

# **FAIR VALUE ACCOUNTING: THE ETERNAL DEBATE**

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### *Moderator:*

Araceli Mora (AinE Editor)

### *Panelists:*

Anne McGeachin (International Accounting Standards Board -IASB)

Mary E. Barth (Stanford University)

Richard Barker (University of Oxford)

Alfred Wagenhoffer (Graz University)

Peter Joos (INSEAD)

### **Abstract**

The last financial crisis led to a vigorous debate still in place about the pros and cons of fair-value accounting (FVA). While detractors basically argue its potential negative impact on procicality and financial stability or inadequacy in illiquid markets or specific business models, the International Accounting Standards Board (IASB) pushed to extend FVA in the new financial instruments standard and issued IFRS 13 to clarify its meaning and application. Some empirical research shows the usefulness of fair value accounting information to investors and contradicts its negative impact on stability, while other studies argue about its limitations in the contracting and stewardship role of accounting. The panelists of this symposium will present their views to contribute to the debate, which should be of interest not just to academic researchers, but also to practitioners and standard setters to deal with implementation issues and potential needs to address in the standards.

**Keywords:** Fair Value Accounting, IFRS 13, own credit risk, analysts and fair value

### **1. Introduction**

*By Araceli Mora*

On the 18th May 2018 during the European Accounting Association annual congress, which took place in Milan a Symposium on Fair Value Accounting (FVA), was organized by *Accounting in Europe*.

Since the beginning of the financial crisis, criticisms were raised against the International Accounting Standards Board (IASB) and the US Financial Accounting Standards Board (FASB) accounting standards for financial instruments in general, and more in particular on FVA<sup>1</sup> and the impairment model under the amortized cost measurement criteria<sup>2</sup>. The G20 welcomed the recommendation and explicitly asked standard setters to improve standards on financial instruments with the aim of achieving a single set of high quality accounting standards. As an immediate response, the two

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<sup>1</sup> FVA already was controversial before the crisis, as showed in the carve-out in IAS 39 in the IFRS endorsement process in EU (Van Mourik & Walton, 2018)

<sup>2</sup> The changes in the loan losses impairment models is widely analysed in Giner & Mora (2019)

Boards set about developing new standards. Despite the efforts made to achieve a common proposal, some significant differences remained, being highly significant in the case of the loan losses impairment models. However, in spite that this last financial crisis led to a vigorous debate still in place about the pros and cons of FVA, the changes in the standards on financial instruments do not drive to a lower use of fair value. While detractors basically argue its potential negative impact on procicality and financial stability or inadequacy in illiquid markets or specific business models, IASB pushed to extend FVA in the new financial instruments standard and issued International Financial Reporting Standard (IFRS) number 13 to clarify its meaning and application.

In this sense, the fact that in market-based economies accounting information fulfils two main roles, valuation and stewardship (or contracting) has been used as theoretical arguments to deal with this controversy. The more general view is that the different missions are in conflict, and particularly in the event of a financial and economic crisis such conflict results in political pressure on standard setters (Zeff 2012). There are also some recent studies whose main research question is if macro economic crisis might affect accounting value relevance (Bilgic, Ho, Hodgson & Xiong, 2019). While some empirical research shows the usefulness of fair value accounting information to investors and contradicts its negative impact on stability, other studies argue about its limitations in the contracting and stewardship role of accounting.

The panelists of this symposium present their views to contribute to the debate, which should be of interest not just to academic researchers, but also to practitioners and standard setters to deal with implementation issues and potential needs to address in the standards. This paper shows the transcription of the speeches given by the panelists.

## **2. Fair Value in IFRS**

*By Anne McGeachin<sup>3</sup>*

I want to set the scene by briefly covering three things: first, how fair value measurement is used in IFRS standards at the moment, i.e. what we've done so far, then to look at what we found from our recent post implementation review of IFRS 13. IFRS 13 looks at how you measure fair value. It doesn't tell you when to use it, but it tells you how to measure it when you are required to use it. Then, finally, to look at the use of fair value in the future, i.e. what we might do in terms of using fair value going forward in the context of our revised conceptual framework.

### ***2.1. When do IFRS standards use fair value measurement?***

So, how has fair value been used in IFRS standards so far? The IASB is sometimes criticised for having a goal of using fair value measurements for everything, but, in fact, as you can see in figure 1, the use of fair value in IFRS is quite limited. The figure includes a reasonable list of standards, but if you look into that, fair value is often only used for a small aspect of the standards. So, for example, with IAS 19 employee benefits, you use fair value but only to measure the plan assets. You don't use fair value to look at the plan liabilities at all. And for IAS 36 and IFRS 5 we use fair value less

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<sup>3</sup> IASB staff. The views expressed in this presentation are those of the presenter, not necessarily those of the International Accounting Standards Board (the Board) or IFRS Foundation.

costs to sell as part of the impairment model to look at recoverable amount. So unless you're thinking about whether assets are impaired, it's not the main measurement aspect in those standards. Under IFRS 9 we use fair value, but not for everything—only for specific financial instruments. So IFRS 3 and IAS 41 are the standards where fair value is required for a substantial amount of the measurement, but when you think about that in the context of all our IFRSs, that's not that often.

We also permit fair values in some cases, so that entities have a choice. If they want to use fair value measurements, they can. That's true for property, plant and equipment, intangible assets and investment properties. In practice, I think only investment properties are frequently measured at fair value. Not very many companies, if any, measure intangible assets at fair value. And then, finally, we require fair value disclosure for some items, for example sometimes where maybe there is a choice of measuring them at fair value or cost. So the use of fair value at the moment in IFRS is possibly more limited than many people imagine, or the image that is sometimes projected of how we use fair value.

(FIGURE 1 near here)

## ***2.2. IFRS 13 Post Implementation Review***

We recently completed a post implementation review on IFRS 13. IFRS 13 sets out how you measure fair value, i.e. if an entity is required to use it or can choose to use it under standards, how do they derive that measurement. In doing this post implementation review we focused on specific areas that we identified through outreach with a broad range of stakeholders. The areas that we focused on in the post implementation review were the usefulness of the disclosures about fair value and then a number of specific measurement aspects. The unit of account, is an issue that some people feel very strongly about: whether you should look at an observable price for, say, a single share in the market, or whether you should adjust that if you hold a block of shares or not. People express different views. Some people think we've got the right answer. Some people think we haven't got the right answer.

We also looked at the extent to which you have to apply judgments, particularly in level three measurements of fair value. IFRS 13 establishes a hierarchy of fair value measurements. Level 1 is where there are observable prices in the markets. Level 2 is where an entity can make an estimate of fair value by using observable inputs. And then level three is where you don't have observable prices and not all the inputs you need are observable. So you need to make estimates and use judgment.

Finally, we also looked at how to apply the idea of using the highest and best use for non-financial assets because there were some people who were struggling to know how to implement that. We also touched on two specific issues where people were telling us that measuring fair value was particularly difficult, and those were biological assets under IAS 41 and unquoted equities under IFRS 9.

We put out a request for information on those issues and the key message that came back was that IFRS 13 is working well. Most people find it helpful and are able to use it to get to their fair value measurements, so that was really good from our point of view. We were also told that it has improved financial reporting. As part of the post

implementation review we commissioned an academic literature review of how IFRS 13 has been used (Filip et al, 2018). The very positive result from that literature review from our point of view was that fair value information is relevant. That was well established in the academic literature. Interestingly, it's not just level one fair value information that is relevant, but also level two and level three fair value information is regarded as relevant. That was good news from our point of view. It supports what we're doing in terms of fair value and in terms of how IFRS 13 is working.

We've got significant feedback on disclosures, particularly about level 3: what sort of aggregation or disaggregation might be useful or not useful and the costs of developing that information compared to the benefits that they give. And we got a lot of feedback on this issue of PxQ. Users want to have the measurement based on the observable quoted share price without adjustments. They think that's the best representation of the fair value. Preparers in general would like to make some sorts of adjustments, so that is an issue where there is a divergence of view.

How are we going to follow up on that information? In terms of disclosure, we've also got a disclosure initiative and we've got projects looking at disclosure. In particular, we've got projects that are going to be looking at disclosures in standards, involving a standards level review of particular standards to see if the disclosures there can be improved and whether we can take general messages from that to apply to disclosure generally. The feedback that we've got from the post implementation and review of IFRS 13 will feed into that project. We are going to continue liaising with the valuation profession. Over the last ten to fifteen years the techniques for developing fair value measurements have developed and improved a lot. We want to continue discussing with the valuation profession how that should be done to make sure that we're picking up on all the best new ideas and getting the best possible measurements. We're not planning to do any other follow up on the post implementation review because, as we said, from our point of view the results were very favourable and very positive. The feedback we've got seems to suggest that, by and large, it is working well and there aren't major problems. I know there are some particular issues that are controversial, but we've been through our standard setting process and we've arrived at where we are.

### ***2.3. Fair value in the revised conceptual framework***

Finally, I want to highlight how we might be using fair value in the future. How does it fit in with our recently issued measurement chapter in the conceptual framework? In the previous conceptual framework there was very little on measurement, and what did exist was not very helpful. There was a list of measurement bases, most of which were never used in IFRS standards, and absolutely no guidance at all on how you would choose one rather than the other. Because of this, the board didn't refer to it when it was making standard-setting decisions. Therefore, coming up with something on measurement was a priority in the conceptual framework project—to develop something that the board would find useful and would be able to use in making decisions about choosing measurement bases.

The chapter describes a process whereby we identify measurement attributes that we think might be potentials for use in financial reporting and we divide them into two groups. Thus we've got historical cost and we've got current value. With regard to historical cost, we explain in the conceptual framework that it includes the notion of

amortized cost in IFRS 9 and we say that historical costs are measures that are derived from the transaction or other event that gave rise to the asset or liability. So, if some part of the measurement can be tracked back or arises out of the transaction or the event itself, then that means it's in the historical cost bucket.

Current value, on the other hand, is updated to reflect conditions on the measurement date. There we've got a collection of different measurement attributes that include fair value. We have fair value. and we have value-in-use and fulfilment value. The latter two are essentially the same notion, but value-in-use relates to assets while fulfilment value relates to liabilities. For current value, you update the measurement to reflect all the conditions of the measurement date. So, in principle at least, if there's any sort of stickiness in the measure it's regarded as a historical cost. If it's all updated, it's the current value.

But that's not quite the end of the story because we also allow for modifications of the measurement basis. So, for example, if the board were thinking about fulfilment value, it might decide that, in principle, fulfilment value includes an assessment of the entity's own credit risk and, in principle, it would update that assessment at each reporting period, which would be consistent with a current value perspective. But the conceptual framework also says that often such a measure might not give useful information, and therefore the board might want to customise or modify fulfilment value to exclude own credit risk. The board would think about whether it wanted to modify any of the measurement bases, so it might think about modifying fair value in particular circumstances as well.

There is discussion in the conceptual framework of the information that these measurement bases give, and some examples. Broadly speaking, with regard to historical cost, the conceptual framework says that if an entity is using assets together in combination in some sort of transformative way to produce things, then historical cost can give useful information about margins, which users find helpful. Regarding current value, the conceptual framework says if it is important to users that they get information about changes in prices and in other factors, then that's something that might drive the board towards a current value.

The difference between fair value and value-in-use and fulfilment value is that fair value looks at things from a market participant perspective while value-in-use and fulfilment value look at things from an entity specific perspective. So those three measurement attributes look at the same inputs essentially but from a different perspective. They are all exit values while current cost is a current entry value and it looks at the price that the entity would pay now for the asset or what it would have to be paid to assume the liability.

Finally, what does the conceptual framework say about how we would select that measurement basis? It says that the board needs to think about what gives useful information, so it ties it back into the theme that runs through the conceptual framework about relevance and faithful representation. We want entities to produce information that is relevant and gives a faithful representation. This applies to recognition, to measurement and also to presentation. So in terms of measurements, the conceptual framework says for relevance that one should think about both the characteristics of the asset and liability and the contribution they make to future cash flows. Thus one

question is whether the asset or liability is particularly sensitive to market variables. If so, then maybe something that reflects that an up-to-date measure, that shows that variability, provides useful information. On the other hand, if the asset or liability contributes to future cash flows in combination with other assets and liabilities, and if users want information about margins, then maybe a historical cost measure might be more relevant.

In terms of faithful representation, we want to avoid creating accounting mismatches. Now, it is true that the board expects that this decision-making approach will result in a mixed measurement model. The board does not expect that thinking about relevance and faithful representation will lead to it always picking the same measurement attribute for every asset and every liability. But, given that the board expects to be using a mixed measurement model, it also needs to be aware of the problems that arise from accounting mismatches. The board does not want to mislead users of financial statements by creating mismatches that arise only because it has chosen different measurement bases. So that is going to be a factor in how the board chooses the measurement basis.

Another aspect of faithful representation is that considering the effects of measurement uncertainty. Almost all measures involve some sort of uncertainty. The only one that perhaps doesn't is a level one fair value where you can actually observe the price in the market. All the others involve some sort of measurement uncertainty. Historical costs, for example, require you to estimate the useful life of the assets, and to think about impairments. So measurement uncertainty is a factor for all the different measurement bases that we've identified. The conceptual framework is not saying that measurement uncertainty makes information not useful. Even a high level of measurement uncertainty would not necessarily prevent that measurement from providing useful information. But the conceptual framework acknowledges that there are occasions where the level of measurement uncertainty could be so high that maybe another measurement basis would give more useful information. So that's something that the board will consider.

Of course, the conceptual framework also includes the enhancing qualitative characteristics— understandability, verifiability, timeliness and comparability— and the cost constraint. But again, it's important to realise that that cost constraint applies across all types of measurement bases. It might seem that historical cost is less costly, but that's not true once you start to consider impairment issues. Fair value or current value may seem a very costly way of getting information, but again that's not necessarily true for level one fair value where there are observable prices. There's always going to be this balance of different factors. It'll be very interesting to see what decisions the board makes.

## **2. Fair Value Accounting Commonly Held Beliefs: Insight from Research**

*By Mary E. Barth*

My remarks focus on how research can shed light on some commonly held beliefs regarding fair value accounting. When I do not understand something in accounting or there is a debate or a question about it, my natural tendency is to conduct research to try to determine what the issue is, and apply rigorous thinking and evidence to the question. Today, I'd like to share with you some of what I have learned.

I have selected three commonly held beliefs about fair value accounting to talk to you about this morning. The first belief is that fair value accounting caused the financial crisis, the second is that fair value earnings is useless, and the third is that liability fair value changes from changes in own credit risk should not be included in profit or loss.

### **2.1. *Did fair value accounting cause the financial crisis?***

The first commonly held belief is that fair value accounting caused the financial crisis. I address this validity of this belief with Wayne Landsman and Amir Amel-Zadeh in *Contribution of Bank Regulation and Fair Value Accounting to Procyclical Leverage*, which is published in the *Review of Accounting Studies*. The motivating question for our study is to what extent do fair value accounting and bank regulation contribute to procyclical leverage. I'll explain what procyclical leverage is in a moment. The specific research question we address to provide insight into this motivating question is: how could procyclical leverage occur? We generally expect that when a firm's economic condition declines, leverage should increase because asset values have declined. But procyclical leverage says that is not the case—when the firm's economic condition declines, leverage increases, or at least it does for banks that engage in behaviour that results in increases in assets.

A key question is how leverage can decrease when credit risk increases or when there is trouble in the financial markets. The first step in our study is to provide an answer to this question. The second step is to determine whether commercial banks exhibit procyclical leverage, which is what prior research finds for other financial institutions. Then, we focus on addressing our main research question of what explains procyclical leverage for banks. Does the bank regulatory leverage constraint explain it, or is it fair value accounting? Many are concerned about the financial crisis, but we would like to know whether our findings apply regardless of the state of the economy. Thus, we also determine whether the answers to these questions differ in economic upturns and downturns.

The crisis story goes as follows. In the crisis there are exogenous negative shocks to asset prices, banks recognise losses, leverage increases, banks sell assets, and leverage decreases. If asset sales are excessive, the banks sell too many assets and leverage ends up being procyclical. That is, when there is a negative shock to asset prices, bank leverage decreases rather than increases or remains the same. There also likely is a feedback loop that people talk about, whereby the drop in asset prices causes banks to sell assets, the sales depress asset prices more, which causes banks to sell more assets, and the loop goes around and around exacerbating the situation. This also is referred to as the contagion effect. The result is more procyclical leverage. Many claimed that fair value accounting was responsible for this situation because fair value accounting would require banks to recognise the asset value declines, thereby precipitating asset sales. However, commercial banks must meet a constraint based on how bank regulators calculate leverage, which differs from accounting leverage. Thus, banks need to manage to regulatory leverage. Accounting leverage is dollar for dollar, but in the regulatory capital calculation assets are risk-weighted, with weights ranging from zero to one. Thus, our study focuses on the difference between accounting leverage and regulatory leverage to see the extent to which that difference explains procyclical leverage.

What do we find? The first part of the paper provides an algebraic analysis to determine how procyclical leverage could occur. That analysis reveals that when the regulatory leverage constraint binds, absent differences in regulatory risk weights across assets, procyclical leverage does not occur. The second part provides the empirical results. We find that commercial banks exhibit procyclical leverage. Importantly, we find that regulation explains procyclical leverage for banks that are relatively close to their regulatory leverage constraint and contributes to procyclical leverage for others. Fair value accounting does not contribute to procyclical leverage in economic upturns or downturns. Thus, our overall conclusion is that bank regulatory requirements explain leverage procyclicality during the crisis, not fair value accounting.

## **2.2. *Is fair value earnings useless?***

The second commonly held belief is whether fair value earnings is useless for investors focused on valuing the firm. I address the validity of this belief with Wayne Landsman in *Using Fair Value Earnings to Assess Firm Value* in *Accounting Horizons*. This is a thought piece and not empirical research, but we believe the observations we make are worthy of further study and consideration. The question motivating our paper is: Can fair value earnings provide information to financial statement users that is helpful in making their economic decisions, including valuing the firm? If so, how? The specific questions on which we focus are: What information is in fair value earnings? and Can disaggregation of fair value earnings reveal information that can be used to assess firm value?

Table 2 in our paper (reproduced in figure 2) provides an example of the conclusions we draw. The first column in the example makes the simple assumption that at the beginning of the year an asset is expected to generate \$1,000 per year in perpetuity and the interest rate is 10%. This means the asset value is \$10,000. In this column, because there are no unexpected changes during the year, the asset value is expected to remain \$10,000 and expected fair value earnings is \$1,000. However, in reality there would be changes in expectations and realized cash flows would differ from expectations. The second column incorporates changes in the discount rate and expected cash flows, and actual cash inflows differing from expectations. In this column, the asset value is \$10,000 at the beginning of the year and \$13,333 at the end. Fair value earnings is \$4,483. The question is: What does the \$4,483 mean? This is where people struggle with fair value earnings. If you divide the \$4,483 by the cost of capital of 9%, you do not get the asset value of \$13,333. I believe this is a key reason people conclude that fair value earnings is not useful for assessing firm value.

Table 4 in our paper (also reproduced in figure 2) offers a disaggregation of the \$4.483 that reveals there is quite a bit of information in fair value earnings. The expected return on the asset at the beginning of the year was \$1,000 and the update of the expected annual cash flow of \$200 results in an updated expected return at the end of the year of \$1,200. This is what I would view as sustainable or recurring earnings, which users seem to seek. Terms such as sustainable, recurring, and core earnings are not well defined. The table 4 disaggregation provides some rigour and structure around what it is, namely the expected return. This is the amount expected to be received in perpetuity. However, this amount is not fair value earnings. Other things happen during the year. There are unexpected earnings components, which are non-recurring by definition—



definable non-recurring components, rather than “special items” that companies identify but often are not truly non-recurring. Thus, the table 4 disaggregation provides a benchmark against which to assess current year performance. In particular, at the beginning of the year, expected earnings was \$1,000 and actual earnings is \$4,483. Why? What happened during the year? How much of the \$4,483 was attributable to market fluctuations? How much of it was attributable to management activity? The \$1,200 expected return is the sustainable, recurring part of earnings. If you divide \$1,200 by the cost of capital, you get the asset value, which helps predict future cash flows.

(FIGURE 2 near here)

### **2.3. *Should fair value changes from changes in own credit risk be in profit and loss?***

The third commonly held belief is that including in profit or loss changes in debt value associated with changes in the firm’s credit risk is counterintuitive and inappropriate. I address the validity of this belief with Leslie Hodder and Stephen Stubben in *Fair Value Accounting for Liabilities and Own Credit Risk* in *The Accounting Review*. The motivating questions in our study are: Do changes in credit risk effect liabilities’ fair value? Would net income be misleading if it were recognised? The latter question is the heart of the controversy over fair value of liabilities and own credit risk.

Again, an example helps illustrate the issue. Assume a firm begins with assets of \$1,000, debt of \$800, and equity of \$200, and then the asset value decreases to \$900. What do we accountants do? We impair the asset by debiting a loss and crediting the asset for \$100. But, remember, profit or loss is for the equity holders—that’s why interest on debt is an expense. Thus, the question is whether equity holders bear all of the \$100 impairment loss. Do debt holders share in the asset value decrease? That is, did the value of the debt decrease too? If it did, then the value of the liability is something less than \$800, say it is \$780. In this case, the equity holders only bear 80% of the loss, not 100%. Merton (1974) theoretically establishes that the debt holders bear some of loss. If we first recognise the \$100 impairment loss, then \$20 of it needs to be reversed by debiting the liability and crediting a gain of \$20. People say: “Wait a minute. How can the firm have a gain when asset values decrease? I cannot help but wonder whether the accounting would be more intuitive if we had just made the entire entry in the first place. That is, debit a loss of \$80, debit the liability for \$20, and credit the asset for \$100. There is no gain. The \$20 reversed an over-recognised loss.

In the paper, we subject this intuition to empirical validation by testing whether equity returns associated with changes in credit risk are attenuated when the firm has more leverage. We find that they are, which reveals that equity holders understand that they do not bear all of the loss or gain. Unfortunately, the accounting does not reflect these effects.

We also use Merton’s (1974) model to obtain estimates of asset and liabilities values and conduct “what if” analyses on alternative accounting treatments. What if we had recognised the change in debt value in profit or loss—would the effect on profit or loss be as strange as people think? The answer is not really. The directions are as one would

expect. Firms with asset value decreases would recognise higher profit or lower loss, but the difference is almost never big enough to offset the otherwise recognised loss from the asset value decrease. That is, for real firms, including debt value changes in profit or loss is not apt to be misleading. We also make some assumptions about firms' recognised asset write-offs during the year and find that recognised write-downs exceed the so-called gain on debt. Of course, a confounding problem is that we do not recognise all assets, such as intangibles, which means we cannot write them down when they decrease in value. However, our study shows that, for the most part, the write downs we do recognise are larger than the so-called gains on debt.

Do changes in credit risk effect liabilities' fair value? Yes. Would net income be misleading if the effect were recognised? Based on our findings, I do not think so.

## **2.4. Concluding remarks**

As with all new ideas, it is healthy to challenge fair value accounting, even though I'm not sure how new of an idea fair value accounting is. The topic of this panel is "Fair Value Accounting: The Eternal Debate," which suggests it has been around for a while. Firms have been disclosing fair values of financial instruments, including securities and debt, for many years—about 20 years in the United States. Despite this, it is healthy to challenge fair value accounting, to determine when it aligns with intuition, common sense, and economic theory and helps achieve the objective of financial reporting. I believe this is where research can play a role. When conducting research, we apply conceptually sound and internally consistent methods to answer these questions, apply rigorous thinking analyses that are subject to extensive peer review, and build on prior research to help complete a picture. We do not attempt to do everything in one paper. In addition, research is not opinion or advocacy; it offers an unbiased perspective. This is key to research helping to ensure that accounting is a learned profession as well as a fabulous practical profession.

## **4. Fair value: Conceptual issues**

*By Richard Barker*

When I was asked to talk about fair value today, my first thought was: Are we still talking about fair value? This has been a contentious issue from the start of the life of the IASB and to some extent remains so. It's not immediately obvious. We have just heard a couple of defences of fair value. But of course there are many who remain instinctively critical, instinctively critical, unpersuaded by the notion, and it's worth trying to explore why that might be the case. The thoughts that I will present here are based on an empirical study of the difficulty of applying fair value to non-financial assets (Barker & Schulte, 2017), but the points I'm going to make are conceptual ones and I think essentially quite simple. However, there's a bit of subtlety in there as well and I hope it will help to get to some of the underlying source of conflict.

What is fair value? Well, it's essentially an application of financial economic thinking into a space that is traditionally associated with the recording of transactions. And it's unique in the sense that it's the only measurement attribute that's the subject of a full standard. In the revised version of the framework, the IASB has started to think about other measurement attributes and started to say something about those. But there's no question that it has given a far greater amount of attention to this one. Thus, it's not

surprising that critics of the IASB see it as too single-minded, working too hard to promulgate (and defend) this measurement attribute and not giving enough attention to others.

What is it about fair value? What's special about it? What's distinctive about it? I think there are two things. The first is that it's explicitly market oriented, representing the perspective of the market participant. The second is that it insists on the generality of that perspective. Now this is in principle. This is not saying that the IASB insists on a full fair value approach in financial reporting. Clearly, that's not what it is doing in practice. But what it is doing in this standard is saying 'in general, this is how you apply fair value.' There's also a logical fit with the framework. If you think about an asset as a stream of future economic benefits and so on, it can get you into a mind-set of financial economics, of future cash flows that get discounted into present value, and through that lens fair value can become a 'natural' measurement attribute. So I think that those are the two distinctive features – a market perspective, that is generally applicable. The second feature is the one that I think is going to be particularly important in what I'm about to try to describe.

What's the appeal of a market perspective? Well, the following is actually taken from FASB's framework, but it illustrates a logic that is very similar to that which lies behind IFRS 13 (FASB, 2000, para. 26):

*Among their many functions, markets are systems that transmit information in the form of prices. Marketplace participants attribute prices to assets and, in doing so, distinguish the risks and rewards of one asset from those of another ... An observed market price encompasses the consensus view of all marketplace participants about an asset or liability's utility, future cash flows, the uncertainties surrounding those cash flows, and the amount that marketplace participants demand for bearing those uncertainties.*

The idea is that markets reveal prices, in a way that is external and objective. It's very much an economist's way of thinking about the world and it has a very strong intuitive appeal. The market is made universal in IFRS 13. The idea is that you either have a Level 1 fair value, in which case there is a market transaction and you just record that transaction, or you have at the other extreme a Level 3, where you hypothesise what the market price would be if there was a market. And there is conceptual guidance in IFRS 13 as to how you would in principle go about doing that. So the idea is that Level 3 extends the reach of accounting technique. It doesn't restrict accounting to traditional verifiable transactions. It says: "Here's a way of thinking about measurement that extends to all possible situations, even when there isn't a market."

At Level 1, it seems to me that fair value is not particularly distinctive. It's just exit price. And, linking to revisions to the framework, there's also not a meaningful distinction here between reliability and faithful representation. So, if reliability is 'traditionally' about being able to verify then, in the framework revision, faithful representation instead captures some broader notion of what's being represented in the accounts (Power, 2010). But at Level 1, if you have a reliable measure of fair value, you also have a faithful representation, so there's no meaningful distinction between those two concepts. At Level 3, however, a simple but subtle point arises, which is

whether the concept of being able to faithfully represent a fair value is meaningful or not.

The IASB introduced faithful representation to be a broader concept than just verifiability. It describes a situation where you have measurement uncertainty or you are still 'faithfully representing' because go through a reasonable process for trying to estimate the value of something, even though you can't actually verify it. This is moving away from some narrow notion of reliability to a broader notion of putting a reasonable measure on something that you 'know' exists, even though you can't verify the carrying amount. Thus the concept of faithful representation is an important corollary to the notion of Level 3 fair value.

Now, let me take a slight abstract turn; please bear with me. If you want the full description of this, it's summarised in Barker & Schulte (2017), drawing upon (Searle, 2010). This is just to give you a soundbite. John Searle is a distinguished philosopher, and one of the things he works on is the nature of social reality. He gives the example of a line of stones on the ground, which interested parties agree defines a boundary between properties. What is happening is that the stones are assigned the function of being a boundary, which causes them to be so, even though this function is observer-related and is not an intrinsic property of the stones themselves. The stones act as a boundary because, and only because, all the parties agree that this is the case. Now the point here is that you have something that is socially constructed. It exists only because everyone agrees that it exists and they act on the basis that it exists. So the wall acts as a boundary because we agree it's a boundary, and we respect the rights and obligations associated with the boundary because we have a consensus view that this thing exists. All accounting data have that ontological property. But thought the stones-as-boundary is a subjective social reality, rather than an intrinsic property, it is nevertheless an epistemologically objective fact that there is a boundary. It's observable. It's verifiable. It's a thing. So you can demonstrate that this thing exists even though it only exists because we say it does. Now I hope that makes sense as an example. As I said, it's a short description.

This applies to thinking about Level 3 fair value. So if you are at Level 1, you have the social structures, the institutions, the agreements, the rights and the obligations, and so on, that create the objectively verifiable institutional fact. So, it's not an intrinsic property of a company that has a share price. It doesn't physically exist in that sense, but it exists socially because we agree it exists and we create contracts that are binding around it. So at Level 1 you have an observable fact that you can report in financial statements. At Level 3, and this is the core difficulty with Level 3, and presumably why it is instinctively challenged, there is no such reality. If markets don't exist, those rights and obligations, those conventions, and so on, have not actually been agreed. There is therefore nothing to be faithfully represented. So the point is that the concept of faithful representation does not in principle apply at Level 3. There's a kind of logical incoherence in IFRS 13; it is not possible to faithfully represent something that does not exist to be represented, and insisting on the generality of a market participant's perspective means insisting on applying a concept to an imaginary world. Now, that doesn't mean that it's not a practically useful expedient to have Level 3 fair value and for that to be one of the options for a measurement attribute, but it does involve a conceptual sleight of hand.

I'd like to just mention briefly another project, a paper presented at the IASB's Research Forum, which is a rather nice way to connect these two worlds together here. It's concerned with uncertainty in accounting and how uncertainty is captured and represented, and the role of accounting in reporting what we can say that we know, rather than what we estimate about things that we don't know (Barker & Penman, 2019). An argument in this paper is that the asset recognition criteria should be extended in the framework, so that you shouldn't recognize an asset unless, *ex ante*, realisation uncertainty is low, or the amortization scheme can be established reasonably reliably. The idea is that if you think towards the income statement consequences of asset recognition, you should only recognise things that are either *ex post* fair value gains or losses that you can say belong in the reporting period or *ex ante* amortised cost amortisation schemes that you can allocate to time periods reliably. If you can't do either of those things, then you're not providing useful information to investors with respect to resolving uncertainty. The reason I mention this is that an implication of thinking in this way is actually highly consistent with almost all of the ISAB standards, but it's inconsistent with IFRS 3 Business Combinations. So, in the standard that Anne (McGeachin) mentioned, in which assets are widely recognised at Level 3, our extended recognition criteria are not satisfied. The absence of a verifiable institutional reality is again the challenge here, and presumably it is the underlying reason for instinctive, widespread concern with respect to requirements of IFRS 3. This is a different but similar perspective, looking at the primary conceptual limitation of IFRS 13.

## **5. Fair Value Accounting: An Economic Theory Perspective**

*By Alfred Wagenhofer*

### ***a. The eternal debate and why we have the same debate today***

We have heard several different perspectives on fair value and I would like to add to the debate from an economic perspective. The question why this is an eternal debate and why we are having the same debate today is interesting. One could go back a hundred years or even longer when people started doing current values rather than cost. In Germany in the 1870s and also later in the US, it was rather the norm before people started to think about it and then came up with cost-based measurement. Now we discuss fair values again. From an economic perspective, the real question concerns what has changed and has given the fair value debate a different flavor?

I think there are two major changes. One is that practical business has changed. We've had a lot of developments in different markets, but particularly financial markets. These have grown enormously over the many years until now, and firms create and use financial instruments for risk management and for hedging, and also to do all sorts of financial engineering. This bears the question of how to deal with those complexities in contracts, how to account for them, and it's not a simple binary decision. Take the distinction between equity versus liabilities for example. It's apparently not that easy to come up with a clear distinction. And it has measurement implications. Fair value seems to be a measure that tries to capture economic characteristics of financial instruments.

The other change that has occurred is in accounting theory. Originally, there were a lot of theories in the 1920s to the 1940s trying to answer how to deal with measurement, allocations, inflation and other issues. But more recently the paradigm shifted to finance

theory that offers very simple and elegant theories, like efficient capital markets and the CAPM. People use valuation models based on these theories when they estimate fair values and values in use. Everybody knows that these theories are not an ideal basis to derive values because empirical research shows they do not explain much. Application also becomes very complex, and there's a big demand for consulting trying to figure out all the details, refinements, and necessary data. But conceptually, they are still very elegant.

So what does this all mean for fair value measurement? We've got fundamentally different recognition and measurement standards for financial instruments and for operative assets. These two asset categories are very distinct. Fair value actually took off with financial instruments for reasons that I was talking about earlier, and the question then is: When we consider operating assets, could we use the same kind of conceptual basis for measurement or should there be differences? The recent IASB Conceptual Framework tries to provide a consistent conceptual basis, for example, by aligning the recognition and measurement criteria, but it retains actual differences for financial instruments and operative assets.

What I would like to do in my remarks is to talk about some theoretical insights that highlight issues regarding fair values. This is important because it can qualify the use of the elegant finance theory.

#### ***b. More information is not always better***

Suppose fair values are viewed as more informative than other measurement bases, such as cost. This should be good. But a first insight that results from theory is that more information is not always better. To provide the intuition for this, assume that fair value would be the ideal measure and there are no measurement issues. So it provides an unbiased signal of market value. I'd like to give you some examples of situations where this is economically detrimental.

One example I'm sure most of you know of is the social value of public information. This goes back to Hirshleifer (1971), who considers security markets and risk-averse traders that have a beginning portfolio and are then allowed to trade on the market. When public information arrives, this reduces trading because once people learn more about the assets, they don't want to trade anymore or find no one to trade with. In other words, there's no risk sharing with others and trade can eventually break down in the market and everyone is stuck with their beginning portfolio, which need not be the optimal one.

While this holds for public information, let's move to private information by firms, which present or disclose information about themselves. There is an area that is now called Bayesian persuasion. Consider the following example (Göx & Wagenhofer, 2009) with a setting where a firm seeks to finance a new project by issuing debt, and lenders would like to know the value of collateral, which is important for the decision to provide debt financing. The question here is how to measure this collateral, not the debt. Of course, full fair value of the collateral provides the best information about the value of the collateral. Lenders will then provide the loan if the fair value is sufficiently high. Firms have an incentive to only provide good information, but essentially they can provide bad information as well because it doesn't matter because they will not

receive funding anyway. So the question then is whether fair values do best in terms of the opportunity to raise capital for an ex ante positive NPV project. Or would it be better to not disclose some values?

In fact, one can show that a policy of disclosing only low values does strictly better. This is counter-intuitive because the firm does not get funding after disclosing bad news. However, the key is that if it does not disclose, lenders infer that it must be good information that's being withheld, and they will provide the financing if the withheld information on average is sufficiently good. What one can show is that this disclosure strategy strictly increases the probability to obtain funding for the ex ante positive NPV project. This disclosure strategy is consistent with cost-based measurement and impairment. Although it provides less information than fair value, it increases welfare in expectation.

There are other situations in which more information makes things worse, for example, when accounting information has real effects. A typical argument when deciding about what are good measurement bases is looking at price efficiency in the capital market, that is, how strong prices react to information. The real effects literature focuses on the fact that measuring events changes behavior. So it might be the case that firms do things that are not intended by the standard but nevertheless are a consequence of the standard.

Here are two examples. One is about short-term and long-term investment (Kanodia, 2007). This relates to what the European Union is up to—promoting long-term financing and long term investment—and they consider accounting as a way to induce long-term financing, to ensure that people are not too myopic in their decisions. Now when earnings, which capture short-term profits and some part of long-term profitability, are reported, investors are rational and update their beliefs about future profitability based on that information. But they also seek additional information about future profitability. Suppose the firm decides whether to invest in a new project. Clearly, if prospects are unfavorable, it should not invest. Knowing that, if investors observe actual investment, they view it as a signal for favorable prospects. Exactly this induces the firm to overinvest. And there are also examples where firms underinvest. Of course, the market is not fooled but understands this incentive and discounts the signal. Still, the incentives remain. Over- and underinvestment are real costs and reduce firm value. You see the difference between price efficiency and economic efficiency. Alternatives could be less frequent reporting or the provision of more long-term profitability information that is verifiable.

The other example is about using market prices as a management performance measure (Shin, 2007). Let's assume there are managers with limited tenure and they work consecutively to produce some final payoff. Management compensation is based on the change of the firm's market price, and this is a perfect measure of what interests investors. The market is rational and anticipates all the future unobservable efforts by the managers and prices them correctly. The problem is that when one uses market price as a performance measure, the conjectured effort is already included in the market price, and actual effort is unobservable. Each manager sees there's no way they can change the market beliefs by their unobservable effort choice. So, actually, the best response is not to expend effort. One might then say that the market is stupid, but actually the market is pretty rational. What's happening is that the market anticipates these missing incentives and it prices the firm with the value given no manager exerts effort. This is

indeed the equilibrium but it is a very bad economic outcome. And it is the real effect of using a perfect measure of firm value.

### *c. Importance of verifiability*

Another aspect of the fair value debate is verifiability or verification, which are important characteristics of financial reporting. In terms of decision usefulness, one question to ask—if one wants to provide useful information to the market participants on future cash flows—is whether it should be the fair value, which is an aggregate measure of future cash flows anticipated by the market, or other information that underlies the stream of future cash flows. It could be other kinds of information, like past transactions for example. Hence there's not clear why one should put fair value in the balance sheet in all cases. It may be more the fundamental and verifiable information affecting future cash flows that informs investors who use their own models, aggregation procedures and additional information sources to estimate future cash flows.

This is how the confirmatory value of accounting information comes in. In empirical research, many people do event studies to examine whether the market reacts at the time when information becomes publicly available. But very often information is leaked through other channels—there are announcements, forecasts, press releases and other sources, but that information is not verifiable. The role of financial statements is to provide verifiable information and, with that, to lend credibility to earlier disclosures. So it's no wonder that once per se unverifiable information is disclosed in the market, the market prices it, and when the financial statements are disclosed, there's no market reaction any more. But that doesn't mean that other sources are informative but financial statements are not.

Decision usefulness is one use of accounting information. Contracting and assessing management stewardship is another. The key characteristic of such information is that it is verifiable and thus contractible. Timeliness and other characteristics are secondary.

Particularly when choosing among different measurement bases, verifiability is clearly important. We have many enforcement institutions around financial reporting—consider board monitoring, auditing, audit oversight, public enforcement—and the question is whether they can verify measures that include management's beliefs, for example. Often, they can only check the accounting process but not the outcome. Essentially, my point is that it's not only the accounting standards—and the underlying measurement concepts—that can be useful or informative, but it's also the enforcement environment built around those standards. Suppose a firm is in a low-enforcement country, then fair value might just be a highly managed number relative to a fair value in other countries where enforcement is effective. In the low-enforcement country an application of a less informative measurement basis might actually be more informative than a managed fair value.

### *d. Standard setting challenges*

I conclude with some challenges in standard setting. Should we have differentiation within standards? For example, should measurement depend on the availability of market prices? In terms of verifiability, market prices (level 1 fair values) are easier to



verify than level 3 fair values, so fair values that are not market prices have a big disadvantage. I also discussed about whether financial reporting should be useful for investors to form market prices or whether one uses market prices to create this accounting information.

I talked about possible differentiation of measurement concepts applicable to operating and financial activities. IFRS, for example, distinguishes between business models that are based on the intent to use an asset in a particular company because intent is relevant for estimating future cash flows the firm will produce. There are also questions accounting for synergies among assets, which occur mostly with operating assets and not with financial instruments.

Finally, there is the question how to deal with uncertainty in fair value measurement. Should there be more information about the precision or variances of asset and liability values? Or should we be rather more interested in their covariances to gain an aggregate picture of uncertainty? Perhaps these issues get new answers once Big Data and algorithms take over. Information overload and aggregation will then be seen in a much different light. But data quality—the verifiability aspect—will remain to be important.

## **6. Analysts and Fair value**

*By Peter Joos*

Contrary to the previous presentations, which were based on theory and academic research, I will take us into the office of the sell-side analyst who has to deal with fair value disclosures and fair value accounting. What I'm going to do in my brief remarks is first describe two examples of how analysts have dealt with fair value accounting issues in practice and then conclude by making a couple of broader remarks to illustrate how fair value accounting numbers present challenges for one category of market participants, i.e., analysts.

For my first example I want to take us back to 2015 and focus on the company Noble Group. This is a well-publicised example, documented in many business school case studies. In February 2015, an independent research company wrote a number of scathing reports on this particular company. The reports highlighted several issues, but in particular brought to the forefront the fair value accounting of Noble Group for its commodity trading contracts.

Noble Group is a commodity trader and its business had been growing substantially. Commodity contracts were a major part of their business model and Noble was marking to market these contracts for accounting purposes. The independent research company published a report to illustrate that there actually was a problem with this. They pointed out that, because of the mark to market accounting, the profits of this particular company showed a nice pattern, whereas the operating cash flows showed quite a different pattern. Why was that the case? Because as they were marking these contracts to market, they were booking a lot of gains on these contracts early on in pro-cyclical fashion.

Now, imagine that you're the sell-side analyst who's covering this particular company and this independent report comes out. What do you do? Obviously, your clients want to know what you think about this. My example illustrates this reaction with a report

from a real analyst written at the time to address the client demand faced. In the first few days after these independent reports come out the analyst sticks to his original view. However, he also points out that what the independent research company has done is take a particular view on how to measure accruals and cash flows. In his report he points out that there are other ways to look at the same issue that would make the disparity between the two metrics a lot smaller. The most important thing he writes though is that he could be wrong on the matter and that the real problem is that it is unclear as to what's going on. Noble Group had been increasing the volume of these particular contracts, marking them to market, i.e., using fair value accounting, but the disclosures pertaining to these contracts had been lacking. This had left the analyst in the dark and therefore, ultimately, at that point in time, he could not address the issue.

This is one illustration of how tough it can be for analysts to, on the spot, deal with issues that come up related to fair value accounting as they hit the market.

My second example is more recent and concerns Alphabet. So, just a month ago Alphabet reported its earnings and showed a surge in profit, but equally a jump in expenses. That was the headline of the earnings announcement. But, importantly, and this is what caught my attention, Alphabet's earnings got a multibillion-dollar boost from stakes in start-ups, including Uber. So what had happened was that in the first quarter 2018, US GAAP introduced fair value accounting for non-marketable securities. Accordingly, a Wall Street Journal article wrote that Alphabet's first quarter earnings received a big boost from this change in accounting rules related to measuring the change in value of Alphabet's stake in Uber. The amount involved was three billion dollars and therefore material, showing up on the income statement. Alphabet also presented a beautiful disclosure indicating that this number indeed reflected a gain on equity securities during this particular quarter.

So again, imagine you're the analyst who covers Alphabet. What do you do? Obviously, the analysts was aware that this accounting change was going to happen. So I looked up one actual analyst report, with the telling title: "What's the number?" In this report, the analyst shows a table with income statement line items in different columns showing both expectations and actual numbers. Was the analyst wrong on this particular line item? You bet! The number that the analyst had forecasted was a lot smaller than the actual number that Alphabet reported. Since the actual number presented information to both the analyst and the markets, the analyst actually applauded the change because it allowed him and the market to see a little bit more of what goes on inside the black box at Alphabet: with all these stakes now being reported at fair value on the income statement, it is possible to get a better sense of what some of these moonshots imply for a company like Alphabet.

The problem though is that the analyst's job is not just about reading these statements and saying something about them, but rather it is about forecasting. So what can the analyst do here? The model in the note includes a line—"other items"—that reflects the change in value of the stake in Uber. And basically in this note, the analyst increased the magnitude of this number from around 1.5 billion to 4.5 billion dollars now. That's a substantial increase that directly feeds into the earnings per share forecasts. What caused this change? As mentioned, the reported fair value change related to Uber was around three billion. So to forecast this item for the foreseeable future, the analyst simply put in the same figure every single quarter. To mimic the challenge the analyst faces, I suggest that we all write down the number that we think is going to be the change in value of Uber quarter by quarter in the foreseeable future. I'm not quite sure

that we would get it right either. But this is the challenge that analysts face. The number is on the income statement so they have to forecast it. They have to put the forecasts into their spreadsheet and they have to stick their neck out and publish them. That is not that easy.

Different analysts commented on this issue around the same time by pointing out that this fair value accounting for non-marketable securities is good because it provides new information. But it also increases P&L volatility. And it might also might lead to a new set of non-GAAP measures that we all know very well. Ultimately, and this was their final point, it might lead to what they call the behavioural response— companies changing the way they structure their contracts etc. to avoid some of these reporting effects.

So what is the take-away, in my opinion, from these two short examples? First, there is some good news in that fair values provide information. But the problem with fair values is that we may not know how to forecast them in the future. In the example I just showed, it was great to know the fair value of the delta in Uber for this year or this quarter. But what does this number tell us in terms of the value changes of next quarter, or the quarter after that etc. And the job of analysts is to put down a number for the future on a piece of paper in black and white. That is where their challenge lies.

This brings me to my broader point. The examples highlight that it is good to think about putting rules together to guide accounting. However, it is equally important to think in the same context about how these accounting numbers will feed into the market. The examples bring to the forefront the issue of management guidance. In my personal opinion, analysts will often just take the numbers that management gives them in this context because they have no way of doing a better job in terms of forecasting them. This practice underlines the importance of management guidance and it also highlights the importance of non-GAAP metrics. Companies will vary in terms of how they implement fair value accounting rules and this creates challenges in terms of comparability across firms. It also highlights, and I applaud the standard setters for thinking about these issues with the primary financial statements project, the issues of separating operating from non-operating components of the financial statements. For example, is Uber part of the operations of Alphabet? We could argue about that but the answer to that question would affect our forecasts of operating income and the like.

The final thing I want to say is that I realize that people are often sceptical about analysts. However, the analyst job is not an easy one. One particular challenge analysts face is that companies present numbers to analysts and their clients at investor presentations. Subsequently, in their discussions with clients analysts do not necessarily spend time explaining their view on the these accounting numbers presented to their institutional clients. They want to talk about the underlying business, the narratives etc. to make the case for the stock call.

This is a key challenge in the context of information flows into the market. As mentioned, we can come up with good accounting rules, but we have to think about how the numbers that result from these rules feed into the market. It's a bit unfair to put the blame on the analyst if things prove difficult. They are forced into a particular way of working that makes them subject to choices made by management in terms of guidance, or in terms of non-GAAP, and this is particularly the case in dealing with fair value accounting numbers.

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## **FIGURES**

## IFRS 13 applies when another IFRS Standard...

requires fair value measurement for some or all items within its scope, with or without IFRS 13 disclosures

permits fair value measurement, with IFRS 13 disclosures required

requires fair value information for items measured at cost

IFRS 3 *Business Combinations*\*

IFRS 9 *Financial Instruments*\*\*

IAS 36 *Impairment*\*, \*\*

IAS 19 *Employee Benefits*\*, \*\*

IAS 41 *Agriculture*

IFRS 5 *Assets Held for Sale*\*\*

IAS 16 *Property, Plant and Equipment*

IAS 38 *Intangible Assets*

IAS 40 *Investment Property*

IFRS 9 *Financial Instruments*

IAS 40 *Investment Property*

Figure 1: When IFRS use fair value

\* IFRS 13 disclosures are not required.

\*\* Applied to some items in the scope of the Standard or to items in specific circumstances

TABLE 2		
Fair Value Earnings: Realizations Differ from Expectations and Changes in Expectations		
	Expected at Beg. of Year	Actual
Asset fair value end of year: \$1,200 per year at 9%	\$10,000	\$13,333
Asset fair value beg. of year: \$1,000 per year at 10%	10,000	10,000
Change in fair value	\$0	\$3,333
Cash collected during the year	1,000	1,150
Fair value earnings	\$1,000	\$4,483
Expected return on asset: \$10,000 at 10%	\$1,000	\$1,000
<i>Unexpected</i> decrease in expected return: 10% to 9%	0	1,111
<i>Unexpected</i> increase in expected cash flows: \$1,000 to \$1,200	0	2,222
<i>Unexpected</i> cash inflow: \$1,150 instead of \$1,000	0	150
Fair value earnings	\$1,000	\$4,483

This table illustrates fair value earnings for a firm with a single asset that has expected cash flows of \$1,000 per year in perpetuity with a discount rate of 10 percent. During the year, the firm collects \$1,150, which exceeds expectations by \$150. In addition, expected cash flows for subsequent years increase by \$200 per year to \$1,200, and the discount rate decreases from 10 percent to 9 percent.

TABLE 4		
Disaggregation of Fair Value Earnings to Assess Firm Value as Well as to Provide a Benchmark for Assessing Current-Year Performance		
Expected return on asset beg. of year		\$1,000
Update of expected annual cash flows		200
Expected return on asset end of year		\$1,200
<i>Unexpected</i> decrease in expected return: 10% to 9%		1,111
<i>Unexpected</i> increase in expected cash flows: \$1,000 to \$1,200		2,222
<i>Unexpected</i> cash inflow: \$1,150 instead of \$1,200		–50
Fair value earnings		\$4,483

This table provides an alternative disaggregation of fair value earnings illustrated in Table 2 for a firm with a single asset that has expected cash flows of \$1,000 per year in perpetuity with a discount rate of 10 percent. During the year, the firm collects \$1,150, which exceeds beginning-of-year expectations by \$150, but is below end-of-year expectations by \$50. In addition, expected cash flows for subsequent years increase by \$200 per year from \$1,000 to \$1,200, and the discount rate decreases from 10 percent to 9 percent.

Figure 2. Tables from Barth and Landsman (2018).