



The Subject Matter of Financial Reporting: The Conflict between Cash Conversion Cycles and Fair Value in the Measurement of Income

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Overview

This paper challenges the prevailing view of primacy of assets, its consequence of a balance sheet-based financial reporting model and its extension into a full fair value accounting model.

The paper starts with an analysis of the *business activity* as the object of financial reporting, its subject matter, which is characterised as investing cash in non-cash resources to be combined according to a specific economic logic to generate future net cash flows. The causation of net cash flows is the business activity in its entirety, not single non-cash resources or constructs like “net assets”.

The paper argues that different business activities have different business models based on a different economic logic and that the value of a non-cash resource to an activity depends on the way it contributes to the net cash inflows under the economic logic of the activity in progress, i.e. depending on its function and use.

Contribution to net cash inflows are described to be of two basic types: contribution by use and contribution by exchange. Contribution by exchange refers to the economic logic of purchasing and selling the same non-cash resource, where the inputs and outputs are physically the same resources. For this type of activity, the final, concluding cash flow contribution to its cycle can only be achieved by giving up the resource.

Contribution by use refers to an economic logic that is based on the addition of value through the use of the non-cash resource including the addition of further input. Contribution by use can occur in the form of ‘sacrifice’ where the non-cash resource is consumed, or can occur without consumption, i.e. without change in character, identity or disappearance. Contribution by use with consumption is marked by the definite character of its initial cash outflow as the direct and final cash flow contribution to the activity. Non-cash resources in use without consumption can contribute by generation of their own cash inflows or by saving of cash outflows that otherwise would have to be incurred for its input.

Contribution to net cash inflows by use and contribution by exchange are mutually exclusive concepts as one cannot use a resource that is sold. The paper claims that accounting concepts and measurement attributes have to be aligned with the inherent economic logic of an activity if faithful representation is to be achieved. If alignment fails, e.g. by the use of inapplicable assumptions in contradiction to the economic logic of the activity, the concepts are flawed and misinformation is produced.

The paper then applies its theses to different non-cash resources in use for different business activities starting with production activities and the use of machines and raw materials. The conclusions drawn from the examples are essentially the following:

When non-cash resources are in use, i.e. not sold, their value at measurement date has to represent the unconsumed amount of initial cash conversion. Temporary value changes that are not confirmed by cash flows can be relevant information; however, they are not relevant to periodic income. Reporting of temporary value changes as income represents misinformation when those changes have to be reversed in subsequent periods as the assumptions used are proven erroneous.

The implications of these conclusions are tested in depth in a case study of interest bearing financial instruments in a banking book which is provided in full length as exhibit at the end of the paper. The examples show how the exit-value assumption of full fair value accounting creates erroneous volatility in results between different periods with a clear pro-cyclical tendency in an upturn as well as in a downturn. Though the main fact lies in the use of the inapplicable assumption of the “sale” of the non-cash resources, the analysis also provides evidence

that the use of discounted cash flow analysis is methodologically incompatible with earnings' based valuation methods. Critically, the paper provides further evidence that its theses are applicable to any non-cash resource that is serving a particular business model. Interest bearing assets and liabilities are revealing no different characteristics as derivatives with the same cash flow profiles and characteristics over the cash conversion cycles described. These findings support the claim that financial reporting and measurement attributes have to be aligned primarily with the economic logic of the activity rather than the type of non-cash resource employed.

Based on the Hicksian concepts of income with its focus on the separation of income *ex post* and income *ex ante*, the paper concludes that a clearer distinction between fair value changes as information and fair value changes as income is essential. The paper suggests a primacy-of-activity view on grounds that the business activity of an entity is the ultimate subject matter of financial reporting. Under this view, earnings or the income of an entity during a specific period are represented by the change in cash together with the changes in non-cash resources' ability to contribute to the net cash inflow of the business activity. Changes in the cash-value of non-cash resources do not qualify as income when their cash flow contributions have not and will not change.

Introduction

The current renewed debate on fair value accounting highlights some fundamental flaws in the underlying framework the IASB and FASB use. This paper considers an alternative view based on many years of experience in dealing with measurement and disclosure issues in managing a large financial institution.

Undeterred by the wave of criticism, the IASB published its Exposure Draft of an “improved” Conceptual Framework that largely retains the flaws of the previous discussion paper. Although the Exposure Draft claims to be committed to a principle based approach rooted in fundamental concepts, the draft does not stand up to this benchmark.

The IASB, apparently, has decided to limit the depth of its work to a convergence exercise between the existing frameworks of both the IASB and the FASB. The boards have seemingly made the decision on behalf of their constituencies in the belief that a comprehensive reconsideration of concepts is unnecessary, because many aspects of their frameworks are thought to be consistent with each other and therefore do not need fundamental revision.¹

Contrary to this declaration, the project has not left the existing frameworks untouched, but bent them by interpretation towards a view that appears to be prevailing amongst some Standard Setters, the “asset and liability view”. In this view, income is a measure of the increase in the net resources of the enterprise during a specified period.² The ‘existing’ IASB Framework does not have the same focus and is quite open to different views, as expressively stated in par. 110 of the Framework.

According to par. 110 of IASB’s Framework, it was not the intention of the predecessor of IASB to prescribe a particular accounting model. If this intention is to be reviewed, it should be done with an appropriate fundamental analysis presented to the IASB’s constituency, rather than a decision outside the consultative process in a way that would seem to go against good practice and due process. The divergence from the current basis and the avoidance of appropriate consultation is further evident in the Exposure Draft’s Basis for conclusion³, where the decision to deviate from FASB’s primacy of reporting performance is explained. It is unsurprising that respondents to the “preliminary view” on the conceptual framework thought that “the Boards prejudged the objective of the statement of financial performance in this DP”.⁴

¹ IASB Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, op.cit., P. 8 (London: IASB, May 2008) .

² Bullen and Crook (2005), p. 7.

³ IASB Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, op.cit., paragraph BC 1.35 (London: IASB, May 2008).

⁴ Comment letter summary, Board Meeting 20.2.07, Information for Observers, Agenda Paper 3A, p. 17, No.53; Board Meeting 20.3.07, Information for Observers, Agenda Paper 10B, No. 47 and Agenda Paper 10A, No.14 – 18.

The effect of this pre-emptive decision is compounded by the IASB's Discussion Paper on Reducing Complexity in Reporting Financial Instruments suggesting only one measurement basis for financial instruments, full fair value. This proposal is a derivative of the flawed asset-liability-concept as expressed by IASB's "critical idea" of measuring net assets to determine income.⁵

This paper attempts to initiate discussion⁶ around a fundamental conceptual analysis that the IASB is unwilling to undertake. In the author's view, a principle based approach must start with the fundamental concept of the objective of financial reporting. From this, conclusions can be drawn which significantly influence discussions on a higher level of the principles concerned, such as the measurement issues. Thus this paper aims at initiating a discussion and proposes some solutions that to my knowledge have not been actively discussed until now.

The paper suggests a "primacy-of-activity" view of financial reporting on the basis that the business activity of an entity is the ultimate subject matter of financial reporting. Under this view, earnings or the income of an entity during a specific period are represented by the change in cash together with the changes in non-cash resources' ability to contribute to the net cash inflow of the business activity. Changes in the cash-value of non-cash resources do not qualify as income when their cash flow contributions have not and will not change. However, they are temporary values which require appropriate disclosure.

This view differs substantially from the IASB/FASB's asset/liability primacy view, which suggests that earnings should be measured by reference to the changes in periodic current cash-values ("as-if exit prices") of individual assets' prospective cash inflows. This view leads to income recognition of asset/liability changes even when the cash flow contributions of the resources in question have and will not change.

⁵ IASB Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, op.cit., paragraph BC 1.37 (London: IASB, May 2008); For a short reference to the history of FASB's belief that earnings represent change in value which can only be determined by valuation of assets, see Dichev (2007), p.15.

⁶ The comprehensive debate, requested by European Financial Reporting Advisory Group Draft Comment Letter on IASB Discussion Paper, *Reducing Complexity in Reporting Financial Instruments* (Brussels: EFRAG, September 2008), Appendix, response 7, 60, should start with the subject matter of financial reporting and be performed through "blue sky thinking" as suggested by EFRAG loc. cit., 48.

The Subject Matter of Financial Reporting

According to the IASB, the objective of financial reporting is the presentation of financial information about a reporting entity that is useful for decisions of capital providers.⁷

The concept of “information usefulness” has been dominating the discussion around financial reporting, culminating in the new sharpened definition of decision-usefulness for capital providers. Information is considered as “decision-useful” when it helps to assess an entity’s ability to generate net cash inflows.⁸ Which information would be necessary to enable such assessment is defined in the Exposure draft (OB15): information about economic resources (assets) claims to them (liabilities and equity), effects of transactions and other events and circumstances that change resources and claims to them.

How exactly this information enables the assessment of future net cash inflows is described by the board’s “critical idea”, which ties together its views on financial position and performance⁹ of an entity. An entity is supposed, first, to identify and measure its assets and liabilities, resulting in net assets. The performance for the past reporting period, which capital providers are trying to assess for the future, is then represented by the change¹⁰ in net assets of the entity. Thus, the boards prescribe to users how they are supposed to assess prospective net cash inflows of an entity and which information to use in what sequence.¹¹

Whilst much attention has been given to the objective of financial reporting, less energy has been invested in the object itself, namely its subject matter. In fact, the 2006 Discussion Paper apparently did not consider it necessary to discuss the subject matter¹² – i.e. what is it precisely that we are reporting about? Whilst the current exposure draft has introduced the notion of financial reporting providing information “about a reporting entity”, this is inadequate, as it does not articulate the importance of the fact that the subject matter is the activities of the reporting entity. This fact has only been recognised in the separate Discussion Paper on the

⁷ IASB Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, op.cit., Chapter 1, S 2, paragraph OB 2 (London: IASB, May 2008).

⁸ IASB Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, op.cit., paragraph OB 9 (London: IASB, May 2008).

⁹ IASB Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, op.cit., paragraph BC 1.37 (London: IASB, May 2008).

¹⁰ Between the start and the end of the past period.

¹¹ Specifically critical to the chance of success of this ‘method’: Dichev (2007).

¹² Whereas the IASB Framework, paragraph 12, refers to an entity in the definition of the objective, it was absent from the earlier IASB Discussion Paper, *Preliminary Views on an Improved Conceptual Framework for Financial Reporting* (London: IASB, July 2006). Neither S 2 nor OB 2 have mentioned the subject matter of financial reporting. Paragraph OB 1 refers to reporting by an entity. Only later, when defining which information should be provided (Discussion Paper 2006, paragraph OB3 ff), one could discover that it was an entity whose resources and cash flows were to be reported.

“reporting entity”, which explains the “thing”¹³ that is the subject of financial reporting. This recognition, however, does not entail a “precise definition” of entity, but a broad description as being “a circumscribed area of business activity”.¹⁴ The Discussion Paper is focusing on boundaries, on the separation of “the thing” from those who are interested in “the thing”. The broader implications beyond the issue of separation itself have not been analysed.

When the “business activity” is recognised as the ultimate subject matter of financial reporting, a closer analysis of this subject matter can provide insight as to which information may be helpful for which assessment and which information is suitable to the reporting’s purpose. Though this thought is not particularly new¹⁵, it is important for it to be included in the Framework once again. It may be comforting to some that the IASB has elevated this discovery to the level of “economic phenomena”.¹⁶ Now, this economic phenomenon can be analysed as to how best to depict its substance for a faithful representation¹⁷ in financial reporting.

¹³ IASB Discussion Paper, *Preliminary Views on an Improved Conceptual Framework for Financial Reporting: The Reporting Entity*, paragraph 16 (London: IASB, May 2008).

¹⁴ IASB Discussion Paper, *Preliminary Views on an Improved Conceptual Framework for Financial Reporting: The Reporting Entity*, S 2, paragraphs 22, 24, 27 (London: IASB, May 2008).

¹⁵ Godfrey et.al. (2003), p. 98, “The established and underlying objective of accounting is the measurement and reporting of the economic activity of an entity”.

¹⁶ IASB Discussion Paper, *Preliminary Views on an Improved Conceptual Framework for Financial Reporting: The Reporting Entity*, paragraph 21(c) (London: IASB, May 2008).

¹⁷ IASB Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, op.cit., S 4 (London: IASB, May 2008).

The Essence of a Business Activity

What are the essential characteristics of a business activity that financial reporting needs to observe and reflect for a faithful representation? The Exposure Draft offers several clues as to what a business activity consists of, e.g. paragraph OB 6 indicates that the business activity generates cash flows with OB9 adding the focus on net cash inflows. OB10 mentions reinvestment in operations and OB16 refers to cash flows being generated by an entity's operations that result from combining several of its economic resources. Thus the business activity could be described as operations combining different economic resources to generate net cash inflows. OB20 supports this thesis by mentioning buying, producing, selling and other (forms of) operations¹⁸, while OB23 differentiates financing and investing activities on the one hand and the entity's operations on the other; the latter seems to be assumed as being based on a business model.

These descriptions in the Exposure Draft indicate that the board presumes that it is clear and obvious to everyone concerned what a business activity consists of. Yet, the need to understand an entity's business model and the alternatives of different operations would indicate that different models and operations could be generators of different net cash inflows. The same could be said for the underlying gross cash outflows and inflows. This may have consequences for the selection of information to be provided and even the relative importance of one information-set over another. The following is an attempt to gain a deeper understanding of the essence of business activities and its implications for financial reporting.

The descriptions are also not dissimilar to those already found in existing literature: operations generating cash flows, combining of resources, producing, business model etc. Paton and Littleton¹⁹, one of the earliest influences that have shaped the discussion on financial reporting, described the economic activity of a business enterprise as consisting "in uniting materials, labour, and various services to form new combinations having new utilities". Their definition refers to a "production activity" that "uses material things and services". The question of what else a business activity could be thought of has been explained by Edwards and Bell, who made the distinction between two separate types of "purposive profit-making activities"²⁰:

(1) those that yield a profit by combining or transforming factors of production into products whose sale value exceeds the value of the factors; and

(2) those that yield a gain because the prices of the assets rise while such assets are in possession of the firm.

¹⁸ IASB Discussion Paper, *Measurement Bases for Financial Accounting – Measurement on Initial Recognition*, (London: IASB, November 2005) cites in a footnote (paragraph 47, Fn 12) "the production and sale of goods and the provision of services".

¹⁹ Paton and Littleton (1940), p. 13.

²⁰ Edwards and Bell (1961), p. 36.

The profit is caused in the first case by *using* factors, and in the second case by *holding* factors or products. This causal relationship between what the activities consist of, using factors versus holding, the action and its effect, the profit, is a central piece of logic necessary for a faithful representation of business activities. Activity type (2) consists of the purchase of a factor or an asset and its subsequent sale which (hopefully) results in a profit. Activity type (1) *uses* factors, i.e. combines or transforms factors and creates something different, a (new) product. Thus activities type (1) and (2) are mutually exclusive in relation to factors or assets. One cannot use a factor when it is sold.

One element of the definition requires further attention. The term “transforming” indicates something that happens that either changes the factor in use significantly or replaces the factor – which thus is sacrificed – by something new. This property of a production activity, transformation, has been described as effecting “a change in the form of raw material by the consumption of labour and machine-power”.²¹ “Operating activities... are related to the transformation of purchased and internally-produced inputs into goods and services”²², “where acquired or internally-created assets are continually sacrificed or transformed for the larger goal of producing revenue and earnings”.²³ The term ‘factor’ has been replaced by ‘input’ which can be replaced by the term “resources”: “profit is generated through the combination of different resources, including potentially unrecorded intangibles...”²⁴

Of course, the simple addition of assets is not a sufficient way of capturing the production activity. But, what is missing to explain the added value? According to Paton and Littleton²⁵, “the added utility is given to the product by the process of business operations itself”.

By definition, activity requires people to act. It requires intellectual and physical input to perform any business activity. The input comes from human resources as plans have to be made and decisions taken *before* any asset can be purchased and transactions can be executed: this needs human resources. This highlights a critical fact for financial reporting: a business activity involves more resources than a balance sheet can reflect in the form of assets. Moreover, a business activity consists of more than a pure, mathematical addition of all factors used: it is the combination of factors by a *process*. The secret lies in the process that is specific to each type of business activity. It is the process and the organisation of it that makes a combination of factors successful or not.

²¹ Paton and Littleton (1940), log cit.

²² Dichev (2007), p. 20.

²³ Dichev (2007), p. 10.

²⁴ Cooper (2007), p. 14. It is apparent that resources are more than assets. Therefore, the definition of economic resources as assets in IASB Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, op.cit., paragraph OB 6, 15 (London: IASB, May 2008) is erroneous. Assets are economic resources, however, economic resources are more than assets!

²⁵ Paton and Littleton (1940), p. 14.

A wooden board and four wooden sticks, alone, do not make a table. Something more is needed: the activity of combining them, uniting these resources, *in a specific manner*. It needs a specific activity and the activity has to be performed in a certain way to generate a table. The sticks have to be cut to an equal length to become useful as part of a table. If two of the legs are attached to the bottom, the other two to the top of the board, cost has been incurred without added value being created. Any business activity has to follow its inherent logic – any product or any service to be provided is subject to the logic of the activity it is assigned to.

The message from this example is twofold. First, business activity entails human activity performed in a certain manner, “a process”. Second, any business activity has its own specific procedural logic, i.e. certain processes are required and certain combinations of resources “work”. Others do not. From this follows the fact that the economic logic of business activities finds its expression in the causal relationships between resources and the process in which they are combined.

Every “business activity”, the subject matter of financial reporting, has this inherent attribute: an economic logic, specific to each type of activity. It is this specific logic that capital providers are referred to when requesting an understanding of the business model and the operations of an entity.²⁶ Any business activity includes an entrepreneurial idea, followed by a business plan that details how to acquire “assets and other factors of production and then, an organisational design that combines these factors, to produce added value in the form of products or services”.²⁷ The generation of net cash inflows from a business activity is causally dependent on its specific economic logic.²⁸

Thus, a business activity – independent of its different types – could be described as consisting of combining different resources according to an economic logic to generate net cash inflows.

The concept of net cash inflows requires some examination, as ‘Net’ is always the product of something ‘Gross’. Net cash inflows are the product of gross cash inflows less gross cash outflows²⁹, the latter being smaller. An explanation of the causal relations between cash, cash inflows and cash outflows for a business activity is offered by FASB’s CON 1, par 39: “...business enterprises ... invest cash in non-cash resources to earn more cash.” A given amount of cash is converted into something else, a non-cash resource, to be re-converted, eventually, back to cash. As FASB’s Con 1 recognises, by referring to investors and creditors, this definition is valid for any investment activity. The simple aim of the activity is to end up with more cash than it

²⁶ IASB Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, op.cit., paragraph OB 23 (London: IASB, May 2008).

²⁷ Nissim and Penman (2008), p. 42.

²⁸ Unfortunately, this is frequently confused with the subjective opinion of management.

²⁹ Whereas the initial IASB Discussion Paper, *Measurement Bases for Financial Accounting – Measurement on Initial Recognition*, S 3 (London: IASB, November 2005) contained a gross description of cash inflows and outflows, the current IASB Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, op.cit. (London: IASB, May 2008) refers either to ‘net cash inflows’ (paragraphs OB 9,12,15) or just ‘cash flows’.

started with. This is, in short, the definition of the cash conversion cycle and, as will be developed further below, this cycle has its own logic for business activities.

Thus the essence of a business activity could be described as investing cash in non-cash resources to be combined according to an economic logic to generate net cash inflows. Observing the inherent economic logic of a business activity combined with the specific logic of its cash conversion cycle should lead to recommendations for information required by a faithful representation³⁰.

³⁰ This is in line with some observations of the Advisory Committee on Improvements to Financial Reporting, *Final Report to the United States Securities and Exchange Commission* (Washington, D.C.: SEC, August 2008), e.g. p. 3, "...accounting standards should be based on business activity..."; p. 5, "A better approach would be to focus on the nature of the business activity itself..."

The Cash Conversion Cycle

A business activity is marked by its conversions. The initial conversion of cash signals the start of the activity, the final reconversion into cash documents its end. It occurs because of a transaction. This act of conversion is characterised by an important quality. Conversions represent an exchange, the “giving up” of one thing for obtaining another, cash for non-cash and vice versa. The conversion of one resource (cash) into another (non-cash) by exchange causes a transformation of the nature of the resource.

Cash³¹ never has a net present value other than its own face value, i.e. a multiplier of one. Cash doesn't grow or earn by itself; thus, it is not a source of income. Cash by itself is “unproductive”. To earn something, to have value added – i.e. more cash –, cash needs to be converted to a non-cash resource. Only, if cash is “given away”, i.e. invested in or exchanged for a non-cash resource, is there a basis for the expectation of receiving more cash.

The initial conversion of cash into a non-cash resource changes the nature of economic resources from general to specific. The choice of a non-cash resource is determined by the economic logic of the business activity. It follows the choice of activity and its logic, the business model. At the same time, the purchase of a non-cash resource documents its assignment to a specific activity through its links with the business model. This is the intellectual content of the phrase ‘it becomes input to the activity’.

The term input describes the assignment of a non-cash resource to an activity. The term also indicates the supportive character of the resource within the economic logic of the activity. During the progress of a business activity various non-cash resources become inputs to the process. The first will always be the ‘human resources’ or labour factor. It makes no difference, whether it is the entrepreneur as business-owner or non-owners employed that start the activity, e.g. design the plan, organise the process and start purchasing further input. Human resources, always, are the first assignment of resources to a business activity.³² Any further cash conversions for additional input as well, e.g. assets, undergo this transformation from a general economic resource to a specific one through the assignment to the activity.

The ultimate aim from the outcome of the activity is “more cash”, i.e. a net cash surplus or net cash inflow from the outcome of activity. A re-conversion of the output back to cash is finally required. Again, it represents an exchange and the giving up of one thing for another. The re-conversion of non-cash to cash

³¹ The term “cash” represents un-invested cash. As soon as cash is invested it becomes a non-cash resource.

³² Because it is impossible to reliably measure the impact of this input, it is considered as being immediately consumed by the activity. The amount of cash converted, money paid, is considered the final cash flow impact to the activity. The use of the resource is considered to occur in parallel with the final outflow of cash. Input equals consumption of resource as expressed by final amount of cash outflow, cost.

completes the conversion cycle and the change of non-cash resources specific to the activity back into the general economic resource, cash. It marks the end of the cycle as at the end of an activity, the resource ought to be cash again. It is only when cash has been received that a new cycle can begin.

The exchange transactions that represent conversions cause cash flows. Cash flows indicate cash conversions and re-conversions. They are the evidence of transactions of activities and proof of their progress. Cash conversion cycles (“CCC”) at their start and at their completion are inevitably marked by cash flows³³. Cash outflows indicate input or the arrival of a non-cash resource (“NCR”). Cash inflows indicate re-conversion of output and the “giving up” of a NCR (through exchange or consumption). Cash flows are the key elements for any reality test³⁴ of fact over fiction.³⁵

The logic of CCC: 1. cash outflow \implies 2. NCR in = input

4. cash inflow \Leftarrow 3. NCR out = output

When an activity is completed, only cash remains. Consequently the existence of non-cash resources reveals that an activity has not finished, the cycle remains incomplete. However, the non-cash resources in existence at such a moment can be either input or output. One is destined to be used, potentially consumed and sacrificed whilst the other is destined to be reconverted to cash. The distinction of non-cash resources as input versus output is essential for the assessment of their contribution to the net cash inflow of the activity and a judgment on its progress.

³³ The netting of cash flows does not alter the character of the event. A positive cash flow, e.g. payment for a service, and a negative cash flow, e.g. granting of a loan for the cash payment due, that are netted against each other, still represent the end of one and the start of a different CCC.

³⁴ Schmalenbach (1933), p. 113: “Revenue {cash inflow} and expenditure {cash outflow} as the benchmark of reality”. The terms in brackets added.

³⁵ Nissim and Penman (2008), p. 39 ff: truing-up principle: reconciliation against a cash transaction.

Non-cash Resources to a Business Activity

The logic of the cash conversion cycle is initially one of “cash out”, then “cash in”; and for non-cash resources first input, then output.³⁶ After completion of the cycle, there is only cash, no non-cash resource. Consequently, the non-cash resources that appear as assets in the balance sheet belong to cycles that are unfinished. They represent either input unused, unconsumed, or output, incomplete and/or unconverted. Thus their status (input or output) is a consequence as well as evidence of the progress of the activity towards completion in its specific cycle. Unfinished cycles create complexity for reporting due to their different levels of completion and the different economic logic inherent in their respective activities. Assets are non-cash resources unconverted, in transition between conversion from cash and reconversion to cash either as input or as output.

Non-cash resources – whilst still input – are tools serving a purpose to the activity, not the purpose itself.³⁷ The relationship of a supporting non-cash resource to a business activity is ultimately defined by its impact on the activity’s cash flow conversion cycle, expressed as contribution to cash inflows over cash outflows.

Different business activities have different models based on a different economic logic.³⁸ Non-cash resources assigned to different activities will contribute in different ways to the activities’ cash flows according to the inherent logic of their business model. These differences lead to unavoidable complexity in financial reporting.³⁹ Contributions depend more on the activity’s logic than the type of resource. The same type of non-cash resource can contribute in different ways. Financial reporting about a business activity and its ability to generate cash flows requires the analysis⁴⁰ of any supporting resource as to its relation to the activity.⁴¹

³⁶ It is the logic behind Paton and Littleton (1940), p. 24: “cost is largely incurred before revenue”.

³⁷ Edwards and Bell (1961), p. 33/34, refer to assets as tools and the need to decide about the kind of tools and the size of the toolbox. Unfortunately – and in contrast to their definition of activity type (1) -, they relate the issue to the yielding of profit as if the tools were the cause of the profit, not the activity. The term tool, however, correctly describes the supportive role to an activity. This is the fundamental error in IASB’s predetermined opinion about the primacy of assets as documented – amongst other – in IASB Discussion Paper, *Measurement Bases for Financial Accounting – Measurement on Initial Recognition*, paragraph 47 (London: IASB, November 2005), p. 30, which concludes that a business “may be presumed to invest in assets... for the future net cash-equivalent flows that they can be expected to generate”. It is not the assets, i.e. the tools that generate net cash inflows; it is the activity which consists of more than buying tools.

³⁸ Recognised by the Advisory Committee on Improvements to Financial Reporting, *Final Report to the United States Securities and Exchange Commission* (Washington, D.C.: SEC, August 2008), p. 47, “...may depict important differences in the economics of an industry...”; also European Financial Reporting Advisory Group Draft Comment Letter on IASB Discussion Paper, *Reducing Complexity in Reporting Financial Instruments*, (Brussels: EFRAG, September 2008), Appendix, Q3, 22 (b): “there are many different business models.”

³⁹ in the definitions of the Advisory Committee on Improvements to Financial Reporting, *Final Report to the United States Securities and Exchange Commission* (Washington, D.C.: SEC, August 2008), p. 19 No.1, p. 20. The complexity of the mixed-measurement attributes is a function of the underlying activity, i.e. the differences of input versus output to be reflected in financial reporting.

⁴⁰ Godfrey et.al. (2003), p. 99: “Basically, in order to measure and report information, the activities and the means of supporting an entity’s activities need to be defined.”

Every resource originates from an initial conversion of cash in an exchange transaction.⁴² Thus the initial contribution of any resource to an activity is usually a cash outflow. Thereafter, the path of contribution splits into two different roads to the ultimate goal of net cash surplus of the activity: one road for business activity type (1) and a different road for activity type (2).

A. Activity type (1)

Business activity type (1) is characterised by the *use* of a non-cash resource which can have complex and diversified patterns. Such a *resource in use* may change its identity or character or disappear all together. It may or may not contribute cash inflows itself. However, even its disappearance or a contribution of cash flow will not necessarily mark the end of the cycle of the activity. This is one of the essential differences to resources employed by activity type (2). The differences are mirrored by differences in the nature of the cash flow contribution to the activity: contribution by use versus contribution by exchange, i.e. “giving up” of the non-cash resource.

The underlying connection between an activity and its supporting resource can be used as a testing tool for distinction between the different types of activity: does the sale of a resource accomplish the intended⁴³ completion of a business activity’s conversion cycle? If a re-purchase of the resource hypothetically sold (or a similar resource) is necessary to complete the initial activity’s cycle, it will be most likely a business activity type (1) rather than activity type (2).

B. Use with consumption

The use of certain non-cash resources as input into the activity could be viewed as a ‘sacrifice’. The employment of human resources is the most important, though not necessarily the most obvious case.⁴⁴ The use of cleaning chemicals in a cleaning service business or the use of raw materials in production is easy to observe. The common feature of non-cash resources with consumption by use is the definite character of its initial cash outflow as the direct, ongoing and final contribution to the activity.

⁴¹ This relation to the activity determined by its economic logic provides the “sound basis of distinction” IASB’s Proposal for measurement basis was unable to detect, IASB Discussion Paper, *Measurement Bases for Financial Accounting – Measurement on Initial Recognition*, paragraphs 124(b), 125 (London: IASB, November 2005). It also delivers the foundation to a conceptual basis for earnings as a measurement of performance which is missing, Connors, p. 7.

⁴² Exceptional cases like gifts etc are not relevant to a fundamental analysis.

⁴³ i.e. as assigned by the economic logic of the activity in progress.

⁴⁴ That labour is an important resource to a business activity when combining resources is uncontroversial. What is widely overlooked is the fact that it also is an asset. See Godfrey et.al. (2003), p. 660.

This can be demonstrated by a little extension of the previous graph for the logic of cash conversion cycles. If the initial cash conversion to obtain the non-cash resource is not followed just by its subsequent re-conversion to cash by sale, other mechanics evolve for the contribution to the cash conversion cycle:

Example - use of a machine in production:

- | | | | | |
|---|-----|--------|---|----------------------|
| 1. cash outflow | ==> | NCR in | = | cost |
| 2. use with consumption of value | | | = | expense |
| 3. no sales value at the end of its useful life | | | = | no final cash inflow |

For some non-cash resources that are consumed by use, the sacrifice occurs over time through wear and tear instead of a one-off event. Their use effects more than one cycle's output or even more than one activity, e.g. a building or a machine. However, at the end of the useful life of such a non-cash resource, its value has been exhausted. Its initial cash outflow has also been the definite and final contribution to the activity. The fact that this contribution has to be allocated in some reasonable manner when reporting is required before the end of one or more cycles does not alter the final character of its initial cash flow contribution. Neither does a potential resale before the end of its useful life, e.g. due to a decision for upgrade of this input.⁴⁵

C. Use without consumption

Some non-cash resources contribute through use without being consumed in the process. They neither change their identity or character nor do they disappear in the progress of the activity. Their contribution through use may be generation of cash inflows, e.g. a bond can generate interest and a property can generate rental payments. The example of a bond is particularly helpful as it makes apparent (and calculable) the different forms of cash flow contribution.

Extending our example of the logic of CCC:

Purchase of a bond

- | | | | | |
|-------------------------|-----|--------|---|------|
| 1. initial cash outflow | ==> | NCR in | = | cost |
|-------------------------|-----|--------|---|------|

⁴⁵ All of the issues connected with an early exchange of a non-cash resource for a different one, but the same use, or even the unexpected higher resale value are issues of allocation of changes in cash flows to reporting periods, not of causation of the initial cash outflow to the activity. In other words, the earlier than expected sale of a machine for a better one does not alter the character of use or function of the old one within the cycle's economic logic, it just amends the amount of final cash outflow as expense, depending on whether or not a resale value could be realised.

- | | | |
|---|---|------------------|
| 2. interim cash inflows | = | interest |
| 3. re-conversion to cash: final cash inflow | = | recovery of cost |

Cash flows 1 and 3 have a distinctly different character to cash flow 2 as they are caused by exchanges of the NCR for cash not by the NCR itself. Cash flow 2 originates from the NCR itself⁴⁶ and is not linked or dependent on its exchange.⁴⁷ As a matter of fact, a final exchange for cash before maturity eliminates any possibility of collecting further interest cash flows through time to maturity. Cash flow 2 and cash flow 3 are mutually exclusive, because one cannot collect interest when not in possession of a bond after giving it up in exchange for cash.⁴⁸

The use of non-cash resources by activities of type (1) differs from type (2) by benefitting directly from the non-cash resource while in ownership instead of cash flows for its exchange. Thus, the relevance of the cash flows unfolds by contribution to the activity over time, thereby making the specific cash flow profile (cash flow pattern through time to maturity or expected life) an essential feature. The difference in character of cash flows in their contribution to the activity can be clarified by differentiating between cash flows *from* a non-cash resource in difference to cash flows *for* a non-cash resource (in exchange).⁴⁹

A resource can contribute by use with neither consumption nor generation of cash inflows, just through saving of cash outflows that otherwise would have to be incurred for its input. A property can be supportive of the activity as its own premises, e.g. a factory for the production activity or as an administrative headquarter, that would be necessary for the activity to be performed, thus saving cash outflows (such as rent).

The difference between non-cash resources that are consumed and non-cash resources that are used lies in the character of their initial cash outflow. For the latter, it is not their final and definite contribution to the target of the activity, net cash inflow.⁵⁰ As the resource remains in existence, it can be reconverted to cash once it either has finished its contribution, e.g. a bond matures, or different use of the cash invested appears recommendable, e.g. relocation of the factory to a better suited position.

⁴⁶ The argument does not propose the use of a pure cash flow accounting method, but interest cash flows are considered to be treated under the accrual concept, i.e. they are allocated to the reporting periods they relate to, independent of the actual date of cash flow.

⁴⁸ This may qualify for an “undeniable truth in accounting concepts” as referred to by the European Financial Reporting Advisory Group (EFRAG Comment Letter on Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, (Brussels: EFRAG, October 2008), Appendix 2, comment 3).

⁴⁹ IASB seems to be unaware of such differences according to its line of arguments on financial instruments (IASB Discussion Paper, *Reducing Complexity in Reporting Financial Instruments* (London: IASB, March 2008), 3.14 – 3.18).

⁵⁰ It is rather obvious that there is no abstract “logical correlation” between initial cash outflows and final cash outflows that could provide a conceptual basis for the “general principle” that IASB believes to have detected (IASB Discussion Paper, *Reducing Complexity in Reporting Financial Instruments* (London: IASB, March 2008), 4.14).

D. Activity type (2)

Holding of a non-cash resource by business activity type (2) is characterised by physical identity in its representation as input and output. Its contribution to the activity can be directly related to the difference of cash outflow versus cash inflow, the difference in cash from cash conversion and re-conversion.⁵¹ The relative importance of the contribution to the net cash inflow of the activity depends on the amount of cash outflows of further input required by the activity.

For this activity, cash flows follow a relatively simple pattern of a conversion cycle. After the initial cash outflow in exchange for the resource, the concluding cash inflow is generated by its re-conversion to cash, i.e. the sale of the resource in exchange for cash. For this type of activity, the final, concluding cash flow contribution to its cycle can only be achieved by giving up the resource.

It fits the pure description of an investment set out in FASB Con 1. The difference that makes it a business activity is not only the repetition on an ongoing basis, but the amount of additional activity that generates additional input. Pure investment is also referred to as passive investment⁵², marked by its' lack of further input.

Trading is an obvious example of a business activity type (2), in particular, when aiming at benefitting from short-term price fluctuations. Using the price difference of the same non-cash resource at different market places is called arbitrage trading.⁵³ The border line between activity type (1) and (2) can be fluid. The need of additional input aside from the initial purchase of the non-cash resource becomes a distinguishing factor. The essential difference between the two activities lies in their economic logic. When the logic is based on the addition of value through the *use* of a non-cash resource including the addition of further input, it leans towards activity type (1). For activity type (1), the trigger of value change is the addition of further input instead of a 'wait-and-sell' logic. An example would be a retailer, since he takes action to bring the non-cash resource closer to his targeted customer. He takes the risk of investment, storage, interim funding for which the customer will benefit by his easier access and alternative choices.

When the key to the activity is to benefit from a change in price that is independent from, i.e. not caused by the business activity, it leans towards activity type (2). The activity of *trading* consists largely of the purchase and sale of one, main resource. The inputs and outputs are physically the same resources, except that

⁵¹ This direct relation is the underlying causation for the One-to-One principle from Nissim and Penman (2008). It is, however, not necessarily a relation of One-to-One to the net cash inflow of the activity's cycle.

⁵² See Nissim and Penman (2008), p. 27 case (1).

⁵³ Nissim and Penman (2008), p. 25, use the term arbitrage for activity type (2) to express the benefit of the difference in prices from input over output. In such cases, physical identity can rarely be found between the non-cash resource that is input and the one that represents output. Arbitrage should remain limited in application to cases of physical identity of the non-cash resource as input and output.

they have different amounts of cash converted. The non-cash resource fulfils its function within this logic by being ‘held’ until sale. The resource does not undergo any process for improvement or added value.⁵⁴ It remains largely unchanged until its final re-conversion to cash. The success of the activity is determined by the art of timing of initial and final conversion.⁵⁵ The sale of the resource is its designated use and is the logical completion of the conversion cycle. Selling is not a question of if, but of when.

Critical to financial reporting about a business activity is the correct analysis of the supportive function of its non-cash resources. It is essential to understand the underlying relationship between the economic logic of an activity to the cash flow contribution of its non-cash resources when cash conversion cycles remain incomplete.

⁵⁴ Supportive procedures to maintain the quality of the non-cash resource by appropriate storage or other measures are not intended for adding, but maintaining value.

⁵⁵ There is an interesting aspect in ‘financial engineering’ which is sometimes considered part of trading. When different instruments or elements of instruments are combined to create a new product, this frequently has to remain serviced by the business. The contingent cost of this future service needs to be considered for the net cash surplus from this activity.

Value and Income

Ahead of the first discussion paper for the Conceptual Framework, two senior staff from the IASB and the FASB undertook to publish their views⁵⁶ about what was needed and what had already been decided on the issue. The key message was that the primacy of the assets was an obvious choice because it was based on the Hicksian definition of income. This view has been strongly rejected by Macve et.al.⁵⁷ as well as by Dichev,⁵⁸ all of whom have made a plausible case that the Hicks definitions actually support the opposite view to that of the IASB/FASB staff.

Hicks' concept of income was developed for the practical purpose of serving as a guide for prudent conduct to live 'within one's income' and remain as well off at the end as at the beginning of a defined period, i.e. Hicks' week. 'Well-off', then, is defined as the capitalised monetary value of the individual's prospective receipts. Those prospective receipts are streams of receipts that the individual expects to receive in the future. As they are "dependent on the particular expectations of the individual in question", this concept of income is a subjective concept.⁵⁹

The concept of wealth as the capitalised monetary value⁶⁰ of prospective receipts, the 'prospects', is based on expectations. It is based on an assessment of those future receipts with judgments on risks and the probability of occurrence. To be objective, one would not only have to expect, but to know those future receipts. To become an objective concept, there would have to be a way to find 'objective expectations'. However, with 'lack of consistency in expectations and plans,'⁶¹ market views are not representative of objective expectations. Market views⁶² cannot transform expectations into real events. Otherwise there would not be expectations, prospective *ex ante* views, but retrospective experiences. Thus users have to make their own assessment of future receipts, which is inevitably subjective. They do not know the receipts of future periods. As Schmalenbach⁶³ had observed as far back as 1933: "you cannot determine profit by comparison of wealth⁶⁴ when you need to know the profit⁶⁵ to determine the wealth".⁶⁶

⁵⁶ Bullen and Crook (2005), p. 7, 18.

⁵⁷ Macve et.al. (2005).

⁵⁸ Dichev (2007), p. 4ff.

⁵⁹ Hicks (1946), p. 177.

⁶⁰ Hicks also uses the shortened term "capital".

⁶¹ Hicks (1946), p. 178.

⁶² Recent developments in financial markets have proven the "efficiency-of-markets theory" obsolete. When differences between "intrinsic" and "fundamental" values are apparent and markets are believed "pricing in too much risk" (Financial Times, August 2008, p. 6), the subjective nature of the different expectations shaping market views is documented. See also European Financial Reporting Advisory Group Draft Comment Letter on IASB Discussion Paper, *Reducing Complexity in Reporting Financial Instruments* (Brussels: EFRAG, September 2008), Appendix, Q4, 28 (b).

⁶³ Schmalenbach (1933), p. 101.

The essence of Hicksian wealth is a stream of expected receipts, a constant flow of amounts expected to be received “in every future week”. Hicks’ “receipts” in analogous use of the term are the net cash inflows to a business activity for reporting periods. The stream of such net cash inflows for future periods, when capitalised to an amount, leads to Hicks’ definition of wealth or capital or ‘well off-ness’ for a business activity. It is a concept of value that is derived from the future net cash inflows from a business activity like the non-controversial description of the price of a security.⁶⁷ This is a distinctively different concept of value than the idea of value as ‘net assets’.⁶⁸

As the expectation of future receipts is a subjective assessment, the comparison between expectations at two points in time will reveal only changes in subjective assessments as far as the remaining future periods are concerned. To measure and compare a Hicksian ‘wealth’ for a business activity, one would have to compare the expectation of prospective receipts in one point in time, t_0 , with the same expectations at another point in time, t_1 . Thus, the change would be the result of the actual receipts⁶⁹ in period 1 ($t_0 - t_1$) and the change in expectations for all other periods. The latter would comprise the expectations in t_0 of the receipts for periods 2 ($t_1 - t_2$), 3 ($t_2 - t_3$), ...n ($t_{(n-1)} - t_n$) compared to the expectation for the same periods, however, at the next measurement date, t_1 ⁷⁰. Consequently, a large part of change in wealth is purely determined by change in expectations for future receipts of the same periods. The outcome of such comparison, aside from the past period’s result, are only changes in subjective values.⁷¹

In contrast, Hicks’ Income No. 1 *ex post* (excluding income from human resources⁷²) applies a retrospective view to an individual’s affairs. It looks at the experience of a past period’s receipts, consumption and expectations. The difference in previous expectations to what has been realised of them is called “windfall”.

⁶⁴ {defined by Hicks as capitalised value of prospective receipts}.

⁶⁵ {those future receipts}.

⁶⁶ Dichev (2007), p. 15, highlights the equivalent circular argument in FASB’s link from future economic benefits of an asset to its valuation. This renders IASB’s critical idea (International Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, op.cit., paragraph BC 1.37 (London: IASB, May 2008)) of performance to be determined on the basis of primacy of assets critically flawed.

⁶⁷ Penman (1992), p. 466.

⁶⁸ as assumed Bullen and Crook (2005), p. 18; similar, Schroeder et.al. (2005), p. 129.

⁶⁹ i.e. realised in Hicks’ (1946) terms, p. 178.

⁷⁰ Obviously, the old periods 2, 3, ... n become the new periods 1, 2, ...n.

⁷¹ Hicks’ (1946) income *ex ante* is always subjective. Nissim and Penman (2008), p. 36, consider a model particularly dangerous where the input is estimated revenue.

⁷² Hicks’ (1946) exclusion of ‘Human Capital’ may be based on the difficulty in assessing its future income. Hicks (p. 173) struggles with the issue, but settles for assuming an expectation of ‘a constant stream of receipts’. A journey into expectations of change in quality of work or in demand of work provided and the consequences on expectations of corresponding changes of future receipts is avoided. The same problems would arise, obviously, with attempts of assessing future cost of labour or changes in quality of labour, e.g. improvement in people’s skills, or changes such as improvement in the processes of a business activity. The concept of determination of future net receipts as information of objective quality for a business activity is unrealistic; see Macve et al. (2005), p. 4 Fn 12(quoting Sandilands).

This leads to the definition of Income No. 1 *ex post* as Consumption *plus* Capital accumulation.⁷³ The latter is defined as the increment or decrement in the monetary value of the individual's prospects. This monetary value will have changed during a period due to two factors:

- the realisation of receipts different to the expectation, i.e. either more or less receipts in that period than expected, and
- the change of expectations for the remaining periods between the beginning and the end of the past period.

The realisation of receipts is an objective or actual experience, a fact. By amending the cash basis available for cash flow generating activities, it has an objective and measurable impact on the basis for expectations of future receipts. However, the rest of the changes in expectations will be changes concerning the subjective part of value only. Thus, it is only to the extent to which receipts have been realised that information could be reported objectively.⁷⁴

Realised receipts amend the basis for future cash flow generation and thus value. However, value turns to income by re-conversion to cash only. Only the 'giving-up' of the item the value of which has changed makes it possible to realise that value change as cash in exchange. Only the final cash inflows in exchange complete the cycle and amend the basis for generating of future cash flows – by starting a new cash conversion cycle.

This vital point needs a little more explanation by using a simple example. An investor buys a fixed rate bond⁷⁵ for its interest cash flows over time to maturity. Thus, he ensures the stream of prospective receipts to match his future spending in the sense of a proper Hicksian conduct, living within one's income. The bond, issued with a current market interest rate applicable to its duration has a fair value gain (loss) of zero i.e. its cost is equal to its market value assuming transaction costs to be zero. In difference to cash – with the same fair

⁷³ Hicks (1946), p. 178.

⁷⁴ Hicks (1946) limits his remark of 'almost completely objective' to Income No. 1 *ex post* while he considers it impossible to get an objective measurement of Income No. 3, even *ex post* (p 180). All of Hicks' income definitions depend upon the expectations of prospective receipts, themselves. The constant stream of receipts, the knowledge of which is required for the calculation of their capitalised money value, remains to be based on expectations, thus subjective. Only a major constraint to the income definition allows Hicks the qualification as objective: it is limited to the income from property which he considers 'assessable'. However, Hicks' explicit exclusion of changes in "people's own earning power (accumulation or decumulation of 'Human Capital')" has more than one dimension for analogy of a business activity. Human resources are a vital non-cash resource though not covered by the balance sheet. The asset-liability view excludes – like Hicks' income definition – any future cash flows that are linked to human resources as well as any other future cash flow without a link to a current asset or liability. It is an attempt to define wealth by reference to future prospective receipts without the cost of labour that is needed to achieve these receipts in future periods; Macve et al. (2005), p. 3 with reference to Beaver (1999): "...a large element of the value of their future cash flow prospects ... is not captured in the value of their net assets".

⁷⁵ A treasury bond, of course, to eliminate – for the purpose of this analysis – the issue of credit risk.

value – the bond generates future income.⁷⁶ When market rates change, the fair value of the bond changes even though the interest payments from the bond do not change. Assuming the rates have fallen, the fair value of the bond increases and is now positive. In terms of fair value, the investor seems to be better off. However, there is a dilemma: he cannot realise the positive value by way of a sale of the bond and at the same time collect the bond's future interest flows.

The bond investor who sells his bond for the fair value gain from drop in market rates has turned value ex ante into income ex post. But because of the rationale for his initial investment he now faces the problem of, how will he match his future spending (which is the issue of Hicks' conduct). He needs to regenerate the future receipts that he surrendered to match his expected future outflows. As a consequence he will find that nothing has actually been gained through the sale because he will need to re-invest the total proceeds, the gain and the capital proceeds to secure the same future receipts. This is because he can only obtain the new, lower market rates on any re-investment. However, if he spends the realised fair value gain considering it as income available for spending, he will be worse off in the future.

The hypothetical calculation of fair value using a changed market rate is a futile exercise if the investor needs future receipts rather than immediate cash. The fair value does not indicate a higher stream of future receipts in comparison to the current position. Without a sale, no cash arrives; but if it is sold, cash needs to be re-invested, and no change in income ex ante has been achieved for the investment, during the cash conversion cycle. A more appropriate description is the term "value ex ante".⁷⁷

The only way to impact the overall result of an investment or business activity and its cash conversion cycle would be by changing the investment horizon and/ or the non-cash resource itself. Thus, unless a credible assumption can be made about the re-investment and its new cash conversion cycle, the information of a hypothetical sale for the purpose of determining earnings and a new value ex ante is useless information for either past or future earnings.

The question of income ex post versus value ex ante is essentially the distinction between the past and future, between that what has been realised and that which is yet to occur. One is mutually exclusive to the

⁷⁶ This essential difference is missed by the proponents of fair value: the result of the exercise of hypothetical sales is just cash, without "future prospects" of income streams that are objectively determinable.

⁷⁷ This term contrasts with the term of OCI – other comprehensive income. Unfortunately, a large amount of "value changes" reported under this heading represent just value changes that haven't turned to income.

Some of them may well be permanent values while others disappear – in the sense that their realisation does not impact the value ex ante of the business activity – as the cash received has to be reinvested at lower rates, thus the sum of future receipts remains unchanged. As explained below, even the sale of a property with large unrealised gains will affect the future receipts as well, dependant on what the reinvestment will be, e.g. lease or rent or repurchase. Only, when the non-cash resource is actually exchanged for something else, a value change can be realised permanently. The term of "recycling" of income is just as much a misnomer. To recycle something requires prior possession. One cannot "recycle" income that has not come in. It is a classic example of confusion between income ex post and value ex ante.

other. However, one has a bearing on the other. On the basis of the past reality, conclusions can be drawn as to what reasonably could be expected to occur in the future. Thus, the distinction between receipts of the past, i.e. income *ex post*, and expected receipts in the future, i.e. value *ex ante*, is critical for unbiased financial reporting.⁷⁸

⁷⁸ The Advisory Committee on Improvements to Financial Reporting, *Final Report to the United States Securities and Exchange Commission* (Washington, D.C.: SEC, August 2008), p. 5, recommends “clearly distinguishing cash receipts from unrealised changes in fair value” but remains entangled in the US concept of comprehensive “income”. Rayman (2006), p. 9, Segregation of records of facts from estimates of value”.

Value Change of Non-cash Resources

The asset-primacy theory has added a further dimension to Hicks' concern about confusion: the confusion⁷⁹ between value change of non-cash resources and change in future net cash inflows of a business activity.⁸⁰

Business activities invest cash in non-cash resources for net cash inflow. The value of a business activity is determined by expectations of net cash inflows in future periods. Value changes of non-cash resources at measurement date can impact future net cash inflows. However, they are not automatically representative of changes in net cash inflows to the business activity. Whether or not they will have an impact on the activity depends entirely on future decisions and their consequences, thus on assumptions that users will have to consider appropriate for use in their assessment.

Income *ex post*, i.e. realised, raises the amount of resources available to earn future income. Therefore, future income itself is not realised; future income and its changes do not change the amount of resources now available. Realised income of past periods leads to an increase in capital at the beginning of the future periods. This relates to a meaning of 'working capital', i.e. it is cash or cash-equivalents, i.e. a resource that contributes to the receipts of future periods. The basis for the future increase in net cash inflows has grown, i.e. income realised, if either the amount of cash resources or the amount or quality of non-cash resources has increased.⁸¹ This non-cash resource could be called "input-at-work" or "value-at-work".

⁷⁹ Hicks (1946), p. 179: "Theoretical confusion between income *ex post* and *ex ante* corresponds to practical confusion between income and capital."

IASB draws a fine line between the income *ex post* and the value *ex ante* most visible in the IASB Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, op.cit., paragraph OB 6(a) (London: IASB, May 2008), by declaring an increase in share price as a return *on* the cash provided in difference to a return *of* the cash provided. Effectively, the cash conversion cycles of investors are not completed until they sell their non-cash resource in exchange for cash. Until that completion market price is a fleeting indication of what may be a possible return, not more. To consider it the value of the business activity represents a subjective view.

⁸⁰ One of the clearest documentation of this confusion has been delivered by CFA who infer that current fair value should be applied to items in the balance sheet (and income statement) from their observation that "asset exchanges and financial decisions are based upon fair values" (CFA Institute Centre for Financial Market Integrity, *A Comprehensive Business Reporting Model*, 2007, p. 8. N.3). Although the latter observation is not incorrect, it does not support the conclusions drawn from it because most of the assets under discussion are not a subject for exchange. The logical flaw in CFA's line of thought is more obvious in the previous draft of the paper (October 2005, p. 4 exhibit 1 principle 2): "Decisions about whether to purchase, sell, or hold investments are based upon the fair values of the investments and expectations about future changes in their fair values." That observation, again, is correct, except it refers to the fair value of the business activity in its entirety, not to the fair value of single items in the balance sheet. And the first does not follow from the second.

⁸¹ This is "the nature and quantity of the resources available for use in an entity's operations" that capital providers need to know, IASB Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, op.cit., paragraph OB 16 (London: IASB, May 2008).

Non-cash resources or input-at-work on measurement date are indications that an activity has not completed all of its cash conversion cycles. Assets are unconsumed resources, residuals⁸² of unfinished cycles. They are, importantly though, designated to serve the specific purpose assigned by the economic logic of their business activity's conversion cycle. The relevance of an asset to a business activity depends on its function within and the level of completion of its designated conversion cycle. The assignment of a non-cash resource by a business activity restricts the numbers of options for logical assumptions about its possible contributions to the net cash inflow of the specific business activity.⁸³

The underlying relationship between a specific business activity and its supporting non-cash resource requires consistency in assumptions regarding the activities in future periods. The assumption of a productive activity that requires the use of a specific non-cash resource is mutually exclusive to the assumption that this resource is going to be sold. For if it was to be sold, the asset would have to be 'given up' and, consequently, the productive activity could not be continued. The assumption of a gain by the sale of the asset would be followed by the loss in value from decrease in expected future net inflows from the activity currently in progress, as demonstrated earlier by the simple 'bond example'.

Different types of business activities can have a different economic logic to their specific cash conversion cycle.⁸⁴ Following their individual logic, the conversion cycles possess different underlying connections between resource and activity as well as between different resources combined in the process. This, consequently, is reflected in different cash flow patterns throughout the cycle. When cash conversion cycles are not completed by the end of a reporting period, the differences in logic and pattern lead to differences in the relevance⁸⁵ of value changes in residual non-cash resources. A concept of one measurement basis for all non-cash resources cannot reflect faithfully these differences. To provide relevant information for the purpose of comparison requires comparison of like with like non-cash resources. Information that pastes over differences, thus making different non-cash resources and their different contribution to the cash conversion cycles look alike, is unfit for the purpose of financial reporting.

For valuation purposes, an analysis is necessary of how a residual non-cash resource contributes in the future to its specific cash conversion cycle. This analysis has to cover the following three issues:

1. The economic logic of the specific activity,

⁸² Paton and Littleton (1940), p. 25 "assets" are "revenue charges in suspense"; Schmalenbach (1955), p. 14: "Thus the balance sheet with its items in suspense became more or less an account for left-overs, the cameralist's 'remnants'."

⁸³ (which usually persists of a variety of different types of specific cash conversion cycles).

⁸⁴ A difference that earlier seemed to be recognised by at least some Standard Setters, e.g. Accounting Standards Board, Statement of Principles For Financial Reporting, paragraph 7.9 (London: ASB, October 1999): "Financial performance is made up of components that exhibited different characteristics in terms of – for example – nature, course, function,... some would carry more weight than others".

⁸⁵ (to the activity's capacity of generating future net cash surpluses through its cycle.)

2. The supportive function of the non-cash resource within that economic logic, i.e. by its use,
3. The relevance of a resource's value change to the activity's capacity of generating cash flows.

The last point of analysis needs to provide answers to the question on whether and how the value change has contributed to the activity in the past or whether and how it has an impact on the activities capacity⁸⁶ of generating cash flows in the future. The assumption of the Exposure Draft⁸⁷ that a value change caused by changes in market prices affects the ability to generate net cash inflows, has to be tested in every case. Reporting of market price changes that are not specifically related⁸⁸ to the generation of net cash inflows of the activity in progress as income of a period equals misrepresentation. Misrepresentation becomes apparent if the market price change is reversed in a subsequent period up to completion of the cash conversion cycle, i.e. when the result of the activity's completed cycle remains unchanged irrespective of whether or not the value change of the non-cash resource is accounted for as profit or loss. In such a case, the value change accounting creates a misleading and arbitrary shift in interim period's results, only.

A. Non-cash Resource with value change from use – Machine, Tools

The line of thought about the impact of resources can be demonstrated through a simple example of the use of a non-cash resource in productive activities. A machine is acquired for \$10,000 and is expected to last for 3 years, with no residual value expected.⁸⁹ The cash conversion cycle has started with a cash outflow of \$10,000 with no cash inflow expected from the resource itself. The activity benefits from the use of the machine as it enables production. However, its measurable cash flow contribution to the activity remains confined to the initial cash outflow throughout the three periods during which the activity is performed. The net surplus from the business activity is positive in total, because the re-conversion of the output results in a higher gross cash inflow.

⁸⁶ IASB Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, op.cit., paragraph OB 21 (London: IASB, May 2008): "... the extent to which the entity has increased its available economic resources, and thus its capacity for generating net cash inflows..."

⁸⁷ IASB Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, op.cit., paragraph OB 22 (London: IASB, May 2008).

⁸⁸ This lack of causal relation is the main flaw in one of the key assumptions about market prices in the measurement basis proposal, IASB Discussion Paper, *Measurement Bases for Financial Accounting – Measurement on Initial Recognition*, paragraph 128 (London: IASB, November 2005): "Primary among these qualities is that competitive market forces work to resolve diverse expectations of various entities' managements to a single price that impartially reflects all publicly available information on any given measurement date. As a result, market values of assets and liabilities reflect the present value of future expected cash flows to yield the current market rate of return for commensurate risk." This is simply absurd as many non-cash resources just are not for sale; they don't change their assigned function; they are not part of an "offer-and-demand"-communication. The diverse expectations of management are recorded through the assignment of non-cash resources to different activities and supportive functions. This diversity and the lack of causal relations between the net of cash inflows from the activity and single assets in use (see below paragraph 8), make these assumptions illusionary, leading to a logically flawed concept.

⁸⁹ Using the example of Edwards and Bell (1961), p. 39ff .

According to the economic logic of the activity, the machine uses value through time and/ or usage, i.e. wear and tear.

The input, i.e. the machine expressed in terms of cash outflows, is consumed over the periods of the activity. The change in value is caused by the designated use within the respective cash conversion cycle.⁹⁰

When remaining market values for non-cash resources are known⁹¹ for the respective measurement dates, the value change could be an expression of resource consumption. The loss in value is an expression of the change in the resource's ability to support the respective activity and not by the change in market price. The change in value is the result of past usage and not because of the reduced time available for use. The change in market price has not decreased the economic resource for its contribution compared to previous assumptions. The change in market price is a documented fact, an event that has occurred nothing more; it does not cause a change in the economic resource or its contribution to the activity.

What is important is the ability of the activity to produce future net cash inflows. These net inflows are the result of gross cash inflows over gross cash outflows.⁹² The generation of gross cash flows, outflows and inflows, as caused by the activity has to be reported with *respect to the period of activity* in a way that reflects the inherent economic logic of the activity. This is of foremost importance for monitoring the activity by management in order to make necessary and timely adjustments. However, the clear cut off between the past and future periods is also a matter of fair, i.e. equal, treatment of shareholders of different periods, present and future investors. Thus, resource consumption as well as the addition of value to the output has to be allocated to their respective periods on the basis of their contribution to the activity.

An amendment to the example can highlight the issue. The time and volume of usage is, again, expected to be limited to three years with no residual value at the end, indicating a remaining value at the first measurement date of \$7,000. However, due to a shortage in production of the respective machine, the second hand market price surges to \$9,000 and remains at \$4,000 at end of year 2. This change in market price does not affect the contribution of the machine to the activity that is in progress. Without a change of assumptions for the activity or for the use of the machine, there will be no further impact on the cash conversion cycle. A loss in

⁹⁰ Edwards and Bell's (1961) example looks in an abbreviated P&L as follows:

	Y 1	Y 2	Y 3	Σ
net profit before depreciation:	4,000	7,000	8,000	19,000
depreciation:	3,000	4,000	3,000	10,000
net profit:	1,000	3,000	5,000	9,000

⁹¹ critical about absence of second hand markets, Hicks (1946), p. 176.

⁹² European Financial Reporting Advisory Group points to the relevance of gross cash flows (EFRAG Comment Letter on Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, (Brussels: EFRAG, October 2008), Appendix 1, 9b).

value is caused by its use over time representing the consumption of input. Allocation of the consumption of the resource to the activity and the periods of activity as caused by the activity is the logical form of reporting the results of the activity. The change in market price has no impact on the net cash inflows for the activity at completion of the cycle. It only alters the timing of interim periods' results,⁹³ thus misrepresenting the economic reality through a lack of understanding of the economic logic of the activity in progress.

It could be argued that the \$9,000 cash represents an increase in resources over the value of the machine at a remaining usage value of \$7,000. Turning value to income requires re-conversion to cash, i.e. the sale of the resource. This change in assumptions alters the function of the non-cash resource from that of input to one of output. To consider the change in market price as a factor of income of the reporting period changes the assumptions about the future activity with a different economic logic to its cash conversion cycle. It contradicts the business model in place. As the resource would have to be 'given up' by this assumption, the activity actually in progress would have to be discontinued. As a consequence, the report of the profit from the sale in Y1, in the absence of a replacement, would be followed by the disappearance of the previously forecasted net cash inflows for Y2 and Y3 from the productive activity.

A change in assumption to that of a sale of the non-cash resource leaves another question to be answered about future assessments. What to do with the cash arising from the sale?⁹⁴ It is easy to assume a sale. It is impossible to make reasonable assumptions as to what to do with the proceeds. When every resource of a business activity is assumed to be sold and turned into cash, what happens after that? Which assumptions of investment in economic resources can reasonably be made? It is not the function of financial reporting to provide alternative values based on alternative assumptions of hypothetical activities.

For a business activity's future net cash inflows, assumptions have to be made based on the activities currently in progress. For an ongoing business, the most reasonable assumption is the continuation of its operations as currently performed, unless there are indications to the contrary. Thus, a productive activity – as in the example – would have to be considered as continued, and require an assessment of the future net cash

⁹³ The reduced depreciation of Y1 would have to be compensated by increased amounts in Y2 and Y3. At the end of the cycle, the total contribution of this non-cash resource will remain its initial cash outflow of \$10,000:

	Y 1	Y 2	Y 3	Σ
net profit before depreciation:	4,000	7,000	8,000	19,000
depreciation:	1,000	5,000	4,000	10,000
net profit:	3,000	2,000	4,000	9,000

⁹⁴ The problem of triggering changes in further assumptions is a consequence of hypothetical exercises. When a business owns a property used by its headquarter building, the assumption of a sale to benefit from an increase in real estate markets is followed by the need to make further assumptions on: – the use of the proceeds, – the replacement of the headquarter, e.g. renting or buying etc. It is a classic example of market price changes having no impact on the ability of the business activity in progress to generate cash flows. The assumption of changes in the future is a matter of users to make, not for financial reporting. Reporting has to provide information required for assumptions such as market values, i.e. input data, not the output of assumptions, e.g. a sale.

inflows arising from it. The assumption of the sale of the machine is contradictory to the initial, underlying assumption. The activity could not be performed without the machine. If sold, another machine would have to be purchased at the current second hand market level in order to continue the activity.

The amended example highlights an important point in the valuation of residual non-cash resources. The assumptions for the *future* activity to be performed and for the *future* use of the non-cash resource assigned to it have to be consistent. The assumption of a sale of a non-cash resource required for a specific activity and its economic logic and the assumption of the continuation of that activity are mutually exclusive.⁹⁵

The distinction between value ex ante and income ex post requires precision in the analysis as to the effect of changes in market conditions. If the machine in use for the production activity has been superseded by a machine that is technically superior, then the precise impact of this change will need to be analysed.

If there is no doubt that the new machine will be the next choice of input, a higher future cash outflow for the non-cash resource as well as the consequence on future price changes for the output have to be considered. That, however, is only of relevance for future cash flow cycles, thus only affecting value ex ante and its assumptions about net cash inflows in the future. At the same time, the technical advance will have an impact on the second hand market's price of the machine in use. The impact on income ex ante is entirely dependent on whether or not changes in assumptions are necessary as to its initial planned use. If the planned use will become less than initially anticipated than the remaining input unconsumed has to be allocated to the new estimated periods of use until replacement.

B. Non-cash Resource with value change before use – Raw Material

The relevance of a change in the value of a resource to an activity's capacity of generating cash flows is tested further by a case of a value increase in raw materials before use in production: raw materials have been bought at \$100; at measurement date, before use, the market price has increased by \$20. The question at hand is whether this increase represents income or just value, and, if value, value to whom? The proponents of fair value accounting believe that it should be income because the change in market prices is an event that has 'happened', i.e. that is reality. The logic of cash conversion cycles says that an increase in resources relevant for income can only occur if the business has given something up for it in exchange for cash.

⁹⁵ This logic is clearly missed by CFA (CFA Institute Centre for Financial Market Integrity, *A Comprehensive Business Reporting Model*, 2007, p. 8.), requesting unrealised fair value changes to be reported in income. "If investors are to better understand how companies create value ... and whether the value-generation process is sustainable" (p. 18), then investors are ill-advised by assuming the non-cash resource's sale and discontinuation of the activity in progress. If the value generation process requires the activity in progress to continue, then the assumption of an asset exchange for cash is unfit for purpose and a fair value reporting concept based on this assumption critically flawed.

When raw material has been purchased, the initial cash conversion has been locked in, i.e. finally determined its impact on cash flows. The material will be used as designated. Its interim value change, +20 in our example, has no cash flow impact on the net surplus of this conversion cycle. The value change does not represent a change of the resource for future net cash inflows of the activity in progress. The non-cash resource, the input-at-work remains unchanged for its purpose. Changes to the net surplus of this cycle can only come from changes⁹⁶ in the cash flows for or from other elements, input or output.⁹⁷ These potential changes are events of the future, not the past period reported and unrelated to the input acquired.

The acid-test for activity-distinction⁹⁸ is that a hypothetical sale would have to be followed by a hypothetical re-purchase in order to continue the conversion cycle in progress. Thus, a fair value view that would treat the interim price change of +20 as income in the current reporting year will produce a complimentary loss in the following year (all other factors assumed to remain equal according to previous expectations (or plan)). It is an artificial shift of results between periods. One of the most essential features for a Hicksian definition of wealth is the correct allocation of cash flow based input and output to their respective period. The use of a value change without cash flow impact in earnings based valuation would suggest a higher earnings base for future projections, only to be contradicted by next year's results. Within the conversion cycle set in motion by the purchase of the material, the fair value change becomes reversed as in the previous example – it disappears in its effect on the contribution of this non-cash resource to the activity.

The market price change has no relevance to income as it does not affect the ability to generate cash inflows. The change in value is not an expression of change in either quantity or quality of the material to be used. Such changes are the only changes that could cause a change in capacity of generating cash flows. Thus, this change in value is not a value to the business activity, the subject matter of financial reporting. It does not change the “input-at-work”.

However, it changes the temporary value of the input at work. Someone who wanted to replicate the business activity in its current existence would have to buy the resources at current prices. Again, it is a change in assumptions. However, they are of relevance to present and future investors and need to be provided by presentation of the respective information required: the information about the change in value of the resource.

The information about the value change, also, has relevance for future, new cash conversion cycles of the activity, i.e. when new materials have to be bought. If there is an expectation of a permanent change in price level for this factor with all other factors unchanged, it would lead to the expectation of decrease in future cycle's net surpluses (all other conditions assumed as unchanged). If future changes would be expected to occur

⁹⁶ From previous expectations.

⁹⁷ For example change in the selling price for the final product.

⁹⁸ See above paragraph A. Activity type (1), p.12.

to the prices of the output as well, e.g. an increase in selling price of the finished goods, the expectation would be one of unchanged future surpluses of cycles.⁹⁹ For a true Hicksian wealth method, e.g. an earnings based valuation, *all* factors and price changes expected in the future have to be considered for their impact on an activity's cycle's net surplus. Only the impact on the net surplus of the activity has impact on the 'wealth' as capitalised value of money of future receipts.

The importance of the distinction between Income *ex post* and Value *ex ante* is evident. Information about value changes is relevant only to the future activities and their future net cash inflows, but it is not relevant to past actions, transactions or income.

C. Non-Cash Resource assigned to Trading

In contrast to the non-trading examples above, the value change in the non-cash resource of a trading activity finds alignment of the economic logic of the activity and the assumptions needed to benefit from the changes by re-conversion to cash in an exchange transaction. Its contribution to the activity can be related directly to the difference of cash outflow versus cash inflow, the difference in cash from cash conversion and re-conversion. Sale is the designated action. Thus, the change in market price should be accounted for as profit or loss unless there are significant reasons for doubt as to its realisation.

As previously indicated, the line between a trading or holding activity and a business activity type (1) is fluid. The more additional input, aside from the purchase of the non-cash resource, that is required the less the net cash inflows for the activity are determined only by the value change of the resource. Whilst the physical identity of the non-cash resource may remain, the output may become the result of significantly more non-cash resources used than to justify taking the market price change of the main item as a realised income for the past period.

On the other hand, it could be argued that a market value view is the economic logic of the activity. The sale of the item is not the deciding factor, because it may be re-purchased to profit further from market price changes. Thus, a sale and re-purchase would only generate unnecessary cost. Such a view would be supported by an economic logic whereby all input, all non-cash resources are used with a market value perspective. If that was to be the business model described to users, fair value accounting would be in line with its economic logic.¹⁰⁰

Further analysis is required regarding the appropriate boundaries of such a philosophy. Current claims for fair value accounting consider only parts of the non-cash resources for input to the business activity. Value

⁹⁹ Paton and Littleton (1940), p. 125: "may never become actual income or loss..."

¹⁰⁰ Such is the basis for the use of the fair value option in accounting for financial instruments.

changes are only considered in regards to non-cash resources that currently qualify as assets. Some of the assets concerned are priced on the basis of their future cash inflows, e.g. interest bearing financial instruments. Value changes are considered to the time horizon available, i.e. maturity. However, until that future date of maturity additional resources are necessary as input, e.g. risk management, systems, labour. When calculating profit for the interim period, however, these future inputs cannot be calculated. Future cash inflow streams are calculated on a one-sided gross basis only¹⁰¹ while future cash outflows are not considered. For non-cash resources that are to be held for the medium to long-term it is questionable whether the short term fair value view is fully justified.

¹⁰¹ It is unsurprising that some of the investment banking industry has been a strong supporter of fair value as their fees and the bonuses of their actors are understood to be based on this “gross view” of profit.

From Hicks to Earnings-based Equity Valuation

Hicks' Income *ex ante* combined with the Income *ex post* look convincingly like a suggestion for earnings-based valuation to be made possible through the delivery of appropriate information by public financial reporting.

Hicks' capitalised monetary value of prospective receipts is the conventional neoclassical economic approach to asset valuation,¹⁰² which states that the value of holding an asset is the discounted present value of future dividends from that asset. Until the early 1990s, valuation models had not developed much beyond the discounted cash flow analysis and, furthermore, analysis of information that predicted future dividends has not been very successful.¹⁰³

According to Peasnell,¹⁰⁴ the equation of value of an entity is represented by the following formula:

$$V_0 = \sum_{t=1}^N v_t C_t + v_N R_N$$

This formula contains the sum of all future dividends, discounted to the “planning horizon” and a residual value (either at liquidation or at an earlier point in time). Therefore, value has two elements: future earnings and a potential residual value at the end of the activity.¹⁰⁵ Peasnell, then, started to link accounting information with the forecast of a firm's economic value. According to Peasnell, accounting is a system of measuring value and value accretion. Book values are presented as a measure of equity value and earnings as a measure of the change in that value.¹⁰⁶ At the same time, empirical research has shown that accounting data,¹⁰⁷ in particular, reported earnings,¹⁰⁸ are strongly related to security prices.¹⁰⁹

The “clean surplus relation” used in Peasnell's “Accounting Identity 1”¹¹⁰ has led to the accounting-based performance measure of abnormal (or residual) earnings in the Ohlson Model.¹¹¹ According to Ohlson, abnormal earnings are “defined by earnings minus a charge for the use of capital as measured by beginning-of-period book value multiplied by the cost of capital” and “the future profitability as measured by the present

¹⁰² Peasnell (1982), p. 362.

¹⁰³ Penman (1992), p. 467.

¹⁰⁴ Peasnell (1982) loc. cit.

¹⁰⁵ This residual value will become more relevant when fair value changes occur that are not realised in earnings but are relevant as information for prospective investors about temporary value, see paragraph C. Reporting of Temporary Values, p. 66ff.

¹⁰⁶ Penman (1992) loc. cit., p. 468.

¹⁰⁷ See Nissim and Penman (2008), p. 16, Fn 26.

¹⁰⁸ Kim and Cross (2005), p. 753, 778, have found that between 1972 and 2001 the relationship between earnings and stock prices have been decreasing, but the relationship between current earnings and future, i.e. next years', operating cash flows have been strengthening over time.

¹⁰⁹ Hirst and Hopkins (2000), p. 12.

¹¹⁰ Peasnell (1982) loc. cit.

¹¹¹ Ohlson (1995), p. 662.

value of the anticipated abnormal earnings sequence reconciles the difference between market and book values”.¹¹²

This has brought the focus of attention to “earnings of a period”: how do earnings evolve over time,¹¹³ which components of earnings will most likely persist in the future and which ones will most likely not recur?¹¹⁴ As the concentration is on the development of future earnings per period rather than attempting to forecast future dividends, the Modigliani and Miller theorem of the irrelevancy of actual dividend pay-outs applies.¹¹⁵ The fundamental strength of this earnings-based valuation model is that it does not require users to forecast the timing of actual cash flows.¹¹⁶

The essential matter of interest to users is the reporting of earnings of a business activity and its components. Earnings are the single most important output of the accounting system.¹¹⁷ Hirst and Hopkins¹¹⁸ have provided extensive elaboration on the importance of earnings as a representation of reporting the *activity* of a business. They believe that “the financial reporting function is designed to provide information (i.e. earnings data) that summarizes the present and future net cash effect *of the activities*¹¹⁹, in which a company is engaged during a given period. Earnings offer the comprehensive base¹²⁰ for analyzing and making judgments about the persistence of its elements, which in total determine goodwill from which follows equity value. This is also why businesses are, in fact, analysed and valued using conceptually based and economically relevant measures of earnings.¹²¹

According to a recent survey from PriceWaterhouseCoopers,¹²² users of financial reports largely agree with this view. Users are less interested in the cash flows of single assets and liabilities (as expressed in fair value) than in earnings and real (not hypothetical) cash flows. The PWC report confirms the higher relevance of the business *activity* that converts inputs into revenue compared to balance sheet information. This is reinforced by Cooper, who states that investors consider “operating activities” and companies’ “ability to earn recurring

¹¹² Ohlson (1995), p. 667.

¹¹³ Ohlson (1995), p. 677.

¹¹⁴ Hirst and Hopkins (2000), p. 14.

¹¹⁵ Ohlson (1995), p. 665; Peasnell (1982), p. 363.

¹¹⁶ Hirst and Hopkins (2000), p. 13.

¹¹⁷ Dichev (2007), Overview 3.

¹¹⁸ Hirst and Hopkins (2000), amongst others: p. 23.

¹¹⁹ Loc. cit. p. 24; italic set by the author.

¹²⁰ The Corporate Reporting Users’ Forum, Letter to IASB and FASB, October 23rd, 2007, p. 3: “measure of earnings form the basis of valuation”.

¹²¹ Cooper (2007), UBS Investment Research.

¹²² PriceWaterhouseCoopers, *Measuring Assets and Liabilities - Investment Professionals’ Views* (PWC, February 2007).

profits through the combination of assets and other resources in a business venture” as more relevant than “the value of the individual assets that might form part of that venture”.¹²³

The Ohlson model has replaced the two elements of value in the initial (Peasnell) equation of value by an expression of “weighted average of (i) capitalised current earnings (adjusted for dividends) and (ii) current book value”.¹²⁴ However, there is a subtle, but crucial conceptual difference between the dividend-discount formula and the Ohlson-model: unlike the dividend discount formula where expected values are “discounted “ and then summed, here expected values are first summed over future periods and then “capitalised “. “Unlike dividends (or cash flows), earnings aggregate in a value sense. One does not have to worry about timing”.¹²⁵ Aggregation of earnings applies as opposed to discounting.¹²⁶ Furthermore, as earnings per period are the core information and the basis for aggregation, it is a logical requirement that elements of earnings, i.e. cash flows, remain in the respective periods they belong to. Thus, for an earnings-based valuation method, the use of discounted future cash flow analysis is methodologically incompatible. This is another impact of the fundamental distinction between receipts of the past, i.e. income *ex post*, and expected receipts in the future, i.e. income *ex ante* in the Hicksian view. To become book value in the Ohlson formula, earnings have to become income *ex post* first. Value has to be ‘unlocked’ by reconversion to cash. As explained by Penman, “the value in price at t must work its way into the accounting system (through the “realisation principle”) by period $t + T$.”¹²⁷

Even though Income *ex post* is a “useful measuring-rod for economic progress” it has to be adjusted for the purpose of assessment of future receipts, i.e. Income *ex ante*.¹²⁸ What Hicks has called ‘windfall gains’ can be equated with the analysis for the transitory elements in earnings. An earnings-based valuation uses the accounting information of earnings (income) per period and adjusts this data by subtracting any element included in it that is not considered to be persistent. It is considered to be exceptional or transitory, and not expected to have the same impact on earnings in subsequent periods.¹²⁹ Such items are excluded on the basis that they will not repeat themselves. Transitory earnings lack forecasting and valuation relevance.¹³⁰ When applying a discounted abnormal earnings (DAE) model to equity valuation a user should carefully consider the

¹²³ Cooper (2007), UBS Investment Research, p. 5.

¹²⁴ Ohlson (1995), p. 662.

¹²⁵ Penman (1992) loc. cit., p. 469.

¹²⁶ Ohlson (1995), p. 674.

¹²⁷ Penman (1992), p. 468.

¹²⁸ Hicks (1946), p. 179.

¹²⁹ Beaver (1999), p. 166.

¹³⁰ Ohlson (1999), p. 162; The Corporate Reporting Users’ Forum, Letter to IASB and FASB, October 23rd, 2007, p. 4: “the need to identify and isolate one-off events”.

model's input.¹³¹ Particular effort has to be made to analyse current as well as historic earnings for their characteristics of persistency.¹³²

The question of persistency becomes of specific relevance when considering value changes in non-cash resources that are unrelated to the activity's economic logic. As explained, fair value accounting will, in such cases, result in arbitrary shifts between periodic results without any impact on the net cash inflows of the activity when the cycles are completed.

The table below contains a simple example of an entity with earnings (symbolized by the sign "€") of CU 4 per period to be considered as being persistent in the following two periods after measurement date. This entity, however, has a valuation reserve of CU 2 at t1, the date at which the valuation is made. The question arises as to whether this unrealised valuation gain should or should not be part of income of period 0. This is of particular importance, because under an earnings-based valuation model, it will form the basis of assumption of persistent earnings for the relevant earnings of future periods.

<i>Period</i>	<i>1</i>	<i>2</i>	<i>3</i>
accrued €	4	4	4
unrealised FV	2	?	?
FFV €	6	?	?

Let us assume that the unrealised gain belongs to a machine in use for a productive activity derived from a shortage in the second hand market for such a machine.¹³³ What is the impact on persistent earnings?

Clearly, the non-cash resource continues contributing to earnings through its use in the production of the activity in progress, by sacrifice of value measured by the initial cash outflow over time of use. On the other hand, if the unrealised gain is realised, thus becoming part of current earnings, it will not recur. This suggests that it should not be considered in the base of persistent earnings for the future, since the realised gain will not recur in future earnings. Furthermore, the assumption of a sale is a change of assumptions as the productive activity in progress will have to come to an end, due to the sale of an essential resource. This would change the value of the business activity because the expectations of future earnings as previously assumed would end at t1.

If, however, the activity in progress would have to be assumed as continuing due to its economic logic, a re-purchase would be required which would then – ceteris paribus – leave the gain¹³⁴ to be written off over the

¹³¹ Hirst and Hopkins (2000), p. 57.

¹³² Dichev (2007), p.17: "Thus, for investors good earnings means a metric that is highly persistent and predictive of future earnings."

¹³³ The case described on p. 25-26 above.

¹³⁴ The gain on the sale, re-invested in the re-purchase, would represent the new value of input-at-work for the remaining two periods of potential use.

next two periods of machine use. The sum of fair value changes over the cycle in progress would amount to zero.

<i>period</i>	<i>1</i>	<i>2</i>	<i>3</i>	Σ
accrued €	4	4	4	12
unrealised FV	2	-1	-1	0
FFV €	6	3	3	12

When the hypothesis of a sale is in contradiction to the economic logic of the activity in progress the sum of changes in value calculated as “hypothetical income” will amount to zero. Such earnings are not even transitory. Furthermore, since they have not actually occurred, they have to be reversed in the following periods. It is only a temporary value that, if the assumptions about the activity remain constant, will not even become transitory earnings. This representation of artificial allocations between interim period results without an impact on the total result of the completed cycle is misinformation.

The same example can also be used to demonstrate a further unacceptable consequence of fair value accounting if it were to be assumed that the unrealised gain in the example would belong to an interest bearing financial instrument. The analysis of fair value and its changes for interest bearing financial instruments has the benefit that the cash flows under consideration are known (amount and date) and directly attributable to the instrument because they are contractually agreed upfront. In the case of interest bearing financial instruments, fair value is determined by the aggregation of all known future cash flows, discounted to today’s value, i.e. present values. Therefore, fair value generates information that disconnects future cash flows from the respective periods in which they (are expected to) occur. Accrual accounting allocates (where necessary) the actual cash flow that occurs at a certain date to its related period. This creates the methodological problem that discounting cash flows makes the borders between periods indistinguishable. It also has the same effect on the cash flow contribution from the instrument by period.

The unrealised fair value gain represents the impact of a change in market rates in comparison to the contracted rate of the instrument. If the instrument would be sold, the gain again would have to be considered transitory as it would not be expected to recur. At the same time, persistent earnings as previously assumed will have to be adjusted. This is due to the fact that the ‘gain’ as well as the capital can only be re-invested at market rates, i.e. the current market rate available for the relevant period, and will differ from those that previously contributed to current earnings. Once the fair value result is realised it becomes part of next ‘start-of-period’ book value corresponding to a “prior period adjustment approach”.¹³⁵

¹³⁵ Ohlson (1999), p. 162.

However, if the instrument is not expected to be sold due to the economic logic of the activity, the same effect of an overall result of fair value changes of zero¹³⁶ will become apparent over the life of the activity. When the hypothesis of an exchange turns out to be incorrect and the cash flows brought forward through discounted cash flow methodology actually occur in their respective future periods (because the instrument is held to its maturity), it will cause the reporting of a *reversal* of that anticipatory, but unrealised, fair value. Over time to maturity, the generation and changes of fair value of interest bearing financial instruments amount to zero.

Another issue arises from the fact that future cash flows are discounted and condensed into one fair value figure. The availability of information about earnings per period and the cash flow profile of the instrument vanish.¹³⁷ The fair value that relates to the current period cannot be identified from the fair value information provided. All assets and liabilities that can be valued through a DCF analysis have a defined maturity, with the benefit of certainty about their cash flows. On the other hand, the horizon is finite, leading to the terminal problem of DCF analysis.¹³⁸ For instance, a fair value (FV) does not provide information on how many periods' earnings are brought forward in this one figure. How can such fair value information and its changes be analysed for persistence? What happens after maturity? How would one measure the contribution to earnings from future transactions that are not captured by the balance sheet, but need to be considered for persistent abnormal earnings?

Finally, how would one consider future cash flows not captured at all by fair value, e.g. cost, even though they are part of the cash conversion cycle's use of resources and part of future period's earnings?

These questions suggest a test of applying the lines of arguments, as developed so far, on non-cash resources that commonly are valued by a DCF analysis. A most suitable object for such a test are interest bearing financial instruments of a non-trading entity, i.e. instruments that are not intended to be sold. The test should make transparent how the mechanics of fair value accounting interact with discounted cash flow analysis and demonstrate its impact on earnings of periods as compared to accrual accounting.

With the focus on this comparison – between fair value and accrual accounting – a detailed case study of interest-bearing financial instruments in a non-trading portfolio has been added as Appendix to this paper.

¹³⁶ As in the previous example.

¹³⁷ Nissim and Penman (2008), p. 33: “fair value accounting destroys the historical cost information.”

¹³⁸ Penman (1992), p. 473: “problem of “estimating continuing value” after a finite cash-flow forecast period”.

Interest-Bearing Financial Instruments in a Banking-Book

The critical lines of argument, developed so far, are as follows:

- The subject matter of financial reporting is a business activity that has an essential inherent attribute: its economic logic;
- Non-cash resources are the enablers of this economic logic;
- The economic logic determines how a non-cash resource is used in combination with other non-cash resources in order to contribute to the cash conversion cycle of the activity. This combination of non-cash resources is unique to each specific business activity;
- Thus, the choice of measurement attributes should be compatible with the economic logic of the business activity as it is in progress.

Interest-bearing financial instruments are particularly well suited for testing these lines of arguments. This is because the cash flows involved are contractually predetermined, i.e. they are not just based on assumptions. Therefore, the impact of fair value accounting when the contractually agreed interest cash flows are replaced by hypothetical ones can be demonstrated with mathematical precision.

A. The Economic Logic of the Banking Book

Earlier the two types of activity have been described as:¹³⁹

(1) yielding a profit from combining or transforming factors of production

versus

(2) yielding a profit from the rise of asset prices while such assets are in the possession of the entity.

The activity of a bank that issues loans that are funded by the issue of deposits fits the description of transforming factors¹⁴⁰ of production into profit-making activity (1). This activity, the intermediary function, connects market participants who are in need of cash (liquidity) with other market participants who have excess liquidity available. In these cases, the capital of the bank is not used ‘for investment in the assets’. Equity is more a requirement for backing the overall operations of the intermediary function, from the necessary infrastructure to the requirements of holding capital for regulatory purposes.

The term ‘banking book’ refers to this non-trading activity in a bank, the essence of which can be described by the economic logic of investing cash collected from non-equity-investors into non-cash resources,

¹³⁹ See chapter: The Essence of a Business Activity.

¹⁴⁰ Cooper (2007), UBS Investment Research, p. 9, considers it correctly to be “operating”.

interest-bearing financial instruments, which contribute over time to maturity by cash inflows in the form of interest paid. The aim of the activity is to receive more cash inflow, interest revenue, than the cash outflow required for the funds collected. The interest cash outflows for the non-cash resources issued, the liabilities, represent inputs consumed, i.e. expenses. The economic logic is centred on the ‘intermediary function’, the position of collecting funds from multiple sources with different characteristics (timing, rate, repayment), and lending this cash to others, again with different characteristics. In carrying out this intermediary function, the cash flow profiles over time of the instruments are essential, as the timing of the interest expense has to be matched with interest income.

For profit-making activity (2), e.g. trading, FFV accounting is aligned to the economic logic of the activity. This holds true, even if a realisation has not taken place. However, this is due to the fact that precise proof of realisation is of less relevance. There is little significance in an exact date at which realisation occurs in cases of constant selling and buying which constitutes a trading activity. And even when the sale and re-investment occurs over a longer period, the changes can continue to be considered ‘realised’ because the activity is focused on ‘earnings’ from the change in value of the assets and their funding liabilities. In these cases, fair value and its changes are a faithful representation of expectations of cash flows and changes in those expectations.

However, for profit-making activity (1), i.e. the banking book activity, fair value reduces any cash flow profile to a plain cash position independent of their different time horizons (time to maturity). FFV reporting eliminates the causal connection between the underlying business activity¹⁴¹ and the ‘results of the period’ it is supposed to report on. The underlying relationship between activities, management decisions and reporting of (real) results is disrupted when FFV accounting is applied. The reported results contradict these relationships because they ignore the underlying economic logic of the activity in progress. Such representation also breaks the relationship between management decisions and the results of the execution of their decisions. It means that the stewardship function of financial reporting cannot be fulfilled.

A.1. Contribution to the Net Cash Inflow

Financial reporting should inform about contributions to earnings as they are achieved by the business activity of the entity over time through its cash conversion cycles. This statement contains a simple, though critical thought. Cash flow contributions from non-cash resources differ in their impact on earnings depending on the economic logic of the business activity in progress, i.e. depending on what an entity is doing or planning to do

¹⁴¹ Dichev (2007), p.12: “...divorced from what the firm is doing...”

with the instruments. If they are sold, fair value is the correct reporting information. The sale marks the completion of a conversion cycle. However, if non-cash resources are not sold, the reported value changes do not translate into cash flows of the respective reporting periods. Only the actual cash flows determine results. The contracted cash flows will actually occur in future periods as expected according to the cash flow profile of the respective instrument.

Financial instruments as non-cash resources in non-trading activities are attractive for their cash flows *from* the instrument over time rather than *for* the instrument in exchange.¹⁴² This activity is strongly influenced by the fact that the funding – one could call it “non-cash resources issued” – can rarely be re-converted at will by repayment in cash at any time, due to the contractual obligations that are attached to the funding. Depositors, in particular retail depositors, are not interested in the fair value of their deposit; they actually want the interest paid as agreed to match their own future spending requirements.¹⁴³

The economic logic of the activity uses the loans granted as input without consumption. The initial cash outflow for the non-cash resource is aimed to be recovered dollar for dollar at maturity.¹⁴⁴ At the same time, the cash inflow from the funding, the non-cash resource issued will be matched by an identical cash outflow.

Interest bearing financial instruments pay interest on the nominal amount of the capital transferred. If the amount transferred equals the nominal amount, interest is calculated as a percentage of 100 per annum for the time of transfer to the time of final maturity (or re-setting of interest rates). The consideration given (of 100) equals the nominal amount of capital. The contractually agreed interest – the client rate – determines future interest cash flows until the re-transfer of the capital.

The example portfolio in the Appendix¹⁴⁵ of a loan and a deposit, both at market rates of 5%, 4 year maturity, shows their cash flow contribution to this activity by means of interest revenue and interest expense:

Table 1 ¹⁴⁶	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue	0	5	5	5	5	20
Interest Expense	0	-5	-5	-5	-5	-20
Accrued Nil	0	0	0	0	0	0

¹⁴² See above chapter: Non-cash Resources to a Business Activity (C), as to the difference in character of these contributions.

¹⁴³ This fact, in particular, is what makes the fair value assumption of own debt, representing a hypothetical repayment “at market”, look so absurd. No depositor would be willing to accept freely less than 100% of his/hers deposit as pay-back just because market ratings suggest so.

¹⁴⁴ For the purpose of clarity, the examples used in the case study (Appendix) eliminate the issue of credit risk.

¹⁴⁵ Appendix 1. The initial Case - Client Rates at Market.

¹⁴⁶ From Appendix, Table 8, p.79.

The contribution to the *net* cash inflow of the activity can be seen on the level of (accrued) net interest income (NII). Not the single gross cash in- and outflows, only their combination to the *net cash inflow* is the focus of the economic logic of this (and any) activity. Thus, it should be the focus of financial reporting.¹⁴⁷

The simplicity of this example makes it an ideal candidate to demonstrate the relevance (or lack thereof) of changes in market rates of interest.

A.2. The Zero-sum Game

Earlier, it has been demonstrated that a measurement model that contradicts the economic logic of the activity in progress will only lead to shifts in results between interim periods without changing the result of the total period.¹⁴⁸ This contradiction becomes evident when a value change is measured through profit or loss although the change, e.g. in market price, changes neither the amount nor the quality of the contribution by the non-cash resource to the activity as it is in progress. In such cases, the sum of reported changes in value over the interim periods is zero.

When FFV accounting is applied to an activity the economic logic of which is based on cash flow contribution from use over time instead of for the non-cash resource in exchange, the hypothetical value change has to be reversed as no exchange takes place. Value change accounting merely becomes a zero-sum game.

Assume for our example a drop in market rates by – 0.5% at the 31.12 of year 2. Fair value changes are accounted for, but have to be reversed in the following periods to maturity.

Table 2	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
FV loan ¹⁴⁹	0	0	0.9363	0.4785	0	
Earnings relevant FV Δ: ¹⁵⁰			0.9363	-0.4578	-0.4785	0
FV deposit ¹⁵¹	0	0	-0.9363	-0.4785	0	
Earnings relevant FV Δ:			-0.9363	0.4578	0.4785	0

The measurement at fair value discounts the difference between the contracted rate of 5% and the new market rate of 4.5% and includes as fair value result the difference in earnings of the financial reporting of year

¹⁴⁷ This is where the primacy-of-assets errs as it focuses on the single gross cash flows adding to the confusion; see chapter: Value Change of Non-cash Resources and Fn 77-78.

¹⁴⁸ See above chapter: Value Change of Non-cash Resources, through section (B).

¹⁴⁹ From Appendix, Table 5, p. 78.

¹⁵⁰ The term “earnings relevant FV” refers to the amount of fair value and difference in fair value (FVΔ) that has an impact on the P&L; whilst the full cash flow from the contractual interest rate impacts P&L, only the difference to market rates are considered for the purpose of FV and P&L. relevance.

¹⁵¹ From Appendix, Table 7, p. 79.

2. As the hypothesis of a sale is proven incorrect, the reported value changes have to be reversed in the following periods.

Table 3 ¹⁵²	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue	0	5	5	5	5	20
FFV Interest Revenue	0	5	5.9363	4.5422	4.5215	20
Interest Expense	0	-5	-5	-5	-5	-20
FFV Interest Expense	0	-5	-5.9363	-4.5422	-4.5215	-20

This change in market rates does not lead to any change in actual or expected cash flows. Over time to maturity, the two methods of income measurement lead to identical, total sums of revenue¹⁵³ from the transaction. The difference in interim reported results is caused only by applying discounted cash flow analysis (DCF) which changes the results between periods, though not in total. DCF brings forward future periods' results into the current period. If time passes on without a sale, documented by a cash flow of the realised amount, then the prior value changes have to be reversed over time. The longer the time to maturity of an instrument, i.e. the larger the number of cash flow elements to be brought forward from future periods, the bigger the distortion of information for current period's earnings. The sum of cash flows over the total period for both methods remains the same.

According to Barth,¹⁵⁴ “predictability of income itself is not an objective of financial reporting. Rather, it is income's predictive ability for future cash flows that is important.” It appears that the predictive ability of FFV for earnings is impaired by its logic of reversals of future income elements previously brought forward. This logical conclusion is consistent with the empirical research finding of Chen, Sommers, and Taylor that “moving toward fair value accounting may reduce the predictive ability of accounting systems for future cash flows”.¹⁵⁵

The example demonstrates that, for a non-trading activity, it is the cash flow contribution over time that is of relevance for financial reporting about the progress of the activity. The misrepresentation through the merely hypothetical information provided by FFV reporting is evident in Table 3. Fair values and their changes are relevant for earnings if, and only if, they lead to the change in or expectation of changes in cash flows to the respective business activity being performed.

¹⁵² From Appendix, Table 8, p. 79.

¹⁵³ Presumably, this is what IASB perceives as “artificial stability” (IASB Discussion Paper, *Reducing Complexity in Reporting Financial Instruments* (London: IASB, March 2008), 3.450).

¹⁵⁴ Barth (2006), p.2.

¹⁵⁵ Chen, Sommers, and Taylor (2007), Abstract.

B. The Terminal Problem of Discounted Cash Flow Analysis (DCF)

Discounted Cash Flow Analysis (DCF) can calculate cash flows only to a known, i.e. finite, planning horizon. This is known as its ‘terminal problem’.¹⁵⁶ DCF cannot forecast future cash flows beyond its known finite horizon. As a consequence, it leads to asymmetric recognition of a rate change impact for assets and liabilities of different maturities.

This problem becomes apparent in a so-called mismatch position.¹⁵⁷ Assume an asset of 4 year maturity that is funded by a deposit with 1 year maturity, annually renewed. At the end of the second year, the market rates drop by -0.5% to 4.5%. The position will have the following results from its interest cash flows reported:

Table 4 ¹⁵⁸	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue	0.00	5.00	5.00	5.00	5.00	20.00
Interest Expense	0.00	-5.00	-5.00	-4.50	-4.50	-19.00
Accrued Nil	0.00	0.00	0.00	0.50	0.50	1.00

B.1. The Myth about Reflection of Risk

B.1.1. Mismatch Position

In difference to the real interest cash flows, FFV accounting has to consider the effect of the market rate changes and take them, discounted, “upfront” into profit and loss – the anticipatory effect of DCF. Because DCF can calculate cash flows only to a known, i.e. finite, planning horizon, the loan and the deposit are affected by the rate change differently due to their different maturities. While the deposit – renewed at every measurement date – is always “at market”, thus no fair value change, the fair value change of the loan is taken upfront at end of year 2 and subsequently reversed over the next two periods. The terminal problem of DCF takes effect in the recognition of different time horizons of the asset and liability. The perceived value changes of the revenue cash flows from the asset are considered upfront for two future periods. The opposite impact on the expense cannot be captured for the respective length of time. This is like a denial of the fact that future funding until maturity of the loan is inevitable, i.e. part of and determined by the economic logic of the activity.

At the conclusion of the transaction, the sum of all periods’ results is identical for both accrual and FFV accounting, i.e. interest income of 20, expense of 19 and net interest income of 1.

¹⁵⁶ Penman (1992), p. 473.

¹⁵⁷ See in detail Appendix, 2.1 ff.

¹⁵⁸ From Appendix, Table 10, p.81.

Table 5 ¹⁵⁹	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
FFV Interest Revenue	0.00	5.00	5.9363	4.5422	4.5215	20.00
FFV Interest Expense	0.00	-5.00	-5.0000	-4.5000	-4.5000	19.00
FFV NII	0.00	0.00	0.9363	0.0422	0.0215	1.00

The information provided by the two accounting systems on the net cash inflows compares as follows:

Table 5a ¹⁶⁰	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.00	0.00	0.00	0.50	0.50	1.00
FFV NII	0.00	0.00	0.9363	0.0422	0.0215	1.00

In contrast to the actual contribution from real cash flows, FFV exacerbates the magnitude of the changes as well as the volatility in results. FFV reports changes that differ from the actual changes in cash flows and it reports changes for a different number of periods, Y2 to Y4, than the actual number of periods where net cash flows change, i.e. Y3 and Y4 only.

The driving force behind the distortion of information is the terminal problem of DCF, as it cannot forecast future cash flows beyond its known finite horizon. It, therefore, leads to asymmetric recognition of a rate change impact for assets and liabilities of different maturities. In the example above, it cannot measure the deposit beyond its time horizon of one year, whilst it reports the impact of rate change on the asset for two future periods.¹⁶¹

Some believe that “fair-value gains and losses are important elements of bank risk and profitability”¹⁶² and that a FFV accounting model provides more complete information.¹⁶³ However, as the examples show, fair value only measures cash flows that are known, using the underlying assumption of market conditions to remain unchanged until maturity. Fair value provides information about the cost of a hypothetical closure of a mismatched position, thus eliminating risk as well as chances. It does not provide information on earnings for the future as the management of the risk is a continuous activity.¹⁶⁴ Fair value is a point in time measure and therefore has no predictive quality for earnings.

¹⁵⁹ From Appendix, Table 10, p.81; FFV accounting simply adds (or subtracts) the value changes (and their reversals) to or from the real interest cash flows.

¹⁶⁰ From Appendix, Table 10, p.81.

¹⁶¹ The examples used by Gebhardt et.al. (2002) are of longer maturities (up to 10 years), thus the distortion of information at each year-end will be more pronounced.

¹⁶² Hodder, Hopkins, and Whalen (2006), p. 341.

¹⁶³ Hirst, Hopkins, and Whalen (2004), p. 445, who compare the mixed-attribute model to a “piecemeal-fair-value accounting” (p. 454).

¹⁶⁴ FV does not reflect the results of risk taking, only the results of a hypothetical elimination of it.

There is a further lack of causation between fair value changes and future earnings that commonly remains unnoticed. Fair value based on DCF measures the cash flows that do not change instead of the cash flows that do change. This is because, by definition, the method cannot discount unknown cash flows. The risk of value changes of known cash flows can be assessed, but the risk of value changes of unknown cash flows cannot. As can be seen from the example, a risk that derives from mismatches in maturities will impact income (earnings) in a way that will rarely correspond to the way fair values of known balance sheet items may change. FFV accounting can only simulate the cost of a hypothetical closure of a mismatched position.

There is no logical connection between the impact of mismatch risk and valued (discounted) future earnings. Methodologically, unknown cash flows cannot be discounted under any assumption. FV does not reflect the risk involved in a mismatched position as it cannot measure the mismatch. The largest distortion in reporting is caused by changing results between different periods under a hypothetical assumption that has to be reversed over time to maturity¹⁶⁵ – sometimes gradually, sometimes not. The net cash inflow from the business activity as it completes its cycles over time remains unaffected by the erroneous assumption.

B.1.2. Hedging

The relevance of contributions to the net cash inflow of the activity is a logical consequence of the activity's economic logic. This logic determines the relevance of measurement attributes for faithfully representing the business activity across different types of non-cash resources employed. These findings are independent of the type of non-cash resources employed, whether it is machines or raw material in production or whether it is loans and deposits in a bank's non-trading portfolio. It is not the type of non-cash resource that is of relevance to the determination of a measurement attribute, but the type of activity that the non-cash resource is assigned to. Only the latter determines the way a non-cash resource contributes to the net cash inflow of that activity.

This is a general principle, which is also valid for derivatives when they are not acquired for trading but, instead, for serving the non-trading activity with their cash flows over time to maturity.

Assume that the bank – in contrast to the example (Table 4) – considers the re-pricing risk of the interest rate on the deposit unsuitable to its business objectives. Thus, it enters into a 'pay-fix/receive-float' swap at market rates for the same remaining time to maturity as the loan.¹⁶⁶ The swap is assigned to the same economic logic of the non-trading activity, i.e. it does not get sold before maturity but contributes with its interest cash

¹⁶⁵ For this reason, the use of income variables (PFV – FFV) by Hirst, Hopkins, and Whalen (2004), p. 461, proves only the asymmetry of the two income measuring methods, not the relation of volatility in results to risk.

¹⁶⁶ See for the detailed description and assumptions used, Appendix, 2.2.1, p.83ff.

flows over time to maturity. The cash flow results over time are the same as if the bank had funded initially with a deposit of the same maturity as the loan.¹⁶⁷

Table 6 ¹⁶⁸	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue loan (fix)	0	5.00	5.00	5.00	5.00	20.00
Interest Revenue swap	0	5.00	5.00	4.50	4.50	19.00
Interest Expense deposit	0	-5.00	-5.00	-4.50	-4.50	-19.00
Interest Expense swap (fix)	0	-5.00	-5.00	-5.00	-5.00	-20.00
Accrued NII	0	0.00	0.00	0.00	0.00	0.00

At time of market rate changes, the selling assumption of the FV methodology leads to the generation of fair value changes, which are subsequently reversed – for the loan as well as for the swap:

Table 7 ¹⁶⁹	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
FV loan	0.00	0.00	0.9363	0.4785	0.0000	
Earnings relevant FV Δ:			0.9363	-0.4578	-0.4785	0.00
FV Swap	0.00	0.00	-0.9363	-0.4785	0.0000	
Earnings relevant FV Δ:			-0.9363	0.4578	0.4785	0.00

Like in the previous examples without a derivative, this example including the derivative reveals that FFV accounting distorts the results of the interim reporting periods. The real cash flow contribution to the net cash inflows from the cash conversion cycle of this specific combination of non-cash resources, the loan, the short term deposit and the swap, are identical, again, for reporting under both accrued NII and under FFV, as the sums of fair value changes are zero.

Table 8 ¹⁷⁰	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue	0.00	10.00	10.0000	9.5000	9.5000	39.00
FFV Interest Revenue	0.00	10.00	10.9363	9.0422	9.0215	39.00
Interest Expense	0.00	-10.00	-10.0000	-9.5000	-9.5000	-39.00
FFV Interest Expense	0.00	-10.00	-10.9363	-9.0422	-9.0215	-39.00

The change in market rates has the same effect on the derivative as it has on the loan or the liability in the initial case: it does not change the contractually agreed cash flows and it cannot measure the cash flows that do change. As a consequence, the fair value changes reported initially have to be reversed over time to maturity

¹⁶⁷ The example is suitable to clarify a common myth about hedging: it does not only eliminate risk, it also eliminates chances. In this case the bank is unable to take advantage of the drop in the funding rate like it did in the mismatch example (Table 4).

¹⁶⁸ From Appendix, Table 12a, p.84.

¹⁶⁹ From Appendix, Table 12b, p.84.

¹⁷⁰ From Appendix, Table 12c, p.85.

as the swap is not sold. There is no difference between non-cash resources in use that are machines or raw material or loans or deposits or swaps: the nature of the resource does not amend the logic of the activity. Or putting it the other way around, the economic logic of the activity the non-cash resources are assigned to determine the measurement attribute. In the case of the banking book this logic is contribution by interest cash flows over time to maturity. The law of cause and effect¹⁷¹ applies to all non-cash resources: if they are not sold, the anticipated results from the inappropriately assumed sales have to be reversed in subsequent reporting periods.

These findings raise the question as to whether hedging is a separately identifiable, specific business activity that requires different accounting rules for different activities. If the same accounting rules applied for all non-cash resources employed are able to reflect the economic reality of a specific type of business activity and successfully represent the net cash inflows over the time of the conversion cycle, is there a need for a different rule that infers its measurement basis from the type of non-cash resource rather than the type of activity in progress?¹⁷² In other words, is special hedge accounting rules even needed?

B.2. *Selective Accounting*

DCF can only capture cash flows relating to assets and liabilities within their given time horizons. This refers to the contracted maturity in our examples. DCF and, consequently, FFV accounting cannot capture cash flows beyond these known maturities. It, therefore, leads to asymmetric recognition of a rate change impact for assets and liabilities of different maturities. It is an issue that develops further consequences due to the anticipatory effect of discounting cash flows. As this method brings forward future cash flows into the current or last reporting period, it will be selective in its accounting results. It can only bring forward the cash flows it can recognise. Thus it results in selective-by-design, asymmetric results between assets and liabilities of different maturities. The simple economic logic that shorter term assets and maturities will (have to) be renewed towards

¹⁷¹ The new “general principle” of correlation between initial cash flows and “ultimate cash flows” as developed by IASB (IASB Discussion Paper, *Reducing Complexity in Reporting Financial Instruments* (London: IASB, March 2008), 3.13 (a), 3.14 ff) appears to have been developed without any regard to cause and effect. The problem in misperception starts with overlooking the differences in character of cash flows which are mutually exclusive, i.e. cash flows from the non-cash resource or cash flows for them in exchange. The problem grows by the assumption that such correlation – if existing - would enable “the assessment of future cash flow prospects” (IASB loc.cit.) of the non-cash resource which is claimed necessary (see to its lack of causation, chapter: Reporting about a Business Activity (A)). Finally, even if this were to be a relevant criterion it would fail as an argument for fair value. The fair value of last measurement date is not correlated to the next fair value either, except that it contains the reversal of previous fair value changes. Future cash flow prospects cannot be assessed from a fair value number, as it is already the condensed result of an assessment. It does not permit a user to make his or her own assessment as it does not deliver the data required: the cash flow pattern over time as well as all other future cash flows for the activity to arrive at a forecast of future net cash inflows to the activity.

¹⁷² The answer to this question explains why IASB has struggled unsuccessfully with the concept of a ‘non-derivative’ instrument representing a hedging instrument.

the longest running maturity of the other side of the portfolio is an issue that cannot be captured by the methodology of DCF.

B.2.1. From Net Interest Income to Earnings

Due to its terminal problem, DCF cannot consider cash flows that are unrelated to recognised assets or liabilities, the largest portion of which is represented by future costs. Cash flows (and their related accruals) represent the impact of a business activity on cost as well as on income. Profit and loss consider *all* cash flow contributions from a profit-making activity (1) by period, instead of merely selective information that is accidentally dependent on the changing consistency of the balance sheet. Thus fair value changes do not “reflect all sources of expected inflows or outflows of the entity’s economic benefits”.¹⁷³

The flawed signal from FFV accounting becomes more pronounced when observed at the level of net income, i.e. earnings, instead of net interest income. A detailed example has been developed in the case study (see Appendix) that makes transparent the effect of selective anticipation of value changes. These are not only related to a sub-level of profit and loss,¹⁷⁴ i.e. net interest income, but to the ultimately relevant level of earnings.¹⁷⁵ On this level, where *all* cash flows impacting the net cash inflow to the activity are reported, the stable income level of the example, CU 1 per period, is met by the related cost of assumed CU 0.70 per period.

Table 9: ¹⁷⁶ From NII to €	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
NII (accrued)	0.00	1.00	1.00	1.00	1.00	4.00
Cost (CIR 70%)	0.00	-0.70	-0.70	-0.70	-0.70	-2.80
Accrued €	0.00	0.30	0.30	0.30	0.30	1.20

The dimension of misrepresentation by reporting anticipated and reversed value changes as elements of profit and loss under FFV accounting is depicted in the following table, where the stable, real cash inflows are not any more sufficient to make up for the correction of the erroneous accounting of a prior value gain.

Table 10: ¹⁷⁷ From NII to €	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
FFV NII	3.55	0.18	0.14	0.09	0.05	4.00
Cost (CIR 70%)	0.00	-0.70	-0.70	-0.70	-0.70	-2.80
FFV €	3.55	-0.52	-0.56	-0.61	-0.65	1.20

¹⁷³ Barth (2006), p. 10.

¹⁷⁴ See Appendix, Table 23, p.91.

¹⁷⁵ Symbolised by the sign “€”.

¹⁷⁶ From Appendix, Table 24, p.92.

¹⁷⁷ From Appendix, Table 25, p.93.

At the end of the position in year 4, the result of the total period is reflected by the sums of interest- and cost cash flows, once again identical between the two accounting methods.

The impact of applying full fair value accounting is that the simulated changes in market rates are brought forward to the period where market changes have occurred. This is hailed as one of the supreme benefits of FFV accounting.¹⁷⁸ Fair values are considered relevant¹⁷⁹ because “they reflect present economic conditions, i.e. the conditions under which the users will make their decisions”, and, they are “timely because they reflect changes in economic conditions when those conditions change”. These arguments are commonly quoted from the Joint Working Group of Standard Setters citing their view of fair value as the “superior information”.¹⁸⁰ What nobody has been mentioning is that prior value changes will have to be reversed when they are not confirmed by real cash flows. Consequently, if an entity has made real cash pay-outs based on the hypothetical value gains, the subsequent reversals become real losses that someone has to pay for.

This is pointing towards more than a theoretical problem. It becomes a real issue when an entity decides to consider the hypothetical gains as “real profit” for the year 0. First, it would be alarming if this “value gain” would be the basis of compensation of management and others involved in the activity. Moreover, it could be possible that the entity decides to pay a dividend for the year 0. Not only would the dividend cash pay-out have to be funded by a new liability. Worse, the future negative earnings would ultimately have to be covered by future shareholders.

The table above suggests that a Full Fair Value accounting model for the activity as described would be biased towards the ‘sell-side’ of users in case of fair value gains.¹⁸¹ It would deprive future buyers of value that they previously may have paid for. It is the consequence of confusion between income *ex post* and value *ex ante*.

B.2.2. Further Unrecognizable Cash Flows

Earnings based equity valuations suffer from the terminal problem of DCF when fair value changes are represented as “real” part of earnings in a FFV accounting format. The results will offer only selective amounts of fair values limited by the accidental structure of the maturities in the balance sheet. Because DCF cannot

¹⁷⁸ Barth (2006), p. 3-4.

¹⁷⁹ IASB Discussion Paper, *Reducing Complexity in Reporting Financial Instruments* (London: IASB, March 2008), 3.10 now simply refers to “many documents previously published by the boards state that fair value is the only appropriate measure”, thus replacing arguments with repetition of “the board’s beliefs” despite intense criticism of some of the more fundamental documents, see EFRAG (Comment Letter on IASB Discussion Paper, Reducing Complexity in Reporting Financial Instruments (Brussels: EFRAG, September 2008), Appendix 58 (c)).” We recall here that the report of the Joint Working Group of Standard-setters *Financial Instruments and Similar Items* (published in December 2000) was criticized for not addressing this issue adequately, and little progress seems to have been made in the last eight years.”

¹⁸⁰ Just one representative for many: Hirst, Hopkins, and Wahlen (2004), p. 456.

¹⁸¹ Recent market experience indicates that in case of fair value losses, FFV accounting is biased towards the “buy-side” of users.

anticipate further cash flows after the maturity date of existing instruments, FFV can only capture fractions of business. Fair value can provide information only about the cash value of the existing balance sheet positions, i.e. as if they were hypothetically sold. Fair value cannot provide sufficient and relevant information about business activities with re-investment and re-funding beyond the current maturities in the balance sheet. The problem of misrepresentative information from FFV accounting continues in cases where changes in maturities occur during renewal of business.

The case study (Appendix, chapter 4.2 ff) contains a number of examples where existing business is considered to be repeatable over a certain number of years with the same volume and margins as before. Further scenarios of changing maturities of this repetitive business are added, however, with the same volume and the same margins.

The examples highlight the differences in reported results between the two income measurement systems when business changes. FFV results exacerbate results from real cash flows in the build-up phase as well as in a slow-down scenario. For such scenarios, FFV accounting combined with DCF develops a pro-cyclical dynamic of mathematic precision.

Again, the sum of accrued earnings and the sum of FV earnings over the years of activity are the same. Yet, their distribution over the interim periods reveals significantly different profiles. If the overall results on a total period view are the same, the problem for any user of FFV accounts is to know what the real cash flows are for any particular period that can be considered as persistent, i.e. representative for future periods.

Furthermore, the terminal problem of DCF will lead to the reporting of different fair values for businesses with the same volume and margin, but different maturities. Fair values based on DCF are unable to reflect other information than the contractual cash flows of instruments the balance sheet appearances of which are purely accidental. Therefore, users are misled to believe in the comparability of information that is neither comparable between different reporting periods for the same entity nor comparable for the same business in the same reporting period between different entities. The conclusion to be drawn from the analysis is that – contrary to a widely held view¹⁸² – fair values do not provide comparable information for comparable underlying business activities.

Changes in fair value that neither convert to real cash flows nor to changes in expectations of real cash flows are not relevant to earnings. The information required for an estimation of future earnings for this activity is sustainable volume and margins.

As mentioned before, earnings-based valuation requires elimination of transitory earning elements that are not expected to recur in subsequent periods. Transitory earnings are not expected to have the same impact

¹⁸² Barth (2006), p. 3-4.

on earnings in subsequent periods and are, therefore, excluded on the basis that they will not repeat themselves.¹⁸³ What are the consequences for fair value changes in earnings that are actually reversed i.e. reduced to zero over subsequent periods? On the basis of the analysis, it seems that they must be irrelevant. From this follows that any earnings-based valuation methods should eliminate reversal fair value changes from persistent earnings¹⁸⁴ for application in its model.

Discounted cash flow analysis measures only the difference of contracted cash flows to the benchmark rate. This causes the differences in reporting of interim periods' results under FFV accounting. The reported changes bear no relation to real cash flows in any of the periods. Despite a matched position with a stable margin, FFV accounting signals volatility that does not exist with regard to actual earnings. FFV accounting does not "unmask true economic reality";¹⁸⁵ to the contrary, it hides it beyond recognition. Instead of generating more complete information, it generates information that is incompatible with any earnings-based valuation.

C. The Myth about Volatility

The IASB argues that volatility in fair values is a "real phenomenon",¹⁸⁶ thus dismissing the criticism of its cause of "artificial volatility" as just a consequence of reality. What the IASB overlooks is that a genuine case for applying these fair values to the non-trading activity has not been made. The issue is one of fundamental disagreement about the implications when accounting introduces real fair value volatility to an activity for which cash flows do not change in line with changes in markets due to the lack of a sale. The main implications are reversals of prior fair value changes that are unrelated to cash flows. This introduces artificial volatility into earnings that arises only because of the reversals of previous false assumptions. Artificial volatility does not only arise from mismatch in measurement.¹⁸⁷ It arises also because FFV accounting relates unrelated market events to earnings. The lack of causal and real connection to the business activity forces the reversal of the measurements' prior misinformation in subsequent periods.

DCF is, merely, applied analysis at one point in time. Its impact on income needs to be reversed, if assumptions are not confirmed by reality. Therefore, if the calculated sum of discounted cash flows does not occur as a cash flow at 'valuation date' and previously discounted cash flows occur in later periods at their

¹⁸³ Beaver (1999), p. 166-167.

¹⁸⁴ The Corporate Reporting Users' Forum, Letter to IASB and FASB, October 23rd, 2007, p. 3: "earnings reported in the performance statement should exclude the re-measurement of operating and non-operating assets and liabilities, except those arising from short-term trading".

¹⁸⁵ CFA Institute Centre for Financial Market Integrity, *A Comprehensive Business Reporting Model*, 2007, p. 9.

¹⁸⁶ IASB Discussion Paper, *Reducing Complexity in Reporting Financial Instruments* (London: IASB, March 2008), 3.42.

¹⁸⁷ as IASB Discussion Paper, *Reducing Complexity in Reporting Financial Instruments* (London: IASB, March 2008), 3.43 insinuates.

contractual dates, the cash flows brought forward have to be reversed in those later periods. These reversals cause volatility in profit and loss of interim periods that is entirely artificial.

The lack of causal connection to the cash conversion cycles in progress can be seen in every example of the case study in the identity of the total cash flow results for both accounting methods. Yet, the degree of arbitrariness in results produced by FFV accounting can be demonstrated further.

The earlier example (Table 3) has demonstrated the irrelevance of market rate changes to contracted client rates that do not change. The artificial interim volatility of the matched position (loan and deposit) with rates at market occurs, however, only on the sub-level of interest revenue and expense; though, on the level of net interest all changes are netted. The same, however, does not apply to the fair valuation impact on a matched position where the loan and the asset contain a client margin, e.g. 0.5%.

This would translate – for our example – to clients’ rates of 5.5% and 4.5% respectively. The difference between market and client rate would be taken up-front and the reversals would change the interest cash flow results in the following periods. However, the fair value of the margins do not offset each other; they are additive. A matching clients’ deposit with a 0.5% margin below the benchmark rate results in a lower FV of the liability compared to the consideration received of 100. Compared to market, the lower contractual client rate represents a positive fair value to the business entity which would have to appear as value correction on “interest expense”.¹⁸⁸ In short, the difference in accrued and fair value net interest income would be reported as follows:

Table 11: ¹⁸⁹ Summary	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.0000	1.0000	1.0000	1.0000	1.0000	4.00
FFV NII	3.5460	0.1772	0.1362	0.0930	0.0476	4.00

If market rates change, as in our previous scenarios, with a drop of -0.5% at the end of year 2, the potential confusion created by FFV accounting grows. In this case, the change in market rates causes different changes in fair values for the matching deposit with a margin compared to a matching deposit without a margin. The reason lies in the fact that, after the rate change of -0.5%, fair value accounting views the contractual deposit rate, i.e. including the margin, as being in line with market, resulting in a fair value of 100 (FV relevant to earnings: zero). Thus, the reversal of prior years’ fair value at year-end 2 contains the complete amount of prior fair value without further, subsequent reversals.¹⁹⁰ On the level of FFV net interest income (NII), the differences

¹⁸⁸ See details in Appendix, Tables 20-21, p. 90-91.

¹⁸⁹ From Appendix, Table 21, p. 90-91.

¹⁹⁰ See for details Appendix, Tables 22, p.91.

in reported FFV results between the two cases of rate-change and no-rate-change are only small. The essential discrepancy remains between FFV reporting and cash flow based accrual reporting.

Table 12 ¹⁹¹	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.0000	1.0000	1.0000	1.0000	1.0000	4.00
FFV NII – no rate change	3.5460	0.1772	0.1362	0.0930	0.0476	4.00
FFV NII with rate change	3.5460	0.1772	0.1494	0.0844	0.0430	4.00

The table is vivid testimony of the irrelevance of the market rate change as well as the fair valuation of the margin: at the end of the cash conversion cycle, all results are identical with CU 4.

In a mismatch position, fair value cannot reflect the risks involved as it cannot measure any mismatch. The volatility reported by such a valuation method does not report the volatility inherent in the mismatch. FFV accounting leads to additional distortion of reported results when changes in interest rates are simulated for positions that contain client margins, even when they are matched.

Not only does the terminal problem of DCF lead to the selective upfront recognition of the margins according to the time horizon of different maturities, but a multitude of different interim results are produced for the same business in volume and overall margin, in our example CU 1, if there are variations to where the margin is earned, on the side of the loan or the deposit. Again though, all cases of FFV reporting will always end with the same result for the total period as the cash flow based accrual accounting.¹⁹² The game of discovering yet more irrelevant value changes reported under FFV accounting to the confusion of users can easily be extended by adding the scenario of market rate changes.¹⁹³ However, the law of the zero-sum game rules even then; the results for the total period are identical between the two accounting systems.

All the examples confirm one fact: volatility in fair values may be a real phenomenon, but it is unrelated to the economic reality of a non-trading book where the instruments are used, not sold. When applied to a banking book activity, the volatility of the results it generates neither reflects the volatility in real earnings as documented by changes in the interest cash flows, nor the risk inherent in a mismatched position. The largest factors causing the artificial volatility in FFV results are the anticipation of fair value changes followed by their subsequent reversal, contrary to the actual volatility of real cash flows.

¹⁹¹ From Appendix, Table 23, p. 91.

¹⁹² See for details Appendix, Mismatched Positions and Client Margin, chapters 5.1, p. 97ff; 5.2, p. 99ff.

¹⁹³ See for details Appendix, chapter 5.3, p. 99.

D. Reducing Complexity

The IASB's definition of artificial volatility¹⁹⁴ to be caused by market changes, which cause fair values to change whilst one of two instruments are not measured at fair value, is missing the point. Artificial volatility is caused by a mismatch of the measurement attribute of the accounting model and the economic logic of the activity the instrument is serving. Reduction in complexity will be achieved when the measurement model fits the business model across all instruments types that serve the same business model.

D.1. Alignment of Measurement Model to Business Model

Concerning the path and pace of convergence to international accounting standards in the US, the Advisory Committee on Improvements to Financial Reporting to the SEC noted in principle that “accounting standards should be based on business activity” and that “any joint or separate projects completed by the FASB should be based on business activity”.¹⁹⁵ Furthermore, for improving the substantive design of new standards, the Committee suggests that “a better approach would be to focus on the nature of the business activity itself”¹⁹⁶ which they believe would decrease complexity and increase comparability.

These recommendations are supported by the conceptual arguments in this paper. It requires recognition of the business activity as the subject matter of financial reporting. As stated before,¹⁹⁷ different business activities have different models based on a different economic logic. These differences lead to unavoidable complexity in financial reporting in the definitions of ACIFR.¹⁹⁸ The complexity of the mixed-measurement attributes is a function of the underlying activity, i.e. the differences of input versus output to be reflected in financial reporting. Noncash resources assigned to different activities will contribute in different ways to the activities' cash flows according to the inherent logic of their business model. Thus the measurement attributes for financial reporting should be determined by the economic logic of the business activity¹⁹⁹ as it is in progress.

The various examples in this chapter (and the Appendix) serve to prove that the general principle for assessing the suitability of measurement attributes to a business activity applies to financial instruments as

¹⁹⁴ IASB Discussion Paper, *Reducing Complexity in Reporting Financial Instruments* (London: IASB, March 2008), 3.43.

¹⁹⁵ Advisory Committee on Improvements to Financial Reporting, *Final Report to the United States Securities and Exchange Commission* (Washington, D.C.: SEC, August 2008), p. 3.

¹⁹⁶ Advisory Committee on Improvements to Financial Reporting, *Final Report to the United States Securities and Exchange Commission* (Washington, D.C.: SEC, August 2008), p.5; the term “better” refers to the qualification of “the same activities” rather than industry-specific guidance.

¹⁹⁷ See chapter: Non-cash Resources to a Business Activity.

¹⁹⁸ Advisory Committee on Improvements to Financial Reporting, *Final Report to the United States Securities and Exchange Commission* (Washington, D.C.: SEC, August 2008), p. 19 No.1, p. 20.

¹⁹⁹ This is consistent with the approach recommended by Advisory Committee on Improvements to Financial Reporting, *Final Report to the United States Securities and Exchange Commission* (Washington, D.C.: SEC, August 2008), p. 27 (II. Mixed Attribute Model) to determine which measurement attribute should apply to different types of activities.

much as to any other non-cash resource employed. Thus, a reduction in complexity of financial reporting should start with the re-alignment of measurement attributes for non-cash resources to the specific way they contribute to a business activity. When the critical assumptions of a measurement model are in conflict with the economic logic of an activity, then its application is incompatible with the concept of faithful representation.

The particular complexity of the Standard for financial instruments, IAS 39, is not just a consequence of the natural unavoidable complexity of the activities that employ these instruments. To a larger degree its avoidable complexity is caused by contradictory and unsystematic rules-based assignment of measurement attributes to either single instruments or categories of instruments. Contrary to the Standard's approach, it is not the type of non-cash resource that is of relevance to the determination of a measurement attribute, but the type of activity that the instrument is assigned to. Only the latter determines the way a noncash resource contributes to the net cash inflow of that activity. Categorisation of instruments is important to help understanding the relative nature of their temporary fair values in the additional disclosures²⁰⁰ required, however, it is unsuited to determine measurement attributes. EFRAG has put the finger on the wound of the categorisation of financial instruments: the categorisation rules are without a principle base as they link accounting to the type of assets rather than their use.²⁰¹

The principle has to be that there are generally two types of activities, trading and non-trading. Each of these activities has its specific measurement attributes assigned that are applied across all types of instruments.

Categorisation of instruments within one of the activities is not an issue of applying different measurement attributes, but it is one of transparency regarding additional information by disclosure.

The available for sale category, for example, is a classification of instruments that are assigned to a non-trading activity and accounted for at amortized cost. The categorisation, however, is of importance for the disclosure of temporary values as the likelihood that a sale will take place is significantly higher than for any other instruments employed in non-trading. This, in particular, is a category that requires disclosure of the impact from its sale not only regarding its temporary value realised, but also the impact on future earnings per period compared to the last period. Consequently, it would become transparent how the realisation of the temporary value has changed the base for persistent earnings by period, and thus the value ex ante of the activity.

There is no need for a category of "Holding to maturity". Such a category is as meaningless as a requirement for a machine in production to be kept until the very end of its useful life otherwise it would be "tainted". The replacement of a machine earlier than the end of its useful life does not change the economic

²⁰⁰ See below, chapter: Reporting about a Business Activity

²⁰¹ European Financial Reporting Advisory Group Comment Letter on IASB Discussion Paper, *Reducing Complexity in Reporting Financial Instruments* (Brussels: EFRAG, September 2008), Appendix, 24.

function of either the old or the new machine within the specific cash conversion cycle. There are many reasons why the discontinuation of use of an asset can be entirely within the logic, e.g. a technically better suited machine becomes available, the replacement of a loan becomes necessary due to changes in credit rating or due to the fact that the limits for a particular counter party risk have been reached (even without changes in credit rating).

Neither example reveals any contradiction to the economic logic of the activity or the use of the replaced noncash resource. Occasional deviations are inevitably to be expected, however, they will remain a minority compared to the total number of noncash resources in use for a non-trading activity. Deviations require explanations, not accounting penalties. Deviations from the assumption of continued use of noncash resources are not a documentation of unjustified assumptions. Assessment regarding use requires reasonable assumptions. The economic logic of a business activity offers the most meaningful starting point by assuming that management decisions will most likely be in line with that logic.

The measurement attributes have to be assigned according to the activity across all types of instruments employed, including derivatives. The example above (Tables 6-8) has demonstrated that, for a non-trading activity – swaps included – it is the cash flow contribution over time that is of relevance for financial reporting about the progress of the activity. In other words, it is not the type of instrument used that is relevant, what is relevant is how it is used. For this activity, FFV accounting only generates hypothetical value changes that have to be reversed in the following periods to maturity for the swap as well as for the loan. The accounting complexity of employing swaps in this activity is not caused by the activity, but by the current rule-based provision of the Standard: that all “derivatives” have to be accounted for at fair value. This conceptual flaw and its consequences in complexity are corrected with the principle-based approach suggested by this paper.

D.2. Hedging Provisions

The unnecessary complexity created by the rule that has assigned fair value measurement to all derivatives has been compounded by the ‘overriding rule’ in the hedging provisions of IAS 39, that the “measurement basis” for derivatives overrides the accounting rules of other financial instruments employed in a conversion cycle, when one of the non-cash resources employed is itself a derivative.

Instead of aligning accounting to the logic of the underlying activity, current hedge accounting rules request the application of fair value measurement logic. This requirement is questionable, as it forces an asymmetric view to be taken on either the loan or the deposit instead of the activity in its entirety. These

accounting provisions are a derivative of the primacy-of-assets theory, requiring a decision (by accountants not the business actors) to “assign” the derivative to either the asset or the deposit, instead of to the activity itself.²⁰²

In the reality of the cash conversion cycles, only the interest cash flow contribution over time to the net results of the activity is what matters for financial reporting. Contrary to this, the hedge accounting rules require an incomplete, asymmetric view for measurement as either related to the asset or the liability. The confusion generated by this rule is compounded by its consequences in reporting. When “declared” (designated) as a fair value hedge,²⁰³ the fair value changes are reported in income (generating swings in interest income and expenses, but without corresponding cash flows) with the fair value change of the loan booked against its nominal value. However, when “declared” as a cash flow hedge,²⁰⁴ the fair value changes of the swap are reported as changes in equity. Thus, for identical activities with identical results, artificial and subsequently reversed fair value changes are reported in different ways, dependent on a somewhat arbitrary designation that is unrelated to cash flow contribution to results.

In addition to the previous example, the case study attached contains an example of employing a swap in a mismatch position some time after the position has been created, combined with a scenario of changes in interest rates.²⁰⁵ The different results reported by the two measurement systems is summarised on the level of interest income in the following table:

Table 13 ²⁰⁶	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.00	0.00	0.0000	0.5000	0.5000	1.00
FFV NII	0.00	0.00	0.9363	-0.9125	0.9762	1.00

As before, the change in market rates has the same effect on the derivative as it has on the loan or the liability in the initial case: it does not change the contractually agreed cash flows and it cannot measure the cash flows that do change. The difference in this case, however, is that hedge accounting might not be applicable because it is measured against the fair value benchmark.²⁰⁷

Whatever fair value changes are calculated or reported, the key fact remains: at maturity of the position, its conversion cycle, all measurement models show the same result of CU1. The interim volatility reported under fair value is clearly out of line with what happens in the real world of interest cash flows. This leads to a

²⁰² European Financial Reporting Advisory Group Comment Letter on IASB Discussion Paper, *Reducing Complexity in Reporting Financial Instruments* (Brussels: EFRAG, September 2008), Appendix, 51, ...”usually companies do not hedge specific transactions”.

²⁰³ i.e. assigned to the loan.

²⁰⁴ i.e. assigned to the future interest cash flows from the revolving deposit.

²⁰⁵ Appendix, chapter 2.2.2, p. 85ff.

²⁰⁶ From Appendix, Table 13b, p. 86.

²⁰⁷ Appendix, Table 13c, p. 86, demonstrates the possible effect on results reported in this case.

disconcerting thought. If the fair value measured and reported is of no relevance to the earnings of the entity, what relevance, then, has an effectiveness test that compares the changes in two irrelevant fair values? This raises serious doubts about the information value of the effectiveness tests required by the Standard.

All fair value changes, from the pre-emptive anticipation of fair value to its subsequent reversal, and their respective effectiveness calculations generate mountains of information irrelevant to earnings and the forecast of earnings. This constant production of not relevant (but potentially misleading) information camouflages real economic results of net cash inflows from the activity. It also is the cause of millions of dollars having to be spent on setting up appropriate systems, risk managers overseeing the changes in the use of instruments to suit the accounting rule and auditors who have to audit and testify the appropriateness.

Like FFV accounting in general, hedge accounting according to IAS 39 leads to distorted information that is disconnected from real cash flows and the economic logic of the business activity in progress, and which is therefore misleading. The conflict of IAS 39 with the underlying economic reality of business activities suggests that there may be a need for a basic conceptual overhaul untainted by the fallacy of a one-size-fits-all measurement basis like FFV.²⁰⁸ This overhaul should ensure a reporting system that reflects the inherent economic logic of the activity by reference to the period in which that activity occurs and which thus provides fair and equal treatment of present and future investors.

E. Confusion between Income-ex-post and Value-ex-ante

The Exposure draft on the Conceptual Framework uses the assumption²⁰⁹ that is at the heart of the confusion between objective Income *ex post* and subjective Value *ex ante*: it assumes that market changes are the cause of value changes which affect the ability (of an entity) to generate net cash inflows. It is the Credo that supposedly justifies full fair value accounting.

This assumption has been challenged by the earlier analysis of cash conversion cycles that are ruled by their economic logic which differs between different types of the business activities. From this analysis²¹⁰ follows that only Income *ex post*, i.e. realised, raises the amount of resources available to earn future income while future income itself is not realised. Value changes that only change assumptions about future income do not change the amount of resources now available.

²⁰⁸ European Financial Reporting Advisory Group Comment Letter on IASB Discussion Paper, *Reducing Complexity in Reporting Financial Instruments* (Brussels: EFRAG, September 2008), Appendix, 52: “blue sky thinking”.

²⁰⁹ IASB Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, OB 22 (London: IASB, May 2008).

²¹⁰ See chapter: Value Change of Non-cash Resources, p. 22.

The confusion between such Income and Value as defined above can be demonstrated on one of the prior examples (Table 5, 6) where a 4-y-maturity loan is financed by a 1-y-maturity deposit and at 31.12.02 market rates drop by -0.5%.

What is the change in the ability of the loan to contribute to the future²¹¹ net cash inflow of the activity? It has contributed CU 5 p.a. and it will contribute the same for the next two periods. Thus, the change in market rates has had no effect on the past contribution nor will it have an impact on the future contribution to the net cash inflow. Thus, it cannot have an effect on the future income streams to the activity as compared to before, i.e. it does not change the value *ex ante* of the activity. This seems contradictory to the change in fair value of the loan which has increased at measurement day from 100 to 100.9363.

The solution to the puzzle can be made easier to see by the simple bond example used earlier.²¹² If the loan was a bond held by an investor who would decide to sell, he would find out that on re-investment of the sales' proceeds he would receive the same future CU 5 p.a. as before. Thus, his future prospects remain unchanged. The only change is the swap of a non-cash-resource back to cash. But, the future cash flow prospects of the activity – when re-invested the same way and for the same time horizon – remain unchanged.

The value change is of relevance only to someone who is *not* in possession of this non-cash resource, the loan; someone, who only has cash. If he wanted to receive CU 5 in the next two periods he would have to invest more than CU 100. The value change is not a value to the business activity as it does not change its future cash flow prospects. If sold, it becomes cash, thus income. However, the future prospects are unknown as it is unclear what the business would do with the cash. It may just spend it. Then the value *ex ante* would decrease.

The activity under review does not consist of just holding a loan. It is performing the intermediary function of banks by using a client's deposit to fund the loan.

What is the change in the ability of the deposit to contribute to the future²¹³ net cash inflow of the activity? It has contributed a cash outflow of -CU 5 p.a.; however, it will now cause a cash outflow of -CU 4.5 p.a. This change in cash flows has an effect on the future net cash inflows of the activity under review. It changes the value *ex ante* of the business activity, though not the income of the past two periods. However, the change in market rates causes a change in the value of the activity *ex ante*, but not of the deposit the cash flows of which will actually change. The reason is the 'opportunity perspective' of fair value. It only measures against the benchmark what someone could do with cash. The deposit equals cash. It has been at market rates before, and it is now. Once again, fair value changes are not representative or consequences of cash flows that change. They are simulations of market changes to cash flows that do *not* change.

²¹¹ The future time horizon under review can obviously only be the next two periods, Y3 and Y4, at the end of which the loan matures.

²¹² Chapter: Value and Income, p. 19.

²¹³ The future time horizon under review can obviously only be the next two periods, Y3 and Y4, at the end of which the loan matures.

After all the claims of transparency it is surprising to find that the changes in market that have an effect on future, though not *ex post*, income streams of the business activity, only come from the changed possibilities of the cash position, not the non-cash resource with a longer maturity.

This change is, however, not a certainty for an unlimited time horizon. Unless, the deposit is fixed in maturity to match the loan, the future income streams remain with uncertainty. The implicit assumption of fair value that the current level of rates will remain until the maturity of the loan is an assumption indeed. The uncertainty of the markets leaves this assumption as subjective as any forward looking assumption. Thus, it belongs to the values *ex ante*, not the income *ex post*.

So, what is the justification for fair value accounting to bring forward value changes of cash flows that do not change as income of the past period, earnings that would be expected to raise the level of future earnings, but it does not? What is the justification of bringing only those cash flows forward that are linked to currently recognised assets and liabilities (according to their maturities)? What about the cash flows of current assets and liabilities that will be renewed? How about expected cash inflows from commissions? How about future cash flows from future cost?

Discounted cash flow analysis when applied to interest bearing financial instruments under FFV accounting breaks the relation of future cash inflows and outflows with their date of appearance. Future cash inflows and cash outflows that appear in the same periods are naturally netted to the net cash inflow of each of those future periods. Earnings relate to such a period of reporting about a business activity, commonly one year. However, FFV results depend on the time horizon of the financial instrument to be valued. FFV accounting violates the borders of reporting periods and, thus, falsifies the income *ex post* of the past period with a selective accounting effect in cases where sales of non-cash resources do not take place. Then, the absence of changes in cash flows to the entity (or any expectation thereof) represents the economic reality of the business.

The difference in perspective causes confusion²¹⁴ over what the real, the reliable results are. For interest bearing financial instruments that contribute to earnings over time, the obvious answer is accrued interest cash flow results.

The Draft Exposure of the Conceptual Framework assumes implicitly that market changes cause changes in value causing – automatically – changes in the ability of the business activity to generate net cash

²¹⁴ A particularly significant case of discrepancy between real cash flows and artificial FFV results can be found in Hodder, Hopkins, and Whalens' (2006) estimation of fair values of non-term deposits, "using a static discounted cash flow approach used by bank regulators, together with firm-specific deposit data obtained from bank holding company Y9-C reports."(Appendix, p. 371) Non-term deposits have no maturity, i.e. no fixed re-pricing dates. Therefore, their cash flows will not follow 'market rates' of fixed terms which, however, is used in the statistic discounted cash flow approach. They also include zero-rate demand deposits which don't have a cash flow at all. The authors, thus, have created a particularly unhelpful, artificial volatility compared to real interest cash flows of a specific period.

inflows. Unfortunately, these assumptions are aiding to the confusion between income *ex post* and value *ex ante*.

The general discussion about fair value suffers from a lack of precision in using the argument of transparency. Proponents of fair value claim that fair value is needed for transparency without differentiating between fair value disclosure and fair value measurement through profit and loss. This lack of precision has added further to the confusion. What is needed is a fundamental debate that allows for precision in analysis of the real cash flow contributions in the respective periods that they occur. This analysis has to start with a clearer distinction in reporting between income *ex post* and value *ex ante*. Income *ex post* will be dominated by objective facts like realised cash flows whereby value *ex ante* requires information by additional disclosure that permits users to develop their subjective assumptions on future net cash inflow streams of the activity. Financial reporting has to deliver the information needed, not the result of the assumptions when used in a valuation model.

Reporting about a Business Activity

A. Causation of Net Cash Inflows

The subject matter of financial reporting is a business activity whose aim is to invest cash in non-cash resources to create more cash. The target of the whole exercise is the generation of net cash inflow by the activity's cash conversion cycles. Thus, the origin of the net cash inflows is the activity. Even though non-cash resources contribute in different ways to this net cash inflow, it is the activity that has to be seen as its basis. Assets are just tools of the activity²¹⁵ that appear because the activity is unfinished, i.e. its conversion cycles are incomplete.

Frequently, attempts are made to associate non-cash resources of unfinished conversion cycles, i.e. assets, with the net cash inflow of the activity. The 2005 IASB Discussion Paper on Measurement Basis²¹⁶ declares the net cash inflows of the activity to be “the aggregate” of a number of cash flows related to individual assets and liabilities.²¹⁷ The most obvious flaw in this definition is the fact that non-cash resources employed by the cash conversion cycle are significantly more than the input and output unconsumed or unconverted at measurement date.

Economic resources are cash (C) and non-cash resources (NCR). The cash conversion cycle runs through more non-cash resources than assets reported in the balance sheet. In other words, non-cash resources used by a business activity are greater than recognised assets. The balance sheet does not report on all non-cash resources employed by a business activity: $\Sigma (C + NCR) > \text{assets}$. Therefore, measured changes of net assets represent only an incomplete account of performance.²¹⁸

The appearance of a non-cash resource in the balance sheet is not necessarily related to the net cash inflow of the activity. It is more of an accidental occurrence, such as the consequence of choosing this particular reporting date and not another reporting date. A large amount of input is consumed and is thus part of the cycle that causes net cash inflow without ever appearing as an unconsumed resource in the balance sheet. A lot more of non-cash resources would appear in a balance sheet if there were monthly or weekly balance sheets published.

²¹⁵ Dichev (2007), p.10: “the temporary and subservient nature of most assets”.

²¹⁶ IASB Discussion Paper, *Measurement Bases for Financial Accounting – Measurement on Initial Recognition*, (London: IASB, November 2005), p. 30, paragraph 47; the same view is implicitly contained in the arguments of CFA (see above p.22, Fn. 77).

²¹⁷ More recently, a follow-up of this view finds its expression in IASB's claim that one of the overriding principles by which to judge measurement attributes is whether it provides “information about future cash flow prospects” (IASB Discussion Paper, *Reducing Complexity in Reporting Financial Instruments* (London: IASB, March 2008), 3.11) which is then narrowed down to the cash flow prospects of instruments (3.17), instead of the activity in its entirety.

²¹⁸ Cooper (2007), UBS Investment Research, p. 14: “Operating profit is generated by combining assets and other inputs rather than from single assets.”

The less obvious error in the IASB's assumption concerning "the aggregate" nature of cash inflows is the lack of homogeneity in their connection to the gross cash flows of the activity for assets and liabilities in general, independent of a specific measurement date. Some assets represent input. Some are output, thus reflecting different stages of completion in the cycle. Some resources contribute to the activity by gross cash inflows through direct cash inflows from use, e.g. rent, interest. Others contribute by cash inflows for exchange, i.e. through sale. When the asset is 'given up' in the exchange transaction, its reconversion to cash marks the end of the cycle. However, others contribute through the consumption of value by sacrifice of the input²¹⁹ that has been obtained in the purchase of the resource. The balance sheet at any reporting date will reflect specific stages of completion of various cash conversion cycles dependent on circumstances unrelated to the choice of the date.

There is no non-arbitrary or logical way to determine the causal relationship of any asset at a reporting date to the net cash inflow of a period of activity.²²⁰ The primacy-of-assets view replaces the arbitrary uncertainty of the cost-attach-theory with that of a profit-attach hypothesis.²²¹

Financial reporting cannot represent a business either appropriately or sufficiently through the balance sheet as the primary information. Business is a dynamic activity, whilst a balance sheet reflects a static state of items²²² in their inadvertent composition.

B. Reporting on Progress of an Activity

The Reporting about the continuous flow of an activity represents the attempt of catching and describing a movement that continues uninterrupted until the activity is finished and the cycle is completed. The moment of measurement will have passed by the time a report reaches the users and the picture of the movement portrayed will be a picture of the past.²²³ As investors cannot wait until every cash conversion cycle of a business activity

²¹⁹ Some appear to be unaware of the fact that many non-cash resources do not have future cash flows attributable and, as a result, build flawed concepts on flawed assumptions, e.g. CFA (CFA Institute Centre for Financial Market Integrity, *A Comprehensive Business Reporting Model*, 2007, p. 8): "Fair value measures reflect the most current and complete estimations of the value of the asset or obligation, including the amounts, timing, and riskiness of the future cash flows attributable to the asset or obligation."

²²⁰ Paton and Littleton (1940), p. 122: "Net income ... cannot be imputed, in some order, to specific factors." Surprisingly, IASB recognises this lack of causal connection in IASB Exposure Draft, *An Improved Conceptual Framework for Financial Reporting*, OB 16 (London: IASB, May 2008), but fails to accept the logical consequences.

²²¹ Bell and Peasnell, 125: "practical problem of forecasting benefits, delighted to the arbitrariness involved in allocating joint benefits to separate assets.";131.

²²² Dichev (2007), p. 10; Rayman (2006), p. 24, P & L describes the flow of resources during an accounting period, the balance sheet describes the stock of resources at balance sheet date.

²²³ Schmalenbach (1933), p. 79-80: "A fleeting moment is extracted from a movement to be reflected in a picture of figures. However, it is not about recognition of a state, but the recognition of a movement between different moments. The movement we are trying to seize is ... the effect of energies, on the one hand performance and on the other the consumption of energy, i.e. an expense."

is completed, a “test reading”²²⁴ is required for which the generally accepted convention of the reporting period has developed.

The reporting period is a convention that has no specific relationship to a business activity. The period result does not represent anything caused by the period, only something that may have occurred in that period. The occurrence of an event or transaction is unrelated to the period itself, only to the ongoing activity. Conversions of cash into non-cash resources are neither profit nor loss, only cash flows that will become input data into the final calculation of result from the completed cycle. Matching of future cash inflows with their associated prior cash outflows are essential to avoid artificial swings in results²²⁵ when a conversion cycle is to be reported over more than one period. It is an essential element of a business activity that input is needed before output can be achieved. The final result of the activity remains independent of the period in which the completion of a cycle is achieved. This element of the subject of financial reporting forms the conceptual basis to the matching or accrual basis of accounting.

Users will best be served by an attempt to report the progress of the business activity up to date. Progress of a business activity is best reflected by reporting about the progress of its various cash conversion cycles, their cash conversions and re-conversions and the stages of completion reached at measurement date. This involves foremost a complete and neutral representation of the cash conversion cycles in their various stages of completion at reporting date. Even though the activity is aiming at a net cash surplus, reporting has to cover the gross cash flows from the cash conversion cycle to enable analysis of the development of the past period. Without sufficient detail about the past period’s generation of cash flows it is impossible to develop a reasoned assessment of what future cash flows to expect.

Reporting gross cash flows of a business activity has to include information on how much cash has been converted into which non-cash resources (= input, advance of expenses) and how much cash has been received by re-conversion of output of the activity (goods and services). For a proper presentation of stages of completion of cash conversion cycles, the amount of input consumed within the period (expenses) as well as the amount of input that remains available, value of cash outflow unconsumed (cost of the resources remaining) have to be included in any set of reports.

Cash conversion cycles lend themselves naturally to reporting of progress by the documentary effect of the transactions involving conversion. The cycle’s own logic of cash outflow first for input before cash inflow from output is helpful, as the reporting period causes an unrelated break in the process. As a matter of fact, it is

²²⁴ Paton and Littleton (1970), p. 7.

²²⁵ This would be the case when the cash outflows for non-cash resources would be reported as loss in the first period against a ‘profit’ of the gross revenues in the next period.

this underlying economic concept of the cycle that demands faithful representation by a reporting concept²²⁶ that mirrors the economic process in financial data.²²⁷ The cash outflows to date representing the unconsumed input at measurement date of an incomplete activity's cycles are most appropriate documents of the stages of completion (or lack thereof).

Financial reporting has to facilitate information about what has happened with the reported activity up to date as well as information to enable assessment of how the activity will continue in the future. This can be done best by reporting about the Income *ex post* from the activity combined with the delivery of information that enables assessment of the future, i.e. input data for value *ex ante*.

Reporting on Income *ex post* has to concentrate on the relationship between the economic logic of an activity²²⁸ and the cash flows which have occurred. This is particularly relevant for previous assumptions regarding the activity to be performed and the use of a non-cash resource unconsumed at the last measurement date. Users will want to compare the realisation through the activity with their expectation at the previous measurement date. Reporting has to provide information of where realisation has deviated from expectations and its consequences on the income *ex post*.

If in the reporting period a non-cash resource has been used in a different way to what would have been reasonably assumed based on the activity in progress at the previous reporting date, the impact of this has to be reported accordingly. A non-cash resource may be accounted for as in use with regards to its remaining cost and current contribution to net cash inflow of a period. In the period following, it may be sold contrary to assumptions based on the logic of the prior activity in progress. The information for the following period would have to cover not only the 'unexpected' gain or loss from the sale compared to the previously remaining input value, i.e. book value, but also the information about the consequential impact of further decisions on the net cash inflow of the business activity, such as re-purchase of non-cash resources and their future contribution to the activity's period's net cash inflow. This information would make the much decried "earnings measurement" transparent.²²⁹

²²⁶ Advisory Committee on Improvements to Financial Reporting, *Final Report to the United States Securities and Exchange Commission* (Washington, D.C.: SEC, August 2008), p. 47, "accounting that is faithful to a transaction's substance".

²²⁷ Dichev (2007), p. 2; EFRAG finds information representing an entity's activity faithfully if it reflects its business model (European Financial Reporting Advisory Group Comment Letter on IASB Discussion Paper, *Reducing Complexity in Reporting Financial Instruments* (Brussels: EFRAG, September 2008), Appendix, A 24 (b)).

²²⁸ Dichev (2007), p. 22.

²²⁹ As explained above, only the spending of a fair value gain for other purposes than re-investment into the same or similar non-cash resource impacts the capitalised amount of future prospects for the activity. Thus, covering losses or unexpected costs with realised fair value gains reduces the value *ex ante* of the activity. The peculiar answer provided by fair value proponents to the issue is to simulate indiscriminately "earnings management" for all fair value changes, thus losing any chance of depicting the economic progress of the activity, including where and how cases of earnings management have impacted results.

The measurement for the purpose of progress reporting has to be based on the distinction between economic resources in their function of input versus output. The information must cover the amount of cash converted to input either consumed or left available for the activity's cycle in progress in difference to output that has been generated and is available for reconversion to complete the cycle. In most cases of productive activity, input does not contribute to the result of the cycle by its own cash inflows, but through sacrifice. For this sacrifice to the activity, it is only relevant how much cash outflow has actually occurred and been consumed and how much remains unconsumed. One cannot judge progress of a cash conversion cycle by information of cash flow amounts that have not been part of the cycle. Such information misrepresents the actual cycles in progress at the reporting cut-off date.

Financial reporting of business activities has to provide information which clearly separates realised Income *ex post* from value information *ex ante*. The *ex ante* view of a business activity is a forward looking perspective with an important condition: the activity yet has to be performed. Income *ex ante* represents a conditional value,²³⁰ a value conditioned by future realisation of the activity itself. Whilst the concept of going concern permits expectations of future activities to continue in general, assessments have to be made more precisely on how this may happen. Reasonable assessment will take into consideration the business model of the activity as it is in progress.²³¹

Thus, reporting about the progress of a business activity requires information about the

- amount of cash converted into non-cash resources, input, with the details of the
 - o amount of input consumed, expenses, measured as final cash outflow for the activity within the reporting period,
 - o amount of input, unconsumed, measured in temporary cash outflow, cost;
- amount of output generated with the details of
 - o amount of output, unconverted, measured by input consumed, or amount of cash realisable by reconversion,
 - o amount of output, re-converted to cash;
- amount of cash reconversion from sale of prior unconsumed input when it represents a change in its function as aberration from the economic logic of the activity's cycle.

²³⁰ Ohlson (1995), p. 663: "value reflects anticipated, rather than current, realisations of accounting data".

²³¹ The most unreasonable assumption for a non-trading activity anyone could suggest is the assumption that all noncash resources are sold without any idea of what activity might follow. If all items sold have to be repurchased – because there is no indication that the business activity is going to be or has been changed – than the initial assumption of the entire sale is proven absurd.

This is the conceptual answer to two fundamental questions: why do we measure items in the balance sheet, and what is the function of the balance sheet? Only, when the basic principle is established as to why we measure non-cash resources, can we understand what the information should reveal that we gather in the process.

Therefore, on the basis of the foregoing analysis, the function of the balance is a test-reading of the progress of a business activity. However, for this test-reading, the non-cash resources observed for the moment of test-reading are

- in their function dependent on the type of activity, and
- in their amount/volume dependent on the stage of completion of their specific cash conversion cycle.

Thus non-cash resources contribute in different ways to the net cash inflow of the activity. From this follows, that no direct causation can be found between the future gross cash flows from single non-cash resources and the future net cash inflows to the activity. For this understanding of the purpose, fair value accounting does not provide the information required.²³²

We measure non-cash resources because they are the remains of incomplete cash conversion cycle(s) of an activity when a “test reading” is performed. Otherwise, there would only be cash. The function of measurement has to enable the separation of income ex post from value ex ante by providing information of cash converted, yet available for sacrifice, consumption or for re-conversion to cash.

C. Reporting of Temporary Values

The belief that market value is the most relevant information²³³ misses the benchmark for that judgement. Relevance of information depends on what one wants it for or wants to do with it.²³⁴ If one wishes to know the amount of cash a non-cash resource could be sold for, market price is relevant information. On the other hand, if one wishes to know the contribution of that non-cash resource to the net cash surplus of a business activity, market price is not relevant information unless the sale is aligned to the economic logic of the activity.

Reporting of progress of a business activity up to the reporting date has to present earnings in the last period as occurred and non-cash resources in the balance sheet as to their value for the activity. For non-cash

²³² This is the conceptual reasoning for EFRAG’s difficulty “to accept many of the statements made in the DP about the usefulness of full fair value for financial instruments.” (European Financial Reporting Advisory Group Comment Letter on IASB Discussion Paper, *Reducing Complexity in Reporting Financial Instruments* (Brussels: EFRAG, September 2008), Appendix, A 58) in general and its doubts about the relevance of opportunity cost (A 59) in particular.

²³³ CFA Institute Centre for Financial Market Integrity, *A Comprehensive Business Reporting Model*, 2007, p. 8.

²³⁴ Hirst and Hopkins (2000), p. 14: “As when using any information, what data are relevant depends on what one is trying to learn and what one wants to do with the answer.” This part of the quote CFA has decided to leave out when referring to Hirst and Hopkins (2000), CFA Institute Centre for Financial Market Integrity, *A Comprehensive Business Reporting Model*, 2007, loc.cit. p. 12, Fn 19.

resources that represent input, this value is the remaining unconsumed cash outflow available for use or sacrifice in future periods.

Yet, differences in value between input-at-work, i.e. book value, and fair value have to be reported as additional information. The relevance of information about a difference to market value of input is limited to future expected cycles, only. They are not related to the earnings ex post of the reporting period because they will have no impact on the net cash inflow of the reported cycles. The “sale and repurchase” consequence of a hypothetical sale of a non-cash resource unconsumed though needed to complete the cycle proves the irrelevance of the value change to the full cycle’s results. The period of reporting is a mere convention without related impacts on activity cycles; the results of cash conversion cycles are determined by completion, not by reporting dates. The hypothesis of sales that are in contradiction to the economic logic of the business activity is incompatible with the purpose of financial reporting. The use of hypotheses that are consistently proven to be incorrect is misleading and incompatible with the concept of faithful representation.

On the other hand, market values in difference to book values could be realised. They are relevant information to capital providers considering the sale of the activity or the collateral value for funding provided or to be provided. The information required is the

- amount of value change in unconsumed input, unrelated to the economic logic of the activity, i.e. without impact on the generation of net cash inflows from the activity’s cycle in progress.

To avoid confusion amongst users as to the nature of this information, the unrealised fair value changes without impact on a reporting period’s earnings have to be presented as temporary values, clearly distinguishable as to their specific character. The presentation has to make clear what the consequence would be of an assumed realisation of values which would negate the basis for assuming recurrence of parts of the past period’s earnings. This suggests a table where the non-cash resources are classified into the categories of their supportive function within types of activities displaying the input-at-work against their value-at-sale. This would enable users to develop an understanding as to which value may be realised with what consequence on recurring earnings due to the mutually exclusive nature of the assumption of sale and the continuation of activity in progress.

In addition it would also enable users in favour of fair value accounting to make the assessment according to their preferred methodology. At the same time, this form of reporting would provide users with a preference for earnings based valuation with the necessary information for their assessment. One deciding factor for this choice has to be that one method enables reporting of information in line with economic logic of the business and its conversion cycles from an activity while yet providing the other method with the necessary

information for its different methodology. It does not work the other way round because fair value accounting loses important information previously available.

Summary

The ultimate subject matter of financial reporting is the “business activity”. A faithful representation of this economic phenomenon has to adhere to its essential characteristics which are described below.

A business activity engages in the investment of cash in non-cash resources to generate more cash. In order to achieve this goal, the activity combines different non-cash resources according to a specific economic logic which represents an inherent attribute to the respective business activity. The economic logic of business activities can be described as the causal relationships between resources and the process in which they are combined, the business model. The objective of the activity is to generate more cash than invested: the net cash inflow for the activity. The causation of net cash inflows is the business activity in its entirety, not single non-cash resources or constructs like “net assets”.

A fundamental classification of types of activity is that of “using non-cash resources”, activity type (1), in difference to “trading non-cash resources”, activity type (2). The logic of employment of non-cash resources is mutually exclusive between the two types of activities: One cannot use non-cash resources when they are sold. Another fact has become evident from the analysis: the economic resources employed by business activities are more than assets as reported in the balance sheet.

Business activities are characterised throughout their investment cycles by cash conversions: cash outflow for non-cash resources, input, and cash inflows from reconversion to cash of non-cash resources, output. Conversions represent an exchange, the “giving up” of one thing for obtaining another, cash for non-cash and vice versa. The conversion of cash into a non-cash resource causes a transformation of the nature of the resource. The non-cash resource becomes assigned to the specific economic logic of the activity for which it has been acquired. This economic logic determines the way a non-cash resource contributes to the net cash inflows of the activity.

When business activities have completed their cycle, only cash remains. Thus non-cash resources appear in the balance sheet only, when cash conversion cycles are incomplete. The appearance of assets other than cash in the balance sheet is a coincidental consequence of cash conversion cycles that are not completed. Non-cash resources are tools with a supportive function to the business activity, not its objective.

Assets are non-cash resources unconverted, in transition between conversion from cash and reconversion to cash either as input or as output. Non-cash resources – whilst still input – are tools serving a purpose to the activity. The question about the appropriate measurement attribute for non-cash resources has to be answered according to the economic logic of their particular cash conversion cycle in progress. This requires

the allocation of cash flow contributions from each non-cash resource to the past reporting period, which represents only part of its complete cash conversion cycle. This allocation has to be consistent with and appropriate to its total contribution to the net cash inflows of the business activity.

The choice of an appropriate measurement attribute depends on the non-cash resource's function within the economic logic of the activity in progress. In other words, the value of non-cash resources to an activity depends on the way they are contributing to it. Different business activities have different business models based on a different economic logic. The resulting differences in contributions depend more on the activity's logic than the type of resource. Whilst the initial contribution of any resource to an activity is usually a cash outflow, thereafter, the path of contribution to the activity splits into two different roads towards the net cash surplus of the activity: one road for business activity type (1), contribution by use, and a different road for activity type (2), contribution by exchange.

Contribution by exchange refers to the economic logic of purchasing and selling the same non-cash resource, where the key to the activity is to benefit from a change in price that is independent from, i.e. not caused by the business activity. The inputs and outputs are physically the same resources; the non-cash resource remains largely unchanged until its final re-conversion to cash. For this type of activity, the final, concluding cash flow contribution to its cycle can only be achieved by giving up the resource.

Contribution by use refers to an economic logic that is based on the addition of value through the use of the non-cash resource including the addition of further input. Contribution by use can occur in the form of 'sacrifice' where the non-cash resource is consumed, e.g. employment of human resources or raw materials in production. For some non-cash resources that are consumed by use, the sacrifice occurs over time through wear and tear instead of a one-off event. Contribution by use with consumption is marked by the definite character of its initial cash outflow as the direct and final cash flow contribution to the activity. Contribution by use, however, can also occur without the non-cash resource being consumed, without change in character, identity or disappearance. Non-cash resources in use for an activity can contribute by generation of their own cash inflows, e.g. a bond, or by saving of cash outflows that otherwise would have to be incurred for its input, e.g. a property for the production activity.

If a non-cash resource is assigned to a trading activity, or, if it represents output of a non-trading activity, i.e. its function is to be sold, an appropriate selling price is the correct choice of measurement attribute.

However, if the non-cash resource belongs to, i.e. is assigned to a non-trading activity as input in use, the appropriate measurement attribute is that part of the initial cash outflow, cost, that remains unconsumed, that is not used up. When "present economic conditions" indicate a price in case of a sale of the non-cash resource in question that differs from its unconsumed cash outflow value, then it has to be analysed whether or

not the difference in value is an appropriate reflection of changes in the non-cash resource's ability to contribute to the activity. If the contributions to the future net cash inflow do not change, then changes in market prices are not relevant for determining its contribution to past period's income. It may be, however, relevant information for users to be disclosed.

Changes in prices for replacement of a non-cash resource are not a change in the current cash conversion cycle. They are changes from future cash conversion cycles, obviously relevant for the assessment of future net cash inflows, however, not affecting the past.

This view is supported by the Hicksian concepts of income as they focus on the separation of income *ex post* and income *ex ante*. The claim that this income concept supports the primacy-of-assets view is without foundation due to a number of misinterpretations, the first of which is the confusion between income and value, or capital. The concept of primacy of assets and the idea of associating future net cash inflows with single or "net" assets are based on a circular argument: one cannot determine profit by comparison of wealth when first the profit has to be known in order to determine wealth.

Hicks's prospective receipts find their equivalent in business activities' net cash inflows of future reporting periods, not in the aggregate of single, arbitrarily selected gross cash flows of some non-cash resources that are detectable by the methods prescribed. These prospective receipts are not an objective concept, as they are entirely based on expectations and assessments of future cash flows to happen. Financial reporting has to deliver the objective facts, the information, the data required for the assessments, not the assessments themselves.²³⁵

Unrealised fair value changes without cash flow impact on a reporting period's earnings have to be presented as temporary values, clearly distinguishable as to their specific character. In particular, the presentation has to disclose the effect on future values from the assumption of ending a particular activity in progress (by sale of the noncash resource employed). This would eliminate the basis for assuming recurrence of the respective part of past period's earnings. This presentation enables users in favour of fair value accounting to make the assessment according to their preferred methodology. However, it would also enable users with preference of earnings based valuation their different path to the assessment.

The more objective part of the Hicksian income concepts is his income *ex post*. Its equivalent for business activities can be found in the realised part of their cash conversion cycles, whereby the term "realised" embraces the accrual and matching principle of accounting. It is vital for financial reporting to return to an

²³⁵ Measurement Round Tables Summary – agenda paper 10A, 22.3.07, The Asset/Liability View and Performance Reporting, No. 42: "...users do not need accountants to do their work for them. Users need model inputs rather than model outputs..." It is the answer to Lennard's question of who is responsible for evaluating future cash flows, their timing and certainty: "is it the accountant, or is it the user?" (Lennard (2002), chapter 4, paragraph 87).

objective basis, to separate facts from fiction and realised results from opportunities not taken. The introduction of “other comprehensive income” which has largely turned out to be no income at all was the first, but huge step in the wrong direction of accounting development.

This unfortunate turn has particularly affected the reporting on interest bearing financial instruments through the compounding effect of fair value accounting when combined with discounted cash flow analysis. The paper has demonstrated a number of facts, some of which are common knowledge whilst fair value proponents are in denial of some of the other.

That a value change through profit and loss that does not occur has to be corrected in the following period through profit and loss is easy to comprehend. That fair value accounting violates the boundaries of periods, thus preventing any meaningful earnings-based valuation seems to be more difficult to recognise.

Interest-bearing financial instruments in non-trading activities are negatively affected by fair value accounting when their value change is calculated by discounted cash flow analysis. Reported results are reported selectively due to the terminal problem of DCF, i.e. that it can only calculate known cash flows to the maturity of the respective instruments. This leads to asymmetric recognition of value changes depending in their magnitude on the time to maturity, i.e. for how many periods the changes in cash flow value have to be taken upfront. Opposite to a common claim by fair value proponents, fair value accounting delivers comparable results neither for different businesses in the same period nor for the same business in different periods. The much stressed term of volatility has been proven entirely artificial because it contradicts the real cash flow results with its constant reversals of unrelated value changes which have previously been reported through profit and loss. A further myth about fair value has been clarified: fair value does not reflect risk, not even in so-called mismatch positions. Fair value by discounted cash flow analysis cannot measure the cash flows that will change. It is these unmeasured cash flows that bring change to future net cash inflows and consequently to the value *ex ante* of the business. This method can only measure the cash flows that do not change! It is only information of the price that it would cost to close all positions today, i.e. eliminating all risks as well as all chances. This is not an appropriate basis for determining income of a reporting period that has past.

These findings and their conclusions are valid across all types of instruments in use. Thus they are valid for derivative instruments as well as non-derivative instruments. The larger part of complexity in accounting standards for financial instruments is caused by the philosophy of determining measurement attributes by types of instruments instead of types of activities assisted by an analysis of how the instruments are contributing to the cash conversion cycle of their respective activity. Finally, the decision by Standard Setters to override their basic allocation system for measurement attributes by the fair value logic in cases of derivatives employed by the activity has caused a flood of information that is difficult to see who can make any sense of it. Effectiveness

tests require comparisons of fair value changes that are hypothetical and subsequently reversed for all instruments involved. The outcome of such comparisons has to be consequently hypothetical and reversed as well.

The conceptual analysis of this paper suggests an urgent, however, fundamental overhaul of IAS 39, which has to concentrate on the alignment of assigning measurement attributes to the economic logic of the business activities that employ the non-cash resources. However, this can hardly be successful unless the equivalent Standards in the US are addressed at the same time.

For the “blue sky thinking”²³⁶ that should be applied to a discussion on fundamental concepts for financial reporting, this paper suggests a primacy-of-activity view on grounds that the business activity of an entity is the ultimate subject matter of financial reporting. Under this view, earnings or the income of an entity during a specific period are represented by the change in cash together with the changes in non-cash resources’ ability to contribute to the net cash inflow of the business activity. Changes in the cash-value of non-cash resources do not qualify as income when their cash flow contributions have not and will not change.

²³⁶ European Financial Reporting Advisory Group Comment Letter on IASB Discussion Paper, *Reducing Complexity in Reporting Financial Instruments* (Brussels: EFRAG, September 2008), Appendix, A52.

Appendix: Case Study on Interest Bearing Financial Instruments in a Banking-Book

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 - 2.1 Client Rates at Market - Mismatch Position*
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The Client Margin

1. under IAS 39
2. under SFAS 157

Tables

The purpose of this case study is to demonstrate the effect on the financial reporting of value changes under full fair value accounting when the business model is characterised by a non-trading activity. The non-cash resources under such a business model are employed for the purpose of generating net cash inflows from their use over time instead of net cash inflows for their exchange through sale. Fair value changes are based on a hypothetical sale assumption which, when not sold, requires their subsequent reversal.

The case study focuses on the difference in reported income over the periods (interim periods) until the completion of the activity (total period) under the measurement model of accrual accounting on the one hand and full fair value accounting on the other hand. The examples use interest bearing financial instruments in a non-trading portfolio of a bank, the so-called banking book. Thus, the case study takes advantage of the clear visibility of contractually agreed interest cash flows best suited to demonstrate the impact of the theory and its impact on reported income due to the reality of the cash conversion cycles of this non-trading activity.

Interest bearing financial instruments pay interest on the nominal amount of the capital transferred. If the amount transferred equals the nominal amount, interest is calculated as a percentage of 100 per annum from the time of transfer to the time of final maturity (although the interest rate may not be the same for the entire period). The consideration given (of 100) equals the nominal amount of capital. The contractually agreed interest – the client rate – determines future interest cash flows until the re-transfer of the capital.

To provide the utmost clarity, the examples are simplified in several ways.

Firstly, all instruments are contracted as well as mature on the 31st of December of a year whilst the reporting period is defined as a calendar year. Secondly, all assumptions of changes in market rates occur on this same date of a year. This allows observing the effect of the forward looking valuation of fair value which takes into account all market changes at measurement day. At the same time, the difference of that one day for accrual accounting will be ignored as immaterial. Finally, the case study focuses exclusively on the impact of market changes regarding interest rates only, thus eliminating any impact associated with movements in credit and liquidity risk.

The examples assume individually contracted assets (a loan) and liabilities (a deposit). Therefore, quoted prices of identical assets (or liabilities) cannot be used for determining fair value as required for Level 1 Inputs.²³⁷ To establish fair value, a fair valuation technique with Level 2 Inputs has to be applied. For interest bearing financial instruments, a generally accepted valuation technique,²³⁸ commonly used by market participants, is a discounted cash flow analysis (DCF) that generates a present value (PV) of the particular asset or liability, i.e. the sum of all cash flows discounted at the appropriate market rate.

²³⁷IASB Discussion Paper, *Fair Value Measurements*, Part 2 (London: IASB, November 2006), SFAS 157, paragraphe 24.

²³⁸IASB Discussion Paper, *Fair Value Measurements*, Part 2 (London: IASB, November 2006), SFAS 157, paragraph 11b) income approach; Appendix B, Present Value Techniques; IAS 39.48A, ii).

The main factors considered in determining present value are the time value of money (i.e. interest at the basic or risk-free rate) and credit risk. As stated, to demonstrate clearly the mechanics of fair value in cases of discounting cash flow analysis, the impact of credit risk is excluded, thus assuming it to be priced correctly at all periods, the examples also assume no prepayment and surrender risk.

1. The Initial Case - Client Rates at Market

A bank grants a loan to a client (cash outflow) and funds it with a deposit (cash inflow) received from another client. Both transactions are assigned to the economic logic of the ‘banking-book’ activity, i.e. they are intended to be and by design are held to maturity. The loan and the deposit, both, have a nominal amount of CU 100 and a maturity of 4 years. Both transactions are concluded on the 31.12.00 and therefore will mature on the 31.12.04. All cash flows take place on the 31st of December.

1.1 The Asset

Assume a (market) benchmark rate of 5% on a flat yield curve. A contractual client rate at market is charged on the loan to the client, 5%. The rate is assumed to remain unchanged over the next four years. The future four interest cash flows of CU 5 p.a. are at market rate. Therefore, the fair value of the loan is CU100²³⁹, equal to the nominal amount of the loan.

Table 1	Capital	Market rate	Client rate	Margin	FV
Loan	100	5.00%	5.00%	0.00%	100

As the benchmark rate is assumed not to change, there will be no fair value changes (FV Δ) until maturity.

Table 2	initial Y 0	subsequent Δ Y 1	subsequent Δ Y 2	subsequent Δ Y 3	subsequent Δ Y 4	Σ
Earnings relevant FV Δ ²⁴⁰	0	0.00	0.00	0.00	0.00	0.00
Interest cf (accrued)	0	5.00	5.00	5.00	5.00	20.00

²³⁹ Throughout the examples, the following discount factors are used:

Tenor	1 y	2 y	3 y	4 y
DFs (5 %)	0.95238	0.90703	0.86384	0.82270

²⁴⁰ The term “earnings relevant FV” refers to the amount of fair value and FV Δ that has an impact on the P&L; whilst the full cash flow from the contractual interest rate impacts P&L, only the difference to market rates are considered for the purpose of FV and P&L relevance.

The only contribution to earnings over time to maturity will be CU 5 p.a. accruing to interest revenue. When contractual rates are at market and market rates remain constant over the period of the loan, there is no difference in reported earnings between accrual and FFV accounting. It is only when fair value (FV) deviates from the nominal amount of the loan (FV excess) that would be relevant for earnings of a period. However, if market rates change, differences can appear in the reported results of the interim periods, although they do not impact the results for the total period.

Assume a change in the benchmark rate to 4.5% after 3 years, i.e. a change at 31st December 03 of -0.5%.²⁴¹ Although the interest cash flows paid actually do not change, because they are contractually agreed, the measurement result changes under full fair value at the end of year 3. The measurement at fair value discounts the difference between the contracted rate of 5% and the new market rate of 4.5% and includes the result as FV Δ of CU 0.4785 to earnings of the financial reporting of year 3. This also adjusts the carrying value of the asset in the balance sheet to CU 100.4785. However, it is purely a hypothetical change. Consequently, this impact in earnings of year 3 of CU 0.4785 has to be reversed in the following reporting period of Y 4. At the end of year 4, the loan will mature and only the CU 100 will be repaid and can be re-invested at the then market rates leading to the new fair value of CU 100. Thus, the reverse FV Δ of - CU 0.4785 has to be reported in Y4 in order to clear the balance sheet.

Table 3	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Earnings relevant FV Δ :	0.00	0.00	0.00	0.4785	-0.4785	0.00

Applying FFV accounting to the example leads to a change in reported FFV interest revenue for years 3 and 4, even though the total earnings of the transaction over time to maturity as documented by real cash flows remains identical between accrual and FFV accounting:

Table 4	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued Interest Revenue	0.00	5.00	5.00	5.0000	5.0000	20.00
+ FV Δ	0.00	0.00	0.00	0.4785	-0.4785	0.00
= FFV Interest Revenue	0.00	5.00	5.00	5.4785	4.5215	20.00

The effect of discounted cash flows in fair valuation and their reversal in later periods can be expressed in mathematical terms: The sum of all FV changes over the life of an asset is zero when the instrument reaches

²⁴¹ Throughout the examples, the following discount factors are used:

Tenor	1 y	2 y	3 y	4 y
DFs (4.5%)	0.95694	0.91573	0.87630	0.83856

maturity.²⁴² When interest-bearing financial instruments are held to maturity the cash flow results of all periods are identical between accrual and FFV accounting. However, different revenues are reported for the interim periods. The example demonstrates that only accrual accounting correctly reflects the contribution of the real cash flows to earnings over the total period as well as during the interim periods.

Due to the mechanics of discounted cash flow analysis, the longer the remaining time to maturity after a market rate change, the greater will be the differences in reported interim results between Full Fair Value accounting and accrued accounting.

Assume the rate change of -0.5% to occur at the end of the 2nd instead of the 3rd year, the following fair value changes and reversals would be reported:

Table 5	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
FV	0.00	0.00	0.9363	0.4785	0.00	
Earnings relevant FV Δ:			0.9363	-0.4578	-0.4785	0.00

The fair valuation at end of year 2 contains two ‘cash flow deviations’ of each 0.5%, which are discounted to year-end 2 and which have to be reversed in subsequent periods. As the interest bearing financial instrument is not sold, all previously unrealised fair value changes have to be reversed, amounting to a zero change at maturity. At that point in time, at the conclusion of the transaction, the results of accrual and fair value accounting become identical. The differing fair value information has to return to real cash flow results.

The longer the time to maturity of an instrument, i.e. the larger the number of cash flow elements to be brought forward from future periods, the bigger the distortion on information for current period’s earnings. The sum of cash flows over the total period for both methods remains the same. The distortion of information becomes apparent as the difference between accrued interest revenue and FFV interest revenue.

Table 6	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued Interest Revenue	0.00	5.00	5.0000	5.0000	5.0000	20.00
+ FV Δ	0.00	0.00	0.9363	-0.4578	-0.4785	0.00
= FFV Interest Revenue	0.00	5.00	5.9363	4.5422	4.5215	20.00

²⁴² This mathematical logic is consistent with the findings of Hodder, Hopkins, and Whalen (2006), p.346, 370, that “on average, fair-value adjustments in both comprehensive income and FFV income tended to zero-out” over the sample period.

1.2 The Liability

The example assumes identical conditions for the funding of the loan as for the loan itself, i.e. the clients' rate is at market. Any changes in interest rates will affect the liability by an identical but opposite amount as for the asset.²⁴³

Table 7	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
FV	0.00	0.00	-0.9363	-0.4785	0	
Earnings relevant FV Δ:			-0.9363	0.4578	0.4785	0.00

Funding of an interest bearing financial instrument with identical maturity is called a “matched position”. Where both interest rates are at market, no impact will be seen in the reporting of net interest income. Reported results on this level are the same for both, revenue and expense. Accrual net interest income (accrued NII) equals FFV net interest income (FFV NII). Differences and volatility compared with the real interest cash flows are reported only on the sub-level of interest revenue and expenses.

Table 8	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue	0.00	5.00	5.0000	5.0000	5.0000	20.00
Interest Expense	0.00	-5.00	-5.0000	-5.0000	-5.0000	-20.00
Accrued NII	0.00	0.00	0.0000	0.0000	0.0000	0.00
FFV Interest Revenue	0.00	5.00	5.9363	4.5422	4.5215	20.00
FFV Interest Expense	0.00	-5.00	-5.9363	-4.5422	-4.5215	-20.00
FFV NII	0.00	0.00	0.0000	0.0000	0.0000	0.00

2. The Terminal Problem of DCF

2.1 Client Rates at Market - Mismatch Position

A bank may decide not to match the maturity of the funding with the maturity of the loan. This is called a mismatched position.

The following example assumes a maturity of just 1 year for the deposit in difference to the loan which has a 4 year maturity. Both instruments are contracted with client rates at market of 5% on a continuous flat yield curve. Again, when no rate changes occur, no differences in financial reporting will occur between accrual and FFV accounting. This changes, when market rates change.

Assume (as previously)²⁴⁴ a rate change after year 2 of -0.5% on a continuously flat yield curve.

²⁴³ Compared to Table 5.

Reporting at the first measurement date, the 31st of December 02, is depicted in the following table, with the difference between accrued and FFV reporting at year end 31.12.02:

Table 9	Y 0	Y 1	Y 2	Σ
Interest Revenue	0.00	5.00	5.0000	10.0000
Interest Expense	0.00	-5.00	-5.0000	-10.0000
Accrued NII	0.00	0.00	0.0000	0.0000
FFV Interest Revenue	0.00	5.00	5.9363	10.9363
FFV Interest Expense	0.00	-5.00	-5.0000	-10.0000
FFV NII	0.00	0.00	0.9363	0.9363

The rate change affects the loan and the deposit differently as the deposit has to be renewed at the measurement date; thus, the deposit is at market with no fair value change. On the other hand, the loan has 2 years' time remaining to maturity which results in the apparent change in its fair value. The difference, a reported FV profit in net interest income, is caused by the fact that DCF can calculate cash flows only to a known, i.e. finite, planning horizon.

This is known as the terminal problem²⁴⁵ of the DCF analysis. DCF will calculate the rate change impact on the loan for the remaining 2 years. In contrast, the deposit has been renewed on the valuation date (31.12.)²⁴⁶ at the then market rate and therefore the fair value equals the capital amount. The contractual rate was 'at market' at last measurement date and it is 'at market' for the following year, again, i.e. 100 without fair value change. The terminal problem of using DCF becomes apparent in the recognition of different time horizons of the asset and liability leading to different expectations of value changes. The revenue cash flows of the asset are considered for two future periods. While the offsetting impact on the expense is not captured, despite the fact that future funding until maturity of the loan is inevitable.

Assume that – in our example – the bank decides to continue the mismatch position until the maturity of the loan, i.e. renewal of the deposit in each following year with just a 1 year deposit, without any further changes in market rates. At each of the following reporting dates, the same differences in reporting of fair value changes will be reported: no fair value changes for the deposit, whilst the reversals of the previous fair value changes will appear for the loan.

²⁴⁴ See above Tables 5 & 6.

²⁴⁵ Penman (1992), p. 473.

²⁴⁶ As a reminder: the initial case was set with maturity, i.e. renewal dates, at every 31.12. in order to highlight the "day-1"-impact of fair value. However, the results would materially be the same if the examples would use other re-pricing dates, e.g. at 30.6: the deposit would reflect rate changes for 6 month compared to 18 month for the loan.

Table 10	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue	0.00	5.00	5.0000	5.0000	5.0000	20.00
Interest Expense	0.00	-5.00	-5.0000	-4.5000	-4.5000	-19.00
Accrued NII	0.00	0.00	0.0000	0.5000	0.5000	1.00
FFV Interest Revenue	0.00	5.00	5.9363	4.5422	4.5215	20.00
FFV Interest Expense	0.00	-5.00	-5.0000	-4.5000	-4.5000	-19.00
FFV NII	0.00	0.00	0.9363	0.0422	0.0215	1.00

Again, at the conclusion of the transaction, the sum of all periods' results is identical for both accrual and FFV accounting, i.e. interest income of 20, expense of 19 and net interest income of 1. In contrast to the actual contribution from real cash flows, FFV exacerbates the magnitude of the changes as well as the volatility in results. FFV reports changes that are different from the actual changes in cash flows as well as changes for a different number of periods, Y2 to Y4 instead of Y3 and Y4. The differences in information provided by the two income measurement systems lead to significant differences between interim results reported, only one of which is reflecting the real cash flow contribution to the activity.

Table 10a	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.00	0.00	0.0000	0.5000	0.5000	1.00
FFV NII	0.00	0.00	0.9363	0.0422	0.0215	1.00

The differences in reported results to actual cash flow based results becomes even more explicit, if the example assumes a further change in market rates in the following periods: at the 31st of December 03. Assume an immediate reversal of the previous rate change in the following year, i.e. +0.5% at end of year 3. In this case, the change in the fair value of the loan reported at year end 2 has to be corrected at year end 3. The full reversal of prior years' fair value negatively impacts interest income. The interest cash inflow in year 3 of CU 5 minus the fair value difference of -0.9363 results in FFV interest revenue of 4.0637.

Table 11	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue	0.00	5.00	5.0000	5.0000	5.00	20.00
Interest Expense	0.00	-5.00	-5.0000	-4.5000	-5.00	-19.50
Accrued NII	0.00	0.00	0.0000	0.5000	0.00	0.50
FFV Interest Revenue	0.00	5.00	5.9363	4.0637	5.00	20.00
FFV Interest Expense	0.00	-5.00	-5.0000	-4.5000	-5.00	-19.50
FFV NII	0.00	0.00	0.9363	-0.4363	0.00	0.50

This leads to a negative FFV net interest income in year 3 which contrasts dramatically with the actual changes that occur in terms of real cash flows:

Table 11a	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.00	0.00	0.0000	0.5000	0.00	0.50
FFV NII	0.00	0.00	0.9363	-0.4363	0.00	0.50

The driving force behind the distortion of information is the terminal problem of DCF, as it cannot forecast future cash flows beyond its known finite horizon. It, therefore, leads to asymmetric recognition of a rate change impact for assets and liabilities of different maturities. In the previous example, it cannot measure the deposit beyond its time horizon of one year whilst it reports the impact of rate change on the asset for two future periods.²⁴⁷

FV does not reflect the risk involved in a mismatched position as it cannot measure the mismatch. The volatility created by the valuation method is not a reflection of the volatility created by the mismatch. The largest distortion in reporting is caused by changing results between different periods under a hypothetical assumption that has to be reversed over time to maturity²⁴⁸ – sometimes gradually, sometimes not. The net cash inflow from the business activity as it completes its cycles over time remains unaffected by the assumption.

Some may argue that an identical reversal of the fair value impact of a previous rate change is not very common. However, neither is a continuously flat yield curve. In reality, yield curves have different rates for different times, e.g. different rates apply for both short and long maturities.²⁴⁹ Furthermore, the changes in market rates rarely occur in tandem for different maturities i.e. a parallel shift of the curve. Therefore, it will be extremely rare that the market rates at the long end of the yield curve change in exactly the same way as the market rates at the short end of the yield curve.²⁵⁰ The identical rate changes assumed in the examples for the different maturities are the exception.

However, rate changes as measured on longer maturities are not a mirror image of future cash flows. The calculated value changes are for cash flows that will not change. These hypothetical changes are assumed to remain valid for the future periods until maturity and brought forward asymmetrically²⁵¹ into current period earnings. This highlights another issue with fair value: it assumes current market conditions. It cannot forecast objectively future conditions, e.g. future interest rates. The assumptions used by fair value accounting for future conditions or rates are just assumptions, subjective opinions, not objective events. And the assumptions that today's view on future rates remains valid, even until tomorrow, is obviously flawed.

²⁴⁷ The examples used by Gebhardt et.al. (2002) are of longer maturities (up to 10 years), thus the distortion of information at each year-end will be more pronounced.

²⁴⁸ For this reason, the use of income variables (PFV – FFV) by Hirst, Hopkins, and Whalen (2004), p. 461, proves only the asymmetry of the two income measuring methods, not the relation of volatility in results to risk.

²⁴⁹ Which is why different time horizons of different investors will lead to different values for the same asset or business activity.

²⁵⁰ An interesting rate change experience over 10 years can be found in Gebhardt et.al. (2002), p. 16-17; Table II/7, p. 70.

²⁵¹ Asymmetric, because the other side of the P & L, in our example the cost of funding, for those future periods cannot be measured.

2.2 Client Rates at Market - Hedging

The examples have demonstrated how financial reporting generates distorted, thus misleading results, if and when its measurement bases are not aligned to the economic logic of the business activity in question. These findings are independent of the type of non-cash resources employed, whether it is machines or raw material in production or whether it is loans and deposits in a bank's non-trading portfolio. It is not the type of non-cash resource that is of relevance to the determination of a measurement attribute, but the type of activity that it is assigned to. Only the latter determines the way a non-cash resource contributes to the net cash inflow of that activity.

If this is a general principle, the same has to hold true for derivatives when they are not acquired for trading, but to serve the non-trading activity with their cash flows over time to maturity.

The cash flow profile over time of a non-cash resource is an essential feature for a non-trading activity. Swaps offer the opportunity to amend the existing cash flow profiles of a portfolio of instruments for future periods without requiring initial cash inflows or outflows. Thus, the interest cash flow profile of the activity can be amended without either changing its fair value or adding credit risk due to the exchange of capital amounts. This can be demonstrated by extension of the previous initial mismatch example (see above 2.1).

2.2.1 Amending the Mismatch, initially.

Assume, the bank grants a loan to a client and funds it with a deposit placed by another client, both at market rates of 5%. However, the bank has difficulty in finding a funding with the same maturity, and so it funds the loan initially with a one year deposit at market rates. Assume that the bank – in difference to the previous example – considers the re-pricing risk of the interest rate on the deposit unsuitable to its business objectives. Thus, it enters into a 'pay-fix/receive-float' swap at market rates for the same remaining time to maturity as the loan. The swap is assigned to the same economic logic of the non-trading activity, i.e. it does not get sold before maturity but contributes with its interest cash flows over time to maturity. To remain simple, the interest payment dates of the fixed swap leg are the same as for the loan and the short leg of the swap re-prices at the same date as the deposits, thus effectively netting the interest payments.²⁵² Thus, the swap enables the bank to fund with shorter term deposits whilst the fixed annual interest to be paid on the swap is 'funded' by the interest received on the loan.

²⁵² As reporting dates equal re-pricing dates, no change in fair value is to be reported at these dates. For this reason, the following explanations can focus on the cash flow contribution from the loan and the fixed leg of the swap only; even though, of course, the swap would have to be valued in its entirety. Hedging experts may find this calculation over-simplistic, since the FV of the swap is the difference between the FV of the fixed leg and the FV of the variable leg, generally calculated with implied forward rates. This can cause differences; however, it is of no relevance to the findings as it only adds to the confusion of value swings that are not relevant and have to be reversed.

Assume that market interest rates remain flat as initially expected at 5% flat during time to maturity. As in all previous cases, no fair value changes occur; the reported results are identical between the different measurement methods.

Table 12	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue loan (fix)	0.00	5.00	5.00	5.00	5.00	20.00
Interest Revenue swap	0.00	5.00	5.00	5.00	5.00	20.00
Interest Expense deposit	0.00	-5.00	-5.00	-5.00	-5.00	-20.00
Interest Expense swap (fix)	0.00	-5.00	-5.00	-5.00	-5.00	-20.00
Accrued NII	0.00	0.00	0.00	0.00	0.00	0.00
Fair Value changes	0.00	0.00	0.00	0.00	0.00	0.00
FFV NII	0.00	0.00	0.00	0.00	0.00	0.00

As before, when market rates change, the reported results start to differ between the two methods; not for the results of the total period – in line with total cash flows –, but for the interim periods.

Assume that market rates drop to 4.5% flat at the end of year 2. The new cash flow profile of the activity as amended by the cash in- and outflows from the swap is depicted in the following table:

Table 12a	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue loan (fix)	0.00	5.00	5.00	5.00	5.00	20.00
Interest Revenue swap	0.00	5.00	5.00	4.50	4.50	19.00
Interest Expense deposit	0.00	-5.00	-5.00	-4.50	-4.50	-19.00
Interest Expense swap (fix)	0.00	-5.00	-5.00	-5.00	-5.00	-20.00
Accrued NII	0.00	0.00	0.00	0.00	0.00	0.00

The cash flow results over time are the same as if the bank had funded initially with a deposit of the same maturity as the loan.²⁵³ At time of market rate changes, the selling assumption of the FV methodology leads to the generation of a fair value, which is then subsequently reversed – both for the loan and for the swap:

Table 12b	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
FV loan	0.00	0.00	0.9363	0.4785	0.0000	
Earnings relevant FV Δ			0.9363	-0.4578	-0.4785	0.00
FV Swap	0.00	0.00	-0.9363	-0.4785	0.0000	
Earnings relevant FV Δ			-0.9363	0.4578	0.4785	0.00

²⁵³ The example is suitable to clarify a common myth about hedging: it doesn't only eliminate risk, it also eliminates chances. In our case the bank was unable to take advantage of the drop in the funding rate like it did in the mismatch examples (Tables 10, 11).

The reported fair value changes are based on an inapplicable selling assumption for both, the loan and the derivative, the swap. Thus, the FV changes have to be reversed for both. A significant amount of data is produced, however, not relevant to the net cash inflow of the activity. The real cash flow contribution to the net cash inflows from the cash conversion cycle of this specific combination of non-cash resources, the loan, the short term deposit and the swap, are identical, again, for reporting under both accrued NII and under FFV, as the sums of fair value changes to maturity are zero. However, like in the previous examples without a derivative, this example including the derivative reveals that FFV accounting distorts the results of the interim reporting periods, despite proving FFV reporting at maturity to become a zero-sum game.

Table 12c	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue	0.00	10.00	10.00	9.50	9.50	39.00
Interest Expense	0.00	-10.00	-10.00	-9.50	-9.50	-39.00
Accrued NII	0.00	0.00	0.00	0.00	0.00	0.00
FFV Interest Revenue	0.00	10.00	10.9363	9.0422	9.0215	39.00
FFV Interest Expense	0.00	-10.00	-10.9363	-9.0422	-9.0215	-39.00
FFV NII	0.00	0.00	0.0000	0.0000	0.0000	0.00

2.2.2 Amending the Mismatch, subsequently.

The relevance of real cash flow contributions to the net cash inflows from the non-trading activity whilst employing a swap to our portfolio of loan and deposit can be further highlighted with an extension of the example.

As before, the bank had difficulty of finding a deposit with the maturity matching the loan and thus funded it with a 1 year deposit. Assume this time that the bank has accepted the mismatch for the first two years until 31.12.02, renewing the deposit at year-end for 1 further year. When market rates drops to 4.5% at 31.12.02, the bank decides to enter into a pay-fix/receive-float swap for the remaining time to maturity at market rate. Assume further that at the following year end, Y 3, the prior interest rate change reverses, i.e. the market rate recovers to 5%. Now, the swap has secured the lower level of interest expense in Y 4. The cash flow contributions of the instruments to this portfolio are as follows:

Table 13	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue loan	0.00	5.00	5.00	5.00	5.00	20.00
Interest Revenue swap	0.00			4.50	5.00	9.50
Interest Expense deposit	0.00	-5.00	-5.00	-4.50	-5.00	-19.50
Interest Expense swap	0.00			-4.50	-4.50	-9.00
Accrued NII	0.00	0.00	0.00	0.50	0.50	1.00

However, full fair value accounting – again – leads to reporting of results that are quite different from a cash flow based reporting as fair valuation impacts the loan and the swap differently as well as in different periods, as depicted below:

Table 13a	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
FV loan	0.00	0.00	0.9363	0.0000	0.0000	
Earnings relevant FV Δ			0.9363	-0.9363	0.0000	0.00
FV Swap	0.00	0.00	0.0000	-0.4762	0.0000	
Earnings relevant FV Δ				-0.4762	0.4762	0.00

Table 13b	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
FFV Interest Revenue	0.00	5.00	5.9363	8.5637	10.0000	29.50
FFV Interest Expense	0.00	-5.00	-5.0000	-9.4762	-9.0238	-28.50
FFV NII	0.00	0.00	0.9363	-0.9125	0.9762	1.00

To ensure full transparency of the misrepresentation generated by FFV accounting in comparison to the real contribution of the instruments in the portfolio to net cash inflow over time, the differences in interim results on the level of net interest income over the respective periods are shown below. Yet, the total of cash flow results at the end of the cycle is identical between the two methods.

Table 13c	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.00	0.00	0.0000	0.5000	0.5000	1.00
FFV NII	0.00	0.00	0.9363	-0.9125	0.9762	1.00

Unfortunately, the introduction of and subsequent amendments to IAS 39 have already moved reporting half way down what could be termed a “misleading path”. Even though the sums of fair value changes are zero for the conversion cycle overall, the reporting requirements indicate volatility of results.²⁵⁴ However, this volatility is entirely artificial, since it is only caused by inapplicable assumptions. When reported fair value changes are constantly reversed, a concept of measuring “effectiveness” of hedges by comparison of these changes can only deliver information of questionable relevance.

The implications of the current hedge accounting provisions in IAS 39 for the last case (Tables 13a-c) are even more revealing, as in this case the hedge may not be recognised as effective. Then, the interest cash flows will be reported as accrued results, whilst the fair value changes of only the swap, initially and reversed, are reported as “realised results”:

²⁵⁴ The reporting of changes in equity – though meaningless – and the consequential volatility create confusion about what the “real” results are.

Table 13d	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued Nil (Table 13b)	0.00	0.00	0.00	0.5000	0.5000	1.00
FFV Δ in income (Table 14a)	0.00	0.00	0.00	-0.4762	0.4762	0.00
Total “realised” income	0.00	0.00	0.00	0.0238	0.9762	1.00

Like FFV accounting in general, hedge accounting according to IAS 39 leads to distorted information that is disconnected from real cash flows and the economic logic of the business activity in progress and which is therefore misleading.

3. Client Rates off Market – The Client Margin

The examples have been designed, so far, under the assumptions of a flat yield curve, i.e. flat even after change, and of a contractual client rate that equalled the respective market rate. This allowed the impact of a rate change under a Full Fair Value accounting model to be demonstrated more clearly. However, constant flat yield curves are the exception in the market. Also, contractual client rates identical to market rates are even more exceptional. Contractual client rates that contain a client margin develop similar differences under FFV accounting as the differences between contractual rate and market rates when the latter have changed.

Assume the asset in the initial example to have a client margin of 0.5% above market rate of interest. This client margin is defined as a clean margin, i.e. independent of credit risk pricing²⁵⁵ or other factors, e.g. collateral etc. On the basis of a market rate of 5% (still in a flat yield curve environment), the contractual client rate would be 5.5%. The asset would have 4 interest cash flows of CU 5.5 over time to maturity. The difference from market rates is recognised by DCF analysis, discounting to its present value.

FFV accounting would report an up-front positive value at end of year 0:

Table 14	Capital	Market rate	Client rate	Margin	FV
Loan	100	5.00%	5.50%	0.50%	101.773

As discussed earlier,²⁵⁶ neither the contractual rates nor the interest cash flows actually change. Therefore, previous years’ anticipation of the discounted upfront margin, i.e. the difference in the interest to market rate, has to be corrected by a subsequent reversal. This is reflected in the fair value change of each subsequent year through time to maturity. When the prior hypothesis of exchange has to be withdrawn in every subsequent period, the changes in fair value add up to a sum of zero.

²⁵⁵ As before, credit risk is assumed to be priced correctly and without changes as well as no prepayment or surrender risk.

²⁵⁶ For interest rate changes that don’t change contractual cash flows (see above, before Table 3).

Table 14a	Initial Y 0	subsequent Δ Y 1	subsequent Δ Y 2	subsequent Δ Y 3	subsequent Δ Y 4	Σ
Earnings relevant FVΔ	1.773	-0.4114	-0.4319	-0.4535	-0.4762	0

Present value and discounted cash flow analysis represent ex-ante views of cash flows to happen. The exchange-hypothesis leads to an ‘upfront’-value, i.e. a day-1 profit or loss,²⁵⁷ with mathematical precision. The application of this hypothesis in FFV accounting leads to an “earnings shock” by inclusion of earnings elements of several future periods into one period, i.e. current earnings. When the ex-ante view proves to have been incorrect and the hypothesis is not confirmed by a cash flow (from the exchange), the anticipated impact in prior years’ earnings have, subsequently, to be corrected period by period, until maturity and a fair value of zero.

Supporters of a consistent exit price measurement argue that “accounting for day-one gains and losses separately from the subsequent changes in the model-based estimate of fair value provides users of financial statements with more relevant information and a better understanding of the economics of the transactions”.²⁵⁸

Following, the previous examples are extended in order to test the “better understanding” that full fair value accounting is said to provide.

3.1 Client Rates with Margin – The Asset

When a loan includes a margin²⁵⁹ in its contractual rate, FFV accounting adds the fair value changes of the client margin to the actual interest cash flows. Interest revenue as compared to accrued interest revenue would be reported as follows:

Table 15	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued Interest Revenue	0.0000	5.5000	5.5000	5.5000	5.5000	22.00
+ FV Δ	1.7730	-0.4114	-0.4319	-0.4535	-0.4762	0.00
= FFV Interest Revenue	1.7730	5.0886	5.0681	5.0465	5.0238	22.00

The fair value gain from discounting upfront the client margin over market rates for the coming four years is reported as FFV interest revenue of CU 1.77 in year 0. Starting in the following period, the reversals of the prior upfront fair value gain is netted against the actual, first interest cash flow. In contrast to the reported FFV interest revenue, the actual interest cash flows remain constant with CU 5.5. Once more, over time to

²⁵⁷ This Appendix is followed below, p. 102ff, by a short discussion of the issue day-1 profit or loss under IAS 39 compared to SFAS 157.

²⁵⁸ IASB Discussion Paper, *Fair Value Measurements*, Part 1 (London: IASB, November 2006), paragraph 29(b).

²⁵⁹ See above Tables 14, 14a.

maturity, the total sum of cash flows is identical to the total of FFV interest revenue as the fair value changes amount to zero.

Assume a change in the benchmark rate of – 0.5% at end of year 2. This changes the fair value for Y2 to Y4. The change in the benchmark rate has an impact on the previous fair values of the 0.5% margin which increases to the change in the discount factor. At the same time, the difference to the new market rate increases by another 0.5%, i.e. creating an “additional margin”. The changes in FV, before and after the rate change, are depicted in the following table:

Table 16	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
FV Δ on old margin	1.7730	-0.4114	-0.4319	-0.4535	-0.4762	0.00
Δ to old margin from rate change			0.0066	-0.0043	-0.0023	0.00
FV Δ from rate change on “additional margin”	0.00	0.00	0.9363	-0.4578	-0.4785	0.00
Σ	1.773	-0.4114	0.5110	-0.9156	-0.9570	0.00

The change of fair value in year 2 comprises the previously calculated ‘clean’ rate change and the partial reversal of day-1 profits. Therefore, in the subsequent two years, the reversals contain two components:

- (1) reversal of previous day-1 profits and
- (2) reversal of the anticipatory interest rate change.

The result would lead to the reporting of FFV interest revenue as follows:

Table 17	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued Interest Revenue	0.0000	5.5000	5.5000	5.5000	5.5000	22.00
+ FV Δ	1.7730	-0.4114	0.5110	-0.9156	-0.9570	0.00
= FFV Interest Revenue	1.7730	5.0886	6.0110	4.5844	4.5430	22.00

Although, the real interest cash flows have not changed, changes are reported in interest revenue for FFV interim results. The distorting information – in interim reporting periods only, provided by FFV accounting for these two cases – rate change and no rate change – vis-à-vis real cash flows is apparent from the next table.

Table 18	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued Interest Revenue	0.00	5.50	5.50	5.50	5.50	22.00
FFV IR margin – no rate change	1.77	5.09	5.07	5.05	5.02	22.00
FFV IR margin with rate change	1.77	5.09	6.01	4.58	4.54	22.00

The reported FFV results differ from actual interest cash flows with or without a change in market rates.

3.2 Client Rates with Margin – Matching Deposit

The initial example of rate changes has demonstrated that a matching deposit would balance the impact of the changes on the level of net interest income (NII).²⁶⁰ The same, however, does not apply to the fair valuation impact on a margin from a liability.

A matching clients' deposit with a 0.5% margin below the benchmark rate results in a lower FV of the liability compared to the consideration received of 100.

Table 19	Capital	Market rate	Client rate	Margin	FV
Deposit	100	5.00%	4.50%	0.50%	98.227

Compared to market, the lower contractual client rate represents a positive fair value to the business entity which would have to appear as value correction on “interest expense”. Its subsequent changes over time to maturity (without any rate change assumption) follow the pattern of recognition and subsequent reversal of FV changes as seen with the asset (the loan):

Table 20: No rate change	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued Interest Expense	0.0000	-4.5000	-4.5000	-4.5000	-4.5000	-18.00
+ FV Δ	1.7730	-0.4114	-0.4319	-0.4535	-0.4762	0.00
= FFV Interest Expense	1.7730	-4.9114	-4.9319	-4.9535	-4.9762	-18.00

All these income recognitions and reversals continue to sum to zero at maturity. However, this time, matching does not equal offset. The two margins, on the asset and the liability, add up to a total of 1% on NII level. At this level, artificial volatility is increased:

Table 21: No rate change	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued Interest Revenue	0.00	5.50	5.50	5.50	5.50	22.00
Accrued Interest Expense	0.00	-4.50	-4.50	-4.50	-4.50	-18.00
Accrued NII	0.00	1.00	1.00	1.00	1.00	4.00

Interest Revenue FV Δ	1.7730	-0.4114	-0.4319	-0.4535	-0.4762	0.00
Interest Expense FV Δ	1.7730	-0.4114	-0.4319	-0.4535	-0.4762	0.00
Total FV Δ	3.5460	-0.8228	-0.8638	-0.9070	-0.9524	0.00

FFV Interest Revenue	1.7730	5.0886	5.0681	5.0465	5.0238	22.00
FFV Interest Expense	1.7730	-4.9114	-4.9319	-4.9535	-4.9762	-18.00
FFV NII	3.5460	0.1772	0.1362	0.0930	0.0476	4.00

²⁶⁰ See above, 1.2.

Summary	Σ					
Accrued NII	0.00	1.00	1.00	1.00	1.00	4.00
FFV NII	3.54	0.18	0.14	0.09	0.05	4.00

3.3 Client Rates with Margin – Matching Deposit and Rate Change

Assume our scenario of interest rate change at the end of year 2 for the case of the previous example. In this case, the change of market rates causes different changes in fair values for the matching deposit with a margin compared to a matching deposit without a margin. The reason lies in the fact that fair value accounting views the contractual deposit rate, i.e. including the margin, as being in line with market level (both at 4.5%) after the rate change of -0.5%, resulting in a fair value of 100 (FV relevant to earnings: zero). Thus, the reversal of prior years' FV at year-end 2 contains the complete amount of FV without further, subsequent reversals:

Table 22: Rate change -0.5%	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued Interest Expense	0.0000	-4.5000	-4.5000	-4.50	-4.50	-18.00
+ FV Δ	1.7730	-0.4114	-1.3616	0.00	0.00	0.00
= FFV Interest Expense	1.7730	-4.9114	-5.8616	-4.50	-4.50	-18.00

For FFV accounting on the level of FFV net interest income (NII), only small differences appear in the case of a rate-change compared to the case of the no-rate-change. The essential discrepancy remains between FFV reporting and cash flow based accrual reporting. The underlying cause of this discrepancy lies in the subsequent reversal of previously reported fair value changes.

Table 23	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII ²⁶¹	0.0000	1.0000	1.0000	1.0000	1.0000	4.00
FFV NII - no rate change ²⁶²	3.5460	0.1772	0.1362	0.0930	0.0476	4.00
FFV - with rate change ²⁶³	3.5460	0.1772	0.1494	0.0844	0.0430	4.00

4. FFV Accounting - from NII to Earnings

The terminal problem of DCF, i.e. its inability to measure unknown cash flows, generates further asymmetric effects on earnings under fair value accounting. Fair value can recognise only current, not future cash flows in earnings if they are not related to recognised assets and liabilities, such as cost or commission income. The

²⁶¹ Identical for both cases.

²⁶² From Table 21, p. 90-91.

²⁶³ FFV Interest Revenue from Table 17. FFV Interest Expense from Table 22, p. 91.

flawed signal from FFV accounting becomes more pronounced when observed on the level of net income, i.e. earnings, instead of net interest income.

4.1 Matched Positions

So far, the analysis had been limited to the level of interest income and expense and the reporting line of net interest income. It is at this level where fair value calculations impact when applied to interest bearing financial instruments.

However, the aggregation level of earnings comprises further production factors in the profit-making activity (1), in particular, cost. For each earnings period, net interest income is required to cover cost, directly and indirectly related to the activity. This fact is expressed in a commonly accepted ratio: the cost to income ratio (CIR). The ratio gives an indication of the success in combining production factors over time. The ratio also documents the fact that the noncash resources consumed by a business activity are more than can be concluded from the assets at any measurement date. Instead of making assumptions of any particular cost level for further extension of the examples, it will suffice to apply an average ratio of (e.g.) 70% to the case.²⁶⁴

Starting with the accrued net interest income of CU 1 of the last example,²⁶⁵ cost to be covered is assumed to be CU 0.70 per period. This results in accrued earnings of CU 0.30 p.a. and a total result of CU 1.20 over the entire period of the position.

Table 24: From NII to €	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
NII (accrued)	0.00	1.00	1.00	1.00	1.00	4.00
Cost (CIR 70%)	0.00	-0.70	-0.70	-0.70	-0.70	-2.80
Accrued €	0.00	0.30	0.30	0.30	0.30	1.20

After consideration of cost, a consistent positive, though smaller, earnings stream is reported. It is at this level where persistence of earnings effectively has to be considered. This is because earnings represent *all* cash flows caused by an activity, not just a subset. However, FFV accounting presents a different picture. The *asymmetric information* set caused by DCF brings forward elements of earnings from future periods, but not the cost related to the respective periods. In the next table, the previous FFV NII²⁶⁶ is developed to earnings level, i.e. considered after cost.

²⁶⁴ This ratio can be calculated from the difference between net interest income and net income in the sample of 202 banks analysed by Hodder, Hopkins, and Whalen (2006), Table 2, p. 345.

²⁶⁵ See above Table 23, p. 91.

²⁶⁶ Table 21-23, p. 90-91 – matched deposit, no rate change.

Table 25: From NII to €	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
FFV NII	3.55	0.18	0.14	0.09	0.05	4.00
Cost (CIR 70%)	0.00	-0.70	-0.70	-0.70	-0.70	-2.80
FFV €	3.55	-0.52	-0.56	-0.61	-0.65	1.20

Due to the anticipatory valuation and its reversals, FFV accounting would lead to a positive earnings result in year 0 without any cash flows occurring. However, it is followed by negative earnings in the following years to maturity. The subsequent reversals reduce FFV NII to amounts that would not cover cost of the interim periods. At the end of the position in year 4, the result of the total period is reflected by the sums of interest- and cost cash flows, once again identical between the two accounting methods.

4.2. Matched Positions – Repetitive Business

The terminal problem of DCF for the calculation of FFV under a DAE model has to be analysed regarding another issue: the problem of reflecting repetitive business with the same as well as with different maturities.

4.2.1. Matched Positions – Repetitive Business – Same Maturity

The previous example (Table 21) consisted of a matched position (asset and liability) with a 4 year maturity. Fair value had been measured to the known time horizon of the 4 years. However, what happens after the 31.12.04?

Extending the example further, assume that the bank is able to expand its business under the same conditions, i.e. same market rates, same volume and same margin. For this purpose, the identical position²⁶⁷ is added at every following 31.12. After 4 years the bank has reached its full potential of a volume of CU 400 and a cash flow contribution of CU 4 per annum. The following table pictures the appearance and disappearance of fair values by period²⁶⁸ as well as the cash flows from the repeated matched positions:

²⁶⁷ i.e. the data and FVs from the matched position (Table 21, p. 90-91) – shown as net figures.

²⁶⁸ The examples are not extended beyond the time horizon of eight years as it seems to be sufficient to demonstrate the different ‘results’ under the different methods of income measurement for this time horizon.

Position	1	2	3	4	5	6	7	8	Σ	1	2	3	4	5	6	7	8	Σ
End of year	Interest Cash Flows									Fair Value								
0	0								0	3.55								3.55
1	1	0							1	2.72	3.55							6.27
2	1	1	0						2	1.86	2.72	3.55						8.13
3	1	1	1	0					3	0.95	1.86	2.72	3.55					9.08
4	1	1	1	1	0				4		0.95	1.86	2.72	3.55				9.08
5		1	1	1	1	0			4			0.95	1.86	2.72	3.55			9.08
6			1	1	1	1	0		4				0.95	1.86	2.72	3.55		9.08
7				1	1	1	1	0	4					0.95	1.86	2.72	3.55	9.08
8					1	1	1	1	4						0.95	1.86	2.72	5.54
9						1	1	1	3							0.95	1.86	2.81
10							1	1	2								0.95	0.95
11								1	1									0.00

The interest cash flows deriving from the margin of CU 1 per position p.a. are building up from year 1 to a maximum of CU 4 p.a. in year 4. However, as seen before, the positive fair value generated under a DCF is brought forward to year 0. It develops to a maximum of CU 9.08 in year 4. Obviously, each subsequent period contains the partial reversal of prior years' anticipated FV. Eventually, the reversals will balance with newly built up fair values, leading to a constant FV of CU 9.08.

The development of NII, i.e. the aggregation level on which FV changes are recorded, shows the following profile:

Position	1	2	3	4	5	6	7	8	Σ	Σ	FV change	Fair Value NII	Accrued NII
End of year	Interest Cash Flows								CF	FV	(Δ FV)	[Δ FV + CF]	
0	0								0	3.55	3.55	3.55	0.00
1	1	0							1	6.27	2.72	3.72	1.00
2	1	1	0						2	8.13	1.86	3.86	2.00
3	1	1	1	0					3	9.08	0.95	3.95	3.00
4	1	1	1	1	0				4	9.08	0.00	4.00	4.00
5		1	1	1	1	0			4	9.08	0.00	4.00	4.00
6			1	1	1	1	0		4	9.08	0.00	4.00	4.00
7				1	1	1	1	0	4	9.08	0.00	4.00	4.00
8					1	1	1	1	4	5.54	-3.55	0.45	4.00
9						1	1	1	3	2.81	-2.72	0.28	3.00
10							1	1	2	0.95	-1.86	0.14	2.00
11								1	1	0.00	-0.95	0.05	1.00
Σ									32		0.00	32.00	32.00

Differences in reported results between to the two income measurement systems become apparent when business changes. FFV results exacerbate results from real cash flows in the build-up phase as well as in a slow-down scenario. For such scenarios, FFV accounting combined with DCF develops a pro-cyclical dynamic of mathematic precision.

Starting from the initial CU +3.55, FV changes decrease to zero in year 4 when reversals fully compensate each new build up of FV. After that, due to the revolving business, the FV changes remain zero

until year 8 when the positions start to run out and FV changes turn negative. In years 4 – 7, net interest income is identical between the different measurement methods. However, due to the underlying mechanics of DCF, results vary significantly during the years of building up the business and when positions are maturing without replacement. However, the sum of cash flows, the sum of FV results and the sum of accrued P&L is identical: CU 32.

The misinformation caused by the reporting of FFV results compared to the real, cash flow based results increases on the level of earnings (per period).

Position End of year	1	2	3	4	5	6	7	8	?	FV Δ	FV NII	Accrued NII	Cost CIR70%	Accrued €	FV €
0	0								0	3.55	3.55	0.00	0.00	0.00	3.55
1	1	0							1	2.72	3.72	1.00	0.70	0.30	3.02
2	1	1	0						2	1.86	3.86	2.00	1.40	0.60	2.46
3	1	1	1	0					3	0.95	3.95	3.00	2.10	0.90	1.85
4	1	1	1	1	0				4	0.00	4.00	4.00	2.80	1.20	1.20
5		1	1	1	1	0			4	0.00	4.00	4.00	2.80	1.20	1.20
6			1	1	1	1	0		4	0.00	4.00	4.00	2.80	1.20	1.20
7				1	1	1	1	0	4	0.00	4.00	4.00	2.80	1.20	1.20
8					1	1	1	1	4	-3.55	0.45	4.00	2.80	1.20	-2.35
9						1	1	1	3	-2.72	0.28	3.00	2.10	0.90	-1.82
10							1	1	2	-1.86	0.14	2.00	1.40	0.60	-1.26
11								1	1	-0.95	0.05	1.00	0.70	0.30	-0.65
Σ									32		32.00	32.00			

As before, the sum of accrued earnings and the sum of FV earnings over the years of activity are the same. Yet, their distribution over the interim periods reveals significantly different profiles.

Furthermore, the terminal problem of DCF will lead to the reporting of different fair values for businesses with the same volume and margin, but different maturities. To demonstrate this effect, the prior case is amended to a business with the same overall volume of CU 400 and the same overall margin p.a., but with repetitive positions of CU 200 and a 2 years' maturity:

Position End of year	1	2	3	4	5	6	7	8	Σ	1	2	3	4	5	6	7	8	Σ
0	0								0	3.72								3.72
1	2	0							2	1.90	3.72							5.62
2	2	2	0						4		1.90	3.72						5.62
3		2	2	0					4			1.90	3.72					5.62
4			2	2	0				4				1.90	3.72				5.62
5				2	2	0			4					1.90	3.72			5.62
6					2	2	0		4						1.90	3.72		5.62
7						2	2	0	4							1.90	3.72	5.62
8							2	2	4								1.90	1.90
9								2	2									0.00

Interest cash flows p.a. reach the total of CU 4 already after 2 years, i.e. 2 years prior than in the previous case. However, the fair value for this repetitive business is reported significantly lower at CU 5.62.

As the profile of changes in FV is significantly different between the cases of comparable volume and margin, consequently, reported FV results are also different during the phases of change:

Position # End of year	1	2	3	4	5	6	7	8	Σ	Σ FV	FV Δ	FV NII	Accrued NII
	Interest Cash Flows												
0	0								0	3.72	3.72	3.72	0.00
1	2	0							2	5.62	1.90	3.90	2.00
2	2	2	0						4	5.62	0.00	4.00	4.00
3		2	2	0					4	5.62	0.00	4.00	4.00
4			2	2	0				4	5.62	0.00	4.00	4.00
5				2	2	0			4	5.62	0.00	4.00	4.00
6					2	2	0		4	5.62	0.00	4.00	4.00
7						2	2	0	4	5.62	0.00	4.00	4.00
8							2	2	4	1.90	-3.72	0.28	4.00
9								2	2	0.00	-1.90	0.10	2.00
10									0	0.00	0.00	0.00	0.00

The conclusion of the analysis of the two cases is contrary to a widely held view:²⁶⁹ FV doesn't give comparable information for comparable underlying business activities.

4.2.2. Matched Positions – Repetitive Business – Changing Maturity

To analyse this situation, the previous examples²⁷⁰ of repetitive business with 4y maturity positions are extended. After a successful build up over 4 years, it is assumed, as before, that the business can be repeated each year thereafter. However, starting in year 6, clients demand changed maturities of just 1 year. The repetitive volume and margin remain the same. The impact on fair value can be seen in the following table:

Position End of year	1	2	3	4	5	6	7	8	Σ	1 FV	2	3	4	5	6	7	8	Σ FV	FV Δ
	Interest Cash Flows																		
0	0								0	3.55								3.55	3.55
1	1	0							1	2.72	3.55							6.27	2.72
2	1	1	0						2	1.86	2.72	3.55						8.13	1.86
3	1	1	1	0					3	0.95	1.86	2.72	3.55					9.08	0.95
4	1	1	1	1	0				4		0.95	1.86	2.72	3.55				9.08	0.00
5		1	1	1	1	0			4			0.95	1.86	2.72	3.55			9.08	0.00
6			1	1	1	1	0		4				0.95	1.86	2.72	0.95		6.49	-2.59
7				1	1	1	1	0	4					0.95	1.86		1.90	4.72	-1.77
8					1	1		2	4						0.95			0.95	-3.76
9						1			1									0.00	-0.95
10									0									0.00	0.00

²⁶⁹ Barth (2006), p. 3-4.

²⁷⁰ Tables 26-27, p. 94 .

Despite the fact that interest cash flows (representing the margin) remain stable, a dramatic change in business is signalled by fair value changes, starting in year 6. This is a consequence of DCF's terminal problem. DCF as it can only reflect positions with their maturity as recognised in the balance-sheet.

At the net income level, i.e. earnings, the consequences of this reporting are visible in the difference between Accrued € and FV €:

Position	1	2	3	4	5	6	7	8	Σ	Δ FV	FV NII	Accrued NII	Cost CIR70%	Accrued €	FV €	
End of year	Interest Cash Flows															
0	0								0	3.55	3.55	0.00	0.00	0.00	3.55	
1	1	0							1	2.72	3.72	1.00	0.70	0.30	3.02	
2	1	1	0						2	1.86	3.86	2.00	1.40	0.60	2.46	
3	1	1	1	0					3	0.95	3.95	3.00	2.10	0.90	1.85	
4	1	1	1	1	0				4	0.00	4.00	4.00	2.80	1.20	1.20	
5		1	1	1	1	0			4	0.00	4.00	4.00	2.80	1.20	1.20	
6			1	1	1	1	0		4	-2.59	1.41	4.00	2.80	1.20	-1.39	
7				1	1	1	1	0	4	-1.77	2.23	4.00	2.80	1.20	-0.57	
8					1	1		2	4	-3.76	0.24	4.00	2.80	1.20	-2.56	
9						1			1	-0.95	0.05	1.00	0.70	0.30	-0.65	

5. Mismatched Positions and Client Margin

Some of the earlier examples (Tables 9 -12) have demonstrated that a fair value measurement applying DCF analysis can measure only the future cash flows that will not change, but is unable to capture future cash flows that will change: DCF's terminal problem. Therefore, FV cannot reflect the risks involved in a mismatch position as it cannot measure any mismatch. The volatility reported by such a valuation method does not report the volatility inherent in the mismatch. Later examples (Table 21) have revealed that FFV accounting leads to additional distortion of reported results when changes in interest rates are simulated for positions that contain client margins, even when matched.

The following analysis focuses on the mechanics and consequences of FFV accounting with DCF for *mismatched* positions containing client margins.

5.1. Client Margin on Both Sides, Loan as well as Deposit; no rate change

In a market rate scenario of 5% flat without rate changes expected, assume a loan with a 4-year maturity and a 0.5% margin, funded – consistently – by a 1y maturity deposit, also with a 0.5% margin, a classical so-called mismatched position. Accrued NII, based on real interest cash flows, looks as follows:

Table 33: No rate change	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue	0.00	5.50	5.50	5.50	5.50	22.00
Interest Expense	0.00	-4.50	-4.50	-4.50	-4.50	-18.00
Accrued NII	0.00	1.00	1.00	1.00	1.00	4.00

The corresponding reporting under FFV would report the following, different results:

Table 34	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Revenue FV Δ	1.7730	-0.4114	-0.4319	-0.4535	-0.4762	0.00
Expense FV Δ	0.4762	0.0000	0.0000	0.0000	-0.4762	0.00
Total FV Δ	2.2492	-0.4114	-0.4319	-0.4535	-0.9524	0.00
FFV NII	2.2492	0.5886	0.5681	0.5465	0.0476	4.00

The ‘terminal problem’ of DCF causes an asymmetric anticipation of the margin results for the 4y-maturity compared to the 1year maturity. The anticipatory effect covers 4 years of loan margin, but only 1year of the liability margin. Thus, FFV accounting reports a different upfront positive FV in year 0 for an asset and a deposit with the same margin. Consequently, it creates different subsequent reversals until maturity. On the liability side, the same fair value for a 1 year maturity will be reported for the next three years, resulting in a constant zero FV change.

Compared to the initial case (Table 21) of a matched position, FFV accounting for a mismatched position reports different results even if nothing changes except the maturities.

Table 35	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
FFV NII matched position ²⁷¹	3.5460	0.1772	0.1362	0.0930	0.0476	4.00
FFV NII mismatch position ²⁷²	2.2492	0.5886	0.5681	0.5465	0.0476	4.00

In both cases, real cash flow contributions to earnings remain stable throughout the interim periods, but FFV accounting signals volatility which is, interestingly, higher for the matched than for the mismatched position. It documents the inability of fair value methodology to report inherent risk which would be considered higher for a mismatched position.

Fair value can consider margins only to the extent that the time horizon of the respective instrument permits their recognition. Therefore, FFV accounting reports different results dependent on which side of a mismatched position the margins are earned.

²⁷¹ See Table 21, p. 90-91.

²⁷² See Table 34, p. 98.

5.2. Client Margin on either Side: Loan or Deposit; no rate change

To demonstrate this effect in the 4 –to-1y mismatch example, assume that the total margin is earned in full on either side of the position, the asset or the deposit side.

Assume the full margin of 1% is only on the loans’ side, i.e. the contracted client rate is 6%. Fair value and its reversals would occur for the full 4y period with the following discrepancy in interim periods’ results to real interest cash flows:²⁷³

Table 36a: Mismatch with full margin on the loan - Summary	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.0000	1.0000	1.0000	1.0000	1.0000	4.00
FFV NII	3.5460	0.1772	0.1362	0.0930	0.0476	4.00

If the 1% margin was only on the deposit side, i.e. a contracted client rate of 4%, only a fair value for a period of one year would be reported. In the following periods up to year 3, every new fair value will be netted by prior years’ reversal, resulting in year 1 to 3 in fair value changes of zero. In the last year 4, the final reversal will eventually show up as fair value change. On the other hand, accrued net interest income remains the same throughout the periods.²⁷⁴

Table 37a: Mismatch with full margin on the deposit - Summary	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.0000	1.00	1.00	1.00	1.0000	4.00
FFV NII	0.9524	1.00	1.00	1.00	0.0476	4.00

FFV accounting reports different results even without any market rate changes. It is a consequence of the different time horizons between asset and liability, leading to a selective, asymmetric recognition of erroneous value changes. Very different FFV NII is reported for the same position, the same interest rate scenario (i.e. no change), the same cash flows and overall cash flow results. The only difference lies in the instrument which carries the margin.

5.3. Client Margin with Rate Change

Having covered a mismatch position with client margins under a no-rate-change scenario, the examples, now, assume a rate change of -0.5% at the end of the second year. After the change, the yield curve remains flat. Additionally, the example assumes that the mismatched position is continued until maturity.

²⁷³ The details of the example are presented in Tables (Table 36, p. 105).

²⁷⁴ The details of the example are presented in Tables (Table 37, p.105).

The resulting differences to accrued NII²⁷⁵ are, again, caused by different fair value expectations from different maturities which are brought forward. It is a combined effect from the margin as well as from the rate change. The rate change shows its largest effect on the asset side because its impact is anticipated for two years instead of one. On the deposit side, the reported FV change is clearly less significant. This is counterintuitive, because, the rate change actually impacts the real interest cash flows. The reduced impact is due to two factors:

- the limited time horizon of 1 instead of 4 years, and
- the fact that the deposit is actually priced at market (1 year maturity).

Opposite to what FFV reporting suggests, the interest cash flows actually either do not change, Y1, Y2 and Y4, or they change in the opposite direction, Y3:

Table 38a: Mismatch, equal margin on asset and deposit, but rate change - Summary	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.0000	1.0000	1.0000	1.5000	1.5000	5.00
FFV NII	2.2492	0.5886	1.5133	0.5844	0.0645	5.00

Obviously, the same misrepresentation by FFV accounting as before (Tables 36a, 37a) occurs when our last scenario is applied to cases where full margin happens to be either on the loan side:²⁷⁶

Table 39a: Full margin on the asset side only with rate change - Summary	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.0000	1.0000	1.0000	1.5000	1.5000	5.00
FFV NII	3.5460	0.1772	1.0858	0.1264	0.0646	5.00

or on the deposit side:²⁷⁷

Table 40a: Full margin on the deposit side only with rate change - Summary	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.0000	1.0000	1.0000	1.5000	1.5000	5.00
FFV NII	0.9524	1.0000	1.9409	1.0422	0.0645	5.00

The three tables summarise the impact of a rate change scenario for the three versions of margin distribution: Volatility of FFV results does neither reflect the risk inherent in a mismatched position nor does it report the volatility in real earnings as documented by changes in the interest cash flows. The largest factors

²⁷⁵ 0.5% margin on loan as well as on deposit; details in Tables (Table 38, p. 106).

²⁷⁶ The details of the example are presented in Tables (Table 39, p. 107).

²⁷⁷ The details of the example are presented in Tables (Table 40, p. 107).

causing the artificial volatility in FFV results are the erroneous anticipation and subsequent reversal of fair value changes, contrary to the actual volatility of real cash flows.

The Client Margin

1. under IAS 39

IAS 39 requires financial instruments to be reported at initial recognition with its fair value (IAS 39.48) to be measured by a commonly used valuation technique if there is no active market (IAS 39.48A). Under this general rule, client margins would lead inevitably to day-1-profits. Thus, as an exception²⁷⁸ to this rule, IAS 39 AG 64 defines the initial transaction price as the fair value for first time recognition. Additionally, IAS 39 AG 76 declares the transaction price to be the best evidence of a fair value. This, effectively, leads to financial reporting of identical balance sheet values for two loans that have different cash flow prospects due to different client rates, e.g. one of 5%, the other of 5.5%.

The a.m. provision, however, has the caveat that it doesn't protect from day-2 profits. The issue is addressed, once again, by application guidance to the Standard. IAS 39.76A contains the provision that what hasn't been recognised at day-1 shouldn't be recognised on day 2. In other words, if on day 1 the client margin of 0.5% hasn't been recognised, it should remain unrecognised in the future. The practical way to deal with the issue is to add the client margin of 0.5% continuously to whatever the benchmark rate may change to. The prior example (see table 5) assumed a rate change of -0.5%, resulting in a benchmark rate of 4.5%. The 'application-adjusted' discount rate would be 5%. This would result in the reporting of a fair value change limited to the extent the benchmark rate had changed (IAS 39 AG 76A, sentence 3).

This amendment of a basic principle by 'Application Guidance' raises conceptual questions. The use of benchmark rates in DCF is designed to deliver comparable fair values for different cash flow profiles. Contrary to such an objective, the use of different, i.e. entity-specific discount rates, delivers the same fair value for different cash flows. The objective of comparable information has been given 'time-out' through IAS 39 application guidance for the purpose of avoiding day-1 and day-2 profits. Effectively, the application guidance ensures accrual cash flow accounting for the part of the client margin²⁷⁹ with fair value changes reported only to the extent the benchmark rate has changed. For the latter part of this mixed fair value model, the conceptual criticism of distorting information, as developed above, applies.

²⁷⁸ IASB Information for Observers, Board meeting June 2006, Agenda Paper 9A, paragraph 10 b.

²⁷⁹ There is a small caveat in practice. Not every entity has the individual, i.e. transaction-specific, client margin available in their data bases. It is not uncommon practice, then, to apply a 'standard margin', or an 'average margin' for the purposes of valuation. To the extent that the actual contracted individual margin differs from the 'standard margin', there will be day-1-results in the P&L.

2. *under SFAS 157*

According to IASB, the transaction price (equal entry price) notion²⁸⁰ is conceptually different from an exit price notion. The exit price objective is believed to more clearly convey a single measurement objective in line with existing measurement objectives of fair value in IFRS.²⁸¹ Consistency in the measurement objective would also require the application of the exit price notion for initial recognition.

The notion of the principal or most advantageous market to determine the exit-price suggests the use of the wholesale- or interbank-rate for discounting to present value. For the hypothesis of an exchange transaction, the markets that would provide the greatest volume and level of activity²⁸² would be the interbank market or the market for securitisation.²⁸³ These markets would use the benchmark rate for calculating present value. However, could the client margin be viewed as a pricing factor commonly applied by market participants? This raises the question of the character of the client margin.

In its classic non-trading banking business, a bank acts as an intermediary between liquidity demand and liquidity offer, not as an investor. The intermediary function is possible because the bank provides a form of market place where demand can meet the offers. The various factors that a bank needs to combine for creating that intermediary function are mainly cost factors in accounting terms: providing a network for collecting and exchanging liquidity between others, e.g. a bank wholesale -, retail branch network, an internet network, the technical conditions for transaction execution and administration, etc. This requires revenue to cover the cost.

As the profit for this activity isn't planned to be generated by "exchanging" financial instruments, as SFAS 157 hypothesises, it has to be generated through other means. The common way to generate profit in the banking book is to add a "margin" (operative margin) to the benchmark interest rates received and deduct a margin from the benchmark interest rates paid. The benefit of achieving a margin lays in the symmetry of timing between (most of the) expense cash flows and revenue cash flows, as well as spreading the impact on the client over time.

The benchmark interest rate marks the start of the pricing process. As stated earlier, we exclude the credit risk margin in our examples, i.e. assume them as appropriate and stable. The operative margin intends to cover

- directly attributable cost,

²⁸⁰ IASB Discussion Paper, *Fair Value Measurements*, Part 1 (London: IASB, November 2006), paragraphe 25; IASB Information for Observers, Board meeting June 2006, Agenda Paper 9A, paragraph 1.

²⁸¹ IASB Information for Observers, Board meeting June 2006, Agenda Paper 9A, paragraph 6; IASB staff notes that the request in AG 71 of IAS 39 of looking for the most advantageous market is already an exit price notion, Agenda Paper 9A, paragraph 7.

²⁸² IASB Discussion Paper, *Fair Value Measurements*, Part 1 (London: IASB, November 2006), paragraphe 32ff.

²⁸³ The drying-up of these markets since summer 2007, unforeseen by even the most professional investors and regulators alike, raises questions about the validity of a number of assumptions required by Full Fair Value Measurement.

- indirectly attributable cost, and
- overhead cost.

Following the deliberations of IASB, it appears doubtful that any other than directly attributable cost could be considered as an attribute specific to the asset.²⁸⁴

In many banks, the client rate is priced using a formula as required by internal rules of how to calculate the margins with guidance such as “Standard Cost Margins” etc. However, the contracted client rate will depend on the individual situation, e.g. influence by competition, urgency from the clients view point, client relationship considerations which may allow for less than the standard margin etc. The data available in banks after execution of the transaction will, in many cases, only be the contractual client rate, the respective benchmark rate and the credit margin. This leaves the “client margin” as a residual, i.e. contractual rate minus benchmark rate minus credit margin = client margin. Therefore, the client margin will be not only entity-specific, but transaction-specific.

The costs that need to be covered depend on the cost base and cost structure of the individual entities in the market. It is not unrealistic to assume that an internet bank has a different cost structure to a bank with a large retail branch network. This leads to very entity-specific inputs. The need or desire to cover cost of the operations of an entity and for a profit contribution towards the capital tied up does not really seem to qualify for interpretation as an attribute specific to an asset, defining its balance sheet value.

If the single measurement objective is to provide objective information of what the price of a hypothetical exchange transaction would be, it would require market- rather than entity-specific inputs. This suggests that the client margin would have to be discounted with the benchmark rate.

It is not so much a question of entry price or exit price. It is more a question of applying the “exchange hypothesis” or not. It is a question of reporting hypothesis or reality. The consequences of the decision either way can be clearly demonstrated by examples of interest bearing financial instruments. When the instruments are not exchanged, the interest cash flows will occur in their respective periods. This represents the cash flow contribution to earnings as caused by that business activity.²⁸⁵ It is the Edwards/Bells’ profit-making activity type (1).

IASB appears adamant about the objective of full fair value accounting for financial instruments with unrealised gains and losses booked through profit and loss. On the other hand, the board seems undecided about day-1 gains and losses which entail uncertainty for day-2 as well. IASB has not yet formed a preliminary view on the issue, but decided to seek the view of respondents.

²⁸⁴ IASB Discussion Paper, *Fair Value Measurements*, Part 1 (London: IASB, November 2006), paragraphs 36ff, 38.

²⁸⁵ ... and its management (planning, decisions and executions).

Tables

Table 36

Table 36	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Revenue FV	3.5460	2.7232	1.8594	0.9524	0.00	
Expense FV	0.0000	0.0000	0.0000	0.0000	0.00	
Total FV	3.5460	2.7232	1.8594	0.9524	0.00	
Revenue FV Δ	3.5460	-0.8228	-0.8638	-0.9070	-0.9524	0.00
Expense FV Δ	0.0000	0.0000	0.0000	0.0000	0.0000	0.00
Total FV Δ	3.5460	-0.8228	-0.8638	-0.9070	-0.9524	0.00
FFV Interest Revenue	3.5460	5.1772	5.1362	5.0930	5.0476	24.0000
FFV Interest Expense	0.0000	-5.0000	-5.0000	-5.0000	-5.0000	-20.0000
FFV NII	3.5460	0.1772	0.1362	0.0930	0.0476	4.0000
Summary	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.0000	1.0000	1.0000	1.0000	1.0000	4.00
FFV NII	3.5460	0.1772	0.1362	0.0930	0.0476	4.00

Table 37

Table 37	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Revenue FV	0.0000	0.0000	0.0000	0.0000	0.00	
Expense FV	0.9524	0.9524	0.9524	0.9524	0.00	
Total FV	0.9524	0.9524	0.9524	0.9524	0.00	
Revenue FV Δ	0.0000	0.0000	0.0000	0.0000	0.0000	0.00
Expense FV Δ	0.9524	0.0000	0.0000	0.0000	-0.9524	0.00
Total FV Δ	0.9524	0.0000	0.0000	0.0000	-0.9524	0.00
FFV Interest Revenue	0.0000	5.0000	5.0000	5.0000	5.0000	20.00
FFV Interest Expense	0.9524	-4.0000	-4.0000	-4.0000	-4.9524	-16.00
FFV NII	0.9524	1.0000	1.0000	1.0000	0.0476	4.00
Summary	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Accrued NII	0.0000	1.0000	1.0000	1.0000	1.0000	4.00
FFV NII	0.9524	1.0000	1.0000	1.0000	0.0476	4.00

Table 38

- Mismatch position, loan 4y maturity, deposit 1 y maturity, interest rate change:
-0.5% at end of y2 with yield curve remaining flat afterwards;

0.5% margin on the loan as well as the deposit:

Table 38:						
Rate change -0.50%	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue	0.00	5.50	5.50	5.50	5.50	22.00
Interest Expense	0.00	-4.50	-4.50	-4.00	-4.00	-17.00
Accrued NII	0.00	1.00	1.00	1.50	1.50	5.00
Revenue FV						
	1.7730	1.3616	1.8726	0.9570	0.0000	
Expense FV						
	0.4762	0.4762	0.4785	0.4785	0.0000	
Total FV						
	2.2492	1.8378	2.3511	1.4355	0.0000	
Revenue FV Δ						
	1.7730	-0.4114	0.5110	-0.9156	-0.9570	0.00
Expense FV Δ						
	0.4762	0.0000	0.0023	0.0000	-0.4785	0.00
Total FV Δ						
	2.2492	-0.4114	0.5133	-0.9156	-1.4355	0.00
FFV Interest Revenue						
	1.7730	5.0886	6.0110	4.5844	4.5430	22.00
FFV Interest Expense						
	0.4762	-4.5000	-4.4977	-4.0000	-4.4785	-17.00
FFV NII						
	2.2492	0.5886	1.5133	0.5844	0.0645	5.00
Summary						
	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
accrued NII	0.0000	1.0000	1.0000	1.5000	1.5000	5.00
FFV NII	2.2492	0.5886	1.5133	0.5844	0.0645	5.00

On the deposit side, the reported FV change is clearly less significant. This is counterintuitive, because, the impact of the rate change has actual consequences to the interest cash flows. The reduced impact is actually due to two factors:

- the limited time horizon of 1 instead of 4 years, but also due to
- the fact that the deposit is actually priced at market (1 year maturity).

Table 39

- Mismatch position, loan 4y maturity, deposit 1 y maturity, interest rate change:

-0.5% at end of y2 with yield curve remaining flat afterwards;

1% margin on the loan:

Table 39	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue	0.00	6.00	6.00	6.00	6.00	24.00
Interest Expense	0.00	-5.00	-5.00	-4.50	-4.50	-19.00
Accrued NII	0.00	1.00	1.00	1.50	1.50	5.00
Revenue FV	3.5460	2.7232	2.8090	1.4354	0.0000	
Expense FV	0.0000	0.0000	0.0000	0.0000	0.0000	
Total FV	3.5460	2.7232	2.8090	1.4354	0.0000	
Revenue FV Δ	3.5460	-0.8228	0.0858	-1.3736	-1.4354	0.00
Expense FV Δ	0.0000	0.0000	0.0000	0.0000	0.0000	0.00
Total FV Δ	3.5460	-0.8228	0.0858	-1.3736	-1.4354	0.00
FFV Interest Revenue	3.5460	5.1772	6.0858	4.6264	4.5646	24.00
FFV Interest Expense	0.0000	-5.0000	-5.0000	-4.5000	-4.5000	-19.00
FFV NII	3.5460	0.1772	1.0858	0.1264	0.0646	5.00

Table 40

- Mismatch position, loan 4y maturity, deposit 1 y maturity, interest rate change:

-0.5% at end of y2 with yield curve remaining flat afterwards;

1% margin on the deposit:

Table 40	Y 0	Y 1	Y 2	Y 3	Y 4	Σ
Interest Revenue	0.00	5.00	5.00	5.00	5.00	20.00
Interest Expense	0.00	-4.00	-4.00	-3.50	-3.50	-15.00
Accrued NII	0.00	1.00	1.00	1.50	1.50	5.00
Revenue FV	0.0000	0.0000	0.9363	0.4785	0.0000	
Expense FV	0.9524	0.9524	0.9570	0.9570	0.0000	
Total FV	0.9524	0.9524	1.8933	1.4355	0.0000	
Revenue FV Δ	0.0000	0.0000	0.9363	-0.4578	-0.4785	0.00
Expense FV Δ	0.9524	0.0000	0.0046	0.0000	-0.9570	0.00
Total FV Δ	0.9524	0.0000	0.9409	-0.4578	-1.4355	0.00
FFV Interest Revenue	0.0000	5.0000	5.9363	4.5422	4.5215	20.00
FFV Interest Expense	0.9524	-4.0000	-3.9954	-3.5000	-4.4570	-15.00
FFV NII	0.9524	1.0000	1.9409	1.0422	0.0645	5.00

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