

Moving the Conceptual Framework Forward: Accounting for Uncertainty

Richard Barker
Saïd Business School, Oxford University

Stephen Penman
Columbia Business School, Columbia University

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Abstract

To meet the objectives of financial reporting in the IASB's Conceptual Framework, the 'balance-sheet approach' embraced by the Framework is necessary but not sufficient. Critical, but largely overlooked, is the role of uncertainty, which we argue defines the role of accrual accounting as a distinctive source of information for investors when investment outcomes are uncertain. This role is in some sense paradoxical: on the one hand, uncertainty undermines both the balance sheet (because uncertain assets are unrecognized) and the income statement (because mismatching is unavoidable). However, these inevitable accounting effects can be exploited to provide information about uncertainty, though not by a balance-sheet approach alone. Rather, criteria for balance sheet recognition and measurement, and for income statement presentation, are established by consideration of the impact of uncertainty on matching and mismatching in the income statement. This combination of balance-sheet and income-statement approaches enhances the communication of information to investors under conditions of uncertainty, thereby giving greater clarity and purpose in satisfying the objective of the Framework to provide information about "the amount, timing, and uncertainty of future cash flows".

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1. Introduction

The Conceptual Framework of the International Accounting Standards Board (Exposure Draft, IASB, 2015; hereafter 'Framework'), assigns conceptual primacy to the definition of assets (liabilities), expressed in terms of rights (obligations) with respect to economic benefits (Storey and Storey, 1998; Dichev, 2008). The logic of this 'balance sheet approach' is that (net) income is determined as a by-product of the recognition and measurement of (net) assets in the balance sheet. Accordingly, while much of the Framework is concerned with the definition, recognition, and measurement of (net) assets, it offers remarkably little conceptual guidance with respect to the income statement. Particularly noteworthy is that, first, the Framework seemingly rejects the long-standing, 'traditional' income statement concept of the 'matching' of revenues with expenses (Zimmerman and Bloom, 2016) and, second, it offers no conceptual guidance on the income statement, and so is silent on (for example) the distinctions between income (expenses) and gains (losses), and between gross profit and net profit (Barker, 2010).¹

This paper argues that this 'marginalisation' of the income statement arises because the concept of uncertainty is insufficiently developed in the Framework, with the effect that the inherent usefulness of the technology of accrual accounting is inadequately captured. Evidence of this conceptual oversight is that the Framework implicitly *assumes* that its 'valuation-relevance' and 'stewardship' objectives in the Framework can best be addressed by accrual accounting, yet it does not justify why this is the case. We argue that uncertainty is the key concept that would provide this justification. At present, the Framework's discussion of uncertainty is mostly in the context of the challenges that it creates for the measurement of assets and liabilities (e.g. paras. 5.15-5.21) – in other words, it is balance-sheet oriented - yet this does not get to the heart of why the concept of uncertainty is so important for accounting.

We argue that the balance-sheet approach can be extended to accommodate the implications of uncertainty for the informational-usefulness of the income statement, as well as the balance sheet, thereby explicitly acknowledging that the usefulness of accruals lies in the articulation between these two statements. We argue that our approach would:

¹ The IASB stresses that the income statement is not overlooked (BC4.3). It is likely that, in practice, the IASB does think through income and expenses issues in making recognition and measurement decisions with respect to assets and liabilities. Yet such thinking is not formalised conceptually in the Framework with the same logical clarity that is applied to the deductive approach that starts with the formal definitions of assets and liabilities.

enhance the Framework's conceptualisation of recognition, measurement, and presentation; strengthen the conceptual foundations of individual accounting standards; and define an accounting for income and expenses (including an income statement presentation) that would be guided by the matching concept in providing useful information to investors.

To develop this argument, we accept the 'top-down', deductive approach embodied in the Framework, notwithstanding that in practice such as approach is inevitably partial, fluid and, to a degree, grounded in convention (Dopuch and Sunder, 1980; Macve, 1997, 2010 and 2015; Bromwich et al., 2010); in short, we take as given that the Framework forms part of the *modus operandi* of the IASB, and our conceptual analysis is conducted within that frame.

We structure our argument as follows. In Section 2, we note that a striking feature of the Framework is its rejection of the matching concept, notwithstanding the central role that matching has traditionally played in accruals accounting. We then note, in Section 3, that the Framework actually has very little to say about accruals, and in particular about why the technology of accrual accounting is presumed to provide useful information to investors. In Section 4, we argue that the concept of uncertainty is critical in making sense of these observations from Sections 2 and 3. This is because conditions of uncertainty render both the balance sheet and the income statement 'incomplete', yet complementary, with respect to the IASB's objective of providing decision-useful information to investors. In short, we argue that the challenge caused by uncertainty calls for the design of an accrual accounting system that adopts both a balance-sheet and an income-statement perspective, and that this demands consideration of the matching concept. Such a conclusion appears to stand in contrast with the Framework's balance-sheet approach, which we explore in Section 5.

In line with this approach, the Framework explicitly addresses uncertainty in the context of balance-sheet recognition and measurement only. We argue, however, that the Framework also *implicitly* incorporates uncertainty into its definition of (net) assets, and that this goes a considerable way towards meeting the informational needs of investors, especially in the case of revenue recognition. Given, however, that this incorporation of uncertainty is in effect 'subconscious' within the Framework, it is perhaps not surprising that its implications are not fully realised. In Section 6, we therefore propose a 'conscious' extension, which employs additional balance-sheet recognition criteria that take into consideration the articulating income statement. At heart, the approach can be viewed as

structuring and presenting information that the accountant can demonstrably claim to 'know', thereby providing useful input to investors as they face what is unknown. Critically, this approach relies upon the discriminating use of the matching concept.

We identify four different types of (mis)matching under uncertainty, a categorisation which makes use of the concept of matching by identifying and exploiting both its strengths and its limitations, thereby reconciling 'traditional' accounting with the IASB's balance-sheet approach, and enhancing both. We note that our approach is consistent with decisions made by the IASB in several individual standards, which is evidence of a 'missing link' in the Framework, because there is greater conceptual consistency between IFRS and our proposed approach than between IFRS and the Framework. In Section 7, we show that our approach gives structure to the income statement, addressing the Framework's conceptual omission in this regard. In effect, we propose an income-statement approach to financial reporting that extends (and complements) the balance-sheet approach that is embedded already in the Framework, a 'mixed' approach that has the important feature of conveying information about uncertainty, an issue of central concern to investors. In turn, and as we discuss in Section 8, our proposals for the income statement enable insight with respect to the selection of measurement attributes, in particular into the conceptual basis for choosing between (entry) cost and (exit) value.

We conclude the paper in Section 9, where we explore further implications of our approach. We argue that IFRS accounting for acquired intangibles is conceptually inconsistent with our approach, a problem that the 'incomplete' current Framework is unable to detect. We also note, however, a conflict in this regard between the IASB's investment and stewardship objectives, again highlighting conceptual issues that are not salient in the current Framework.

Taking the first step in the above, we consider in Section 2 the merits and limitations of the concept of matching.

2. The Matching Concept

In recent years, the matching concept has fallen out of favour with both the IASB and the FASB (Zimmerman and Bloom, 2016). This is remarkable given that matching has a long history in accounting practice, arguably lying at the heart of the design of double-entry accounting. Paton and Littleton (1940, p.16), perhaps the most authoritative source of its day, asserted that "accounting exists primarily as a means of computing ... the difference between costs (as efforts) and revenues (as accomplishments)." Likewise, and in

common with subsequent generations, Edwards, Bell and Johnson (1979, p.11) simply took as given the centrality of the matching concept: “In order to measure the success or failure of business activities, utilizing the criterion of profit, accountants have adopted the concept of matching efforts with accomplishments.”

Matching has an intuitive appeal, with natural linkages to other ‘traditional’ concepts in accounting. It is arguably the purpose of accrual accounting, whereby (for example) accruing receivables, and capitalizing and expensing outflows, enables the matching of income to expenses in determining periodic performance. In this regard, matching lends itself to historical cost measurement, because it can be understood as allocating incurred costs to recognized revenues. And by thus enabling the periodic measurement of value-added from trading in input (supplier) and output (customer) markets, matching is also clearly aligned with the concept of earnings, and of valuation by means of ‘earnings power’. In addition, there is a more subtle, yet also more powerful, intuitive appeal for the matching concept. Ijiri (1975) identifies the ‘exchanges’ concept as a fundamental strength of the double-entry accounting system, whereby the simultaneous recognition of both benefit and sacrifice reveals differences in economic value in the operation of the market economy. Double-entry is more than just an identity; it is a mechanism for the role of markets in conveying information, a role it fills through the matching process by associating the amounts that counterparties give up in exchange with one another (Hayek, 1945; Basu and Waymire, 2010). Such information is useful not just for investors but also for managers, for whom continual matching guides (uncertain) business decisions that reflect related costs and benefits (Waymire, 2009).

Against these perceived benefits, however, it must be noted that matching has never been particularly tightly defined. It tends instead to be used in a way that presupposes that it is understood, and to be illustrated with examples that are straightforward. For example, Hylton’s (1965) definition—‘assigning revenue earned and expense incurred to the accounting period in which these events occur’—leaves open both the concept and the practicality of the notion of ‘assigning’. AICPA (1961) states that ‘a major objective of accounting for inventories is the proper determination of income through the process of matching appropriate costs against revenues.’ Here again there is vagueness in the terms ‘proper’ and ‘appropriate’. There is the noteworthy use of the straightforward, *specific* example of inventories, but this is insufficient to justify matching as a *general* concept. Similarly, while matching was acknowledged historically in the FASB’s conceptual framework (SFAC 6, 1985), its meaning was left somewhat open. Para. 145 of

SFAC 6 describes the goal of accrual accounting being 'to relate revenues, expenses, gains, and losses to periods' which involves 'matching of costs and revenues, allocation, and amortization.' Quite why 'allocation' and 'amortization' are different from matching is not explained, although para. 146 notes that many expenses 'are not related directly to particular revenues,' while para. 148 states further that the period to which certain types of expense relate are 'indeterminable or not worth the effort to determine.' In short, SFAC 6 appears to struggle somewhat with matching, endorsing its importance while at the same time identifying (somewhat unclearly) that matching falls short of being generally applicable.

This problem of definition is one of a number of reasons for the matching concept falling out of favor with standard-setters. A second reason follows from Sproule (1966), who argued influentially that the practice of matching corrupts the balance sheet, by allowing the creation of meaningless asset and liability balances. BC4.3(d) of the IASB's ED appears to draw directly from Sproule in dismissing matching as generating 'a mere summary of amounts that have arisen as by-products of a matching process. Those amounts do not depict economic phenomena.' If, therefore, the balance sheet becomes a device to enable smoothing in the income statement, then matching can be portrayed as a licence to engage in earnings management. In addition, and to the extent that investors are subject to cognitive bias, matching can be viewed as (unhelpfully) a mechanism for meeting irrationally-determined information needs, for example smoothing as a response to loss aversion, historical cost as a response to omission bias, or a focus on realized gains and losses in response to investors 'mental accounting' (Thaler, 1985; Hirshleifer and Teoh, 2009). A further reason for matching being out of favor is that it can be viewed as conceptually redundant. Barth (2008) notes that 'matched economic positions will naturally result in matched accounting outcomes.' The argument, which is based upon a balance-sheet perspective (and which bypasses the problems posed by uncertainty), is that if accountants get 'right' the recognition and measurement of assets and liabilities, then matching will take care of itself and does need to be defined or applied as a distinct concept. In its only reference to matching, the IASB's Framework ED makes this point as follows (para. 5.8): 'The simultaneous recognition of income and related expenses is sometimes referred to as the matching of costs with income. The concepts in this [draft] Conceptual Framework lead to such matching when it arises from the recognition of changes in assets and liabilities.'

In summary, the matching concept plays no explicit role in the Framework because it is perceived to be poorly defined, open to abuse, and redundant conceptually; it is perceived by the IASB to be no more than a traditionally accepted convention, unsupported by underlying conceptual rigour.

We will argue that a greater understanding of the role of uncertainty in accounting helps to explain this impasse between ‘traditional’ and ‘standard-setter’ views of matching, and by so doing enables insights to be drawn from both the strengths and the weaknesses of the matching concept. Specifically, we argue that, while imperfect matching cannot in practice be avoided, the concept of matching is nevertheless insightful.² The extent to which matching can, or cannot, be achieved, is fundamentally important in evaluating the usefulness of the income statement under conditions of uncertainty and, so too therefore, for consideration of recognition and measurement in the balance sheet. In short, a critical limitation of the Framework lies in its exclusion of any analysis of matching. Accordingly, the rest of the paper explores the implications of this limitation, and of the associated, broader concept of accruals, starting in the next section with an overview of the Framework as it currently stands.

3. Framework Objectives and the Purpose of Accrual Accounting

The IASB’s stated objectives in the Framework are to ‘provide useful financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions about providing resources to the entity’ (para. 1.2). We agree with this objective, and also with the implication that follows from it, that investors and others (hereafter ‘investors’) seek information with respect to ‘the amount, timing and uncertainty of (the prospects for) future net cash inflows to the entity and their assessment of management’s stewardship of the entity’s resources’ (para 1.3). We note also that this objective is essentially just an expression of the discounted cash flow model that underpins basic no-arbitrage valuation theory: investors are concerned with valuation and that involves forecasting the amount and periodic timing of future cash flows and a discount to present value for the *uncertainty* surrounding them. The stewardship feature recognizes that that the generation of those cash flows is in the hands of agents who have to be monitored.

² In much the same way, the impossibility of perfect valuation does not make valuation/measurement on the balance sheet redundant.

While the stated objective brings focus to the types of information required by investors, it does not say anything directly about how accounting might convey that information. Likewise, the Framework's Qualitative Characteristics are not so much a description of the properties of accounting information but, rather, of useful information in general. It is difficult to argue against a definition of relevant information that is 'capable of making a difference in the decisions made by users.' (para. 28) Nor is it unreasonable that information should 'faithfully represent the phenomena that it purports to represent' (para. 2.14), nor that it should be 'complete, neutral and free from error' (para. 2.15). Yet such characteristics are in themselves rather anodyne, because they do not lead to discriminating decisions about how the accounting is actually to be done: they might be characterised as virtuous but not concrete (see also Christensen, 2010). In spite of this lack of guidance, however, the Framework proceeds directly (from its Objective and Qualitative Characteristics) to a proposed 'solution', which takes the form of a conceptual analysis of criteria for recognition, along with a (limited) discussion of measurement and a (very limited) discussion of presentation.

What the Framework lacks is a characterisation of the primary problem that accounting should be designed to solve. Why, in principle, are users helped to understand 'the amount, timing and uncertainty of (the prospects for) future net cash inflows' by means of the structuring of economic resources and claims into a balance sheet, alongside the presentation of changes in those resources and claims in the income statement? Or, more succinctly, what is the design principle for accruals? The question is 'answered' only in the Framework's vague assertion that 'accrual accounting ... is important because information about a reporting entity's economic resources and claims and changes in its economic resources and claims during a period provides a better basis for assessing the entity's past and future performance than information solely about cash receipts and payments during that period' (para. 1.17). But why, and how, are accruals 'better'? The Framework does not answer this question, except to note the truism that accruals-based earnings result from a change in net assets, and that 'the reporting entity has increased its available economic resources, and thus its capacity for generating net cash inflows through its operations ... (and) may also indicate the extent to which events such as changes in market prices or interest rates have ... (affected) the entity's ability to generate net cash inflows' (para. 1.18).

In seeking to address this limited conceptualisation of accruals in the Framework, a starting point is provided by the residual income model (Preinreich, 1938; Edwards and

Bell, 1961; Peasnell, 1982; Ohlson, 1995). This model is of course simply a formal restatement of the discounted cash flow model, and so does not in itself demonstrate that the mechanism of accrual accounting is useful. It does, however, make transparent a formal relationship between book value, earnings and valuation. In turn, this suggests (even though it does not in itself demonstrate) that accrual accounting—the balance sheet and the income statement—can potentially serve as a ‘technology’ that captures and structures data in order to provide useful information. The task for the IASB, viewed through this lens, is to define, recognise, measure and present the articulated variables book value and earnings (and their components), in such a way that they are of greatest benefit to investors in making decisions under uncertainty.

4. Accrual Accounting under Uncertainty

Accruals are useful in accounting, even in the absence of uncertainty. There might, for example, be a known invoice outstanding for services received and consumed, for which an accrual provides better information about the (certain) current obligation and the (certain) recognised expense. This is useful in itself for contracting and stewardship purposes and, in situations where the expense is expected to recur, the (certain) accrual *also* becomes useful in forecasting the flow of (uncertain) future economic benefits. Critically, however, what characterises the decision-making context of investors is that they face uncertainty in making investments, and so they seek information not just about expected economic benefits but also about the uncertainty that those expected economic benefits may not actually be achieved. And, of course, it is the uncertainty that makes the investors’ task challenging. We will argue in this section that uncertainty is the principal driver of the need for accrual accounting in meeting investors’ (forward-looking) information needs, and that it therefore shapes the appropriate criteria for recognition, measurement and presentation. Stated more strongly, the primary role of financial accounting is to shed light with respect to the problem of uncertainty, and explicit acknowledgement of this role is therefore needed in the Framework to guide conceptual thinking.³

To illustrate this argument, consider that, in the (hypothetical) absence of uncertainty, there would be no reason not to capitalise all expected (net) inflows on the balance sheet,

³ The Conceptual Framework of the Accounting Standards Board of Japan introduces uncertainty and its resolution with a concept of *release from risk of investments*, which is proposed to distinguish net income (realized) from comprehensive income (that includes unrealized gains and losses); Saito and Fukui (2016).

giving a price-book value ratio (PBV) ratio equal to one.⁴ Net assets and expected earnings would be two sides of the same coin, with the former being equal to the latter capitalised at the risk-free rate, meaning that there would be no prior claim of either a balance-sheet approach or an income-statement approach to financial reporting. Also, expected (*ex ante*) earnings would always be equal to achieved (*ex post*) earnings, and there would be no unexpected ('windfall') gains or losses of the type that would cause divergence between earnings as the maximum distributable amount while maintaining capital (Hicks' first definition) and earnings of the period that can expect to be sustained (Hicks' second definition); Hicks (1946), Bromwich et al., (2010).⁵ In short, investors' information needs would be trivial, as would be the analysis required of financial statements.

Once uncertainty is introduced, however, the picture changes dramatically. Economic value of the entity could not be reliably 'known' to the accountant at the balance sheet date, and therefore it could not be communicated in the form of recognised (net) assets in the balance sheet. This is acknowledged in the Framework (para 1.7), which states that 'general purpose financial reports are not designed to show the value of an entity.' Arguably, the underlying (and unstated) assumption here is that it would be unhelpful to investors to recognise all assets with non-zero expected economic benefits, including those where the probability of any benefit is low. The propensity for "water in the balance sheet" would be high, while the income statement would be swamped by repeated impairments as investments with low-probability outcomes *ex ante* proved so *ex post*; ascertaining profitability from the income statement would thus be frustrated. This approach would have the feature that the outcome to uncertainty would be revealed in due course, because an asset that failed to yield the expected economic benefit would be written off. But that accounting would report on the uncertainty *ex post*, taking investors by surprise. In practice, investors seek instead an *ex ante* indication of the uncertainty they face, because investment decisions are not made *ex post*. A list of assets on the balance sheet that fails to discriminate with respect to uncertainty does not satisfy this *ex ante* demand.

⁴ There may be some subjective questions of allocation, in so far as there exist synergies between individual assets, but there would be no reason for the sum of the carrying amounts of all assets not to equal economic value.

⁵ Hicks' definitions would nevertheless still lead to different measures of earnings if there is a change in expected interest rates.

This limitation of the balance sheet under uncertainty opens up an informationally useful role for the income statement. As the residual income model illustrates, if book value does not capture the economic value of the entity (i.e. PBV is different from one), then earnings become value-relevant, in that the 'missing' value is explained by the present value of expected residual income. It is therefore the presence of uncertainty that enables a role for the income statement in providing flow-based, value-relevant information, to supplement the stock-based information that is (incompletely) provided by the balance sheet.⁶ In this regard, the income statement reports earnings from (the joint use of) both recognized and unrecognized assets (Basu and Waymire, 2008; Penman, 2009), and earnings provide the basis for extrapolating what is known about the past into a capitalised estimate of an unknown future. There is, however, no discussion of this issue in the Framework, and not surprisingly therefore, there is also no conceptualisation of the information-usefulness of the income statement. While the Framework does refer to the notion of 'predictive value' (para. 27), and thereby to some relationship between a 'known' past and an uncertain future, the reference is too vague to be insightful.

This capitalization of earnings is, however, problematic under conditions of uncertainty. This is because currently-incurred resource outflows cannot be amortised via the accrual mechanism in a way that corresponds periodically to future resource inflows, for the simple reason that the amount and timing of those inflows is uncertain. This impossibility of matching (and the inevitability of mismatching) is the underlying weakness in calls for an 'income-statement approach', as an alternative to the balance-sheet approach adopted by the IASB (Storey and Storey, 1998). In effect, an income-statement approach amounts to willing a solution by denying the problem. 'Perfect matching' is desirable as the basis for valuation under uncertainty, and it gives the Price-Earnings (PE) ratio its surest practical foundation (Black, 1980), yet it is unachievable for precisely the reasons why it is desirable, namely that it exists only in the absence of uncertainty (Solomons, 1961).

This discussion suggests a conundrum, a Catch 22, which is that perfectly matched earnings can be known only in a setting where they do not need to be known, while such earnings become unambiguously useful only in a setting where they cannot be known (Beaver and Demski, 1979). Yet this would be to state the problem in stark terms, with reference to the impossibility of *perfect* matching. We will argue that addressing the

⁶ The absence of progress on the Financial Statement Presentation project is evidence of this conceptual blind spot, as is the Framework's neglect of definitions of income and expenses (Barker, 2010). See Penman (2016) for a financial statement design that embeds some of the ideas in this paper.

conundrum requires acknowledging that imperfection is unavoidable, while identifying that its consequences can nevertheless be minimised. Our approach acknowledges the decision-usefulness arising from the articulation of the balance sheet with the income statement. In contrast, the Framework's approach, which is discussed in the next section, is to address uncertainty in the context of balance-sheet recognition and measurement only. We argue that this approach is incomplete, because it does not consider the inevitable mismatching under uncertainty that corrupts information in the income statement. Not least, while all accruals can be described as being motivated by what happens in the reporting period, the Framework does not develop this periodicity, implicitly treating income statement accruals as by-products of recognition and measurement decisions made at specific points in time.

5. Uncertainty in the Framework

The Framework explicitly discusses uncertainty with respect to the recognition and measurement of (net) assets. In addition, however, we will argue in this section that the definition of (net) assets also incorporates an important, *implicit* acknowledgement of the role of uncertainty in accounting. This latter, unacknowledged role is important, yet also 'incomplete'.⁷

With respect to recognition, the Framework identifies both *existence uncertainty*, defined simply as 'uncertainty about whether an asset or a liability exists,' and *outcome uncertainty*, defined as 'uncertainty about the amount or timing of any inflow or outflow of economic benefits that will ultimately result from an asset or liability'. Existence and outcome uncertainty can both be understood as relating to the amount and timing of expected economic benefits and, without loss of insight for the purposes of this paper, they can be combined; we use the term *fundamental uncertainty* for this combined concept. With respect to measurement, meanwhile, the Framework defines 'measurement uncertainty' as 'uncertainty that arises when the result of applying a measurement basis is imprecise and can be determined only with a range.'⁸

Uncertainty is also implicit in the Framework's definition of an asset. An asset is defined as 'a present economic resource controlled by the entity as a result of past events,' where

⁷ We note that the Framework does not make the conventional distinction between 'risk' and 'uncertainty', where the former is concerned with an expected distribution of payoffs (with knowledge of the underlying 'system') and the latter with a future that is fundamentally unknown (Knight, 1921).

⁸ With respect to 'measurement uncertainty', the Framework attempts to draw a line (though somewhat vaguely), applying a test of 'relevance' for whether 'measurement uncertainty is high' (para. 2.13).

an 'economic resource' is in turn defined as 'a right that is capable of producing economic benefits' (para 4.5). This definition requires the establishment of control based upon past events, thus excluding recognition based on future events. This is important. The definition is constraining because it makes the requirement of expected economic benefits necessary, yet not sufficient, for recognition. These expected economic benefits have variance around them under conditions of uncertainty.⁹ In principle, this need not constrain their recognition on the balance sheet—they could simply be estimated. Yet the Framework differentiates what is 'known' to be an asset from what *might* be an asset based on expected future transactions and events that are as yet uncertain. It is only in this context that it makes sense to ask the questions demanded by the Framework's definitions, because only then are we unsure what the answers might be: 'does the entity have control?' and 'was there a past event?' and 'are there likely to be economic benefits?' An acknowledgement of uncertainty is therefore *implicit* in the definition of an asset.

The example of revenue recognition provides an important illustration of this accommodation of uncertainty. Under IFRS 15, potential assets that arise from (uncertain) future transactions with customers are excluded from recognition until the asset definition can be satisfied. Revenue recognition thereby typically books an asset only when there is low variance around the expected economic benefits (with the recognition of a receivable, discounted to cash-equivalent for non-collection and with any liability booked for unfulfilled firm performance).¹⁰ While IFRS 15 invokes the criterion of "satisfying a performance obligation", it also requires the consideration to be received as "highly probable": revenue is recognised when both earned and either realized or realizable.

While this language, along with notions of completing an earnings process, differs from ours, we essentially see it as capturing the same economic idea, that the resolution of uncertainty about the receipt of cash is paramount. For example, IFRS 15 requires that a near certain cash flow is not recognised if there is no control, yet if 'control' is seen as a proxy for uncertainty resolution, for being 'sure' that the claim belongs to the entity, then this apparent difference is really just a manifestation of finding a rule that works in practice to implement the underlying idea. Likewise, a performance obligation might be satisfied, and so revenue recognised, yet there might be variable consideration, and so a high

⁹ We use variance to refer to all moments of the distribution, not just the second moment (the "variance").

¹⁰ See AAA (2011) for an alternative revenue recognition scheme explicitly built around the resolution of uncertainty.

dispersion of possible outcomes. Such cases are unavoidable in practice, as accounting standards have to 'draw a line somewhere'. The accounting says: prospective customers may well suggest expected cash flows (economic benefits), but this expectation is not booked as an asset because of uncertainty around the expectation.¹¹ Accordingly, while investors may anticipate future revenues and price the firm accordingly, the accounting informs that those anticipated revenues are uncertain—the anticipated customers may not show up. Or, in the words of the Framework, the rights and control of an asset as a result of a past event have not been established.¹² With respect to revenue, therefore, both the Framework and IFRS 15 can be viewed as *implicitly* acknowledging uncertainty in recognition and measurement. This provides useful information because it enables investors to 'know' the economic inflows of the reporting period. An implication is that IFRS 15 enables an income-statement approach, albeit as the by-product of a balance-sheet approach. Revenues are recognized under a principle that connects (albeit implicitly) the income statement to uncertainty resolution. For the forward-looking investor, facing uncertainty, this periodic reporting of (earned) revenue enables extrapolation of a future flow based upon the evidence of a past flow.

6. Expense Recognition under Uncertainty

In comparison with revenue, however, it is more difficult to argue that the Framework's balance-sheet approach provides similarly useful income-statement information for expenditures incurred to generate future (uncertain and unrealized) revenues. This is because of the inevitable mismatching that arises under uncertainty and the associated corruption of earnings information that results.

The expected benefits from an entity's expenditures are uncertain in timing and amount, including those relating to, for example, inventory, fixed assets, research and development investments, brand-building investment, supply chain development, investment in product distribution systems, start-up costs and software costs. This is a problem that increases to the extent that expenditures are associated with longer time periods, as for example when the life of plant and equipment is longer than the revenue cycle. The question here is which expenditures should qualify as resources controlled by the entity.¹³ While

¹¹ The delay in recognizing expected revenues that is implicit in the Framework definition of an asset amounts to a prescription for (conservative) accounting whereby PBV is greater than one (Barker, 2015).

¹² Penman (2016) connects accounting under uncertainty to the required return for investing, and reports on empirical research where features of accounting that involve delayed recognition of earnings are associated with risk to investment outcomes and with average stock returns that are a reward for that risk.

¹³ See, for example, the basis for conclusions in FAS2, SFAS141 and 141R.

inventory, fixed assets, and some development and software costs appear on the balance sheet in satisfaction of the asset definition, many of the other investments satisfy the requirement of expected economic benefits yet are expensed immediately. Consistent with the argument in Brouwer et al. (2015), it is largely left to individual standards to draw the line, without the benefit of explicit guidance from the Framework. In IAS 38, for example, the IASB applied the criterion of “probable future economic benefits” to distinguish between “research” (which is expensed) and “development” (which is capitalized and amortized).¹⁴ As argued above, this incompleteness in the Framework arises because the central role of uncertainty is not acknowledged explicitly; while the need to ask which resources are ‘controlled’ arises only under conditions of uncertainty, it is only at the standards-level, rather than in the Framework, that the consequences of this need are ‘thought through’.

A further complication is that the value of assets need not be realised in use (as is implied by the process of amortisation) but instead value can be realised in exchange. This distinction matters for uncertainty resolution because, from the reporting entity’s perspective, if there are deep and liquid (‘active’) markets available in which to trade the asset, then fundamental uncertainty can be transferred to a different entity by means of a market transaction. Such a case can be said to demonstrate low *realization uncertainty*. To illustrate, there might be an active market for an asset (such as a derivative financial instrument) which has a high outcome uncertainty, in which case the entity has a certain payoff if the value of the asset is realized immediately, notwithstanding an uncertain payoff if the asset is instead held. This realization uncertainty is similar to, though not quite the same as, the IASB’s notion of measurement uncertainty. The difference is that it is explicitly concerned with the existence of markets as mechanisms for certain realization (Beaver and Demski, 1979), as opposed to being concerned with the (closely related) concept of precision in applying a measurement basis.¹⁵ To illustrate the difference, an amortization schedule for a financial asset could be applied precisely, even if there is no active market in which the asset could be sold for a certain amount; this would be low measurement uncertainty but high realization uncertainty.

It follows from this discussion that accounting for assets is concerned with two types of uncertainty. The first is fundamental and resolved only over time, with the implication for

¹⁴ In justifying the immediate expensing of R&D in FASB Statement No. 2, which predates the conceptual framework, the FASB focused on the “uncertainty of future benefits.”

¹⁵ A setting of perfect and complete markets is equivalent, in terms of economic opportunities and implications for accounting, to a setting of fundamental certainty (Beaver and Demski, 1979).

accounting being one of periodicity in reporting on unresolved uncertainties, while the second concerns the availability of market opportunities at a given point in time, whereby uncertainty can be resolved 'at will'. Accordingly, if accrual accounting is to be designed to convey useful information to investors with respect to uncertainty, and if the articulation of the balance sheet and income statement is to be structured accordingly, then these two types of uncertainty ought to play an explicit role within the Framework.

Our proposal in this regard, which consistent with the Framework's 'enhancing' qualitative characteristic of 'verifiability', is that assets should be recognized with respect to a threshold for uncertainty, defined with a view to the mismatching consequences in the income statement.¹⁶ Specifically, we propose the following extension to the existing definition of an asset, whereby recognition revolves around uncertainty about either the appropriate amortization schedule or the scope for realization through existing markets:

Assets (as defined in the Framework) should not be recognised unless either an evidence-based amortization scheme can be established ex ante, or else realization uncertainty is low, such that the consequent mismatching is unlikely to affect the income statement significantly.

Under this proposal, recognised assets in the balance sheet can generally be relied upon to have a significant probability of yielding economic benefits. The investor sees inventory and non-current assets, for example and concludes: this is a firm that can produce revenues. That contrasts with a start-up with no inventory or non-current assets but large research expenditures in the income statement. Amounts are not capitalised if they have a significant probability of reversing, thereby avoiding value being recognised *ex ante* but then failing to be realized. This avoids surprising the investor with negative shocks to earnings forecasts. It also provides a balance sheet that creditors can lend against (which Jensen and Meckling (1976) argue is the original source of demand for financial statements). And in cases where it leads to limited asset recognition, a higher PBV ratio conveys that economic value is not expected to be achieved through the relatively certain recovery of amounts previously invested. It is these 'missing' intangible assets around which there is considerable uncertainty, which the accountant is communicating.

Moreover, and importantly, this approach is designed to take an income-statement dimension into consideration. One can think of the issue as determining the likelihood of

¹⁶ Cade, Ikuta-Mendoza, and Koonce (2016) report on two experiments where individuals use a probability threshold to determine whether an asset or liability exists.

ex post asset write-downs (or, indeed, write-ups), that result from *ex post* amortization differing from the *ex ante* scheme. That likelihood might be ascertained from the possibility of not realizing revenues (or, in the case of realization uncertainty, that the carrying amount of the asset is not recovered directly). So, for example, and as implemented in IAS 38, that likelihood might be considered to be too high for Research but acceptable for either Development or for software that has passed the “technical feasibility” point. Amortization uncertainty might alternatively be established from the likelihood of a sizable gain or loss on de-recognition; that gain or loss should be small (*ex ante*) relative to revenues over the life of the asset. Write-downs and de-recognition gains and losses (both of which are ‘remeasurements’) reveal uncertainty *ex post* rather than *ex ante*, and so a desirable property of financial accounting is that the likelihood of write-downs (or write-ups) is minimized, reducing the *ex post* reporting of uncertainty. As with amounts recognised on the balance sheet, there is income-statement consistency here with the Framework’s ‘enhancing’ qualitative characteristic of ‘verifiability’, which is implied in any given reporting period by requiring amortization to be evidence-based and/or requiring low uncertainty with respect to realizable gains or losses.

An implication, for items meeting the definition of an asset but failing to meet the criterion above, is that write-downs are taken *ex ante*, with immediate expensing arising from non-recognition. That means mismatching in the current period, but a mismatching that conveys uncertainty *ex ante*, with lower earnings and lower asset recognition. In much the same way as uncertain prospective revenues are omitted from the balance sheet, so too are expenditures for which revenue outcomes are deemed to be uncertain. Accordingly, while mismatching is inevitable—it must occur, either *ex ante* or *ex post*—the mismatching is employed in an informative way.

In addition, this approach to accounting for uncertainty provides useful income-statement information for stewardship purposes. Revenue recognition under IFRS 15 requires the management to consummate sales in order to be rewarded. Plans, prospects, and promises are not enough; to be rewarded, the manager must see the plan through to realization, whereby uncertainty is resolved and, after matching expenses, profitably so. As sales are realized on the resolution of uncertainty, this locates the issue of managing under uncertainty with the manager. Similarly, with the non-recognition of assets above threshold uncertainty, the management is not likely to be rewarded on earnings that later will be erased with a (“big-bath”) write-down of assets of uncertain value (after the manager leaves).

This discussion of matching and of earnings invites consideration of income-statement presentation, a subject on which the Framework is essentially silent. Specifically, and as we explore in the next section, the application of the above balance-sheet approach leads naturally to what can be regarded as different types of matching (or mismatching), and categorising these types provides an insight into income statement presentation. In turn, as we will argue, in Section 8, further insights then follow with respect to balance sheet measurement. The common theme is that, in contrast with the approach in the Framework, our approach is motivated by consideration of the information-relevance of *both* the balance sheet and the income statement, rather than the balance sheet alone.

7. Income Statement Presentation

We apply the analysis above to propose a classification within the income statement that distinguishes five different levels of matching – Types 1 through 5 – which we describe as, respectively, revenue matching, *ex ante* matching, *ex post* matching, mismatching and incomplete matching (see Figure 1). Importantly, what we categorise here under the heading of ‘matching’ is actually a spectrum, ranging from ‘perfect’ matching to a failure of matching. Our approach does not advocate ‘more matching’, any more than it cautions ‘look out for mismatching!’ Our purpose is to understand the extent to which matching takes place, and to thereby better understand the informational properties of the income statement.

Figure 1 – Income Statement Presentation

Revenue	100	
Cost of Goods Sold	25	These are Type 1: revenues are reported as earned, and expenses are matched to revenues
Gross Profit	75	
Overheads	40	These are Type 2: expenses are matched to time periods
Underlying Profit	35	
Mismatched Expenses	10	These are Type 4: resource outflows expensed in the absence of either evidence-based amortisation or reasonable certainty of realization
Profit before Gains and Losses	25	
Gains and Losses	5	These are Type 3: gains and losses that are matched <i>ex post</i> to time periods, including impairment losses; all Type 3 are remeasurements, either at fair value (or fair value less costs to sell), or write-downs to value-in-use
Profit before Interest and Tax	20	
Financing Expenses (Income)	8	(Amounts here represent the separation of financing from operating activities)
Profit before Tax	12	
Tax	3	
Profit (Loss)	9	
Other Comprehensive Income	2	These are Type 5: gains and losses that are matched <i>ex post</i> to time periods, yet that are ‘incomplete’, either because they are hedged against future amounts that have not yet been recognised, or else they net to zero over time
Comprehensive Income	7	

We define Type 1 – revenue matching – to be expenses that can be described as ‘directly recoverable’. The archetype here is cost of goods sold or, more broadly, any cost which can be described as directly incurred with respect to revenue earned, and which conventionally (and in Figure 1) sits within Gross Profit. For example, the initial cost to a retailer of acquiring a product is unambiguously and uniquely associated with the revenue generated from the sale of that product; indeed, under IFRS 15 it is transfer over control of the asset that satisfies the performance obligation and triggers revenue recognition.¹⁷ Similarly, Type 1 matching includes the acquisition cost associated with the realized profit from securities held in a trading book. Amortization that allocates on a production basis (as with mine acquisition and development costs allocated to periods on the basis of percentage of known reserves extracted) also fits this level, though with more uncertainty (about known reserves and future prices).

We define Type 2 – *ex ante* matching – to be expenses that can be matched, *ex ante*, to periods of time. They cannot be matched directly to units of revenue, even though there remains an implicit presumption that they are nevertheless recoverable, and are in some sense incurred in order ultimately to generate revenue. The archetype here is a fixed overhead, such as rent, although the category generalises to all indirect overheads, such as selling and general administration costs, and also depreciation of tangible non-current assets and amortisation of certain intangible assets (an example would be the acquisition cost of a patent right with a known patent term). The defining feature of Type 2 is that the period over which expenses are incurred is known with a reasonable degree of certainty. While there is not direct matching with revenue, there can nevertheless be a matching with reporting period.¹⁸ In some cases, such as depreciation, there remains an inevitable degree of arbitrariness about the specific time periods into which the overall costs of the underlying asset are allocated (see Thomas, 1975), yet there is nevertheless an estimable useful life, which makes possible an *ex ante* expense schedule, that is unlikely to be subject to significant *ex post* adjustment. The requirement to be evidence-based requires that, over the observable life of the asset, the amortization scheme has in the past largely worked (without significant *ex post* mismatching adjustments). From an investors’

¹⁷ The example is less obvious for a manufacturer, where the cost of goods sold includes an allocation of overheads; this component is ‘assumed’ in practice to be Type 1, though actually fits the Type 2 definition (Horngren and Sorter, 1961). Indeed, the same problem also applies, to a lesser degree, for a retailer, for example in the case of transportation costs for goods acquired as a bundle. Such allocation problems are of course unavoidable.

¹⁸ The matching does not necessarily imply straight-line amortization, though an alternative that matches to varying revenues over periods would be appropriate only if that variation could be assessed *ex ante* with little uncertainty. Economic depreciation would be ruled out on this basis, because it is a method that presupposes knowledge of the inflow of economic benefits over time.

perspective, there is an allocation of cost that facilitates flow-based valuation, while there is also sufficient confidence that the amounts charged in any one period are not exposed to significant uncertainty.

Broadly, Types 1 and 2 together form the basis for flow-based valuation, because they allocate with a reasonable degree of confidence income earned and expense incurred during the reporting period; they are the basis of forecasts of both potentially realizable earnings that correspond broadly to 'textbook' descriptions of recurring, operating amounts. The investor can, of course, add any information (outside the financial statements) that indicates that revenues and/or profit margins will be different in the future. Importantly, however, this section of the income statement has no accounting feature for which the investor has to adjust in forecasting future earnings and cash flows, meaning that the Gross Profit and Underlying Profit sections of the income statement provide a sound anchor for forecasting, giving substance to the Framework's concept of 'predictive value'. In this regard, a high ratio of stock price to Underlying Profit indicates (all else equal) that the higher future earnings indicated by the price are uncertain. Similar to the notion in Edwards and Bell (1961) of 'subjective goodwill', whereby expected economic gains are realised over time in the accounting, the evolution of the income statement (and of the corresponding balance-sheet) revolves around uncertainty and its resolution over time. Ratios of stock price to Underlying Profit converge to the mean over time as the expected profits are realized (in the denominator) or as prices (in the numerator) fall because prospective revenues (and the earning from those revenues) are not realized.

Our Type 3 category – *ex post* matching – refers to expenses (and also income) that can be matched to any given reporting period, yet where the matching can only be evidence-based *ex post*. The archetype here is gains or losses on mark-to-market financial instruments, where the defining feature is that year-end market prices (and hence reported gains or losses) can be known at the end of the reporting period but not at the beginning. These are items that exhibit outcome uncertainty but not realization uncertainty. In this context, it is instructive to note the absence in the Framework of a distinction between 'gains and losses' and other forms of 'income or expense', even though such a distinction in terminology is widely used in practice, including in IFRS itself. For items measured with the same degree of confidence, this distinction does not arise in a pure balance-sheet approach, because in that context it matters only whether there is a change in the carrying amount of (net) assets, and not whether the change was, in the language used here, either Type 2 or Type 3. Yet the balance sheet carrying amounts are

in effect of different types, because an evidence-based *ex ante* amortisation schedule is possible for Type 2 but not for Type 3. This distinction matters to investors. In the cases of Type 2, expenses are recurring and appropriately valued via a multiple in a flow-based valuation. In contrast, Type 3 fair value gains and losses, and also impairment losses, correspond to a valuation 'shock' that pertains only to the current period and (except for an expected return component) are zero in expectation and attract a valuation multiple of one (Barker, 2004). This point is well established in the literature and is the basis of Hicks' (1946, p.179) argument that 'theoretical confusion between income *ex post* and *ex ante* corresponds to practical confusion between income and capital.' In Figure 1, the reporting of fair-value gains and losses, along with impairment losses, in a separate section of the income statement ensures that the net income flows in the other sections are not corrupted by value changes. Moreover, the Type 3 income-statement data themselves have a distinctive role because, in the case of fair value gains that remain unrealized, the corresponding value of assets in the balance sheet remains uncertain. Income statement data in this context can be used by investors to verify (or challenge) a valuation that is already given, as opposed to estimating (via extrapolation of Underlying Profit) an uncertain business value that is by design excluded from the financial statements.

Types 2 and 3 are 'connected' through the possibility of asset impairments, whereby there are unexpected losses on assets for which an evidence-based amortization scheme had hitherto been confidently asserted. These losses correspond to the notion of conditional conservatism (Mora and Walker, 2015). We propose that such impairments (and also associated reversals) should be classified as Type 3, because their informational properties are similar to items matched *ex post*. These items inform on how reliably Underlying Profit is being measured; for example, an impairment of PPE informs that the evidence-based *ex ante* matching was in the event more uncertain than had previously been assumed by management (see also Prakash and Sinha, 2013). The impairment losses thereby add meaning to the Framework's concept of 'confirmatory value', because they inform about the success of the accountant's initial typing of expenditures to minimize *ex post* mismatching, thereby informing *ex post* about the entity's capacity to report evidence-based Underlying Profit (Lambert, 2010).

In applying these classifications, there is a unit of account issue to consider. One might make the determination of Types 2 and 3 on a pooled (portfolio) basis for a class of assets such that the average *ex post* matching error is small (as seems to be the case with plant

and equipment historically). The ability to identify an asset component in an expenditure (disentangled from an expense component where there is no future benefit expected) would also enter the recognition assessment. To restrain judgment, the “evidence-based” requirement means that an accepted amortization scheme must be consistent with evidence from the time-series and cross-sectional history that such a scheme does not typically result in substantial remeasurement. In this regard, the embraced amortization scheme that passes the threshold governs the gradual derecognition over time, subject to *ex post* write-downs (now minimized) if, based on new evidence, the threshold is no longer satisfied.¹⁹

Our Type 4 – mismatching – refers to expenses that cannot be matched, either *ex ante* or *ex post*. These are uncertain investments expensed *ex ante*. The archetype here is research expenditure, where recoverability cannot be assumed to take place over a reliably estimable period of time, if at all. Similar examples include expenditure on brands, organisational know-how, and other such intangibles. The point here is that, because of underlying uncertainty – both fundamental and realization - concerning the recoverability of the outflow of economic resources, there is no basis on which an evidence-based amortization scheme could be established, either *ex ante* or *ex post*.²⁰ There is therefore little guarantee of avoiding subsequent mismatching that would significantly affect the income statement. Given this inevitable mismatching, assets should not be recognised, because to do so would be to give ‘false’ reassurance with respect to uncertainty. There is instead information conveyed by the absence of recognition. All of the mismatching under this approach takes place in the reporting period in which the outflow of economic resources takes place. In other words, expenditure is immediately expensed, because of uncertainty about establishing conditions that satisfy Types 1, 2 or 3. It should be noted

¹⁹ We see the approach applying to liabilities as well as assets, though we see it being applied more conservatively in the case of liabilities. The issue arises with excessive liabilities for restructuring charges which result in subsequent mismatching when those excessive charges are “bled back” to the income statement. This includes both credits that do not meet the definition of a liability and also changes in estimates, which happen all the time (warranties, asset retirement obligations). FASB Statement No. 146 applies criteria to restrict restructuring charges and the consequent mismatching. Uncertainty is the issue with which IAS 37 grapples; a “more likely than not” criterion is applied. In FASB Statement No. 5, the “probable” criterion for the recognition of the liability reduces the (probable) subsequent mismatching if there were non-recognition, as does the “remote” criterion where a likely subsequent gain is booked to the income statement if the liability is recognized. For pension accounting, a liability from an accumulated pension obligation (ABO) has less uncertainty around it than that the projected benefit obligation (PBO).

²⁰ Note that the issue here is not the difficulty of measuring the expenditure on R&D but instead the uncertainty of outcome/recoverability. Our conclusion is in line with current accounting practice, but we note that neither IASB for FASB has substantially reviewed the accounting treatment of R&D since the introduction of their conceptual frameworks. Open questions in this context include: the analogue for R&D of full cost vs successful efforts; the nature of the ‘resource’ created by R&D spend; the extent to which the resource is ‘controlled’; and the whether the issue of measurement (including boundaries of what to measure) are insurmountable.

that, while matching fails here, the concept of matching remains useful, because it matters to investors to understand when matching has *not* been applied, with separate categorisation signalling that Type 4 comprises a different type of 'expense'. Compared with current reporting, the separate reporting of Type 4 brings some clarity to the broad category of Selling, General and Administrative Expenses (SG&A) which is often a significant percentage of revenue but which currently corrupts operating profit margins by including mismatched, uncertain investment expenditures. In contrast, the Mismatched Expenses section in Figure 1 separates out these components, bringing greater clarity to the notion of unconditional conservatism (Mora and Walker, 2015). And while earnings are penalized by non-recognized 'assets', the effect is to inform investors that an added uncertain gamble has now been imposed. There is, of course, subjectivity here in the distinction made 'through the eyes of management' between Types 2 and 4, and the implicit assumption here is that suppressing that distinction is less informative than revealing it.

From a stewardship perspective, when Underlying Profit from realized revenues is low relative to the unrecognized and uncertain investments in the Mismatched Expenses, the manager has yet to perform in realizing income from uncertain investing; a Board can reward him or her accordingly. One might argue that this might provide a disincentive for managers to make investments with uncertain payoffs. But these investments are transparent in the mismatching section of the income statement. A successful manager will deliver strong earnings in this section because there is no amortization from uncertain investments already expensed. A low ratio of the expenses reported within Profit before Gains and Losses to those reported under Mismatched Expenses indicates a relatively significant (uncertain) investment in the prospect of future earnings and, all else equal, a relatively high reinvestment of the earned amounts that have been reliably matched. This holds notwithstanding that, in steady state, the total in Profit before Gains and Losses is not affected by the separate presentation of mismatched expenses; R&D expense and earnings are the same under a policy of expensing R&D or capitalizing and amortising it, provided that there is no growth in R&D expenditures (Beaver 1998; Lev et al., 2005), albeit that the same is not true for return on equity (Kay, 1976). In this case, the separate categorisation of Type 4 communicates that, while the firm is reporting earnings from

current revenues due to past investment, the firm is adding more investment that bears on the uncertainty about revenues in the future.²¹

In general, and unavoidably in the presence of these Type 4 expenses, more subjective judgement is now required on the part on investors, because the valuation implications of greater uncertainty around these expenditures are relatively difficult to determine.²² There is also, of course, a lack of information resulting from the unconditional conservatism operating here, and therefore the presence of uncertain, 'off-balance-sheet assets'. There is therefore a case for requiring additional, ongoing non-financial reporting disclosures, rather than reporting only the (one-off) Type 4 expense.

A further point concerning Type 4 is that its introduction would have implications for the presentation of the cash flow statement. In current practice, cash flows relating to recognized, non-current assets appear in the investing section of the statement, while cash flows relating to unrecognized assets appear in the cash flow from operations section. Thus, the investing section is not cash incurred on investments, but rather cash incurred on investments that the accountant has chosen to recognize. Cash flow from operations (CFO) is therefore a misnomer—it includes investments in unrecognized assets such as brand building and research. CFO is in fact an accrual measure, reflecting the accountant's recognition decision for assets. Through the introduction of Type 4, however, a change in presentation is suggested: report CFO as the cash flow from the Underlying Profit section of the income statement—the net cash from trading with customers—with the investment section involving the cash flow from all investments, both those recognized in the balance sheet and those recognized in the mismatching section.²³

Our final category – Type 5 – concerns certain income and expenses that currently qualify to be included in 'other comprehensive income' (OCI). We address only certain OCI items because, under IFRS, it would be implausible to derive a *general* conceptualisation of items that are currently excluded from the income statement and instead included in OCI.

²¹ Penman and Zhang (2016a) connect conservative accounting (similar to that proposed here) to the required return for investing (the cost of capital) in an asset pricing framework. Penman and Zhang (2016b) shows empirically that this accounting provides information about uncertainty (risk) of outcomes, and that risk is priced with higher average stock returns.

²² Changes in estimates would also be included in this section. These are more likely for long-lived assets and liabilities where initial estimates are more uncertain. Changes in estimates for long lived items (for example, changes in actuarial assumptions for pension liabilities) could be recognized in this section but then amortized into matched expenses over a long period.

²³ A weaker prescription would dispense with the distinction between CFO and investing cash flows altogether. The cash flow statement would then have just two sections, cash from all operating activities (including investment) and cash from financing activities. The former is free cash flow, a familiar measure to investors.

This is because the items included in OCI are an eclectic mix, with each having characteristics in common with income and expenses excluded from OCI. We argue, however, that there are two OCI cases which together constitute a conceptually distinct type of matching. The first of these is cash flow hedges where, prior to recognition of the hedged item, recognition in the income statement of gains or losses on the hedging instrument would result in a mismatching. In this case, presentation within OCI signals the incomplete matching, and avoids ‘corruption’ of amounts reported within Profit. For similar reasons, fair value changes on an entity’s own debt, resulting from changes in credit risk, might also be included in OCI; again, the gains or losses here can be said to correspond to unrecognised changes in the value of assets. Meanwhile, the second type of OCI item would arise in cases where there is inherent informational conflict between measurement for the purposes of the balance sheet in contrast with the income statement, and where IFRS therefore requires a different measurement attribute for each financial statement (Horton and Macve, 1996). Here, again, OCI can ‘accommodate’ the resulting mismatch, avoiding unwanted distortion in the income statement. To illustrate, if financial instruments are measured at fair value on the balance sheet, but with income or expense at amortised cost in the income statement, then the residual fair value change – which nets to zero over the life of the financial instrument – can be taken through OCI, in effect reconciling the periodic matching determined by amortisation (which is Type 2) with that implied by fair value changes (which would be Type 3).²⁴

We have described Types 1-5 as a discriminating, exhaustive categorisation for presenting the income-statement consequences of balance-sheet recognition. However, the analysis is so far incomplete because consideration needs to be given not just to recognition but also to measurement. In the next section, we therefore explore implications for the balance sheet.

8. Implications for the Balance Sheet

The Framework broadly proposes two measurement bases, historical cost and current value, with the latter being either current exit price (“fair value”) or value-in-use.²⁵ The Framework is rather vague, however, on which measurement attribute should be applied in which circumstance. To illustrate, the IASB adopts (adjusted) historical cost for inventory in IAS 2, a choice between (adjusted) historical cost and fair value for property,

²⁴ Neither of these OCI items necessarily implies reclassification (recycling).

²⁵ While current input price is mentioned in paragraph 6.18, it does not get much traction in the Framework.

plant and equipment in IAS 16, and fair value for agricultural produce in IAS 41, yet the conceptual foundations for these alternative choices of measurement attributes cannot be found in the Framework. We argue here, however, that progress on this conceptualisation can be achieved by applying the matching typology outlined above.

Consider first Type 1, which is characterised by an evidence-based matching process, involving balance-sheet recognition of directly recoverable amounts and corresponding expensing as and when revenue is recognised. It follows that the appropriate measurement attribute is cost, because this enables the value-added to be reported on a matched basis, and to thereby be a foundation for flow-based valuation. In contrast, measurement at fair value would represent a mismatching, and hence a loss of value-relevant information, because of the disconnection in timing between marking-to-market and recognising revenue. In this regard, the rationale for cost is not just as a default, as a measurement attribute to be applied when fair value is difficult to determine. Instead, the underlying insight is that cost differs from fair value because of the ability of firms to add value (Penman, 2007 and Nissim and Penman, 2008). But that added value is uncertain, and just as IFRS 15 rules out booking added value for uncertain expected revenue, so too value is not added to the cost of inventory while the uncertainty remains. A consequence is that the accounting reveals the gains from uncertainties resolved during the reporting period, in the form of a margin that captures the economic distinction between the initial, uncertain cost of the investment in the inventory and the later, certain outcome when that investment in inventory is realised at fair value. And while 'cost' here is in practice likely to be historical, the argument extends to current replacement cost (i.e. a current entry value, rather than a fair (exit) value), in which case holding gains would ideally be identified separately in order that value added might be more effectively communicated (Edwards and Bell, 1961; Macve, 2015).

Much the same argument can be made for Type 2. It was argued above that, because the period over which Type 2 expenses are incurred is known with a reasonable degree of certainty, flow-based valuation is enhanced by means of an approximate matching. Here again, the matching of revenue to cost is important, because it is the value added in the reporting period that underpins estimates of the same in future periods.

While Types 1 and 2 are similar, there are also important differences. With Type 1, there is uncertainty over whether the asset might be exchanged for an alternative asset (receivables or cash) with (most likely) a higher value, while Type 2 costs might more insightfully be viewed as sunk, rather than directly recoverable, and it is the evidence-

based (hence, relatively certain) allocation of expenses that makes them 'belong' to the reporting period, whether or not revenue is also recognised in the same period. While the Framework does not make a distinction between 'variable' and 'fixed' costs, this (consistent with Horngren and Sorter, 1961) is in substance the difference that separates Type 1 from Type 2. Yet the core similarity of Types 1 and 2 is the emphasis on the income statement over the balance sheet in terms of the provision of value-relevant information. In the case of Type 1, for example, the balance sheet amounts of working capital are in themselves likely to comprise a relatively modest component of enterprise value, while in sharp contrast the corresponding income statement variables – revenue and cost of goods sold – are of central importance for the valuation of the entity. It is this income-statement emphasis which makes cost the appropriate balance-sheet measurement attribute.

The relative roles of the financial statements are reversed, however, in the case of Type 3, where the defining feature is low realization uncertainty, such that market prices (and hence reported gains or losses) can be known at any given point in time. Here, valuation is grounded in the balance sheet, making fair value the appropriate measurement attribute. Particularly pertinent is the case of stand-alone securities, such as shares and bonds, that are independent of the entity's operating activities, and for which asset pricing theory shows that the value of a portfolio is always equal to the sum of the values of the component securities, where security betas are determinable and aggregate to the portfolio beta.²⁶

In the case of Type 4, measurement issues do not arise directly because they are pre-empted by the absence of recognition. While this makes Type 4 itself straightforward, its accounting treatment is not inconsequential, because it indirectly affects consideration of measurement attributes for items that are recognised, and so affects also the meaning of Types 1, 2 and 3. A basic notion of business is to combine assets and liabilities (with other factors of production) under an entrepreneurial plan to create value for investors. Business value is thus determined by expected cash flows and the uncertainty around those expectations for the whole portfolio of (recognized and unrecognized) assets and liabilities. The portfolio property described above for Type 3 no longer holds: portfolio value cannot be determined by summing the values of individual assets and liabilities. An implication is that the notion of (entity-specific) value-in-use is misconceived for joint-use assets, as paragraph 6.45 in the Framework recognizes, and there is no accounting

²⁶ Debt can be conceptualized similarly if separable from the operating net assets of the business.

solution to the allocation problem when assets contribute jointly to portfolio value (Thomas, 1969). For example, if inventory is a recognized asset but the promotion asset (brand) is not, one cannot ascribe a value to the inventory if it is dependent on the uncertainty about the promotion campaign. Fair value is the alternative measure of current exit value, yet it presents a potential solution only if traded fair values represent the contribution of the recognized assets or liabilities to the joint value of assets and liabilities in the entity. Yet that is a very unlikely situation: different firms use assets for different purposes, combining them (often uniquely) in carrying out businesses under various degrees of uncertainty. For example, the current exit price for a warranty liability—the amount paid to transfer the liability under paragraph 6.21—is the amount charged by the acquirer to service the liability, but that may be different from the in-house cost to the entity with their expertise with their own products; the entity “adds value” (with less uncertainty) with a comparative advantage to service warranties on its own products that no outsider can replicate.

The non-recognition of Type 4 assets therefore reinforces the case for the recognition of Types 1 and 2 at cost rather than value, because the presence of uncertainty renders the concept of an individual asset value problematic, while also making cost a useful informational input in understanding the resolution of uncertainty. This reasoning also suggests that the application of Type 3 should be primarily for separable assets with stand-alone value where those values sum to portfolio value, which are likely to be ‘non-operating’ for most businesses.²⁷

9. Discussion: implications and limitations

We have argued that the role of uncertainty is implicit in the recognition criteria in the Framework and typically consistent with the recognition and measurement requirements of individual standards. In this regard, our approach can be understood as an explicit conceptualisation of what is ‘there already’, meaning that it might not actually lead to many changes in practice. For example, IAS 2 requires (cost-based) recognition of inventory on the balance sheet, notwithstanding that the Framework itself does not offer guidance to

²⁷ Moreover, Type 3 can be problematic in practice even when there are separable assets with stand-alone values. In finance theory, financial assets and liabilities are separable from operating business assets and liabilities under specific assumptions (Modigliani and Miller, 1958), and usually separable from each other. However, just as cost-based accounting requires income statement matching to be effective, fair values require balance sheet matching: fair valuing debt liabilities that yield a gain on deterioration of the debt price, for example, must be matched with a fair valuing of the assets whose value deterioration gives rise to the additional credit risk that re-values the debt. In short, the fair value accounting for debt and operating assets is not separable. However, fair valuing assets that typically do not have stand-alone value in operations is not feasible.

this end. And while cost of goods sold and gross profit are widely reported in practice, neither is required, nor even defined, in IAS 1. In this example, our approach conceptualises practice, without seeking to change it. We identify that the conceptual omission in IAS 1 and IAS 2, which follows from the corresponding absence of conceptual guidance in the Framework, is that Type 1 represents an evidence-based matching process, involving balance-sheet recognition of recoverable amount and corresponding expensing as and when revenue is recognised. This informs decision-making under uncertainty, by means of determining ‘certain’ added value of the reporting period as an input in forecasting ‘uncertain’ added value in future periods.²⁸

While our emphasis on uncertainty has focused on the omission of the matching concept from the Framework, our approach also points to other ‘traditional’ accounting concepts, which the Framework’s balance-sheet approach is predisposed to overlook. These include the related concepts of stewardship, prudence and historical cost accounting, which all have in common being firmly-established in accounting practice, the products of a long evolution (Basu and Waymire, 2006 and 2010). We have seen already, in Sections 7 and 8, respectively, that our income statement presentation provides useful stewardship information and that (historical) cost finds conceptual support as a measurement attribute. Additionally, and consistent with the ‘hazard concept’ of an investor’s asymmetric concern for the risk of loss (Sunder, 2015),²⁹ our asset recognition criteria serve to delay the recognition of uncertain economic gains, giving our proposed balance sheet the hallmark of conservatism (Basu, 1997; Guay and Verrechia, 2006) and, as with matching, making our approach differ from the Framework but not from accounting practice in IFRS (Barker and McGeachin, 2015). Meanwhile, and as described in Section 7, the proposed approach in our income statement is activated on the resolution of uncertainty our matching typology makes transparent the consequences of conservatism for the income statement: gains or losses arising from conditional conservatism are reported as Type 3, and early loss recognition from unconditional conservatism as Type 4, while there is no explicit conservatism in Types 1, 2 or 5.

A further, somewhat curious, omission from the Framework is any discussion of agency, which probably helps to explain the ‘framing’ in which both stewardship and prudence are

²⁸ We note that the logic of double-entry book-keeping does not imply balance sheet primacy (Basu and Waymire, 2010). Nor does the adoption of a balance sheet approach make the matching concept redundant.

²⁹ Sunder (2015) identifies that there is often conflation of the ‘hazard concept’ of uncertainty with the ‘dispersion concept’, where the latter captures higher risk associated with greater variation in outcomes. He notes that the case for historical cost accounting and for prudence is stronger if the concept of hazard is brought to the fore, while a concern for dispersion is more naturally associated with the use of fair value.

downplayed (Mora and Walker, 2015). There is arguably an insufficiently positive approach adopted in the Framework, which would imply a need (where appropriate) to extract, conceptualise and formalise existing accounting practice (Hirshleifer and Teoh, 2009; Basu, 2015). Instead, and starting from the balance sheet, the Framework seeks to build concepts from 'first principles'. In so doing, it fails to capture 'traditional' concepts that have evolved in practice and that, as we have argued, lend themselves to a conceptual approach that combines the balance sheet with the income statement. As a result, the IASB has constructed an avoidable and unhelpful conflict between what it perceives to be a 'brave new world' of a (conceptually grounded) balance-sheet approach and an anachronistic, conventional (conceptually flawed) traditional focus on the income statement (O'Brien, 2009).

The discussion in this section has so far addressed omissions in the Framework, the correction of which would increase consistency with accounting practice in IFRS. There are also, however, specific cases – relating mostly to intangible assets, but also to Level 2 and 3 fair values – where our approach points to conceptual inconsistency and trade-off in existing practice. In line with the purpose of a conceptual framework, addressing these inconsistencies would lead to greater conceptual coherence in IFRS.

Consider first the case of purchased intangibles, including goodwill, where our analysis does not support existing accounting practice but instead points to the anomaly between assets that are internally-generated and those that are acquired. To the extent that acquisition does not in itself make the expected economic benefits from an asset any less uncertain, it should not under our proposal affect recognition. The implication is that (consistent with internally-generated goodwill and with some intangible assets under IAS 38), acquired 'assets' should be expensed rather than capitalized. It would be particularly difficult to make a case for capitalizing goodwill, which is neither amenable to evidence-based amortization nor realizable. For other intangibles, there may be additional factors that do make a difference - for example, research programs may typically be acquired when they are relatively mature and certain, while the existence of an acquisition price (or contractual terms) may enable either evidence-based amortization or it may be evidence of reduced realization uncertainty – but these considerations are made explicit in our proposed approach. In general, if any given self-developed intangible does not pass our recognition test, then the very same intangible should not bypass the test (and so be recognised) simply by being acquired.

The argument here can be taken further. Consider the R&D required in the pharmaceutical industry, to create a drug and ultimately bring it to market. Our approach, consistent with IAS 38, treats Research as a Type 4 expense, and the amortisation of (capitalised) Development as Type 2. But if the test for capitalisation is met for Development, then why not also for all of the R&D expenditure incurred to create the drug? If uncertainty becomes resolved for both R and D once the drug has 'reached' market, then why should it matter, in determining whether an asset exists, that in a previous accounting period the Research outflows had been too uncertain to capitalise? Our approach suggests that, in such a case, Type 4 prior period expense should be reversed and capitalized back to the balance sheet, and then amortized with a Type 2 matching. This matching would then report the amount of (net) earnings from the total investment in R&D, in contrast with the extreme mismatching evident in current accounting practice. Effectively, the expensed investment expenditures are then in a conditional suspense account, to be reversed on a successful outcome. Issues of successful efforts versus full costing (of pooled successful and unsuccessful investments) can also be explored as implications of this conceptualisation.

A caveat here is that there is arguably a trade-off between the investment and stewardship objectives in the Framework. Investors may prefer, from a stewardship perspective, that management is made 'accountable' for its acquisitions, by means of recognising the intangibles that it has acquired. Similar (though also more general) reasoning can be applied to the recognition at fair value of Level 2 and Level 3 financial instruments, since it is arguably only Level 1 that satisfies our recognition criterion of low realization uncertainty, and that both other levels are inherently unverifiable (Barker and Schulte, 2017). The trade-off here could arguably be mitigated by means of presentation (and disclosure), for example allowing the recognition of assets that do not meet our recognition criteria, yet categorising these separately on the balance sheet, and likewise presenting value changes in a distinct sub-category within Type 3, Gains and Losses. There is a judgement call to be made here, which is not deductively apparent from the existing Framework, but which is highlighted by our analysis.

In brief summary, we have argued that the balance-sheet approach in the Framework is a good starting point for evaluating issues of recognition and measurement. However, taking into consideration the implications of uncertainty, the balance-sheet approach cannot be executed satisfactorily if the income statement is implicitly treated simply as a by-product. The rejection of an income statement approach defined by matching is understandable,

given the inevitability of mismatching, yet an informative income statement should convey a measure of value added (profit) from sales and that requires some form of matching. A balance-sheet approach for recognizing assets and liabilities under uncertainty resolves this tension for it provides a way to minimize the mismatching and convey information about the uncertainty. The labels, “balance-sheet approach” and “income-statement approach” are in some sense distracting, and have become a controversial issue, yet our “mixed approach” is conceptually more comprehensive, allowing for complementary roles for both primary financial statements. In particular, the approach would have conceptual and practical consequences for the income statement. It would introduce a conceptualisation of the income statement to the Framework, filling a gap that is currently created by the application of a pure balance-sheet approach, and it would change the way that income statement information is presented in practice, which would have practical consequences for the application of accrual accounting in conveying, in the presence of uncertainty, information that is decision-relevant for investment and stewardship decisions.

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