
DEBATING NATURE'S VALUE

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Sustainable Cost Accounting

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Abstract

This paper explores the relationship between natural capital accounting (NCA) and financial accounting (FA). NCA is viewed through the lens of the definitions provided by the Natural Capital Coalition (NCC) and the European Union's Integrated Natural Accounting project. FA is viewed through the lens of the current conceptual framework of the International Financial Reporting Standards Foundation (IFRS). The evidence presented suggests that NCA and FA make uncomfortable bedfellows, and both can be subject to criticism. This is primarily because FA requires the preparation of 'general-purpose financial statements' (commonly called 'accounts') whose principal purpose is to supply information to the providers of capital to an organisation with the aim of ensuring that they can make decisions relating to that activity, with the interests of any other stakeholder in the information that they require being secondary to that concern. NCA, on the other hand, is necessarily concerned with the interests of society at large, including civil society yet to be born, albeit that its definitions of natural capital may be limited in scope. There is, then, a conflict between the two methods of accounting that is hard to overcome within the current conceptual framework of FA. What is proposed to resolve this conflict is a new conceptual framework for accounting that explicitly makes the maintenance of production within the constraints of both low or no carbon emissions and the preservation of biodiversity the basis for capital maintenance and requires that financial provisioning take place if this goal cannot be achieved by all or any part of the reporting entity, the precautionary principle having been applied in the appraisal process. If as a result of that provisioning it is apparent that the entity is not viable in sustainability terms then it is suggested that it is a necessary conclusion that it cannot be in financial accounting terms either: the result is that the entity should be required to bring its activities to a close so that its capital might be reallocated for constructive use elsewhere. In this way the goals of society and financial accounting can be aligned.

Key words: Natural capital accounting; Financial accounting; capital maintenance concepts; climate change, sustainable cost accounting.

Introduction

The idea of NCA is relatively new. Natural capital is defined by the Natural Capital Coalition (NCC 2019) as *'another term for the stock of renewable and non-renewable resources (e.g. plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits to people'*. NCA is defined by the European Union (EU 2019) as *'a tool to measure the changes in the stock of natural capital at a variety of scales and to integrate the value of ecosystem services into accounting and reporting systems at Union and national level'*. The EU suggests that this will *'result in better management of the Union's natural capital'*. The NCC sees this issue differently. It suggests *'Natural capital is a stock, and from it flows ecosystem services or benefits. These services (where service is defined as 'a system supplying a public need') can provide economic, social, environmental, cultural, spiritual or eudemonic benefits, and the value of these benefits be understood in qualitative or quantitative (including economic) terms, depending on context'*. It is this process of quantitative measurement that introduces accounting into the debate.

FA does, however, have a very different view of the purpose of accounting. The IFRS conceptual framework (2018, page A17) states that *'The objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders and other creditors in making decisions relating to providing resources to the entity. Those decisions involve decisions about (a) buying, selling or holding equity and debt instruments; (b) providing or settling loans and other forms of credit; or (c) exercising rights to vote on, or otherwise influence, management's actions that affect the use of the entity's economic resources'*. What they add is that (IFRS 2018 page A18) *'Other parties, such as regulators and members of the public other than investors, lenders and other creditors, may also find general purpose financial reports useful. However, those reports are not primarily directed to these other groups'*. What the IFRS calls *'general purpose financial reports'* are what are commonly called financial statements or, more simply, accounts. What these statements by the IFRS make clear is that in their opinion FA is decidedly limited in scope. Its focus is the present, and then its only concern is for one of the stakeholder groups in society. Other stakeholders might include those an entity trades with as well as its employees, its regulators, its tax authority and civil society in all its forms (ASC 1975, Murphy 2019). These other stakeholders are all ignored by FA as it exists at present: the accounts it produces are not intended to meet their needs.

What is, then, readily apparent is that whilst both these concepts refer to accounting their focus is fundamentally different. NCA addresses long term issues impacting on society as a whole whilst FA addresses solely the interests of a particular entity and a particular stakeholder group of that entity at that. This being noted, this paper proceeds as follows. Firstly, the core accounting issue of what capital might be in each of these accounting frameworks is addressed. Next how that capital is to be appraised is considered. Thereafter possible ways to address the apparent conflicting capital maintenance concepts in NCA and FA are considered. As a consequence an alternative capital maintenance concept, described as sustainable cost accounting, is suggested as a way of reconciling these conflicts.

Capital

All accounting frameworks are built around what are technically described as *'capital maintenance concepts'*. The significance of these is that accounting has to measure progress against an identifiable objective. Maintaining the capital of the reporting entity is the standard almost universally adopted. In accounting jargon this assumes the adoption of what is called the *'going concern'* connect i.e. it is assumed that the entity wish to continue to exist, and so trade, into the future. It is reasonable to apply this idea to both FA and NCA. In FA this objective is achieved by maintaining the financial worth of the entity which, it is assumed, is necessary to ensure its perpetuation; in NCA it is instead appraised by taking into consideration the chance of continuing human life on this planet. Both are a form of going concern assumption. There is then commonality between the two systems to this degree.

Maintaining the resources that create this possibility of continuity is then assumed to be the core objective of the reporting entity within an FA framework. It so happens that it is also reasonable to read across this whole idea into NCA. In FA this assumption is used to define the concept of profit and loss: if a profit has been made then the reporting entity increases the amount of financial capital

available to it (subject to distributions to its members) and vice versa. It is making this short term profit that becomes the proxy goal of the organisation, being a proxy because it is the current representation of the long term aim of the survival of the entity that has the value of focussing attention on this singular objective. In contrast, in NCA this concept of gain or loss appears underdeveloped. The focus at present appears to be on reporting the stock of natural capital and not, at last as yet, on the resulting flow that reflects the process of gain or loss of that capital. This might be considered a current operational difference in emphasis between the two accounting methodologies, but the conflicts are more significant than that.

The essential difference between the two methodologies is implicit in their different understanding of the capital that they are maintaining. As the Oxford Dictionary of Accounting (Oxford 2019) suggests, there are in essence two capital maintenance concepts. The first seeks to maintain the financial capital of the reporting entity. What matters within this framework is whether or not there is an increase or decrease in the value of the financial capital available to a reporting entity during a period. This defines the recognition of gains or losses during a period. It is stressed that the term gains or losses is used deliberately: the accumulation of capital in this case is not solely defined by the consequence of trade undertaken in a period; instead the profit or loss on that has added to it the gains or losses arising as a result of holding assets and owing liabilities during a period. The value of many of these assets and liabilities are calculated by restating that worth as being their current (market) value at each period end to estimate the overall result reported. It is this concept that underpins International Financial Reporting Standards.

The main alternative capital maintenance concept that an entity might use is a physical capital maintenance concept. This framework assumes that the physical capacity of the entity is maintained during a period. This would usually imply maintenance of its operating capacity. In general terms this was the capital maintenance concept implicit in most generally accepted accounting principles (GAAP) that existed before the widespread adoption of IFRS at the behest of the European Union in 2005. It can also be reasonably presumed to be the capital maintenance concept underpinning NCA. In my own work that considered the concept of capital maintenance within an economy constrained by limited environmental resources (or natural capital) (Murphy 2013) I suggested that the measure of natural capital that might be utilised in a period is that stock of natural resources that might be used by humans at that point in time to support their material needs without prejudicing the opportunity of those in future periods to meet their needs in similar fashion. I would suggest creates a capital maintenance concept for NCA.

As is apparent, these two capital maintenance concepts conflict with each other. That of FA is derived from the thinking of John Locke, who suggested that natural capital can be possessed by a person when they combine it with their labour. FA does then assume that the reporting entity can appropriate natural resources for its own purposes in perpetuity (or at least so long as it exists) by making claim to either title over them or by making actual use of them in its trading processes. Since the entity is now obliged by IFRS to use a financial capital maintenance concept (no alternative being provided) this then necessarily means that the entity must apply a current market value to the resulting claim on natural capital so that those engaged in the process of trading financial assets (who are the users of its accounts) can decide whether they wish to partake in financing that capital, or not.

This concept does, then, assume that the claim on this natural capital is absolute, and peculiar (in the sense of being distinct to the exclusion of all others) to the reporting entity. What is more, it assumes that if, for example, the resource to which claim is made goes up in financial value because, for example, it is over-exploited and so becomes increasingly scarce, that the entity profits as a result. What is apparent as a consequence is that an external cost, i.e. the loss of resource to society at large, is interpreted by FA as currently constructed as giving rise to a gain that is consequently interpreted as being of private benefit. The delineation between the entity and society at large does then permit a capture of 'the commons' for private gain, and this process is encouraged the financial capital maintenance concept inherent in FA.

A physical capital maintenance capital concept, as implicit in NCA, would at least in part address this issue in FA, but only if FA was adapted to embrace the physical constraints clearly recognised as real by NCA. Traditionally the use of a physical capital maintenance concept by FA was associated with simultaneous use of what is known as historical cost accounting. This meant that assets and liabilities were (some limited exceptions apart) stated on the balance sheet of an entity at the price paid for them at the time that they were acquired. The primary exception was to require that those assets that were known to be incapable of realising the value paid for them in use had to, instead, be valued at that realisable value. This was considered a 'true and fair' over-ride in the interests of prudence. There is, then, historic precedent for alternative accounting bases in FA. What reconciling NCA and FA would, however, seem to require is another such framework.

Sustainable cost accounting

If the conceptual framework for IFRS accounting produces perverse incentives that are wholly unsuited to the long-term financial thinking that must underpin a sustainable future this framework has to be replaced as a basis for accounting. The question then arises as to what the replacement for it must be. That replacement cannot be historical cost accounting (HCA). There are three reasons for saying so. Firstly, this framework is, by definition, backward looking and that makes it unsuitable for the task now required of accounting. Second, as it had developed before replaced by IFRS (and similar standards in the USA and elsewhere) HCA had ceased to adhere to its own declared logic. So, for example, revaluation of assets was permitted by some standards even though that is inherently illogical within the HCA framework. HCA could not, then, be restored without such issues being addressed. Thirdly, the HCA framework had revealed itself not to be a useful basis for decision making, which rarely presumes past action is a good indicator of future performance. This is most especially true when we face a discontinuity in economic behaviour, which the actions required to address climate change represent. A new conceptual framework for accounting is, then, required.

This new conceptual framework must embrace a number of key issues. For example, it must be consistent with existing accounting data systems. In other words, the current framework of accounting data generation, based on double entry book-keeping and the production of general ledger data that supports financial reporting, must also be the basis for this new framework. There is no time, and for governance purposes, no good reason to presume that an alternative to this data basis for accounting be required. To base the framework on existing data production methods also

has the advantage of making a transition to a new conceptual framework relatively easy to achieve. Basic double entry book-keeping can, then, survive intact.

Another essential quality of this new framework is that it must be forward looking. This will be most obviously true with regard to its ability to anticipate losses. It must not then account for losses on what is called a realised basis, as the IFRS conceptual framework has on most issues for most of its existence. The implication of the IFRS approach has been that no loss has been recognised until it has been incurred even though the probability of it arising might be both capable of estimation, and high. This IFRS basis for accounting is not prudent; what it necessarily means is that losses are recognised in accounts some time after the chance that they might arise has usually been recognised by management. This is also profoundly misleading to all stakeholders of an entity, who are as a consequence provided with misstated information on the losses arising from activity arising during a period as a result of the use of this approach in the IFRS conceptual framework.

An alternative conceptual framework must, then, account for losses on an anticipated basis. This would mean that the concept of prudence would be reintroduced into accounting's conceptual framework. The losses in question might cover a range of issues, from bad debts, to unserviceable bank loans, to assets likely to be stranded by the need to meet carbon usage objectives, to provisions made against the cost plant and machinery rendered redundant by changing processes resulting from meeting climate change requirements.

The framework must also have a forward-looking focus when considering capital sufficiency for the sake of protecting all stakeholders of the reporting entity. The aim is not just to protect creditors from the possibility of loss arising as a result of their engagement with the company. All stakeholders must be protected in the same way. This means that a current ability to settle liabilities as they fall due will be an insufficient criteria for viability within this framework. What this means when reconciling FA and NCA, which this new conceptual framework must do, is that if a company cannot demonstrate that it has the ability to maintain its activities in the long term as a going concern within the constraints that the environmental crisis that we face impose upon it then the costs to be incurred to meet those demands that climate change will impose must be provided for in the present period and be treated as a cost.

To achieve this requirement what this framework would effectively require is that a company prepare a living will for its activities that suggests how those activities might either survive as a result of undergoing a necessary process of change, or cease to be undertaken. The onus of responsibility, and so of proof, that the process of change to meet carbon emission and other sustainability targets (such as biodiversity constraints) will fall upon the company and the precautionary principle must apply i.e. if the necessary change cannot be suggested to succeed with a very high probability of success then provisioning must take place.

The process of provisioning, it is stressed, is not in this scenario one that considers financial viability alone. For example, it is well known that action that is inconsistent with the imperatives that global heating create can produce financial reward. Financial return is, then, an inadequate and can even be a misleading measure with regard to sustainable cost accounting. Rather, sustainable cost accounting will require that a reporting entity consider whether the processes it undertakes can be

made consistent with the overall aim of reducing carbon emissions, maintaining biodiversity and other necessary constraints. This requirement is, after all, the physical capital maintenance concept that is in use in this method of accounting. The condition for viability is not then financial alone: the requirement is to appraise the processes of the reporting entity and finance only comes into account when the costs of making those processes compliant with low or no carbon emission standards, biodiversity maintenance and other appropriate standards are taken into account. The consequence might be that a company may decide that it is financially solvent but has, nonetheless, to cease an activity, or even trade, because of the environmental constraints upon it. In that case what sustainable cost accounting would suggest is that a company can be insolvent not for reason of lack of funds, but because the impact of the reporting entities processes cannot be managed within the capital maintenance concepts that NCA suggests apply to it.

The result might be that cessation to trade occurs when an entity has a surplus of financial assets. A lack of financial resources will not then be the reason for it ceasing to trade, as is almost invariably the case in an FA dominated environment: that reason for that cessation will be that its climate cost is unsustainable and cannot be remedied by investment in alternative methods of working within a foreseeable time horizon. This is logical: if this is the case it follows that as a matter of fact that the activity being reported is already imposing that cost on the environment. What sustainable cost accounting indicates is that society cannot afford that cost. As such the activity should cease now, even if financially viable and the costs of closure must be provisioned and plans for ceasing to trade must be made.

What this makes clear is that the focus of this conceptual framework is an issue of proper resource allocation, which is precisely what the IFRS Foundation says accounting should be about. The purpose of the framework is to indicate action required by reporting entities to address issues arising from climate change and to plan for their management. If the resulting indication is that a reporting entity cannot manage that process of change because it cannot indicate how or when it might have command of the resources required to do so then society must require, by statute law if need be, that a company that records a deficit of assets after provisioning for climate change costs cease to trade now so that the resources it now commands at present can be reapplied to other purposes. This is an achievement of the goal of accountancy as a consequence.

In making this suggestion on capital maintenance it is stressed that the costs to be considered should not be discounted. Climate impact is not capable of being discounted: it is real, for the long term and potentially irreversible. This makes the idea that the costs it creates can be discounted by a process of financial mathematics to be represented in current accounting periods at less than the cost that they might actually impose both anachronistic and inappropriate. Doing so would not fairly represent the burden that a company might create. Discounting may have a role in financial decision-making and can, of course, be used by those who both understand it and appreciate when it might have use. Accounting to society at large on climate change is not an occasion when it is of use.

It is stressed that to achieve these outcomes the framework has to be clear as to its intention. This intention is to ensure that reporting entities have taken into consideration the costs that they will incur to ensure that their obligation to be part of a viable and sustainable community has been

fulfilled. This can only be achieved if the process used to appraise this viability is disclosed in the process of sustainable cost accounting. This will necessarily require that all material assumptions also be detailed, with their impact being noted. To ensure that those assumptions are reasonable this new conceptual framework must be subject to audit.

That leaves one further issue to address. If the transition to long term viability requires that capital be raised to cover deficits and costs that require provisioning in the present period then the new conceptual framework must require that the mechanism for raising that capital must be explicitly recorded in financial statements prepared on a going concern basis so that the implications for the current suppliers of capital to a company can be properly appraised. In this context, if capital insufficiency results from the required adaptation to the current business model and it is suggested that future revenues will cover this cost then the model that is used to forecast these revenues will have to be disclosed i.e. sufficiently detailed forecasts that indicate the funds to be raised from future trading, their use for the necessary expenditure on the transition to sustainability and the impact that this might have on other uses of those resources e.g. on making payment of returns to shareholders, will have to be both disclosed and audited. The chance that a solution might be found which cannot as yet be identified cannot be afforded in this model; in other words the precautionary principle must apply to all the assumptions made, including to trading assumptions.

The result of these considerations is that in this new conceptual framework assets will be stated at the lesser of:

- a. their historical cost or (in the case of leased and similar synthetic assets) a deemed equivalent cost, or
- b. their realisable value within their existing use, or
- c. either of those sums less the cost of the asset's redundancy created by the imposition of climate change requirements on the basis noted above.

Similarly, in this new conceptual framework liabilities will be stated as:

- d. the sums falling due in future periods as a result of commitments entered into the current period excluding those sums appropriately to be charged as revenue expense in those future periods (such as interest and in some cases rents), without discounts being applied;
- e. the sums due in respect of liabilities arising in future periods as a result of the constraints imposed by climate change;
- f. provisions as currently understood, but without discounts being applied unless that is necessary to reflect financing costs to be appropriately recognised in future periods.

The resulting conceptual framework represents sustainable cost accounting. Its merit is to, firstly, anticipate losses, which is an essential quality that has to be restored to FA, come what may. Second, it explicitly builds the cost of climate heating and other changes, such as human impact on

biodiversity into financial accounting, which to date no accounting system has done. In the process, thirdly it embraces the necessary concept of reporting to civil society a large, which FA has ignored for far too long. Last, and perhaps most important, it should help promote the required reallocation of capital that our environmental crisis requires.

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