

‘DEPRIVAL VALUE’ VS ‘FAIR VALUE’ MEASUREMENT FOR CONTRACT LIABILITIES IN RESOLVING THE ‘REVENUE RECOGNITION’ CONUNDRUM: TOWARDS A GENERAL SOLUTION

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ABSTRACT: Revenue recognition and measurement can conflict with liability recognition and measurement. We explore here under different market conditions when the two measurement approaches coincide and when they conflict. We demonstrate that the conflict most generally arises over deciding how to treat situations where enterprises expect to earn ‘super-profits’, i.e. profits that cannot be regarded as ‘factor costs’ in the way that ‘interest’ and ‘reward for risk bearing’ may. Moreover, in cases where companies may have invested in building up the necessary intangibles that enable them to achieve these apparent ‘super-profits’ thereafter, current GAAP accounting for those intangibles fails properly to match investment and return. We show that the conceptual conflict is exacerbated by the adoption of ‘fair value’ as the measurement basis for assets and liabilities rather than the theoretically sounder basis of ‘deprival value’ that better reflects the impact of, and rational management response to, varying market conditions. However, while the ‘balance sheet’ liability and the revenue recognition problems (and the problems of income statement presentation) can be resolved by the application of ‘deprival value’ reasoning (subject to accounting for the effects of price changes), this is not sufficient to resolve issues of the appropriate timing of profit recognition. Performance measurement issues still need to be addressed directly. The standard setters’ current ‘revenue recognition’ project will therefore need to consider the whole issue of accounting for intangibles, and more generally the adequacy of a model that identifies ‘comprehensive income’ solely in terms of changes in recognized assets and liabilities.

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I. INTRODUCTION

FASB/IASB (2005, p.9) state that they 'have found their definitions of *liability* insufficiently helpful in distinguishing revenues from liabilities (for example, when payment for products or services is received in advance)'. Recently the Canadian Accounting Standard Board has prepared a discussion paper for the IASB on measurement bases for assets and liabilities on initial recognition (IASB 2005). The ASB's July 2001 discussion paper on *Revenue Recognition* proposed that: 'Where contractual performance is incomplete, revenue should be recognised to the extent that the seller has performed and that performance has resulted in benefit accruing to the customer' (par. 3.3). The ASB 'acknowledged, however, that dealing with incomplete performance is likely to be the biggest single difficulty arising in practice, and that the application of this principle to specific industries will be an important part of the next stage of the project' (fn.36, p.54).¹

One major area where the issues have been very fully explored by IASB and FASB is with regard to insurance contracts. FASB (1999) illustrated the application of 'fair value' (henceforth 'FV' here) to insurance contracts. However, at the stage when the IASB was still hoping to complete a comprehensive standard on insurance contracts in time for the 2005 deadline for adoption by the European Union for all EU listed companies, a joint letter to the IASB from US, German, and Japanese insurance associations (June 11, 2002) objected to the trend in IASB's (2001) insurance Draft Statement of Principles ('DSOP') and related discussions towards, *inter alia*:

- Favouring the 'asset/liability' model as against the 'deferral and matching' model
- Adoption of FV (an exit, settlement value) for insurance policy liabilities
- Consequent recognition of profits at the time contracts are sold rather than wholly over 'the service life of the policy'
- Elimination of the conventional insurance accounting asset of 'deferred acquisition cost' and its amortization.

Also the insurance examples discussed in IASB meetings (before the project was split into 'Phase I' and 'Phase II') had tended to abandon traditional presentations of 'premiums', 'claims' etc. in favour of 'unwind of discount' on, and 'experience variations' from, initial policy liability valuations (cf. Barker, 2004).

In January 2003, the IASB agreed new bases for the development of Phase II which appeared to go against the DSOP's previous acceptance that measures of insurance liabilities based either on FV or an

‘entity specific’ approach (e.g. FASB 2000) would allow recognition of at least some profit on contract inception. The new proposal was that insurers adopt FV (while recognising that absence of sufficient market evidence will often require use of ‘entity specific’ assumptions to estimate FV) but that, in the absence of market evidence to the contrary, contract liabilities should be stated at not less than the amount that would be charged for new contracts with the same terms and length (IASB 2004b).

In similar vein, while FASB’s Appendix A to its *Preliminary Views* (1999) argued for exit FV for insurance liabilities, the FASB’s exposure draft on *Fair Value Measurements* (FASB 2004, para.C23) proposed to continue the current prohibition on recognizing a profit at inception where a derivative instrument is valued by a ‘Level 3’ estimate using significant entity inputs, noting that ‘the Board is addressing related issues in its revenue recognition project’.

Although still adopting an ‘asset/liability’ basis, in more recent developments since May 2005, FASB has changed its approach to revenue recognition from FV and instead proposed an approach which uses an ‘allocation of customer consideration’ as the basis for measuring the obligation to perform under a contract, in part because of concerns about the ‘upfront’ profit recognition pattern that FV might entail. It will be argued below that, while this approach is more consistent with the ‘deprival value / relief value’ approach to liability measurement that we argue for here, it still leaves unresolved the underlying conceptual issues related to profit recognition. Moreover, here the FASB diverged from IASB, which in September 2005 adopted FV as the basis for measuring performance obligations, and thereby revenue recognition.

However, IASB is also now exploring the implications of the ‘allocation of customer consideration’ approach (IASB *Update*, February, 2006). At its April Board meeting, IASB resolved that in the insurance Discussion paper now planned for late 2006 the Board should express a preference for current exit value and that an insurer would not be prohibited from recognising a net gain (i.e. net after acquisition costs) or net loss at the inception of a contract.² Moreover, there should be recognition, on the same basis, of the portion of an intangible ‘customer relationship’ asset³ representing the future premiums that long-term policyholders must pay if they are to retain the right to *guaranteed insurability*—but, in apparent contravention of the normal prohibitions on ‘netting off’ of assets and liabilities, this amount is to be presented as part of the related liability. Also paradoxically, while current exit value is defined as ‘the amount that the insurer would expect to have to pay today to another entity if it transferred all its remaining contractual rights and obligations immediately to that

entity...'. IASB also states that 'in most cases, insurers *cannot* transfer the liabilities to a third party'. At this stage, the Board has not concluded 'whether current exit value is synonymous with fair value' (IASB *Update*, April, 2006).

With regard to fair value measurements, FASB is planning to issue a Statement by June 30th 2006. The current working draft of the Standard makes clear that FV is an 'exit' exchange price. However there is (confusingly) recognition that this price may reflect 'fair value in-use' where market participants (other than just the seller) would consider an asset to be most advantageously used in the manner in which it is currently used, and so is not separable from the asset-group in which it is utilised. Here the FASB seems to be groping towards an element of 'deprival value' reasoning (consideration of the optimal deployment of an existing asset by its owner) without wishing to abandon 'objectivity' by conceding that in certain situations the most relevant value is indeed the owner's own (subjective) 'entity-specific' estimation of its value. It is recognised that there may be a difference between the price at which an entity acquires an asset or liability (an entry price) and its FV (which is an exit price) on initial recognition; and remeasurements to current FV are required at subsequent accounting dates. But no requirements are set out (or guidance given) on how any resulting 'gains' and 'losses' are to be accounted for.

Preparers, auditors, analysts and other users must surely be perplexed by these 'conceptual' twists and turns on the part of the standard setters, which seem to lack any clear underlying theoretical rationale. Much of the time it appears that the differences in approach are imposed by the need to appear to comply with the FASB's and IASB's respective conceptual frameworks (on which the Boards are now attempting to converge, and which may therefore have to be revised in the process). Moreover, while the FASB is approaching a final definition of FV, the extent to which it can successfully be required to be applied in future standards remains controversial (Benston *et al.* 2006) while both the 'revenue recognition' and the 'insurance' projects are adopting other measures of liabilities on which it has not yet been determined whether they also represent FV.

Our paper seeks to provide the needed theoretical rationale. The following section sets out our main argument. We believe this argument to apply generally to all kinds of business contracts, and to illustrate this we take both a simple one-year magazine subscription and a 'short-term' (e.g. non-life) insurance contract. In the subsequent two sections III and IV, we first illustrate this argument with examples of two key market situations and we then discuss insurance contracts specifically. We also

indicate how the argument could be further generalised to long-term contracts with periodic revenue receipts such as long-term (or ‘life’) insurance contracts. We then briefly address the issue of changing prices in section V. Section VI indicates how the main argument could fruitfully be extended. It could give a firmer and clearer theoretical direction to other recent developments in the literature in relation to a non-‘asset/liability’ based approach to income measurement, and to alternative attempts to reconcile ‘deprival value’ vs. ‘fair value’ through redefinition of each. Section VII concludes.

In Appendix A we show both how the two key examples are built up and can be extended, through situations of increasing complexity; and outline some of the alternative solutions that have previously been proposed for accounting for some of these situations and why they are inferior to the approach set out here. We use algebraic formulation throughout for generalisability (the variables being defined in Appendix B). A simple arithmetical illustration of how a possible situation would be accounted for is available from the authors on request.

II. THE ARGUMENT

The focus here is on the relationship between liability measurement and revenue recognition. The paper explores the accounting for the liability on an uncompleted contract’s ‘revenue in advance of costs’. This focus is particularly applicable to accounting by insurers for premium income.

The paper focuses on imaginary companies in two industries—magazine publishing and insurance—to explore how far the problem of accounting for incomplete performance may be generic or industry-specific, and how far there really is a conflict between ‘release of liability’ and ‘revenue earned / performance based’ approaches to revenue recognition and related profit recognition.

The paper builds on many of the ideas in Lennard (2002) and counters the views of Nobes (2003). While Nobes argues for ‘exit’ valuation of liabilities (and corresponding recognition of profit on inception of contracts), Lennard’s essay seeks to justify a ‘deprival value/relief value’ measurement basis as against IASB’s/FASB’s current focus on ‘fair value’ or proxies for it. The difference in emphasis is that our paper aims to provide a more strictly ‘value measurement’ argument, based in alternative market conditions, for why the ‘deferred revenue’ is the relevant relief value of a liability (i.e. the answer to the question: ‘What difference would it make if the contract liability were “removed”?’) whereas Lennard’s paper (e.g. para.25(ii); para.34) still appears to rely more on

arguments as to ‘when is the performance?’. The paper also questions whether Baxter (2003: 13-17) is right to dismiss the idea that liability ‘relief’ values are the mirror of asset ‘deprival’ values.

We advance three main arguments. The first conclusion of our paper (consistent with Lennard’s) is that the asset/liability and deferral/matching approaches may be reconciled via ‘deprival/relief value’ and thereby avoid forcing unconventional revenue and profit recognition patterns.⁴ In this regard it is consistent with the IASB’s initial revised approach to Phase II of the insurance project while adding to the IASB’s (then) simple prohibition on inception-date profit recognition (except where there is convincing market based evidence)—a prohibition which merely shifts the question to ‘Can profit be recognised on Day 2?’ and so on to every other stage of the contract’s life—by suggesting how liabilities should be consistently measured throughout a contract’s life, thereby producing a defensible pattern of profit recognition from its beginning to its end.

However, a more significant, second, conclusion is that adopting deprival/relief value is not sufficient to resolve the issues relating to revenue and profit recognition patterns: those issues still need addressing directly and are primarily related to the recognition and measurement of intangibles, both purchased and internally-generated, whatever the basis adopted for liability measurement. In this regard our paper is more consistent with the approach to insurance profit measurement previously proposed in the IASB’s DSOP (and earlier Insurance Issues Paper), and now apparently reinstated by the Board’s April 2006 decisions. But potentially it completely breaks the link with solely *current* contracts and their performance (i.e. the value-added recognised may in principle also include the value expected from future contracts, as is already conventionally recognised in purchased goodwill).

Thirdly, the examples in this paper also illustrate that it appears unnecessary when adopting a ‘value-based’ approach wholly to abandon traditional styles of income statement presentation—provided one accepts ‘recycling/reclassification’ from previously recognised elements of profit that were based on valuing the expected future revenues and earnings that have now been ‘realised’ through performance.

III. THE EXAMPLES

It is simpler (as in Forfar & Masters, 1999) to focus first on the special case where the interest rate is zero per cent (i.e. to *exclude* interest effects) in order to bring out the more basic issues, which illustrate our three main arguments. Interest effects are considered in the Appendix where they are shown not to alter the main conclusions.

Our focus is on contracts where payment by customers is made in advance of delivery of services,⁵ such as ‘magazine subscription contracts’ and ‘insurance contracts’. Our aim is to demonstrate how far the application of ‘deprival value’ rather than ‘fair value’ reasoning in the measurement of contract liabilities can help to resolve the apparent conflict between ‘asset/liability’ approaches and ‘deferral/matching’ approaches. The examples are based on the following simple assumptions. Revrec is a magazine publisher (and Insrec is a non-life insurer). Revrec receives annual magazine subscriptions in advance on 1 July. Its year end is 31 December. Costs are expected to be y_j per year, incurred evenly with production and distribution (i.e. $\$ \frac{y_j}{12}$ per month j). But Revrec also needs to cover risk, assumed to require an additional risk premium of $\$RP_j$ per year (i.e. the certainty equivalent of expected costs is $\$ \frac{CE_j}{12}$ per month).

$$CE_j = y_j + RP_j \quad (1)$$

What is Revrec’s revenue and profit if all expectations are realised and if:

- a) it charges $\$CE_j$ for a year’s subscription (i.e. $\$ \frac{CE_j}{12}$ per monthly issue) and
- b) $\$CF_j$ (i.e. $\$(\frac{CE_j}{12} + \frac{\xi_j}{12})$ per monthly issue)?

$$CF_j = CE_j + \xi_j = y_j + RP_j + \xi_j \quad (2)$$

Equivalently for Insrec if it charges annual premiums in advance of these same amounts?

The suggested solutions are given in Table I attached (numbered to correspond with those that are their equivalent in the fuller Table II in the Appendix).

Insert Table I about here

Solution for A):

Solution '3' illustrates this key situation of 'perfectly competitive markets': as Revrec/Insrec are charging no more than what is needed to cover all costs including required 'normal profit' (i.e. interest and risk), profit is $\$RP_j = (CE_j - y_j)$ in total if expectations are realised (i.e. interest [$\$0$] and reward for risk bearing [$\$RP_j$]). *Pro rata* 'revenue earned' and 'profit earned' to 31 December are $\$ \frac{CE_j}{2}$ and $\$ \frac{RP_j}{2}$ respectively.⁶

In this case the balance sheet liability at 31 December is unambiguously $\$ \frac{CE_j}{2}$, representing both the consideration that would be charged for the six-months' remaining magazines/insurance and the amount it will cost to perform the remaining half of the contract (including the cost of risk-bearing). It is also the amount a customer would expect to be reimbursed if the contract is cancelled at that point ('cost of release').

Solutions for B):

Solution '4':

Revrec/Insrec are now charging $\$ \frac{\xi}{12}$ per issue/month more than what is needed to cover all costs including 'normal profit' (i.e. interest and risk). So profit is $\$(TP_j)$ in total if expectations are realised (i.e. interest [$\$0$] plus reward for risk bearing [$\$RP_j$] plus 'abnormal profit' [$\$\xi_j$]); *pro rata* 'revenue earned' and 'profit earned' to 31 December would conventionally be $\$(\frac{CF_j}{2})$ and $\$(\frac{TP_j}{2})$ respectively.

$$TP_j = RP_j + \xi_j \quad (3)$$

But is the liability valuation of the contract consistent with this? In this case ('less than perfectly competitive markets') the balance sheet liability at 31 December is potentially one of the following:

- a) $\$(\frac{CF_j}{2})$, representing the consideration that could be charged for the remaining six-months magazines/insurance
- b) $\$\{ \frac{CE_j}{2} = (\frac{y_j}{2} + \frac{RP_j}{2}) \}$, being the amount it will cost to perform the remaining half of the contract (including the cost of risk-bearing).
- c) $\$(\frac{CF_j}{2})$ would also appear to be the amount a customer would expect to be reimbursed if the contract is cancelled at that point ('cost of release').

Clearly Revrec/Insrec would plan to perform rather than cancel the contract as this is the more profitable alternative. Consistent with Lennard's 'relief value' approach, c) does not therefore seem to be a relevant amount on a 'going concern' basis.⁷

If a) is adopted (equivalent to the 'deferred revenue' on a conventional 'matching' approach), revenue and profit for the first 6 months are the conventional $\$ \{ \frac{CF_j}{2} = (\frac{CE_j}{2} + \frac{\xi_j}{2}) \}$ and $\$ (\frac{RP_j}{2} + \frac{\xi_j}{2})$ respectively—with the same to come in the second six months.

However, if b) is adopted, which would appear to be the 'fair value' as defined by standard setters, and the relevant value according to Nobes (2003), profit for the first 6 months would rise to $\$ (\frac{RP_j}{2} + \xi_j)$ {i.e. interest [\$0] plus reward for risk bearing $[\$ \frac{RP_j}{2}]$ plus all of the 'NPV' of the 'abnormal profit' $[\$ \xi_j]$ }—with just $\$ \frac{RP_j}{2}$ normal profit to come in the second six months. Revenue could still be stated at $\$ \{ \frac{CF_j}{2} = (\frac{CE_j}{2} + \frac{\xi_j}{2}) \}$ for each six months: but only if the value of the anticipated further excess revenue (i.e. $\$ \frac{\xi_j}{2}$) is also recognised in the first six months and is then 'recycled'/'reclassified' out again in the second six months in a manner similar to revaluations of 'available for sale' securities which may be recycled/reclassified to profit and loss on realisation (IASB 2006).

Lennard's 'Relief value' is $\$ (\frac{CF_j}{2})$ {i.e. the higher of consideration $[\$ (\frac{CF_j}{2})]$ and the lower of [performance cost $[\$ (\frac{y_j}{2} + \frac{RP_j}{2})]$ and cost of release $[\$ \frac{CF_j}{2} = (\frac{y_j}{2} + \frac{RP_j}{2} + \frac{\xi_j}{2})]$ }. Under what circumstances is it realistic to regard this rather than $\$ (\frac{CE_j}{2})$ as the liability at 31 December?

The key argument in this paper is that one has to ask: What are the market circumstances that can give rise to this situation?

If one presumes that Revrec (and Insrec) are behaving rationally and optimally, they will have already taken on as many such contracts as can be handled while adding to profits—but no more (i.e. they will have equated marginal cost and marginal revenue). Reasons not to take on another contract might include adverse consequences of having to lower the price and/or rising costs (whether operating, financing or organisational) of further expansion, perhaps due to 'indivisibilities' such as the

need to incur major additional investment which will require finding outlets for substantial rather than simply marginal production volume increases. In the case of insurance companies there may be regulatory constraints inhibiting volume expansion through further price cutting. While the precise conditions would need fuller analysis, it is sufficient here to recognise that this will be a common situation.

So, the crucial insight here is that if Revrec (or Insrec) is now at its optimal capacity but it still has 'super-profitable' contracts, then if 'relieved' of one of those current contracts immediately after inception Revrec would seek to use the production capacity now freed up to obtain and fulfil another 'replacement' subscription, for which it could again charge $\$(CF_j)$. In other words it would end up in the same position as before, facing production outlays and risk with an expected cost of $\$(y_j + RP_j)$, but would have received a further $\$\{CF_j = \$(y_j + RP_j + \xi_j)\}$ from the 'replacement' subscriber. Again the equivalent amounts at 31st December would be $\$(y_j + RP_j)/2$ and $\$(\frac{CF_j}{2})$.

The 'entry' value ('consideration') may therefore always be taken as the relevant liability measure, however profitable the contract.

In Table I, solution #4 dv(a) shows the income statement and balance sheet amounts if Revrec uses a 'relief value' measure of its liability, equivalent to deferred revenue throughout as 'relief' would enable the signing of a further profitable contract. This valuation would then naturally lead to balance sheet and income statement figures generally identical to those under the conventional 'revenue recognition' approach.

But even with this higher liability value [i.e. $\$(\frac{CF_j}{2})$], Revrec can still *choose* to report a profit on inception of the contract by valuing the relevant 'inherent goodwill', as in solution #4dv(b). As in other cases, this approach would then require 'recycling' of the initial profit measure as revenues are earned and costs incurred but would not require a wholesale recasting of the income statement from a 'traditional' basis onto a 'valuation' basis. Situations where this 'inherent goodwill' might be more readily accepted would be where there is strong market evidence that the profit estimate on the contract is realistic: e.g. where other companies would be prepared to pay an acquisition cost of up to $\$\xi_j$ to take over Revrec's/Insrec's contract (or pay for 'goodwill' of $\$\xi_j$ to take over the company instead) and thereby still earn a 'normal' profit on the business after charging that acquisition cost/goodwill amortization. Revrec/Insrec could thereby realise the $\$\xi_j$ immediately on inception of the contract. If it

does not wish to actually transfer its business in this way, it could nevertheless ‘mark to market’ and report the value gain accordingly, which would then have to be recycled as a charge against the subsequent conventional reporting of revenues and profits earned.

In the absence of a market for Revrec’s contract, or an actual takeover, it will remain that much harder to estimate the inherent ‘goodwill’ value in the existing contract as a guide to how much ‘up front’ profit on inception it is legitimate to recognise. A result from adopting an ‘asset/liability’ approach that produces an apparently large profit on inception would therefore need to be carefully tested by asking what market conditions make it reasonable to believe that an enterprise such as Revrec is able to successfully charge premium prices that significantly exceed factor cost, and yield a return over and above that required by equity shareholders to compensate for time and risk-bearing. An extremely ‘safe’, conservative view for accounting purposes might be simply to assume that such situations cannot arise (or at least cannot be sustained for long in a competitive economy) and therefore to argue that costs and/or the risk premium must have been underestimated, and provisions for one or more of these should be increased until all initial profit is eliminated, so that all profit has to ‘emerge’ over the life of the contract. The IASB’s April 2006 discussion of insurance contracts reflects this caution. But the problem of determining what a suitable pattern is *within* the contract period will still remain. If the initial, more ‘aggressive’ estimates do turn out to be correct, higher profits will eventually emerge by the end of the contract period than those assumed in fixing the accounting provisions. But when should they be recognised i.e. in our example, how much profit can be recognised by December 31st?

What is happening during the contract period is that the value of an unrecognised intangible (or one that has initially been over-conservatively measured at zero) is being realized. Should it be recognized that imperfectly competitive conditions are present when the contract is initiated or only ‘gradually’ as it is proved that actual costs are indeed less than revenues? Can that be adequately proved before the contract is wholly completed?⁸ Can the ‘risk premium’ be adequately measured: or is the uncertainty in the estimates so great that ‘certainty equivalents’ are themselves little more than guesses and all residual profits (or losses) may better be seen as ‘a reward for bearing uncertainty’ due to the dynamic nature of a modern economy in which technological change, shifting demand, and management action produce markets that are at best in temporary and unstable equilibria?⁹

Without some form of reliable external market benchmark any choice is an ‘incurable allocation’ (i.e. as good as any other, e.g. Thomas, 1977) and wholly conceptual arguments about the nature of assets and liabilities, and about ‘recognition and measurement criteria’, seem unlikely to take us any further forward. A revision to the standard setters’ conceptual framework may acknowledge the problem, but seems unlikely to be able to ‘solve’ it. It would appear that evidence of how relevant markets are behaving is what is needed to guide accounting in different individual situations—the deeper and more mature the market, the stronger the available evidence and the less need to rely on management estimates or on judgements as to whether or not accounting policies adopted are reasonable given the uncertainties involved.¹⁰

The conclusion is therefore that the amount for ‘deferred revenue’ can represent the ‘relief value’ of Revrec’s liability and that ‘deprival value’ reasoning offers a resolution of the conflict between the ‘revenue recognition’ and ‘asset/liability’ approaches to stating balance sheet measures. However, unfortunately this resolution of the balance sheet measurement problem is not sufficient in itself to resolve the issues over profit recognition. Compare valuing assets at replacement cost (equivalent to (depreciated) historical cost until prices change) which would not *ipso facto* preclude recognition of the value of ‘inherent goodwill’ (whether or not identified with particular intangibles such as brands), and therefore potentially of the profitability of investment in the assets ahead of their actual use/consumption. Similarly measurement of contract liabilities at the corresponding ‘relief value’ (here argued to be the equivalent of the ‘deferred revenue’ at least until prices change) would not *ipso facto* preclude recognition of the value of ‘inherent goodwill’, and therefore potentially of the profitability of contracts ahead of their actual full or partial fulfilment (or indeed before their inception). Standard setters clearly need not only to devote attention to clarifying and refining their valuation concepts but also to move beyond regarding ‘fair value’ alone (or even ‘fair value’ and ‘entity specific value’) as an adequate tool for resolving accounting conflicts (e.g. FASB 2004: cf. Barth and Landsman 1995; Horton and Macve 2000).

IV. INSURANCE CONTRACTS

Assume Insrec Inc. issues one-year insurance policies on similar terms to Revrec Inc., so that for a typical policy Insrec receives the year’s premium in advance on July 1st, and expects to pay claims and other related costs of \$ $\frac{y_i}{12}$ at the end of each month, while requiring a risk premium for the uncertainty

inherent in its estimates of $\$ \frac{RP_j}{12}$ per month. Clearly a one-year policy where the policyholder pays in

advance is structurally similar to the magazine subscription case that we have been considering: we merely substitute ‘premiums earned’ for ‘magazine revenue’, and liability to pay any claims arising during the 12 months of cover for the liability to produce and deliver the magazine issues.¹¹

Acquisition costs are normally paid by insurance companies and, under conventional GAAP, are deferred and amortized against premium income. ‘Unearned premiums’ will conventionally be carried as a liability in Insrec’s balance sheet at the December 31st accounting year-end (in the simplest case through simple time-apportionment between accounting periods, or more sophisticatedly by taking account of any variation in the pattern of insurance risk across the policy year) but clearly they will only represent no more than Insrec’s liability to pay the remaining expected claims,¹² together with provision for risk-bearing, in a situation where Insrec’s product is fully competitively priced. As we have seen, if Insrec is able to charge a premium which more than covers all costs that have been or are expected to be incurred, its provision for ‘unearned premiums’ will exceed its estimates for claims and related costs still to arise plus risk premium. It will have an NPV that could be recognised as ‘profit on inception of the contract’ under the asset/liability approach.

So we may legitimately compare Insrec's insurance policy with Revrec's magazine contract. The acknowledgement that financial liabilities such as life insurance policy liabilities or bank deposit liabilities also include some service element (e.g. FASB 1999; IASC 1999, paras. 48-60), and may therefore differ from ‘straightforward’ financial instruments (e.g. IASB, 2004a), does not in itself therefore seem relevant to the conceptual issues (although it may be an acknowledgement that the evidence deemed adequate for making satisfactory liability estimates may thereby differ to some extent).¹³

The new ‘current exit value’ approach favoured by IASB (which seems consistent with FASB’s FV), will generally only produce the same result as practice under current GAAP if insurers face perfectly competitive markets—or are able to treat as policy acquisition costs all investment in brands, reputation etc. that has given them any competitive advantage. In the real world, the substitution represents an implicit decision as to the pattern of reported realization of the insurer’s ‘brand value’ and other intangibles to be adopted. FASB (1999, paras. 166-7) smuggles in the same implicit decision on revenue and profit recognition, which appears inconsistent with current GAAP as found in conventional practice for the ‘magazine subscription’ case.

The analysis can readily be extended to long-term ('life') insurance contracts. In the case of 'single premium' contracts we merely have to extend the period over which the contract is in force with corresponding liability measurements being required at each accounting date. Where premiums are paid annually under 'level term' contracts, policyholders initially pay more than the amount required to cover each year's risk, and in the later stages of the policy pay less than this, which provides them with the economic incentive to continue the contract, and gives rise to a similar accounting problem of how to recognise 'deferred revenue'. So the timing of payment is not crucial to the argument. However, if payment is by instalments, or at or after contract completion, there will be additional complexities of potential credit risk to be considered which we can abstract from where payment is made in full in advance. We do not explore here the additional complexities of 'participating' contracts where policyholders are entitled to share in the 'profits' of the business.

V. CHANGING PRICES

The ASB's discussion paper on *Revenue Recognition* suggests that often an appropriate technique when 'dealing with incomplete contractual performance is to assess the value of benefit that has not yet accrued to a customer' (ASB 2001, para. 3.22, which is consistent with the latest IASB/FASB decision [see again fn.1]). However, inconsistently with deprival value reasoning, it argues that: 'Once again, when making this assessment, it is important that it is based on prices and circumstances that would have prevailed at the time the contract was originally formed; otherwise, *changed prices may distort the allocation of overall revenue from the contract*' (para. 3.23--emphasis added).

If at the year-end conditions have changed such that Revrec (or Insrec) can now charge more for new subscriptions (or policy premiums), while costs have not changed, then both conventional revenue recognition and an asset/liability approach based on the exit value of 'expected cost to perform' will still show the originally expected amounts. But 'relief value' will rise because avoidance of the current obligation would allow entry into a new, replacement contract at the new price. Restatement to the new level would also appear consistent with the IASB's latest approach to the valuation of insurance liabilities for Phase II and with FASB's draft standard on FV measurements.

There is clearly an 'opportunity loss' from being saddled with the current contract (and equivalently an 'opportunity gain' if prices have fallen). But whether the accounts should record any loss or gain as part of 'current earnings' opens up the same arguments as those debated frequently in the past over

whether gains and losses from changes in replacement costs of assets should be recognized in current earnings or presented separately (e.g. as currently under IFRS in the ‘Statement of Recognised Income and Expense’ (‘SORIE’)); and if the latter whether they should then be ‘recycled’ into current earnings in subsequent periods to offset the higher or lower cost (here revenue) amounts then flowing through.¹⁴ It may be noted that not recognizing such revaluation gains and losses, as recommended by ASB (2001), has the same overall net effect on earnings as initial recognition outside earnings coupled with subsequent recycling into earnings.

Where the higher price now being charged reflects the opportunity for Revrec/Insrec to earn a higher margin of profit in the future, it does seem paradoxical to show a loss due to restating the liability at the new higher ‘relief value’ amount. Clearly a satisfactory overall solution also requires restatement of the related intangible for the NPV, which should also be restated upwards too to reflect the additional profit the company could earn at the new prices. Once again, not repricing the liability is tantamount to the implicit recognition of this gain.¹⁵

The repricing issue therefore emphasises the previous argument that revenue and profit recognition need to be considered independently of simply resolving asset and liability measurement issues.

VI. FURTHER DEVELOPMENT

a) Ohlson (2006) argues that investors like to have a natural starting point in the income statement as they try to forecast subsequent periods’ sustainable earnings.¹⁶ The concept of sustainable earnings is consistent with Hicks’s (1946) ‘No. II Income’ which can be described for the case of a firm as the maximum amount of dividends it can pay to the owners of the equity, into infinity. Ohlson argues that producing such maintainable earnings would require that assets and liabilities be derived from income and not *vice versa* (as in his formulation of an ‘accounting principle’ for deriving a period’s closing net operating assets).

However, when interest rates are expected to remain constant, Hicks’s ‘No. II Income’ coincides with Hicks’s (1946) ‘No. I Income’ i.e. the maximum amount of dividends an entity can distribute each period while leaving its capital value intact (as in Ohlson’s ‘steady state’ formulation). The ‘asset/liability’ approach adopted by FASB and IASB measures assets and liabilities and thereby defines income as changes in these and so adopts a *structurally* similar approach to Hicks’s ‘No. I’ concept.¹⁷ Under the assumption of no expected change in the interest rate, the income approach

adopted by standard setters could therefore still produce persistent earnings. However, as illustrated in our argument above (and more analytically in Appendix A), in conditions of imperfect competition an exit value measurement basis cannot produce a maintainable earnings figure, as it forces recognition of the total ‘abnormal profits’ on Day 1. To overcome this problem would require the recognition and capitalization of all future abnormal earnings, on which a sustainable income would then be reported equal to ‘interest on capital’ plus reward for risk bearing. As illustrated under solution 4dv(b) a similar approach would be needed even if ‘deprival/relief value’ is adopted as the basis of measurement.

A more serious problem is that producing sustainable income can be fundamentally unachievable when interest rates are expected to change. Achieving such a goal would require a reconsideration of all aspects of measuring performance and the conceptual framework itself. Moreover, in an environment of changing prices one should consider Hicks’s (1946) ‘No. III Income’ (i.e. sustainable *real* income).

b) Van Zijl and Whittington (2006) attempt to provide a reconciliation between FV and deprival value. They argue that for long-term assets, in the case where net realizable value (‘NRV’) is greater than replacement cost (‘RC’), then the relevant measurement base is NRV instead of deprival value’s (DV) normal RC, with the difference between the two representing the value of a ‘redevelopment opportunity’. This would bring DV closer in line with FV’s exit price. The authors note that while it initially appears that in this situation the entity should continuously sell and replace the asset in question (as it would for inventory) this possibility would seem to be inconsistent with market equilibrium for the prices of long-term assets, so presumably they regard the ‘redevelopment opportunity’ as a ‘one-off’, such that if deprived of the asset the company would be deprived of the opportunity. But if the company cannot restore the original opportunity on deprival, then there is no relevant RC and ‘normal’ DV reasoning would itself arrive at NRV.

The equivalent situation for a liability would be where $RC > NRV$. Van Zijl and Whittington do not discuss liabilities,¹⁸ but the implication of their argument would be that ‘relief’ value here should also be NRV. This situation should not be considered unusual for long-term liabilities, for example insurance companies have long faced such market conditions where they have found it to be preferable that the policyholders cancel their policy instead of continuing to pay premiums, due to the penalty imposed on surrendering the policy early. This penalty lowers NRV and therefore gives rise to a situation where RC (i.e. what can be charged to a new policyholder) is higher. As we have

demonstrated above, the economic logic of optimal action on ‘relief’ leads to valuation at RC (the opportunity to take on an additional profitable contract) and there is no rational basis for modifying the normal relief value logic. This argument further strengthens the view that Van Zijl and Whittington are mistaken in their attempt to reformulate deprival value logic for assets.

VII. CONCLUSION

Will the ‘asset/liability’ approach produce reported earnings patterns of better ‘quality’ than the ‘revenue recognition’ approach? A conflict most generally will appear wherever enterprises expect to earn ‘super’ profits, i.e. profits that cannot be identified as ‘factor costs’ in the way that items such as ‘interest’ and ‘reward for risk bearing’ may. Moreover, in many circumstances, even these elements may not be separately estimable with any reliability from market benchmarks. In other cases, while companies may have invested in building up the necessary intangibles that enable them to achieve apparent ‘super-profits’, current GAAP accounting for these intangibles fails to properly match investment and return.

Deprival value reasoning (in the form of ‘relief value’) does offer a reconciliation of the ‘asset/liability’ approach and the ‘revenue recognition’ approach to the measurement of liabilities. It shows why pursuing solely ‘exit value’ is incorrect in terms of both relevance and economic logic and, unlike the wholly ‘exit value’ liability measurement approaches currently favoured by standard setters (whether ‘fair value’ or some other measure, or the intermediate measure proposed by van Zijl and Whittington, 2006), it does not therefore force the recognition of ‘profit on inception’ of a contract, which has proved to be a major stumbling block in the IASB’s discussion of insurance contracts.

But this balance sheet reconciliation is still insufficient in itself to determine the issue of when profits should be recognised: that requires specific consideration of how performance should be measured, and not just of how it should be presented. It is therefore unfortunate that it is only the latter issue which is the focus of the standard setters’ current project on ‘performance reporting’ (recently relabelled ‘presentation of financial statements’).

Given that the conflict with current GAAP pervades all kinds of business (as acknowledged by the generic ‘revenue recognition’ projects of ASB, IASB and now FASB) it would appear that standard setters will need to consider the whole issue of accounting for intangibles, and the overall adequacy of a model that identifies ‘comprehensive income’ solely in terms of changes in recognized assets and

liabilities (e.g. Macve 1997), before it is likely to make any progress towards resolving the arguments over 'revenue recognition' issues and the appropriate presentation of the corresponding reported performance.

APPENDIX A

A.I. INTRODUCTION

This Appendix extends the discussion of the examples in the main paper, in particular by introducing a positive interest rate. While the interest effect may conventionally be regarded as immaterial for one year contracts, it becomes significant for long-term contracts and we wish to show that our results are in principle generalisable to contracts of any duration. However we do not explore in detail here the additional complexities that arise when interest rates change (cf. Horton & Macve, 2000).

In the following sections we briefly develop various market scenarios¹⁹ and consider where ‘asset/liability’ accounting and ‘deferred revenue’ (or in insurance, ‘unearned premium’) accounting lead us and how and why a ‘conflict’ between the two approaches may appear. Finally we comment on the possibilities for how the apparent conflict may be resolved in each case. The presentations of the examples in Table II also illustrate how, by the use of suitable ‘contra’ entries, traditional presentations of earnings based on matching ‘revenues’ and ‘costs’ can still be utilised even where changes in asset/liability valuations are adopted as the basis of income measurement.

A.II. A SIMPLE EXAMPLE

Insert Table II about here

Assume first that Revrec Inc. faces a fully competitive market and so Revrec has to compete on price and its contract is therefore priced to be just worth undertaking. For the first, very simple scenario, we shall assume neither risk nor time-value of money, and that all costs may be regarded as production costs. Let unit production cost²⁰ per issue of the magazine be $\$ \frac{y_j}{12}$. Assume production costs are incurred at the end of each month and that delivery to customers is then instantaneous and costless.²¹ How much can the publisher charge in a competitive market for a year’s subscription?

Solution 1: Given costs are $\$ \frac{y_j}{12}$ per issue and a year’s subscription covers 12 issues, then the competitive price for a year’s subscription is $\$ y_j$. Assuming the customer has paid $\$ y_j$ in advance, then at December 31st both the ‘unearned revenue’ and ‘liability to produce and deliver 6 more issues’ are

$\$ \frac{y_j}{2}$ and there is no conflict between the ‘deferred revenue’ and the ‘asset/liability’ approach. Profit is revenue earned less cost incurred ($\$ [\frac{y_j}{2} - \frac{y_j}{2}] = \0), the standard result that in long-run equilibrium only factor costs are covered in fully competitive markets (e.g. Katz and Rosen, 1998).

A.III. ‘NORMAL PROFIT’: INTEREST

Conventional microeconomics does however recognise that ‘capital’ must earn its required rate of return and this is as much a ‘cost’ of production as materials, labour, use of equipment, etc. Capital is rewarded both for time between investment and return (‘interest’) and for risk bearing. Continuing for the moment to assume no risk, we nevertheless clearly do need to allow for interest.

Solution 2: Assume interest is $i\%$ per month. Production etc. costs are $\$ \frac{y_j}{12}$ per issue; a year’s subscription covers 12 issues therefore the competitive price for a year’s subscription paid in advance is the amount equivalent in present value to 12 future monthly receipts of $\$ \frac{y_j}{12}$ each, namely $\{PV_{y12,i}$

$$= \frac{y_j}{12} \times \left[\frac{1}{i} - \frac{1}{i \times (1+i)^{12}} \right] = \frac{y_j}{12} \times \alpha_{i,12} \} \text{ (12 monthly receipts for year } j) \text{ —a ‘discount’ of } \$D_{y,12} = (y_j -$$

$PV_{y12,i})$ to the customer for paying annually instead of individually for each instalment as it is delivered. Assuming the customer has therefore initially paid $\$PV_{y12,i}$ on July 1st, then at December 31st the conventional accounting allocation of the revenue under present-day GAAP would be half to each 6-month period, i.e. $\$ \frac{PV_{y12,i}}{2}$, while both the cost to date and the ‘liability to produce and deliver 6

more issues’ appear *prima facie* to be $\$ \frac{y_j}{2}$, indicating a loss of $\$D_{y,12}$ (i.e. making provision now for the loss to come in the second six months).²² However, we do need to recognise the interest effect and then there will still be no conflict between the ‘revenue recognition’ and the ‘asset/liability’ approach.

Earned revenue to December 31st in total is the price of the first six instalments plus interest on the

assets held to date $\$(IntPV_{y,1-6,i} = \sum_1^6 i \times PV_{y_j})$, i.e. $\$ \frac{y_j}{2} + \$IntPV_{y,1-6,i}$, while expenditure is also the

cost of the first six instalments plus interest (i.e. ‘unwind of the discount’ on the liability)²³ to date, i.e.

$\$(\frac{y_j}{2} + \$IntPV_{y,1-6,i})$, which again gives the standard ‘competitive’ result of an overall net income of

zero. As all the finance has been provided by the customer, and there is no risk, the equity owners have contributed nothing and so have properly earned nothing.²⁴ The year-end liability is the remaining obligation to incur the second six months costs of $\$ \frac{y_j}{12}$ per month, which is not $\$ \frac{y_j}{2}$ but the present value $\$PV_{y6,i} = \frac{y_j}{12} \times \alpha_{i,6}$.²⁵ So there is here still no conflict between the ‘asset/liability’ and ‘revenue recognition’ approaches.

A.IV. ‘NORMAL PROFIT’: RISK BEARING

We can make a simplified allowance for risk by assuming that the same magazine price can be charged in a competitive market even when expected production costs per issue are lower by $\$ \frac{Z_j}{12}$, because a risk premium of $\$ \frac{RP_j}{12} = \$ \frac{Z_j}{12}$ per issue is also needed to cover the risk that the costs may turn out to be higher. Equity owners bear this risk and need to be rewarded for it.²⁶ Even without introducing more complicated structure to the example (e.g. stochastic outcomes and the amount of equity capital needed to ensure solvency), it is nevertheless clear that if each magazine issue can be still be sold competitively for what is now equal to $\$ \frac{CE_j}{12}$ and production costs do in fact actually turn out ‘as expected’, i.e. $\$ \frac{y_j}{12}$ per issue (where $\$y_j$ is now lower by $\$Z_j$ than in Example 1), then Revrec will earn $\$RP_j$ profit over a year as its reward for risk bearing. Adding in the interest factor as above, the one-year subscription price is $\$PV_{CE12,i} = \{ \frac{CE_j}{12} \times \alpha_{i,12} \}$.²⁷ How much is the initial liability?

Revrec expects to incur 12 issue costs of $\$ \frac{y_j}{12}$ per month, giving a present value of only $\$PV_{y12,i} = \{ \frac{y_j}{12} \times \alpha_{i,12} \}$, which appears *prima facie* to imply a positive NPV for this activity of $\$NPV_{12,i} = (PV_{CE12,i} - PV_{y12,i})$. But Revrec has not earned a ‘profit on inception of the contract’ as the competitive reward for risk bearing will be ‘earned’ as each issue is successfully produced for only $\$ \frac{y_j}{12}$, so that half of the total (i.e. $\$ \frac{RP_j}{2}$) will be earned by December 31st.

We therefore need to adjust for risk in estimating the initial liability, either by using a ‘risk-adjusted discount rate’ or more straightforwardly here (and as increasingly recommended by accounting standard setters (e.g. see Trott and Upton, 2001; FASB, 2004)), by estimating the ‘certainty equivalents’ of the future cost estimates and discounting these at the risk-free rate.

Solution 3: As the expected cost is $\$ \frac{y_j}{12}$ per issue of the magazine, and given that we have assumed the

risk premium to be $\$ \frac{RP_j}{12}$ per issue, the ‘certainty equivalent’ of the cost of each issue is $\$ \frac{CE_j}{12} =$

$(y_j + RP_j)/12$. Discounting the initial liability to the customer to produce twelve issues therefore

produces the same original $\$PV_{CE12,i} = \{ \frac{CE_j}{12} \times \alpha_{i,12} \}$ and there is no ‘profit on inception’. The $\$PV_{CE12,i}$

could be analysed into a provision for expected costs to be incurred of $\$PV_{y12,i} = \{ \frac{y_j}{12} \times \alpha_{i,12} \}$ and a

provision for risk of $\$PV_{RP12,i} = \{ \frac{RP_j}{12} \times \alpha_{i,12} \}$.

By December 31st, the liability is again down to $\$PV_{CE6,i} = \{ \frac{CE_j}{12} \times \alpha_{i,6} \}$ (comprising a provision

for expected remaining costs to be incurred of $\$PV_{y6,i} = \{ \frac{y_j}{12} \times \alpha_{i,6} \}$ and a provision for remaining risk

of $\$PV_{RP6,i} = \{ \frac{RP_j}{12} \times \alpha_{i,6} \}$. But now we shall have only had to ‘call off’ an amount equal to the

production cost of $\$ \frac{y_j}{12}$ as each of the first six monthly issues was produced. We therefore also need to

recognise a release of the ‘provision for risk’ amounting to $\$ \frac{RP_j}{2}$ for the first six months of the

contract.²⁸ If everything goes to plan in the second six months Revrec will again earn another $\$ \frac{RP_j}{2}$

for risk-bearing in that financial year.

A.V. UNCOMPETITIVE MARKETS: PREMIUM PRICING

So far we have assumed a fully competitive market, where customers regard different magazine titles as perfect substitutes and simply buy the cheapest. But publishers seek to differentiate the

perceived quality of their titles, so that customers will pay a premium price for the ‘masthead’ if people regard a magazine as superior to others. Revrec may thereby be able to earn more than a competitive rate of return. Now the deferral of revenue from advance subscriptions for the months remaining will include an element representing deferral of recognition of the realization of the value of the corresponding ‘intangible’ (the ‘masthead’) that is included in the price charged in the up-front subscription payment.

If we build on our previous example let us suppose Revrec can charge a ‘premium’ price of $\$(\frac{CE_j}{12} + \frac{\xi_j}{12} = \frac{CF_j}{12})$ per issue, against the expected costs of $\$\frac{y_j}{12}$ per issue and allowance for risk of $\$\frac{RP_j}{12}$. Expected profit over the contract is now $\$(RP_j + \xi_j = TP_j)$ or $(CE_j + \xi_j - y_j = CF_j - y_j)$. With the same interest cost of $i\%$ per month, and making the same allowance for risk, the net present value (‘NPV’) from undertaking the contract is the present value of the 12 monthly ‘super-profits’ of $\$\frac{\xi_j}{12}$, i.e. $\$PV_{\xi_{12,i}} = (\frac{\xi_j}{12} \times \alpha_{i,12})$.

If the customer bought the 12 issues of the magazine as separate monthly purchases, Revrec would make profits (including reward for risk bearing) of $\$(\frac{TP_j}{12})$ per month, totalling $\$(\frac{TP_j}{2})$ up to December 31st, and another $\$(\frac{TP_j}{2})$ in the first half of the next financial year. The discounted price charged to the customer who pays in advance for a year’s supply of the magazines is now the present value of 12 instalments i.e. $\$PV_{CF_{12,i}} = \{\frac{CF_j}{12} \times \alpha_{i,12}\}$. At inception this is the ‘deferred revenue’, while the (risk-adjusted) liability for future costs is still only $\$PV_{CE_{12,i}} = \{\frac{CE_j}{12} \times \alpha_{i,12}\}$. So now a difference has appeared between the ‘asset/liability’ approach and the ‘deferred revenue approach’ whereby the former appears to suggest recognition of a profit on inception of $\$PV_{\xi_{12,i}} = \{\frac{\xi_j}{12} \times \alpha_{i,12}\}$, i.e. the NPV of the contract.

Correspondingly, if we look at the position at the accounting year-end, half way through the contract (and still assuming outcomes in line with expectations), the ‘deferred revenue’ then would

now be the present value of the remaining 6 instalments of $\$(\frac{CF_j}{12})$, i.e. $SPV_{CF6,i} = \{\frac{CF_j}{12} \times \alpha_{i,6}\}$ while

the (risk-adjusted) liability would now be down to $SPV_{CE6,i} = \{\frac{CE_j}{12} \times \alpha_{i,6}\}$. So if we adopted the

‘deferred revenue approach’ we would still carry an ‘excess provision’ of $\$[PV_{CF6,i} - PV_{CE6,i}]$ at

December 31st (i.e. the present value then of the remaining 6 monthly ‘super-profits’ of $\$\frac{\xi_j}{12}$).

Total profits over the life of the contract increase from $\$RP_j$ (the reward for risk bearing) to $\$(TP_j)$ (i.e.

including the ‘super-profits’ of $\$\frac{\xi_j}{12}$ per issue). How much should be reported in each half-year

accounting period?

Tentative solution 4a: Under the ‘deferred revenue approach’ profits will therefore total $\$(\frac{TP_j}{2})$ in the

first six-months ($\$\frac{RP_j}{2}$ for release from risk and $\$\frac{\xi_j}{2}$ ‘super profits’) and $\$(\frac{TP_j}{2})$ in the second six

months, again a total of $\$(RP_j + \xi_j)$.²⁹

Tentative solution 4b: Under the ‘asset/liability’ approach, if we initially take all the $SPV_{\xi_{12,i}} = \{\frac{\xi_j}{12} \times$

$\alpha_{i,12}\}$ ‘profit on contract inception’ into the first six-months’ reported earnings, there will then be

further earnings for that period of $\$\frac{RP_j}{2}$ (the reward for risk bearing in that period), giving a total of

$\$(PV_{\xi_{12,i}} + \frac{RP_j}{2})$ and leaving a further $\$\frac{RP_j}{2}$ to be earned similarly in the second six-months of the

contract. Total earnings over the contract life will be $\$(PV_{\xi_{12,i}} + RP_j)$. Note however that these

calculations are based on assuming that the initial profit on inception is distributed immediately, with

only the remaining ‘normal’ profits ($\$\frac{RP_j}{12}$ per month) distributed monthly as before. If the initial

profit is *recognised* immediately, but is only *distributed* in the same pattern as under the ‘deferred

revenue’ approach (i.e. an extra $\$\frac{\xi_j}{12}$ each month), Revrec will earn interest in the same way as before.

The undistributed NPV amount, net of distributions subsequently made monthly during the period, will

then be down to $\$PV_{\xi 6,i} = \{ \frac{\xi}{12} \times \alpha_{i,6} \}$ by December 31st. However, as the liability initially is only

$\$PV_{CE12,i} = \{ \frac{CE_j}{12} \times \alpha_{i,12} \}$ (and is down to $\$PV_{CE6,i} = \{ \frac{CE_j}{12} \times \alpha_{i,6} \}$ by 31st December), 'unwind of the

discount' will be lower than in the corresponding 'deferred revenue' accounts, giving further reported net earnings in the first six months of $\$IntPV_{\xi,1-6,i}$ and in the second six months of $\$IntPV_{\xi,7-12,i}$. Total earnings over the life of the contract will then again be $[(RP_j + PV_{\xi 12,i}) + IntPV_{\xi,1-12,i}] = \(TP_j) , split

$\$(\frac{RP_j}{2} + PV_{\xi 12,i} + IntPV_{\xi,1-6,i})$ to the first six months and $\$(\frac{RP_j}{2} + IntPV_{\xi,7-12,i})$ to the second six months.³⁰

So in this situation we appear to have no clear '*Solution 4*'. The asset/liability approach apparently heavily 'front-loads' the total profit into the first accounting period (as favoured by Nobes, 2003) as compared to the 'deferred revenue' approach, familiar from most present-day GAAP, which allocates equal amounts to each sub-period.

A.VI. CHOOSING A PATTERN OF PROFIT RECOGNITION

We must first note that, in these examples, the 'problem' only relates to how to report the 'super-profits'. Both accounting approaches report 'normal' profits (i.e. interest and reward for risk) on the same pattern. By what criteria should standard setters judge the appropriate pattern for reporting the 'super-profits'?

Solution 5 (a 'market' solution). If Revrec's contract were fully comparable to other contracts for which there is a good market, one would expect other publishers to be willing to pay up to $\$PV_{\xi 12,i} =$

$\{ \frac{\xi}{12} \times \alpha_{i,12} \}$ on July 1st to take over Revrec's new contract. At this price expected super-profit to the

acquirer will be zero, but the acquirer (who has taken over the risk) will expect to earn $\$ \frac{RP_j}{12}$ profit

per month as a reward for risk-bearing. Overall profit will only be $\$RP_j$ as the cost of acquisition will

have to be amortized against the extra revenue of $\$ \frac{\xi}{12}$ per issue (which has a present value of $\$PV_{\xi 12,i}$,

equal to the cost of acquiring the contract). By selling the right to the contract immediately on

inception Revrec could therefore realise the pattern of profit implied by the 'asset/liability' approach:

and if the market for such contracts is deep enough, it may therefore be regarded as legitimate for Revrev to ‘mark to market’ its contract even if it does not actually transfer it, and report the $\$PV_{\xi_{12,i}}$ initial profit at the date of inception, and only the remainder of the $\$(RP_j + \xi_j)$ thereafter as risk is released.

An alternative, but equivalent³¹ way of looking at the outcome is to say that the ‘fair value’ (as apparently defined in FASB, 2004; 2006) of Revrec’s contract liability is only $\$PV_{CE_{12,i}} = \left\{ \frac{CE_j}{12} \times \alpha_{i,12} \right\}$ as this is the amount it would have to pay another publisher to take over the contract: it would therefore be able to keep $\$PV_{\xi_{12,i}}$ out of the original subscription received.³²

Solution 6 (an ‘M&A’ solution). There is a takeover market for corporate enterprises as well as for their underlying businesses. In a well-informed and competitive takeover market an acquirer should be willing to pay up to $\$PV_{\xi_{12,i}}$ to acquire Revrec on July 1st. The acquirer will then receive profits totalling $\$(RP_j + \xi_j)$, but will have to amortize its acquisition cost against these, leaving it with post-acquisition net profits of only $\$RP_j$, reflecting the ‘normal’ reward for the underlying business risks taken over.³³

The amount paid for the acquisition of Revrec Inc. will however be likely to take into account not only the inherent profitability of existing contracts but also expectations of similar profits from future contracts. If Revrec enjoys a market advantage that gives it ‘super-profits’, the key question from the point of view of the acquirer is ‘how long will the advantage last’? It may be protected by some registration of a trademark for a number of years, or may represent only a short-lived ‘first-mover’ advantage over competitors (see e.g. Ohlson, 1995), or, at the other extreme, some market barrier that is expected to be maintained virtually permanently (e.g. due to regulatory requirements for entry to the industry, as perhaps in the case of insurance companies).

The amount paid for this ‘goodwill’ will therefore reflect more than the ‘super-profits’ inherent simply in the current contract. In itself this is not problematic as, if expectations are fulfilled, the goodwill's cost will be able to be amortized over the successive cohorts of ‘super-profitable’ contracts.³⁴ But it does make it more problematic to identify, simply by referring to the price at which ‘similar’ M&A deals occur, how much ‘super-profit’ can be identified *ex ante* wholly with current contracts in force.³⁵

Solution 7 The internal rate of return. One solution that is commonly suggested is to eliminate the recognition of any profit at inception (e.g. Kolschbach 2002)³⁶. One way to do this is to adjust the

estimate of the required rate of return so as to eliminate the NPV of the contract. Profit will then emerge as the earning of the ‘internal rate of return’ (‘IRR’) or ‘effective interest rate’ on the initial investment. In our example, the rate of return that equates the customer’s initial deposit to the future costs/risk releases to be incurred by Revrec is clearly not only lower than $i\%$ per month, $i^- \%$ per month, or $[(1 + i^-)^{12} - 1] \%$ per annum but here, paradoxically, is in fact *negative* (as it only requires Revrec to pay a total of $\$y_j$ to supply the customer with magazines, against an initial purchase price received of $\$PV_{CF12,i} = \{ \frac{CF_j}{12} \times \alpha_{i,12} \}$, i.e the sum of the *undiscounted* future cash outflows is less than the initial price received).³⁷ This is therefore much cheaper than borrowing $\$PV_{CF12,i}$ at the market rate of interest, which would require repayment with interest at $i\%$ per month, e.g. by 12 instalments of $\$(\frac{CF_j}{12})$ totalling $\$(CE_j + \xi_j)$. Revrec thereby gains $\$(CF_j - y_j)$ which, yields the total profit of $\$(RP_j + \xi_j)$ over the contract’s life. It effectively *earns* interest on borrowing from its customers (it is borrowing at a *negative* interest rate of $i^- \%$ per month) as well as investing at $i\%$ per month. The profit split by this method would be $\$[IntPV_{CF,1-6,i} - IntPV_{CE,1-6,i^-} + \frac{RP_j}{2}]$ to the first 6 months to December 31st and $\$[IntPV_{CF,7-12,i} - IntPV_{CE,7-12,i^-} + \frac{RP_j}{2}]$ to the second 6 months (more conservative than the ‘asset/liability’ method as no ‘profit on inception’ is recognised, but here less conservative than the conventional ‘deferred revenue’ method as, in this example, more overall return is earned in the first six months while the balance of the outstanding customer liability is larger). $\$A_j$ and $\$L_j$ are the corresponding amounts of asset and liability which in the beginning are equal to $\$PV_{CF12,i}$.

The objection remains that using the IRR is no more than a ‘fix’ to avoid any ‘instant’ recognition of profit. In addition it produces balance sheet amounts at December 31st that are hard to understand. The ‘liability’ balance at this date (calculated using the IRR) will be $\$PV_{CE6,i^-}$, being neither the ‘deferred revenue’ of $\$PV_{CF6,i}$ nor the risk-adjusted liability for future costs of $\$PV_{CE6,i}$.³⁸ It therefore produces figures that cannot be interpreted either in the way that current GAAP figures can, or in the way that ‘conceptual framework’ liabilities may be understood. Its main advantage is that the showing of a rate of return consistently higher than the cost of capital is a widely understood way of indicating that ‘super-profits’ are being made. But it is just one of many possible ways of ‘spreading’ the total

expected contract income between the two accounting periods, and is not demonstrably superior on conceptual grounds alone.³⁹

A.VII. ‘DEPRIVAL VALUE’ REASONING AND ‘DEFERRED REVENUE’

In the ‘uncompetitive’ setting, on inception Revrec has received $\$(PV_{CF12,i} = \{ \frac{CF_j}{12} \times \alpha_{i,12} \})$ while facing an obligation costing $\$PV_{CE12,i}$. We have argued above that the difference (the NPV of the contract) might be regarded as a ‘profit on inception’ (if not already recognised before then in ‘goodwill’ or other intangibles).⁴⁰ The corresponding amounts at 31st December are $\$PV_{CF6,i} = \{ \frac{CF_j}{12} \times \alpha_{i,6} \})$ and $\$PV_{CE6,i}$.

The relevant liability exit values ($\$PV_{CE12,i}$ initially and $\$PV_{CE6,i}$ at 31st December), represent in each case either what Revrec would now have to pay another publisher to take over the contract—the mirror of an asset’s ‘NRV’—or the outlays etc. it expects to incur in fulfilling the contract itself—the mirror of an asset’s ‘value in use’. If however the profitability is due to Revrec’s expectation that it is more efficient than other publishers (the present value of whose expected costs is anything up to $\$PV_{CF12,i}$ (or $\$PV_{CF6,i}$ by December 31st)) then there will be a divergence between ‘NRV’ and ‘value in use’ (as reflected in the IASB/FASB concept of ‘entity specific value’). Other publishers could not afford to take it over at only $\$PV_{CE12,i}$ (or $\$PV_{CE6,i}$). But nor would Revrec have any reason to dispose of the contract by paying a higher consideration: it would retain it and plan to realise the benefit of its comparative advantage as a cost-efficient supplier. The *relevant* value is clearly here still only $\$PV_{CE12,i}$ (or $\$PV_{CE6,i}$), corresponding to the ‘value in use’ that is relevant for an asset where ‘NRV’ is lower so that ‘value in use’ is ‘recoverable amount’ (cf. Foster and Upton 2001). For a profitable enterprise that enjoys a comparative advantage from staying in ‘the business we are in’ this ‘value in use’ must be the relevant exit value. However, as argued above, the issue of *when* the NPV can be recognised in the accounts as reported profit remains open.

Under deprival/relief value logic, we have to ask ourselves what is the optimal action Revrec can take both ‘with’ and ‘without’ the present contract obligation.⁴¹ If relieved of its obligation immediately on inception would it seek to ‘replace’ it with another? Clearly the market conditions under which Revrec is operating are crucial here. Revrec’s management, if maximising value for its equity owners, should already have been selling just as many super-profitable contracts as the market

would absorb.⁴² As with the strict theory of ‘deprival value’ for asset valuation, we need to assume that Revrec has taken the optimal decisions with respect to its current situation.⁴³ In other words if ‘relieved’ of the current contract Revrec would end up in the same position as before facing production outlays and risk with an expected cost of $\$PV_{CE12,i}$, but would have received a further $\$PV_{CF12,i}$ from the ‘replacement’ subscriber. Again the equivalent amounts at 31st December would be $\$PV_{CE6,i}$ and $\$PV_{CF6,i}$.⁴⁴

A.VIII. ACQUISITION COSTS

If Revrec’s contract to supply magazine issues is expected to yield ‘super-profits’, there are clearly incentives for Revrec to maximise the number of contracts sold. This may require ‘selling’ costs to be incurred, e.g. through advertising and other marketing expenditures, and commissions and other payments to distributors. It would be worth Revrec paying up to $\$PV_{\xi12,i}$ (the initial NPV) to secure each contract.

Solution 8a: If Revrec had to pay $\$PV_{\xi12,i} = \{ \frac{\xi}{12} \times \alpha_{i,12} \}$ in initial acquisition costs, the accounting with respect to profit recognition would again become non-problematic in so far as Revrec was able to identify the costs with the contract. If the ‘deferred revenue’ approach were adopted, Revrec would ‘defer’ the acquisition costs, i.e. treat them as an asset (‘DAC’), and then match the write-off of this asset against the emerging profits of $\$(\frac{TP_j}{12})$ per month. Provided an interest-based method of amortization is used (here ‘annuity’ amortization, yielding monthly amortization charges of

$\$ \frac{Am_j}{12} = \frac{\xi}{12}$), the net monthly income would then again be just $\$ \frac{RP_j}{12}$, representing Revrec’s reward

for risk-bearing. At December 31st the balance of both the total recognised assets (including DAC of $\$PV_{\xi6,i}$) and of the ‘deferred revenue’ would be $\$PV_{CF6,i}$.⁴⁵

Solution 8b: Under the ‘asset/liability’ approach the initial liability, utilising an exit value such as ‘fair value’, would as before be $\$PV_{CE12,i}$, while total assets would also be only $\$PV_{CE12,i}$ as ‘deferred acquisition costs’ cannot be recognised as an asset under this approach since they do not represent the value of any future cash inflows as all the cash from the customer has already been received.⁴⁶ The acquisition costs are therefore written off as incurred and the remaining accounting is therefore as under section A.IV above (‘normal profits: risk-bearing’), with year-end liability and assets of $\$PV_{CE6,i}$

and profits of $\$ \frac{RP_j}{2}$ earned to that date, again representing Revrec's reward for risk-bearing. We may

also note that the year-end 'relief value' of the liability is also $\$PV_{CE6,i}$ —while Revrec would replace the remainder of the contract by receiving another $\$PV_{CF6,i}$ (equivalent to the deferred revenue), to do

so it would also have to incur a *pro rata* proportion of the acquisition cost amounting to $\$PV_{\xi 6,i} = \{ \frac{\xi_j}{12} \times \alpha_{i,6} \}$, so that the net benefit of relief would only be $\$PV_{CE6,i}$, and this would be *solution 8dv(b)*.

Here, the up-front payment of acquisition costs has had a similar effect as in solutions 5 and 6. Profit patterns are the same whether conventional 'deferral and matching' approaches are adopted, or the 'asset/liability' approach (utilising exit or entry values). It may however be argued that the latter approach produces more 'realistic' balance sheet values, as under the former approach the balance for 'deferred revenue', shown as liability in the balance sheet, is more than the estimated liability, while the 'deferred acquisition cost' (DAC), shown as an asset in the balance sheet, does not meet the definition of an asset. Others might however argue that the value represented by the DAC is real enough (the expected return on the upfront investment which is inherent in the 'deferred revenue') and that the presentation is a useful reminder that accounting cannot fully represent values but utilises conventions which at most can provide useful signposts to where and how profits arise.⁴⁷ While this paper has set out the case for using asset/liability values based on 'deprival value / relief value', as far as the primary concern with potential conflicts in overall profit and net asset recognition patterns goes it also argues that 'deprival value / relief value' measurements are not sufficient to resolve the conflicts where they arise (as these result primarily from how to account for 'goodwill' or related intangibles). So we do not pursue these presentational arguments further here.⁴⁸

Solution 9 DAC vs NPV. Suppose Revrec has to pay only one-quarter of the previous amount, i.e.

$\$[PV_{\xi 12,i}/4]$, for acquisition costs. This leaves $\$ \frac{3 \times PV_{\xi 12,i}}{4}$ of NPV. Total profits over the life of the

contract will now be $\$(\xi + RP_j - Am_j^* = RP + 3\xi/4)$.⁴⁹ Capitalizing and amortizing the DAC under the

'deferred revenue' approach as before (i.e. now charging amortization of $\$ \frac{Am_j^*}{12} = \frac{1}{4} \frac{\xi_j}{12}$ per issue) will

keep overall profits at $\$(\frac{TP_j^*}{12} - \frac{Am_j^*}{12})$ per month ($\$ \frac{RP_j}{12}$ for risk-bearing and $\$(\frac{\xi_j}{12} - \frac{Am_j^*}{12})$ 'super-

profit') and net assets at zero. However, under the 'asset/liability' approach, utilising *exit* values, net

assets at inception will now be $\$ \frac{3 \times PV_{\xi_{12,i}}}{4}$ [assets = cash for subscription received $\$PV_{CF_{12,i}}$ less acquisition costs paid $\$[PV_{\xi_{12,i}}/4]$; liability for future delivery (including provision for risk), as before = $\$PV_{CE_{12,i}}$], equal (as in section A.V above) to the residual NPV. Can this amount of profit be recognised on inception? The issues are clearly identical to those discussed already in sections A.V through A.VII above. If the relevant ‘intangibles’ cannot be fully accounted for under GAAP then, as we have seen, subsequent profit patterns will differ as between the ‘deferred revenue’ and ‘liability’ approaches to measuring the contract obligation (see Table II, *solutions #9a and 9b*).⁵⁰ And there is no clear conceptual solution to the conflict.

Again however a ‘deprival value’ approach can overcome the immediate accounting conflict (see Table II, *solution #9dv(a)*). The valuations would then lead to results generally identical to those under the conventional ‘deferred revenue’ approach (except that where there are contract acquisition costs, as in example #9, it is only the *net* income and the *net* assets that will be the same).⁵¹ However, while the accounting numbers no longer force recognition of profit on inception, then (as in case #4dv (b) discussed above), this approach is not ruled out (as shown in *solution #9dv(b)*).

A.IX. REVISIONS TO ESTIMATES

We have assumed in the discussion so far that events turn out as planned. Generally however actual outcomes will diverge from expected outcomes and estimates of remaining outcomes will be revised. If the revisions to outcomes/estimates only arise in the second half of our contract year, then the profits reported for the first half year will remain identical. Clearly if the revisions are adverse (e.g. costs are now expected to be higher) then in all our examples except those where there is an initial positive NPV, the accounts will now show losses in the second half-year and overall (after charging for interest and risk-bearing). For the cases where a positive NPV was originally estimated, that NPV would now be smaller or would become negative (i.e. a loss overall). Equally clearly, the more profit that has been recognised in the first half of the year, the greater the loss (or at least profit fall) that will have to be reported in the second half-year. But provided a proper provision for risk was made initially, this would not appear of itself to justify changing the pattern that is chosen *ex ante*. If the revisions are favourable, this will create (or further increase) NPVs. Correspondingly, the same difficulties over deciding when to recognise this new value will arise, as under sections A.V-A.VII above.

APPENDIX B

B.I. DEFINITIONS OF VARIABLES

y_j :	Total production costs.
$\alpha_{i,n}$:	Discount factor of an annuity for n periods at interest rate i .
$D_{x,n}$:	Discount due to the time value of money (interest rate effect) for n periods, for any future variable x .
$PV_{x,n,i}$:	Present value of annuity with n cash flows x , discounted at interest rate i .
$IntPV_{x,\gamma-\beta,i}$:	Sum of interest charged on the present value of x from time point β until γ at interest rate i .
RP_j :	Risk premium charged as a reward for bearing risk.
CE_j :	Certainty equivalent amount of competitive price charged for subscription covering only production costs and risk bearing.
CF_j :	Price charged for subscription, including ‘abnormal’ profit, as well as covering production costs and risk bearing.
ξ_j :	‘Abnormal’ (super) profit earned, beyond compensation for production costs and risk bearing.
TP_j :	Total profit expected under the contract.
$i^{\sim}\%$:	Interest rate lower than $i\%$.
DAC_j :	Deferred acquisition costs.
Am_j :	Total amortization charges of DAC_j .

B.II. LINEAR DYNAMICS

- a. $CE_j = y_j + RP_j$
- b. $CF_j = CE_j + \xi_j = y_j + RP_j + \xi_j$
- c. $TP_j = RP_j + \xi_j$
- d. $TP_j^* = RP_j + 3\xi_j/4$
- e. $\alpha_{i,n} = \frac{1}{i} - \frac{1}{i \times (1+i)^{12}}$
- f. $PV_{x,n,i} = \frac{x_j}{12} \times \left[\frac{1}{i} - \frac{1}{i \times (1+i)^n} \right] = \frac{x_j}{12} \times \alpha_{i,n}, \forall x$
- g. $PV_{kx\xi,n,i} = k \times PV_{\xi,n,i}, \forall k$
- h. $PV_{CF,n,i} - PV_{(1-k)x\xi,n,i} = PV_{kx\xi,n,i} + PV_{CE,n,i}, \forall k$
- i. $D_{x,n,i} = X_j - PV_{x,n,i}$
- j. $IntPV_{x,\gamma-\beta,i} = \sum_{j=\beta}^{\gamma} i \times PV_{xj}$
- k. $DAC_{\xi,n,i} = PV_{\xi,n,i}$
- l. $DAC_{\xi,n,i}^* = \frac{1}{4} PV_{\xi,n,i}$
- m. $Am_j = \xi_j$
- n. $Am_j^* = \xi_j/4$

TABLE I

INCOME STATEMENT & BALANCE SHEET 31st December, Year 1

Interest rate = 0

Dynamics of solution 3 $CE_j = y_j + RP_j$; $TP_j = RP_j = CE_j - y_j$

Dynamics of solution 4 $CF_j = CE_j + \zeta = y_j + RP_j + \zeta$; $TP_j = RP_j + \zeta = CF_j - y_j$

		Revenue magazine	Revenue other (NPV/ recycling)	Total revenue	Costs magazine	Costs amortization of NPV/Goodwill	Profit Jul-Dec Year 1	Profit Jan-Jun Year 2
[Total profit on contract]		R_{mag}	R_{oth}	TR	C_{mag}	C_{amort}	Profit _{Jul-Dec}	Profit _{Jan-Jun}
Solution:		\$	\$	\$	\$	\$	\$	\$
[\$RP]	3	CE/2	-	CE/2	y/2	-	RP/2	RP/2
[\$(RP+\xi)]	4							
	either a:	(CF)/2	-	(CF)/2	y/2	-	(RP+\xi)/2	(RP+\xi)/2
	or b:	(CF)/2	$\xi/2$	(CF+\xi)/2	y/2	-	(RP/2)+ ξ	RP/2
	or dv (a):	(CF)/2	-	(CF)/2	y/2	-	(RP+\xi)/2	(RP+\xi)/2
	or dv (b):	(CF)/2	ξ	(CF/2)+ ξ	y/2	$\xi/2$	(RP/2)+ ξ	RP/2

$$\text{Profit}_{\text{Jul-Dec}} = R_{\text{mag}} + R_{\text{oth}} - C_{\text{mag}} - C_{\text{amort}}$$

		Assets cash etc.	Other NPV/Goodwill	Total Assets	Liabilities contract	Equity (undistributed profit)	[Assumes half total profit distributed to date]
Solution:		\$	\$	\$	\$	\$	\$
	3	CE/2	-	CE/2	CE/2	-	RP/2
	4						
	either a:	CF/2	-	CF/2	CF/2	-	(RP+\xi)/2
	or b:	CF/2	-	CF/2	CE/2	$\xi/2$	(RP+\xi)/2
	or dv (a):	CF/2	-	CF/2	CF/2	-	(RP+\xi)/2
	or dv (b):	CF/2	$\xi/2$	(CF+\xi)/2	CF/2	$\xi/2$	(RP+\xi)/2

TABLE II

II.A INCOME STATEMENT 1st July to 31st December, Year 1

			Revenue magazine	Revenue other (NPV/ recycling)	Revenue other (interest/'unwind of discount')	Total Revenue
[Total profit on contract] Solution:			R_{mag} \$	R_{NPV} \$	R_{INT} \$	TR \$
[\$0]	1		$y/2$	0	0	$y/2$
[\$0]	2		$y/2$	0	$\text{IntPV}_{y,1-6,i}$	$(y/2) + \text{IntPV}_{y,1-6,i}$
[\$RP]	3		$CE/2$	0	$\text{IntPV}_{CE,1-6,i}$	$(CE/2) + \text{IntPV}_{CE,1-6,i}$
[\$(RP+\xi)]	4	either a:	$CF/2$	0	$\text{IntPV}_{CF,1-6,i}$	$CF/2 + \text{IntPV}_{CF,1-6,i}$
		or b:	$CF/2$	$PV_{\xi 12,i} - (\xi/2)$	$\text{IntPV}_{CF,1-6,i}$	$[(CF-\xi)/2] + PV_{\xi 12,i} + \text{IntPV}_{CF,1-6,i}$
		or dv (a):	$CF/2$	0	$\text{IntPV}_{CF,1-6,i}$	$(CF/2) + \text{IntPV}_{CF,1-6,i}$
		or dv (b):	$CF/2$	$PV_{\xi 12,i}$	$\text{IntPV}_{CF,1-6,i} + \text{IntPV}_{\xi,1-6,i}$	$(CF/2) + PV_{\xi 12,i} + \text{IntPV}_{CF,1-6,i} + \text{IntPV}_{\xi,1-6,i}$
[\$RP]	5	(acquirer)	$CF/2$	0	$\text{IntPV}_{CE,1-6,i} + \text{IntPV}_{\xi,1-6,i}$	$(CF/2) + \text{IntPV}_{CE,1-6,i} + \text{IntPV}_{\xi,1-6,i}$
[\$RP]	6	(acquirer)	$CF/2$	0	$\text{IntPV}_{CE,1-6,i} + \text{IntPV}_{\xi,1-6,i}$	$(CF/2) + \text{IntPV}_{CE,1-6,i} + \text{IntPV}_{\xi,1-6,i}$
[\$(RP+\xi)]	7		$CF/2$	$-(\xi/2)$	$\text{IntPV}_{CF,1-6,i} - \text{IntPV}_{CE,1-6,i}$	$[(CF-\xi)/2] + \text{IntPV}_{CF,1-6,i} - \text{IntPV}_{CE,1-6,i}$
[\$RP]	8	a	$CF/2$	0	$\text{IntPV}_{CE,1-6,i} + \text{IntPV}_{\xi,1-6,i}$	$(CF/2) + \text{IntPV}_{CE,1-6,i} + \text{IntPV}_{\xi,1-6,i}$
[\$RP]	8	b **	$CF/2$	0	$\text{IntPV}_{CE,1-6,i}$	$(CF/2) + \text{IntPV}_{CE,1-6,i}$
[\$RP+3\xi/4]	9	either a:	$CF/2$	0	$\text{IntPV}_{CF,1-6,i}$	$(CF/2) + \text{IntPV}_{CF,1-6,i}$
		or b:	$CF/2$	$(3/4)PV_{\xi 12,i} - (\xi/2)$	$\text{IntPV}_{CF,1-6,i} - \text{IntPV}_{(1/4)\xi,1-6,i}$	$[(CF-\xi)/2] + (3/4)PV_{\xi 12,i} + \text{IntPV}_{CF,1-6,i} - \text{IntPV}_{(1/4)\xi,1-6,i}$
		or dv (a):	$CF/2$	$-(Am^*/2)$	$\text{IntPV}_{CF,1-6,i} - \text{IntPV}_{(1/4)\xi,1-6,i}$	$[(CF-Am^*)/2] + \text{IntPV}_{CF,1-6,i} - \text{IntPV}_{(1/4)\xi,1-6,i}$
		or dv (b):	$CF/2$	$(3/4)PV_{\xi 12,i}$	$\text{IntPV}_{CF,1-6,i} + \text{IntPV}_{(1/2)\xi,1-6,i}$	$(CF/2) + (3/4)PV_{\xi 12,i} + \text{IntPV}_{CF,1-6,i} + \text{IntPV}_{(1/2)\xi,1-6,i}$

II.A INCOME STATEMENT 1st July to 31st December, Year 1 (continued)

Costs magazine	Costs amortization of G'will/DAC/ NPV	Costs other (interest/unwind of discount)	Total costs	Profit Jul-Dec Year 1	Profit Jan-Jun Year 2	
C_{mag} \$	C_{amort} \$	C_{INT} \$	TC \$	Profit _{Jul-Dec} \$	Profit _{Jan-Jun} \$	Solution
y/2	0	0	y/2	0	0	1
y/2	0	$IntPV_{y,1-6,i}$	$y/2 + IntPV_{y,1-6,i}$	0	0	2
y/2	0	$IntPV_{CE,1-6,i}$	$y/2 + IntPV_{CE,1-6,i}$	RP/2	RP/2	3
y/2	0	$IntPV_{CF,1-6,i}$	$y/2 + IntPV_{CF,1-6,i}$	$(RP + \xi)/2$	$(RP + \xi)/2$	4a
y/2	0	$IntPV_{CE,1-6,i}$	$y/2 + IntPV_{CE,1-6,i}$	$(RP/2) + PV_{\xi 12,i} + IntPV_{\xi,1-6,i}$	$(RP/2) + IntPV_{\xi,7-12,i}$	4b
y/2	0	$IntPV_{CF,1-6,i}$	$y/2 + IntPV_{CF,1-6,i}$	$(RP + \xi)/2$	$(RP + \xi)/2$	4dv(a)
y/2	$\xi/2$	$IntPV_{CF,1-6,i}$	$[(y + \xi)/2] + IntPV_{CF,1-6,i}$	$(RP/2) + PV_{\xi 12,i} + IntPV_{\xi,1-6,i}$	$(RP/2) + IntPV_{\xi,7-12,i}$	4dv(b)
y/2	$\xi/2$	$IntPV_{CF,1-6,i}$	$[(y + \xi)/2] + IntPV_{CF,1-6,i}$	RP/2	RP/2	5
y/2	$\xi/2$	$IntPV_{CF,1-6,i}$	$[(y + \xi)/2] + IntPV_{CF,1-6,i}$	RP/2	RP/2	6
y/2	0	0	y/2	$(RP/2) + IntPV_{CF,1-6,i} - IntPV_{CE,1-6,i}$	$(RP/2) + IntPV_{CF,7-12,i} - IntPV_{CE,7-12,i}$	7
y/2	$\xi/2$	$IntPV_{CF,1-6,i}$	$[(y + \xi)/2] + IntPV_{CF,1-6,i}$	RP/2	RP/2	8a
y/2	$\xi/2$	$IntPV_{CE,1-6,i}$	$[(y + \xi)/2] + IntPV_{CE,1-6,i}$	RP/2	RP/2	8b
y/2	$Am^*/2$	$IntPV_{CF,1-6,i}$	$[(y + Am^*)/2] + IntPV_{CF,1-6,i}$	$(RP + \xi - Am^*)/2$	$(RP + \xi - Am^*)/2$	9a
y/2	0	$IntPV_{CE,1-6,i}$	$y/2 + IntPV_{CE,1-6,i}$	$(RP/2) + (3/4)PV_{\xi 12,i} + IntPV_{(3/4)\xi,1-6,i}$	$(RP/2) + IntPV_{(3/4)\xi,7-12,i}$	9b
y/2	0	$IntPV_{CF,1-6,i} - IntPV_{(1/4)\xi,1-6,i}$	$(y/2) + IntPV_{CF,1-6,i} - IntPV_{(1/4)\xi,1-6,i}$	$(RP + \xi - Am^*)/2$	$(RP + \xi - Am^*)/2$	9dv(a)
y/2	$\xi/2$	$IntPV_{CF,1-6,i} - IntPV_{(1/4)\xi,1-6,i}$	$[(y + \xi)/2] + IntPV_{CF,1-6,i} - IntPV_{(1/4)\xi,1-6,i}$	$(RP/2) + (3/4)PV_{\xi 12,i} + IntPV_{(3/4)\xi,1-6,i}$	$(RP/2) + IntPV_{(3/4)\xi,7-12,i}$	9dv(b)

TABLE II
II.B BALANCE SHEET 31st December, Year 1

	Assets cash etc.	Other (Goodwill/DAC)	Total assets	Liabilities contract	Equity (undistributed profit)	[Assumes profit distributed to date]
Solution:	\$	\$	\$	\$	\$	\$
1	$y/2$	0	$y/2$	$y/2$	0	0
2	$PV_{y6,i}$	0	$PV_{y6,i}$	$PV_{y6,i}$	0	0
3	$PV_{CE6,i}$	0	$PV_{CE6,i}$	$PV_{CE6,i}$	0	$RP/2$
4 either a:	$PV_{CF6,i}$	0	$PV_{CF6,i}$	$PV_{CF6,i}$	0	$(RP+\xi)/2$
or b:	$PV_{CF6,i}$	0	$PV_{CF6,i}$	$PV_{CE6,i}$	$PV_{\xi6,i}$	$(RP+\xi)/2$
or dv (a):	$PV_{CF6,i}$	0	$PV_{CF6,i}$	$PV_{CF6,i}$	0	$(RP+\xi)/2$
or dv (b):	$PV_{CF6,i}$	$PV_{\xi6,i}$	$PV_{CF6,i} + PV_{\xi6,i}$	$PV_{CF6,i}$	$PV_{\xi6,i}$	$(RP+\xi)/2$
5 (acquirer)*	$PV_{CE6,i}$	$PV_{\xi6,i}$	$PV_{CF6,i}$	$PV_{CF6,i}$	0	$RP/2$
6 (acquirer)*	$PV_{CE6,i}$	$PV_{\xi6,i}$	$PV_{CF6,i}$	$PV_{CF6,i}$	0	$RP/2$
7	$PV_{CF6,i}$	0	$PV_{CF6,i}$	$PV_{CE6,i}$	$PV_{CF6,i} - PV_{CE6,i}$	$(RP+\xi)/2$
8 a	$PV_{CE6,i}$	$PV_{\xi6,i}$	$PV_{CF6,i}$	$PV_{CF6,i}$	0	$RP/2$
8 b **	$PV_{CE6,i}$	0	$PV_{CE6,i}$	$PV_{CE6,i}$	0	$RP/2$
9 either a:	$PV_{CF6,i} - (1/4)PV_{\xi6,i}$	$(1/4)PV_{\xi6,i}$	$PV_{CF6,i}$	$PV_{CF6,i}$	0	$(4RP+3\xi)/8$
or b:	$PV_{CF6,i} - (1/4)PV_{\xi6,i}$	0	$PV_{CF6,i} - (1/4)PV_{\xi6,i}$	$PV_{CE6,i}$	$(3/4)PV_{\xi6,i}$	$(4RP+3\xi)/8$
or dv (a):	$PV_{CF6,i} - (1/4)PV_{\xi6,i}$	0	$PV_{CF6,i} - (1/4)PV_{\xi6,i}$	$PV_{CF6,i} - (1/4)PV_{\xi6,i}$	0	$(4RP+3\xi)/8$
or dv (b):	$PV_{CF6,i} - (1/4)PV_{\xi6,i}$	$(3/4)PV_{\xi6,i}$	$PV_{CF6,i} + (1/2)PV_{\xi6,i}$	$PV_{CF6,i} - (1/4)PV_{\xi6,i}$	$(3/4)PV_{\xi6,i}$	$(4RP+3\xi)/8$

* if acquirer uses 'revenue recognition accounting'. Net amounts are the same
if uses 'asset/liability' accounting (whether or not measures liability at 'relief value')

** also equals solution #8c, i.e. using relief value to value the liability.

REFERENCES

- Abbott, W.M. 2000. An Assessment from a UK Perspective of the Key Life Insurance Issues. Presented at the ICAEW / Faculty of Actuaries and Institute of Actuaries Conference on *Steering the UK Response*, London, 5th April.
- American Council of Life Insurers, German Insurance Association, and the Life Insurance Association of Japan. *Joint letter to Sir David Tweedie*, IASB, June 11, 2002.
- Arnold, J., D. Egginton, L. Kirkham, R. Macve, and K. Peasnell. 1992. *Goodwill and Other Intangibles*. ICAEW.
- ASB. 2001. Discussion paper: *Revenue Recognition*. July.
- Barker, R. 2004. Reporting Financial Performance. *Accounting Horizons* 18 (2): 157-172.
- Barth, M.E., and W.R. Landsman. 1995. Fundamental Issues Related to Using Fair Value Accounting for Financial Reporting. *Accounting Horizons* 9 (4): 97-107.
- Baxter, W.T. 1975. *Accounting Values and Inflation*. London: McGraw-Hill.
- Baxter, W.T. 2003. *The Case for Deprival Value*. Edinburgh: ICAS
- Beaver, W. 1998. *Financial Reporting: An Accounting Revolution*. 3rd edition, Prentice-Hall.
- Beaver, W. H., and J. S. Demski. 1979. The nature of income measurement. *The Accounting Review* 54 (1): 44-53.
- Benston, G. J., M. Bromwich, R. E. Litan, and A. Wagenhofer. 2006. *Worldwide Financial Reporting: the development and future of accounting standards*. Oxford University Press.
- Draper, P.R., P. Pope and W. McInnes. 1993. An Assessment of the Effective Annual Rate Method as a Basis for Making Accounting Allocations. *Journal of Business Finance and Accounting*: 143-151.
- FASB. 1999. Preliminary Views: *Reporting Financial Instruments and Certain Related Assets and Liabilities at Fair Value*. December 14th, Norwalk, CT: FASB.
- FASB. 2000. Concepts Statement 7: *Using Cash Flow Information and Present Value in Accounting Measurement*. Norwalk, CT: FASB.
- FASB. 2001. SFAS142: *Goodwill and Other Intangible Assets*. Norwalk, CT: FASB.
- FASB/IASB. 2005. *Revisiting the concepts: a new conceptual framework project*. May.
- Forfar, D.O., and N.B. Masters. 1999. Developing an International Accounting Standard for Life Insurance Business. *British Actuarial Journal* 5: 621-698.

- Foster, J.M., and W.S. Upton. 2001. The Case for Initially Measuring Liabilities at Fair Value, in *Understanding the Issues 2* (1), Norwalk, CT: FASB, May.
- Grinyer, J.R. 2000. The Logic of Earned Economic Income—A Reply. *British Accounting Review* 32 (1): 115-124.
- Hicks, J.R. 1946. *Value and Capital*. Oxford: Clarendon Press.
- Horton, J., and R. Macve. 1995. *Accounting Principles for Life Insurance: A True and Fair View?*. Research Board, ICAEW.
- Horton, J., and R. Macve. 1997. *UK Life Insurance: Accounting for Business Performance*. London, FT Finance.
- Horton, J., and R. Macve. 2000. 'Fair value' for financial instruments: how erasing theory is leading to unworkable global accounting standards for performance reporting. *The Australian Accounting Review* 11 (2): 26-39.
- Horton, J., R. Macve and G. Serafeim. 2006a. Accounting for Life Assurance: the State of the Art in the UK and continental Europe. Submitted to ICAEW CBP.
- Horton, J., Macve, R., and Serafeim, G. 2006b. 'Accounting Principles for Measuring Earnings and Reporting Performance: Some Potential Implications of the IASB Project on Insurance Contracts' (LSE working paper).
- IASB. 2001. *Draft Statement of Principles (Insurance)*.
- IASB. 2004a. IAS39 *Financial Instruments: Recognition and Measurement*.
- IASB. 2004b. IFRS4 *Insurance Contracts*. March.
- IASB. 2004c. IFRS3 *Business Combinations*. March.
- IASB. 2005. *Measurement Bases for Financial Accounting — Measurement on Initial Recognition*. Canadian Discussion Paper, November.
- IASB. 2006. Exposure Draft: Proposed Amendments to IAS 1 *Presentation of Financial Statements*.
- IASC (1999) *Issues Paper on Insurance* (2 vols.), December.
- Katz, M.L., and H.S. Rosen. 1998. *Microeconomics*. 3rd edition, Boston MA, Irwin/McGraw-Hill.
- Kolschbach, J. 2002. KPMG International Insurance Insight.
- Lennard, A. 2002. *Liabilities and how to account for them: an exploratory essay*. London, ASB.
- Macve, R.H. 1997. *A Conceptual Framework for Financial Accounting and Reporting: Vision Tool or Threat?* New York, Garland.

- Nobes, C. 2003. *Liabilities and their Measurement in UK and International Accounting Standards*. London, ACCA.
- Ohlson, J.A. 1995. Earnings, book values, and dividends in security valuation. *Contemporary Accounting Research* 11 (Spring): 661-87.
- Ohlson, J.A. 2006. A practical model of earnings measurement. *The Accounting Review* 81 (1): 271-279.
- Peasnell, K.V. 1995a. Analytical Properties of Earned Economic Income. *British Accounting Review* 27: 5-33.
- Peasnell, K.V. 1995b. Second Thoughts on the Analytical Properties of Earned Economic Income. *British Accounting Review* 27: 229-239.
- Schipper, K. and L. Vincent. 2003. Earnings Quality. *Accounting Horizons* Supplement: 97-110.
- Shwayder, K. 1967. A Critique of Economic Income as an Accounting Concept. *Abacus* 3 (1): 23-35.
- Thomas, A.L. 1977. Allocation: the Fallacy and the Theorists. In Baxter, W.T. and Davidson, S. (eds.), *Studies in Accounting*, 3rd edition, London, ICAEW.
- Trott, E.W., and W.S. Upton. 2001. Expected Cash Flows in *Understanding the Issues* 1 (1). Norwalk, CT: FASB, May.
- Zijl, T. v., and G. Whittington. 2006. Deprival value and fair value: a reinterpretation and a reconciliation. *Accounting & Business Research* 36 (1): forthcoming.

Notes:

¹ At the FASB/IASB joint meeting in April 2006 the Boards instructed the staff to explore revenue recognition based on the following criterion: revenue should be recognized if the customer must accept performance to date: http://www.fasb.org/project/revenue_recognition.shtml#decisions (accessed 28 June 2006).

² Clearly several Board members are uncomfortable with this possibility and there is a caveat that ‘if an insurer identifies an apparently significant gain or loss at inception, it would need to check carefully for errors or omissions’. [No comment is made here by the Board on the large profits currently being shown at inception under the supplementary ‘embedded value’ disclosures now made by major EU insurers and generally regarded by analysts as far more useful than the IFRS4 results shown in the main financial statements (Horton, Macve & Serafeim 2006a)].

³ This intangible differs from the ‘goodwill’ intangible that we discuss further below.

⁴ Recently the Canadian Accounting Standard Board prepared a discussion paper for the IASB on measurement bases on initial recognition (IASB 2005) which rejects deprival value (DV) for assets (and correspondingly relief value for liabilities) except as a surrogate in situations where fair value (FV) is not reliably measurable. However their analysis is handicapped by only considering the basic algorithm which compares replacement cost (RC), value in use (PV) and net realisable value (NRV). Although this can be pedagogically useful when introducing the DV concept, it does not analyse rigorously the underlying economic rationale of asking the question ‘what difference would deprival (or relief) make to the entity’s ‘well-offness’, measured as the difference in the present value of all future cash flows?’, as developed in Baxter (1975), and consistent with Hicks’s (1946) ‘No.I’ approach to measuring value and income that is now being promoted by FASB/IASB as the keystone of their revision to the conceptual framework (e.g. Schipper and Vincent 2003; FASB/IASB 2005).

⁵ The example has the attraction of being the mirror-image of the more commonly discussed accounting problems (e.g. for inventories or plant and equipment) where cost outlays occur first and revenues flow in later.

⁶ In our model we have assumed that the contract is initiated 6 months before the end of the fiscal period. Therefore, if we had assumed that the contract begins at the end of the first quarter of the year

the *pro rata* ‘revenue earned’ and ‘profit earned’ to 31 December would be $\$ \frac{3CE_j}{4}$ and $\$ \frac{3RP_j}{4}$

respectively. Our results clearly generalise regardless at which point of time, during the annual period, the contract is initiated.

⁷ If c) is greater than a) or b) and is payable even where cancellation is at the customer’s option there is clearly some (maybe high) probability that the option will be exercised against the company, and here it may indeed be the most relevant value. However, clearly the business is not sustainable as a going concern on this basis (i.e. if customers all act ‘rationally’). The issue has been discussed within IASB’s insurance project in the context of the ‘deposit floor’ but so far without resolution.

⁸ While the completion date of Revrec's contract may be clear, where there are ongoing obligations (e.g. product warranties or, as in the case of insurance contracts, delays between occurrence and settlement of claims) the enterprise may remain 'on risk' well beyond the initial contract period and profit may only emerge during that run-off period.

⁹ An equivalent situation arises if Revrec believes its competitive advantage lies, not in being able to charge premium prices for its ‘masthead/brand’, but in being able to undercut competitors on cost efficiencies. If Revrec expects to be able to undercut competitors, while charging the same price as them, this is equivalent to charging $\$(CF_j/12)$ per magazine issue while anticipating costs of only $\$CE_j$ (including risk premium). There is again expected NPV of $\$ \xi_{12,i}$. Clearly, if it believes its own cost estimates, Revrec could compete even more effectively by lowering its price to gain volume from its competitors, in the limit driving it down to $\$CE_{12,i}$ (hence the standard prediction of microeconomics that in long-run fully competitive equilibrium inefficient firms will be driven out). If it actually charged its customers only $\$CE_{12,i}$, Foster and Upton (cf. 2001) would presumably have to accept this as the ‘fair value’ of the liability, even though other firms would need $\$CF_{12,i}$ to take it over, or else Revrec would have to show a loss on inception of a contract that is profitable (at least far as earning a risk premium is concerned). Clearly its auditors might investigate more closely the risk that Revrec was in fact entering into cut-price contracts that were onerous before accepting its financial statements: but at the end of the day if the estimates appeared to have been made on sufficient evidence (e.g. from recent experience) and with due care, they would have to accept $\$CE_{12,i}$ as an adequate provision for the liability (which here would again equal Revrec’s deferred revenue). It therefore seems illogical to argue

that where Revrec instead decides to exploit its advantage by pricing at the same level as its competitors, it must treat that higher price as its liability estimate (i.e. the amount that would be its ‘deferred revenue’).

¹⁰ The paradox here for accounting standard setters is that it is only when values are not already readily obtainable from other reliable market sources that the accounting process may be seen to add incremental information content (e.g. Beaver 1998; Beaver & Demski 1979).

¹¹ While the insurer is only liable for claims arising during the period of cover, unlike our simple magazine subscription case it is normal both that all claim occurrences are not fully known about by the end of the policy period and that amounts are often not finally determined until after the end of the policy period, and in some cases may not be finally settled for many years ahead (e.g. ‘long-tail’ personal injury, health and environmental claims). While this increases the uncertainty in the estimates as compared to the simple magazine example (such that traditionally the accounts for some classes of business have been kept ‘open’ beyond the year-end, as in Lloyd’s ‘three-year’ syndicate accounting), nevertheless elements of Revrec’s production costs (e.g. employee post-retirement benefits) may similarly not be finally determinable for many years to come.

¹² Strictly one cannot discuss the liability on an individual policy as insurance relies on the pooling of risks across substantial populations of policyholders: but we can still scale down the resulting statistical expectations in considering our simple ‘typical’ policy example.

¹³ ASB (2001) para. 2.19 argues that ‘performance risk’ may be the most significant risk where goods or services are to be delivered under the contract, and may also be the hardest to assess.

¹⁴ Clearly if Revrec/Insrec charges a higher initial annual magazine subscription/insurance premium for providing this guarantee against any price rise, the embedded option premium would need to be matched against the recognition of any such loss or gain from price changes. We do not pursue here the analysis of uncompetitive pricing of any such option premium but in principle the arguments would appear to be identical to those relating to the treatments of other ‘super-profits’.

¹⁵ The ‘NPV intangible’ identified here is not equivalent to the portion of the ‘customer relationship’ intangible that IASB now proposes to recognise and offset against the exit value of the insurance contract liability (IASB *UPDATE*, April 2006).

¹⁶ We use here the terms sustainable, maintainable and persistent interchangeably.

¹⁷ Schipper and Vincent (2003) and FASB/IASB (2005) incorrectly assert that the approach is equivalent.

¹⁸ Nor do they discuss the income measurement consequences of their proposed revision to the DV rule.

¹⁹ For simplicity we assume markets are in both short-term and long-term equilibrium. We allude briefly below to the additional accounting difficulties faced when markets are in disequilibrium.

²⁰ Again for simplicity we assume marginal cost equal to average cost. Under conventional microeconomic analysis, this will be the case if volume is optimal in a fully competitive industry, thereby reaping optimal economies of scale in long-run equilibrium

²¹ One may imagine electronic delivery via the internet, but in fact provided physical delivery has the same unit cost per subscriber, or equivalently the delivery cost for our ‘typical’ subscription represents the average delivery cost, it can simply be counted in with the unit production cost.

²² i.e. conventional accounting, if it ignores the interest effect, would be led to regard this as an ‘onerous contract’ (as only $\$PV_{y12,i}$ has been received for an obligation to incur costs totalling $\$y_j$), requiring the booking of a loss on inception of $\$D_{y12,i}$ under current GAAP. This could also be accounted for as a ‘cash discount’ in the first half-year.

²³ We do not discuss here the presentational issues as to whether ‘interest’ / ‘unwind of discount’ should be shown as part of ‘operating’ income or as ‘finance’—or how far there should be netting off—which are currently being debated in the IASB’s project on ‘Performance Reporting’ (recently relabelled ‘Presentation of Financial Statements’—see website at www.iasb.org.uk).

²⁴ This assumes for simplicity that all production costs are paid monthly (e.g. that property, plant and equipment are all hired at a monthly rent). If equity had provided fixed and working capital facilities it too would properly earn a net interest income at the competitive rate. Consistent with the arguments in this paper any such assets should be valued at ‘deprival value’ (e.g. Baxter, 1975).

²⁵ The bookkeeping is [opening liability $\$PV_{y12,i}$ + unwind of discount $\$(\text{Int}PV_{y,1-6,i} = \sum_{j=1}^6 i \times PV_{y_j})$, less reduction equal to costs of monthly magazine issues now called off $\$ \frac{y_j}{2}$ = remaining liability].

Equal and opposite amounts relate to the investment of the initial subscription received. The results are

shown in Table II. Full calculation work-sheets for all the examples using an illustrative numerical example are available from the authors.

²⁶ For simplicity we assume here that there is no risk of insolvency, so customers and other factor suppliers (other than equity owners) do not bear any risk of their contracts not being fulfilled. Issues relating to 'credit standing' are discussed further in Horton & Macve (2000) and Horton, Macve & Serafeim (2006b). We do not discuss here whether the 'risk premium' should reflect the whole of the company's risk or only its 'systematic' risk (on the grounds that investors holding diversified portfolios will not be rewarded for bearing diversifiable unsystematic risk) (cf. IASB's DSOP (2001) chapter 5).

²⁷ Revrec might choose to invest the subscription proceeds in a riskier investment paying a higher rate of return. But in a fully competitive investment market, differential rates of return will simply reflect different anticipated risks. So there will also need to be a provision for risk in estimating these returns, and the 'certainty equivalents' of the investment receipts will be equal to the risk-free returns expected from the 'risk-free' investment as before. If the expected returns are realised, Revrec will therefore earn an additional reward for the additional risk-bearing over the life of the contract. Estimates of liability values will therefore be unaffected. [As argued by Abbott (2000), failure to distinguish the effects of differential risk in different 'investment margins' clouded unnecessarily the IASC SCI's discussion of 'embedded values' in the Issues Paper (IASC 1999, paras. 641-2). It has continued to do so (see the discussion of 'market consistent embedded values' in Horton, Macve & Serafeim 2006a).]

²⁸ The bookkeeping is now [opening liability $\$PV_{CE12,i}$ + unwind of discount $\$(IntPV_{CE,1-6,i}$
 $= \sum_{j=1}^6 i \times PV_{CEj}$), less reduction equal to costs of monthly magazine issues called off $\$ \frac{y_j}{2}$ and less
 release of provision for risk $\$ \frac{RP_j}{2}$ = remaining liability]. For simplicity of consistent algebraic (and
 accordingly arithmetical) illustration we assume immediate distribution of monthly profits to avoid
 further interest effects. The amounts relating to the investment of the initial subscription received
 therefore remain as in the previous example, so that there is recognition of an overall profit of $\$ \frac{RP_j}{2}$
 for the first 6 months. We are of course assuming here that the risk premium is not varying between

monthly periods, or at least that we may use the ‘effective’ risk premium found for the whole year, similar to the standard accounting practice for the ‘effective’ interest rate on borrowings (Draper *et al.*, 1993).

²⁹ Again for simplicity of illustration we assume immediate distribution of monthly profits to avoid further interest effects. The first six-months' bookkeeping for the remaining assets from the initial

subscription (i.e. $\$PV_{CF12,i} = \{ \frac{CF_j}{12} \times \alpha_{i,12} \}$) is then [opening asset $\$PV_{CF12,i}$ + interest earned

$\$(IntPV_{CF,1-6,i})$, less payments for costs of monthly magazine issues called off $\$ \frac{y_i}{2}$ less distributions of

‘profit’ (comprising release from risk and ‘super-profit’) $\$ \frac{TP_j}{2} =$ remaining asset $\$PV_{CF6,i}$]. The asset is

then equal at all times to the deferred revenue, and interest earned on the assets and ‘unwind of the discount’ on the provision cancel each other out.

³⁰ As the value of all the ‘excess revenue’ is recognised in reported income on inception, if earned premiums are subsequently to be reported as ‘revenue’ in the conventional way there will need to be a ‘recycling’ adjustment of $\$ \frac{\xi}{2}$ in each half year to avoid double counting (as shown in Table II).

³¹ Equivalent because ‘selling’ the right to the contract for $\$PV_{\xi12,i}$ (including handing over the $\$PV_{CF12,i}$ subscription money received) is equivalent to paying a net $\$PV_{CE12,i}$ to be relieved of it. If we assume that the acquirer finances the deal by immediately extracting the ‘excess’ $\$PV_{\xi12,i}$ from Revrec's subscription monies, then if the acquirer uses ‘deferred revenue’ accounting, it reports an acquisition cost asset and amortizes it (the bookkeeping is given in fn. 45 below). If it uses ‘asset/liability’ accounting the net assets acquired will equal the purchase price.

³² Foster and Upton (2001) appear to argue that in this situation the ‘fair value’ is $\$PV_{CF12,i}$ as evidenced by the market transaction of the customer’s subscription, and that another publisher would also require this amount, not $\$PV_{CE12,i}$, to take over the liability. $\$PV_{CE12,i}$ is an ‘entity specific’ value not a ‘fair value’ (IASB, 2001, DSOP ch.3). Certainly the acquiring company would also need to earn a profit to cover ‘interest’ and ‘risk-bearing’—but no more. Foster and Upton do not analyse how ‘profits’ may arise beyond mentioning risk premia and cost efficiencies (which we discuss below). (IASB seems equally confused as in its April 2006 meeting it decided that ‘the measurement of insurance liabilities

should incorporate a margin that represents an unbiased estimate of the compensation that market participants would demand not only for bearing risk (a risk margin), but also for providing other services (a profit margin).’ (IASB *UPDATE* April, 2006.) In our models, any cost of such services would be included in the estimates for y .) Nor do Foster and Upton discuss the general valuation model of ‘deprival value’ and its application to liabilities, i.e. under what circumstances ‘fair value’ is the relevant value (cf. Horton & Macve 2000; Barth & Landsman 1995; Baxter 2003). Moreover, in an imperfectly competitive market it is not clear which other suppliers’ prices and costs should form the relevant ‘market price’ benchmark. Under the assumptions we have made here, the ‘fair value’ of Revrec’s contract liability is surely $\$PV_{CE12,i}$, if that is the best price at which it can actually transfer it.

³³ As before, we assume that the acquirer finances the deal by immediately extracting the ‘excess’ $\$PV_{\xi12,i}$ in cash from Revrec’s subscription moneys. Again ‘goodwill on consolidation’ will arise if the contract is accounted for by ‘deferred revenue recognition’ so that the reported net assets of the acquired company are zero. Despite the ASB’s proposed prohibition on ‘interest based’ methods of depreciation in the UK (ASB 2001), such a method of amortizing the goodwill will be necessary to properly match income and expenditure and leave residual profits totalling $\$RP$ as before. The unamortized balance on this basis at 31st December will be $\$PV_{\xi6,i}$. [If the contract liability is only valued at $\$PV_{CE12,i}$, acquired net assets will be $\$PV_{\xi12,i}$, equal to acquisition cost and the amount needed to finance the deal.]

³⁴ Even if the goodwill is not amortized on a systematic basis, but only through impairment reviews (as now under SFAS 142 (FASB, 2001) and IFRS3 (IASB, 2004c) then, as its value will fall as the life of the ‘super-profits’ expires, the impairment cost will have to be charged against earnings in order to properly match income and expenditure in the reporting of earned income (cf. Arnold *et al.* 1992). The value remaining at 31st December will again be $\$PV_{\xi6,i}$.

³⁵ In current UK insurance company valuation practice, the corresponding distinction is between the ‘embedded value’ (of the existing book of contracts in force) and the ‘appraisal value’ which allows for the expected profitability of future contracts (e.g Horton & Macve 1995; 1997; Horton, Macve, and Serafeim 2006a).

³⁶ E.g in the example discussed at the IASB meeting on insurance on 23rd May 2002, the profit on inception was eliminated by adjusting the estimated risk premium (see www.iasb.org.uk).

³⁷ It is well known that, absent a ‘regular’ cash flow pattern, the mathematical solution for IRR may not produce an intuitively understandable result.

³⁸ Indeed, given that Revrec starts with no net assets, it may be hard to explain how it earns ‘a rate of return’. Moreover, in the general case, where companies also hold productive assets and inventories, use of the IRR produces values for these which do not represent ‘deprival values’ and are inconsistent with any available market values (Baxter 1975).

³⁹ Another approach (‘earned economic income’) that has been proposed for eliminating profit on inception is to allocate the NPV over the contract life in proportion to the cash flows received (e.g. Grinyer 2000; cf. Peasnell 1995a; 1995b). In cases of payment in advance presumably the allocation would have to ignore the initial receipt and be based on the pattern of the subsequent cash outflows.

⁴⁰ As pointed out by Shwayder (1967), under certainty all future NPVs on the entity’s anticipated business will logically be assigned to the opening accounts for the first period of its activities.

⁴¹ Writers have tended to be sceptical as to whether ‘relief value’ of liabilities can be made to mirror precisely the ‘deprival value’ of assets and in particular have doubted the concept of ‘replacement liability’. Baxter (2003, p.19-20) argues that the notion of ‘replacement loan’ is irrelevant. Horton & Macve (2000, p.28 and fn.12) in discussing AARF (1998) do not pursue the matter rigorously. But while the notion may not be helpful for the kind of liabilities that are issued to raise finance—as it is generally not clear why a relieved borrower would want to take on another loan—we need to explore whether it may have a role for the kind of liabilities (i.e. the obligations involved in carrying out the enterprise’s business activity) that we are discussing here, such as Revrec’s contract.

⁴² We do not explore further here the conventional microeconomic analysis of competitive pricing whereby Revrec (like other firms) will in fact seek to equate marginal revenue and marginal cost (e.g. if price is competitively determined in a large market, expand volume until marginal cost of production equals price; or, if pricing is ‘monopolistic’, expand volume until the marginal cost of production equals the marginal revenue from the falling price that can be obtained.) This implies that Revrec will be ‘indifferent’ between replacing and not replacing its ‘last’ contract. The profitability of our ‘average’ contract must represent the value of non-marginal business (of which there will be none in long-run equilibrium in a fully competitive industry with equally efficient suppliers, e.g. Katz and Rosen 1998, pp: 341; cf. 345).

⁴³ e.g. where able to charge a premium price, through sub-contracting output in excess of its own capacity to non-premium producers (of equivalent quality) and thereby maximising revenue and profits. FASB 2004 (as in its recent discussions on FV http://www.fasb.org/project/fv_measurement.shtml) argues for reference to the best alternative of the market opportunities available.

⁴⁴ Note that while the conclusion as to the liability measure is similar to that arrived at by Foster and Upton (2001), their argument is based on an identification of 'exit value' based on 'average' market participants that we have rejected as not being an exit value of any actual relevance to Revrec. Hence we favour viewing the same amount as instead representing the relevant 'entry value'. Similar concerns must arise over FASB's (2006) current notion of 'fair value' as 'in use' exit value.

⁴⁵ Again for simplicity of illustration we assume immediate distribution of monthly profits to avoid further interest effects. But now we assume the acquisition costs are paid at inception. Deferred revenue at December 31st, as before, is $\$PV_{CF6}$. The first six months' bookkeeping for the remaining assets from the initial subscription [i.e. $\$(PV_{CF12,i} - PV_{\xi12,i} = PV_{CE12,i})$] is then [opening asset $\$PV_{CE,12,i}$ + interest earned $\$(IntPV_{CE,1-6,i})$, less payments for costs of monthly magazine issues called off $\$(y_i/2)$, less distributions of 'profit' (comprising release from risk) $\$(RP_i/2) =$ remaining asset $\$PV_{CE6,i}$]. The balance of deferred acquisition cost, properly amortised by the 'annuity method' is [opening asset $\$PV_{\xi12,i}$ + interest earned $\$(IntPV_{\xi,1-6,i})$, less monthly amortization charges $\$(\xi_i/2) =$ remaining asset $\$PV_{\xi6,i}$ (equivalent to the present value of 6 more monthly amortization charges)]. The total assets $\$(PV_{CE6,i} + PV_{\xi6,i}) = \$PV_{CF6,i}$ are then equal at all times to the deferred revenue, and interest (including notional interest) earned on the assets and 'unwind of the discount' on the provision cancel each other out, leaving the net income for the first 6 months as $\$(RP_i/2)$ (comprising release from risk). Even if the balance sheet is presented on an 'asset/liability' basis i.e. with no DAC, it is still possible to present the income statement in the traditional manner if there is also corresponding charge for what might perhaps be labelled 'amortization of embedded value', as in *solutions 8b and 8dv(b)*.

⁴⁶ They are of course an asset until the contract is initiated and the subscription is received, as the costs have been invested in anticipation of securing the profitable contract. They are therefore effectively amortized by immediate write off on inception of the contract, thereby cancelling out the NPV that is effectively being recognised at that time. However this logic would clearly lead to the view

that Revrec may also recognise the current NPVs of all *future* contracts if it expects acquisition costs to average less than $\$PV_{\xi_{12,i}}$. Although such value might indeed be realised by a sale of the magazine title to another publisher, or a stockmarket takeover of Revrec itself, we do not pursue the argument here as standard setters' discussions are generally constrained to debating the accounting for contracts that are already 'on the books'. But the discussion of when 'super-profits' can be recognised is really a question as to what is the appropriate point (or period) of time after they are first anticipated.

⁴⁷ Life insurers have therefore frequently argued that it is immaterial whether DAC (or correspondingly 'embedded values') are shown as a separate asset or are instead netted off against the valuation of 'policy liabilities' (e.g. Horton & Macve, 1995).

⁴⁸ Note that if Revrec's competitive advantage was due to cost efficiencies (e.g. everyone else was charging $\$PV_{CF_{12,i}}$ but Revrec estimated it could supply the magazine issues for a present value of costs + risk premium of only $\$PV_{CE_{12,i}}$), it could similarly be the case that Revrec had rationally invested up to $\$PV_{\xi_{12,i}}$ in order to achieve the necessary improvements in production (new machinery; revised organisational procedures; additional employee training and incentive packages etc.). If these costs are now correctly amortized against the contract (either immediately on inception or gradually over its life), profits will again emerge as only $\$(RP_j/2)$ per half-year.

⁴⁹ Assuming distributions are cut to $\$[(\frac{3}{4}\xi_j)+RP_j]/12$ per month.

⁵⁰ A similar problem would therefore arise even when Revrec had to spend on average a total of $\$PV_{\xi_{12,i}}$ per contract to establish its market advantage, but where not all of this expenditure could be associated with individual contracts (e.g. corporate advertising expenditure) and so a proportion had to be 'written off' under current GAAP. The 'deferred revenue' approach would then fail to fully match costs against revenues, introducing a further conservatism into profit patterns (cf. Ohlson, 1995).

⁵¹ If, as in example #9, we assume the acquisition costs are paid at inception are only $\$(PV_{\xi_{12,i}}/4)$ [so that total contract profit is $\$[(3\xi_j/4)+RP_j]$, 'super-profit' is $\$(3\xi_j/4)$ and the NPV is $\$(3PV_{\xi_{12,i}}/4)$], then the 'deferred revenue' at 31 December, as before, is $\$PV_{CF_{6,i}}$ but there is also a deferred acquisition cost asset at that date of $\$(1/4)PV_{\xi_{6,i}}$. The first six months' bookkeeping for the remaining assets from the initial subscription {i.e. $\$[PV_{CF_{12,i}} - (PV_{\xi_{12,i}}/4)]$ } is then {opening asset $\$[PV_{CF_{12,i}} - (PV_{\xi_{12,i}}/4)]$ + interest earned $\$Int(PV_{CF_{1-6,i}} - PV_{(1/4)\xi_{1-6,i}})$, less payments for costs of monthly magazine

issues called off $\$(y_j/2)$, and less distributions of ‘profit’ [comprising release from risk $\$(RP_j/2)$ + ‘super-profit’ $\$(\frac{3}{4}\xi_j)/2$] which leaves the remaining asset $\$[PV_{CF6,i} - (PV_{\xi6,i}/4)]$. The balance of deferred acquisition cost, properly amortised by the ‘annuity method’ is {opening asset $\$(PV_{\xi12,i}/4)$ + interest earned $\$[Int(PV_{\xi,1-6,i}/4) = \$ \sum_{j=1}^6 i \times (\frac{1}{4} PV_{\xi_j})]$, less six months’ amortization charges $\$(Am_j^*/2)$ = remaining asset $\$(1/4)PV_{\xi6,i}$ [equivalent to the present value of 6 more monthly amortization charges of $\$(Am_j^*/12)$]. The total assets are then equal at all times to the ‘deferred revenue’ (as in example #9a). However, with liabilities valued at exit value, as in example #9b, the NPV of $\$[(3/4)PV_{\xi12,i}]$ is included in the first half year’s profit, and assets exceed liabilities.

Under the deprival value approach, and given our assumptions, the ‘relief value’ of the liability at 31 December is equal to the present value of six months’ replacement’ revenue $\$(PV_{CF6,i})$ less the cost of acquiring it $\$(1/4)PV_{\xi6,i}$. If profit on inception of $\$(3PV_{\xi12,i}/4)$ is recognised (as in example #9dv(b)), the first six months’ bookkeeping for the related asset for ‘inherent goodwill’ / ‘embedded value’ will be [opening asset $\$(3PV_{\xi,12,i}/4)$ + interest $\$[Int(3PV_{\xi,1-6,i}/4) = \$ \sum_{j=1}^6 i \times (\frac{3}{4} PV_{\xi_j})]$, less ‘amortization/recycling’ $\$(\frac{3}{4}\xi_j)/2 = \$(3/4)PV_{\xi6,i}$ balance]. Assets then exceed liabilities by the inherent goodwill amount representing the undistributed amount of the initially recognised ‘profit on inception’ (and equal to the present value of 6 further distributions of $\$[(\xi_j - Am_j^*)/12 = (3\xi/4) \times (1/12)]$ ‘super-profit’ per month). So again, even if the balance sheet is presented on an ‘asset/liability’ basis, it is still possible to present the income statement largely in the traditional manner if there is also corresponding charge for what might perhaps be labelled ‘amortization of ‘inherent goodwill’ / ‘embedded value’ ’ (which together with the *pro rata* implicit ‘loss’ of acquisition cost of $\$(Am_j^*/2)$ needs to be ‘recycled’ out of the reported earned revenue). We do not discuss the income statement *presentation* issues further here.

Of course if no profit on inception is recognized the bookkeeping is that much simpler. Now the balance sheet ‘deprival value’ figures (as in example #9dv (a)) will be as for the ‘deferred revenue approach’ except that there will be no DAC asset, and the liability ‘relief value’ will be lower by the same amount, reflecting the acquisition cost to be incurred in replacing the profitable subscription. The

income statement amounts will also have correspondingly lower interest earnings and costs [by

$\$ \sum_{j=1}^6 i \times (\frac{1}{4} PV_{\xi_j})$ in the first 6 months, i.e. both becoming $\$(IntPV_{CF,1-6,i} - IntPV_{(1/4)\xi,1-6,i})]$ but will

otherwise be identical to those for the ‘deferred revenue’ approach (as there will still need to be a charge for the *pro rata* implicit ‘loss’ of acquisition cost of $\$(Am_j^*/2)$ which needs to be ‘recycled’ out of the reported earned revenue).