge, F. D., Kennedy, J. J., & Maines, L. A. (2004). Does search-facilitating technology improve the transparency of financial reporting? *The Accounting Review* 79(3), 687–703.

Hopkins, P. E. (1996). The effect of financial statement classification of hybrid financial instruments on financial analysts' stock price judgements. *Journal of Accounting Research* 34(Supplement), 33–50.

Hsee, C. K. (1996). The evaluability hypothesis: An explanation for preference reversals between joint and separate evaluations of alternatives. *Organizational Behavior and Human Decision Processes* 67(3), 247–257.

Hull, J. C. (2006). *Options, Futures, and other Derivatives*. sixth edition, Prentice Hall, Upper Saddle River, NJ.

International Accounting Standards Board (2006). Fair value measurements: Discussion paper.

International Accounting Standards Board (2008). Reducing complexity in reporting financial instruments.

Joint Working Group of Standard Setters (1997). Financial instruments and similar items - draft standard and basis for conclusions.

Kachelmeier, S. J. & King, R. R. (2002). Using laboratory experiments to evaluate accounting policy issues. *Accounting Horizons* 16(3), 219–232.

Kadous, K., Krische, S. D., & Sedor, L. M. (2006). Using counter-explanation to limit analysts' forecast optimism. *The Accounting Review* 81(2), 377–397.

Kahneman, D. & Frederick, S. (2002). Representativeness revisited: Attribute substitution in intuitive judgment. In T. G. et al., editor, *Heuristics and Biases*, Cambridge University Press, New York, NY, 49–81.

Kennedy, J., Mitchell, T., & Sefcik, S. E. (1998). Disclosure of contingent environmental liabilities: Some unintented consequences? *Journal of Accounting Research* 36(2), 257–277.

Koonce, L., Lipe, M. G., & McAnally, M. L. (2005). Judging the risk of financial instruments: Problems and potential remedies. *The Accounting Review* 80(3), 871–895.

Koonce, L., Lipe, M. G., & McAnally, M. L. (2006). Investor reactions to derivative use: Experimental evidence, working paper.

Koonce, L., McAnally, M. L., & Mercer, M. (2005). How do investors judge the risk of financial items? *The Accounting Review* 80(1), 221–241.

Koonce, L. & Mercer, M. (2005). Using psychology theory in archival financial accounting research. *Journal of Accounting Literature* 242, 175–214.

Libby, R., Bloomfield, R., & Nelson, M. W. (2002). Experimental research in financial accounting. *Accounting, Organizations, and Society* 27, 775–810.

Minton, B. A. (1997). An empirical examination of basic valuation models for plain vanilla u.s. interest rate swaps. *Journal of Financial Economics* 44(2), 251–277.

Nelson, B., Wohlmannstetter, G., Ferron-Jolys, M.-C., & Labuschagne, R. (2008). *Focus on transparency - Trends in the presentation of financial statements and disclosure of information by European banks*. KPMG, London.

Riedl, E. J. & Srinivasan, S. (2007). Signaling firm performance through financial statement presentation: An analysis using special items, harvard Business School Working Paper.

Ryan, S. G. (2008). Accounting in and for the subprime crisis, new York University Working Paper.

Schwarz, N. & Vaughn, L. A. (2002). The availability heuristic revisited: Ease of recall and content of recall as distinct sources of information. In T. G. et al., editor, *Heuristics and Biases*, Cambridge University Press, New York, NY, 103–119.

Shefrin, H. & Statman, M. (2000). Behavioral portfolio theory. *Journal of Financial and Quantitative Analysis* 35(2), 127–151.

Shleifer, A. (2000). *Inefficient markets*. Oxford University Press, Oxford.

Slovic, P. (1987). Perception of risk. *Science* 236, 280–285.

Spooner, A. (2007). Fair value and financial instruments. In P. Walton, editor, *The Routledge companion to fair value and financial reporting*, Routledge, London, 370–384.

Steenkamp, J.-B., Allenby, G., Gupta, S., & Verducci, J. (2001). Analysis of constant sum scores. *Journal of Consumer Psychology* 10(1-2), 41–43.

Sunder, S. (2008). Econometrics of fair values. *Accounting Horizons* 22(1), 111–125.

Trombley, M. A. (2003). *Accounting for Derivatives and Hedging*. McGraw-Hill Irwin, Boston et al.

Tversky, A. & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology* 5(2), 207–232.

Tversky, A. & Kahneman, D. (1974). Judgement under uncertainty: Heuristics and biases. *Science* 185, 1124–1131.

Vietze, A. (1997). *Survey on derivatives*. IASC.

Walton, P. (2004). IAS 39: Where different accounting models collide. *Accounting in Europe* 1, 5–16.

Weber, E. U., Siebenmorgen, N., & Weber, M. (2005). Communicating asset risk: How name recognition and the format of historic volatility information affect risk perception and investment decisions. *Risk Analysis* 25(3), 597–609.

Woods, M. & Marginson, D. E. (2004). Accounting for derivatives: An evaluation of reporting practice by UK banks. *European Accounting Review* 13(2), 373–390.

Young, J. J. (1996). Institutional thinking: The case of financial instruments. *Accounting, Organizations and Society* 21(5), 487–512.

A Information set with footnotes

Part 1

There exists a vast amount of different financial instruments in business practice. Financial accounting according to IFRS demands classification of these financial instruments in different categories.

Imagine you are confronted with an IFRS financial statement which shows the following line items. Which kinds of financial instruments do you expect to be contained in each of them?

Line item	**Financial instruments contained**
Financial assets...	
- held for trading	
- at fair value through profit and loss	
- held to maturity	
- available for sale	

Part 2

You are in the position of a business advisor. Looking for investment opportunities on behalf of a client you consider recommending various investments in company shares. The client did not express any preferences over particular investments and relies entirely on your professional judgement. Part of this judgement is the evaluation of the individual risk of prospective investments.
After considerable research you have narrowed down the list of potential investments to four companies, with the following financial statements.

Company A

Assets	Balance sheet	Liabilities
Non-current assets	Equity	200
Property, Plant & Equipment 100		
	Non-current liabilities	400
Financial assets		
- Held-to-maturity 300		
Current assets		
Financial assets held-for-trading 12		
Receivables 100		
Cash 88		
600		600

Notes

Financial assets
This item contains investments in fixed interest-rate bonds with maturities between 8 and 10 years.

Receivables
Receivables are loans to customers the repayment of which is expected to occur within 6 to 12 months on average. Their effective interest rate is equivalent to the respective average short-term interest rate of private consumer banks.

Financial assets held-for-trading
This items contains only investments in financial derivatives.

Non-current liabilities
Non-current liabilities are fixed interest-rate bonds issued by company A with maturities between 8 and 10 years.

Company B

Assets	Balance sheet	Liabilities	
Non-current assets		Equity	200
Property, Plant & Equipment	100		
		Non-current liabilities	500
Financial assets			
- Held-to-maturity	300		
- At fair value through profit and loss	100		
Current assets			
Receivables	100		
Cash	100		
	700		700

Notes

Financial assets
This item contains investments in fixed interest-rate bonds with maturities between 8 and 10 years. Assets with a volume of 300 CU are classified as "Held-to-maturity" and measured at amortized cost. The remaining assets with a volume of 100 CU are measured at fair value through profit and loss.

Receivables
Receivables are loans to customers the repayment of which is expected to occur within 6 to 12 months on average. Their effective interest rate is equivalent to the respective average short-term interest rate of private consumer banks.

Non-current liabilities
Non-current liabilities are bonds issued by company B with maturities between 8 and 10 years.

Company C

Assets	Balance sheet	Liabilities	
Non-current assets		Equity	200
Property, Plant & Equipment	100		
		Non-current liabilities	500
Financial assets			
- Held-to-maturity	300		
- Available-for-sale	100		
Current assets			
Receivables	100		
Cash	100		
	700		700

Notes

Financial assets
This item contains investments in fixed interest-rate bonds with maturities between 8 and 10 years. Assets with a volume of 300 CU are classified as "Held-to-maturity" and measured at amortized cost. The remaining assets with a volume of 100 CU are classified as "Available-for-sale" and measured at fair value directly through equity.

Receivables
Receivables are loans to customers the repayment of which is expected to occur within 6 to 12 months on average. Their effective interest rate is equivalent to the respective average short-term interest rate of private consumer banks.

Non-current liabilities
Non-current liabilities are bonds issued by company C with maturities between 8 and 10 years.

Company D

Assets	Balance sheet	Liabilities	
Non-current assets		Equity	200
Property, Plant & Equipment	100		
		Non-current liabilities	500
Financial assets			
- Held-to-maturity	300		
- Loans and receivables	100		
Current assets			
Receivables	100		
Cash	100		
	700		700

Notes

Financial assets
This item contains investments in fixed interest-rate bonds with maturities between 8 and 10 years. Assets with a volume of 300 CU are classified as "Held-to-maturity" and measured at amortized cost. The remaining assets with a volume of 100 CU are long-term financial receivables and are measured at amortized cost.

Receivables
Receivables are loans to customers the repayment of which is expected to occur within 6 to 12 months on average. Their effective interest rate is equivalent to the respective average short-term interest rate of private consumer banks.

Non-current liabilities
Non-current liabilities are bonds issued by company D with maturities between 8 and 10 years.

Additional questions

At the end of this experiment we would like to ask you to answer the following general questions:

1. How would you characterise media coverage on investments in financial derivatives? (0 = very negative; 100 = very positive) _____

2. Can you recall an event which resulted in positive media coverage of financial derivatives? (0 = not at all; 100 = immediately) _____

3. Can you recall an event which resulted in negative media coverage of financial derivatives? (0 = not at all; 100 = immediately) _____

4. Which of the following courses have you completed successfully?

   `[List of courses offered by the respective university]`

5. Do you have professional investment experience (Training, Internship, Job)? ☐ yes ☐ no

6. Did you privately invest money on the capital markets during the last year? ☐ yes ☐ no

7. How confident did you feel during the experiment while evaluating risk on basis of the balance and the footnotes? (0 = very insecure; 100 = very confident) _____

8. Do consider financial reports an appropriate instrument for risk evaluation? (0 = totally inappropriate; 100 = appropriate) _____

B Manipulation of availability effects

Warren Buffett

Warren Buffett, a famous and successful US investor, writes a letter to shareholders of his company Berkshire Hathaway. You read this letter in a recent issue of the *Fortune* magazine:

> I view derivatives as time bombs, both for the parties that deal in them and the economic system. Basically these instruments call for money to change hands at some future date, with the amount to be determined by one or more reference items, such as interest rates, stock prices, or currency values. (...) But the parties to derivatives also have enormous incentives to cheat in accounting for them.
> (...)
> Another problem about derivatives is that they can exacerbate trouble that a corporation has run into for completely unrelated reasons. It all becomes a spiral that can lead to a corporate meltdown. (...) Indeed, in 1998, the leveraged and derivatives-heavy activities of a single hedge fund, Long-Term Capital Management (LCTM), caused the Federal Reserve Bank anxieties so severe that it hastily orchestrated a rescue effort. In later Congressional testimony, Fed officials acknowledged that, had they not intervened, the outstanding trades of LTCM (a firm unknown to the general public and employing only a few hundred people) could well have posed a serious threat to the stability of American markets. (...) One of the derivatives instruments that LTCM used was total-return swaps, contracts that facilitate 100% leverage in various markets, including stocks.
> (...)
> Central banks and governments have so far found no effective way to control, or even monitor, the risks posed by derivatives. In my view, derivatives are financial weapons of mass destruction, carrying dangers that, while now latent, are potentially lethal.

Larry Summers

Larry Summers, the former Chief Economist of the World Bank and US Secretary of Treasury, publishes weekly articles in the *Financial Times*. Today you read:

> Three months ago it was reasonable to expect that the subprime credit crisis would be a financially significant event but not one that would threaten the overall pattern of economic growth. Several streams of data indicate how much more serious the situation is than was clear a few months ago. First, forward-looking indicators suggest that the housing sector may be in free-fall from what felt like the basement levels of a few months ago. Single family home construction may be down over the next year by as much as half from previous peak levels.
> (...)
> Second, it is now clear that only a small part of the financial distress that must be worked through has yet been faced. (...) Estimates vary, but there is nearly universal agreement that - if all credits to private customers were marked to market valuations - total losses in the US financial sector would be several times the 50 billion US-Dollars or so in write-downs that have already been announced by big financial institutions. These figures take no account of the likelihood that losses will spread to the credit card, auto and commercial property sectors.
> (...)
> On the information available, the "super conduit" has worrying similarities with Japanese banking practices of the 1990s that aroused criticism from American authorities for their bad credits and the inhibiting effect on new lending. (...) The government needs to assure that there is a continuing flow of reasonably priced loans to credit worthy home purchasers. At the same time there need to be templates established for the restructuring of mortgages to homeowners who cannot afford their resets, so every case does not have to be managed individually.

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