The Concept of Probabilistic Economic Costs in Accounting and Disclosure

The Transition from Double-Entry to Triple-Entry Accrual Accounting

Introduction

Double-entry bookkeeping is the front of accrual accounting, where credits and debits that account for income/assets and expenses/liabilities are accrued in ledgers to be posted to financial statements for consolidation and reconciliation at the end of reporting periods. Together, double-entry and accounting principles (revenue recognition principle, matching principle, going concern assumption and others) constitute the foundation of accrual accounting.

However, double-entry is only able to accrue expenses that have already incurred in recognition of bilateral transactional revenue ("bilateral revenue"), such as goods sold and services rendered. It is not able to accrue probabilistic economic costs ("PEC") in recognition of unilateral non-transactional revenue ("unilateral revenue") [1], which is forward-looking and derived from unilateral economic activities based on assumptions that beget uncertainties.

As unilateral revenue is based on assumptions, its costs are usually unknown initially and cannot be matched when unilateral revenue is recognized. Therefore, there is no debit-entry accrual of PEC in recognition of unilateral revenue, which allows un-accrued PEC to lurk in the dark as an accounting ghost waiting for the worst moment to implode. In other words, significant un-accrued PEC portends sudden valuation/economic impairments that could result in economic insolvency, such as the implosions of Lehman Brothers and Iceland during the 2008 financial crisis.

Perhaps the biggest mistake that the accounting profession has made historically is its failure to recognize and develop a forward-looking accrual entry for PEC in revenue recognition and allow unilateral revenue to be recognized as expense-free revenue during the last several decades. As a

[1] Examples of unilateral revenue include derivative valuation gains as corporate revenue based on aggressive pricing assumptions; pension funding deferments as state fiscal revenue based on the assumption that the can could be kicked down the road indefinitely; money printing as national fiscal revenue based on the assumption that the cost of inflation could be deferred indefinitely; unilateral revenue derived from acquisitions of natural resources based on the assumption that the environment would never be given legal personhood to be self representative in enforcement of its own economic rights (please see my comments on SASB's ESG reporting standards attached to this letter).

result, unilateral revenue has grown rapidly to now account for significant portions of corporate and fiscal revenue and the un-accrued PEC has become the root cause of the current global economic malaise. At the same time, most of the accounting principles have been subverted by the presence of PEC and accrual accounting has become seriously flawed[2]. Hence, it is time for the concepts of revenue and going concern to be legally defined either by the FASB, SEC or Supreme Court.

Probit – The Third Ledger Entry

As double-entry accrual accounting regimes, such as GAAP and IFRS, are unable to effectively accrue the forward-looking PEC in revenue recognition, this article proposes to expand the double-entry, solvency-profitability reporting model to a triple-entry, solvency-profitability-valuation reporting model so as to complete the missing link of accrual and match of PEC in recognition of unilateral revenue as follows:

1. Credit (Cr.): Ledger entry for bilateral revenue.
2. Debit (Dr.): Ledger entry for bilateral expenses.
3. Probit[3] (Pr.): Ledger entry for unilateral PEC.

PEC would be calculated from the relative degree of uncertainties in assumptions of unilateral revenue and accrued (cataloged) during GCR audits to be subject to discharges (see below). In other words, PEC would be entered in accounting journals as probits to be posted in valuation statements, which are GCR rating reports, for accounting consolidation and reconciliation at the end of reporting periods. This accrual-discharge-match process would represent the accounting procedure of the triple-entry, solvency-profitability-valuation reporting model in GAAP.

PEC probit entries are not single, certain numbers but inventories of PEC ranging from the most conservative to the most aggressive scenarios under unilateral revenue assumptions. As markets move in the opposite direction to the assumptions, especially when the issuer GCR is already in zone of insolvency, a certain PEC probit would be analytically chosen from the probit entries to be

[2] For more information on the current status of accounting, please read *The End of Accounting and the Path Forward for Investors and Managers* by Baruch Lev and Feng Gu.

[3] Following the same etymology of credit and debit, which are derived from Latin words Credere (to give) and Debere (to owe), probit is derived from the Latin word Probare (to test or prove) as is probability.

discharged, either at once or in several smaller discharges successively subject to the speed and depth of the opposite market movements in one of the following types of discharges:

1. GCR rating discharge.
2. Accounting discharge by issuer.
3. Economic discharge by issuer.
4. Regulatory discharge.

1. GCR rating discharge would be usually the first to occur among the four types of discharges. Rating discharge of PEC would be made against incremental insolvency risks, which would affect price discovery of the issuer's capital instruments, including equity price, bond yields, CDS spreads and loan pricing. The total sum of the affected valuation should in theory be equal to the amount of PEC discharge. GCR rating discharge of PEC can be made either for the current reporting period or against historical accumulations.

2. The issuer could choose to discharge (write-off) PEC voluntarily against revenue in income statement for revenue-expense matching if they are recognized during the current reporting period. New management would likely take such accounting actions in the wake of implementing new business strategies but they must act very carefully in order to mitigate litigation exposures.

3. Issuers could also choose to discharge historically accumulated PEC by issuing zero-coupon bonds to refinance existing coupon bonds or loans. The amount of the PEC discharge should be equal to the funding gap between the face value and the discount. Economic discharges are usually made gradually either in balance sheet or income statement during the life of the zero-coupon bonds in order to be credible and gain investor confidence.

4. Regulatory discharges of PEC are always aimed at historical accumulation beyond current reporting periods, especially when PEC has become significant contingent debts. For example, the ultimate economic costs of replacing all the corroded pipes in the Flint water contamination scandal has so far grown to 3,000 times more than what could have been modest economic costs if early preventions were implemented. In this case, regulators, such as the FSOC or the SEC, must take early regulatory actions by discharging PEC directly against Michigan the municipal issuer to prevent the PEC from further accumulation beyond control.

PEC probits would be cataloged for 10-K/Q disclosures under Regulation S-K and the safe harbor protection of the Private Securities Litigation Reform Act of 1995, given that reporting of PEC accruals in GAAP could potentially give rise to catastrophic litigation in the absence of safe harbors in accounting reporting. PEC discharges and match in revenue recognition, however, would be reported in GAAP financial statements via the four types of discharges because GCR analyses and rating actions would be quantitatively, legally defensible. In a nutshell, probits would constitute visible audit trails for otherwise invisible PEC that is currently un-accrued, un-matched, without audit trails and prone to financial impairments later on.

Conclusion

As the current double-entry, solvency-profitability reporting model in GAAP no longer accurately, timely convey incremental information on economic activities in the presence of PEC, a triple-entry, solvency-profitability-valuation reporting model in GAAP is proposed in this article. Accruals of PEC therefore would be entered as probits in accounting ledgers to be posted in financial statements for reconciliation and consolidation.

Thank you very much for the opportunity to comment and please do not hesitate to contact me should you have any questions regarding my comments.

Sincerely yours,

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Related Articles by Simon Hu

1. *Is ESG Reporting a Utopia or Reality?* (attached below).
2. *The Continuing Evolution of Accrual Accounting - In the Context of Depreciation Accounting and Going Concern Rating.*
3. *Disclosure, Discharge and Reporting of Going Concern Uncertainties.*
4. *Going Concern Rating Methodology.*
5. *Government Accountability Rating Methodology.*
6. *Going Concern Rating and Economic Analysis of Insolvency Risk.*

Appendix

Is ESG Reporting a Utopia or Reality?

My Comments on the SASB's ESG Reporting Standards

Introduction

ESG reporting, which is largely comprised of ESG accounting and rating, has made significant progress in terms of investor awareness since its inception in the late 1980s but getting it incorporated into the investor economic calculus has remained challenged. According to "*Sustaining sustainability: What institutional investors should do next on ESG*," a recent report by McKinsey & Company, less than 1 percent of the total capital of the 15 largest US public pension funds is allocated to ESG-specific strategies. In this article, I explain the fundamental deficiencies of ESG reporting in its current form and present a viable solution.

The Problem

If implied economic costs of ESG risks were to be recognized as legitimate expenses in accounting reporting, the environmental legal personhood must be established so that the economic costs can be accrued and matched in revenue recognition and alleged management misrepresentations in ESG reporting can be litigated. This is crucial as the environment is not self-representative in words and actions. However, is it an attainable goal?

The concept for the environmental legal personhood was first presented by Professor Christopher Stone in 1972 in his seminal article "*Should Trees Have Standing? - Towards Legal Rights for Natural Objects*." During the same year, Justice William Douglas endorsed the concept in his dissenting opinion in the landmark environmental law case *Sierra Club v. Morton* [405 U.S. 727 (1972)]. Unfortunately, these early efforts failed to launch a sociological evolution in law toward recognizing the environmental legal personhood in conflict resolutions. While various interest groups in the US have attempted to bring legal actions as guardians of the environment, the efforts have largely stalled due to that the threshold for standing is economic injury to the plaintiff instead the environment that the plaintiff tried to prevent, but the link from personal injury to environmental injury is difficult to establish.

In the absence of the environmental legal personhood and the presence of national sovereignty, the following structural impediments for ESG reporting quickly emerged:

1. Adoption of ESG reporting in autonomous national accounting and legal systems is highly problematic and uncertain due to:
    a. The economic costs of ESG risks cannot be accrued and matched in revenue recognition of double-entry accrual accounting.
    b. The absence of legalization of ESG risks in financial reporting abdicates ESG reporting of its accounting authority via interaction with law, including contractual law, state corporate law, litigation, tax law and securities law.
    c. Uncertain future of global carbon regulations, including climate modeling, reporting, audit and enforcement at the national level, presents significant level of uncertainties in ESG reporting.
2. Difficulties in establishing a monetary materiality threshold for ESG reporting given most of the ESG risks, such as pollutions or violations of environmental regulations, have already been covered by insurance. This effectively removes the ESG factors from the investor economic calculus of risk, return, market exit, price discovery and investor dispute resolution.
3. Inconsistent ESG risk analyses, i.e. ESG equity analysis is subject to an implied perpetual going concern status and ESG rating is in the context of incremental credit risks subject to bankruptcy. Hence, the score-based ESG equity analysis and ESG ratings do not add any incremental probabilistic information to the investor economic calculus.

The Solution

ESG risks should be analyzed in the context of going concern valuation ("GCV") – insolvency risk discounted cash flow valuation that would unite the otherwise separate ESG equity and credit analyses. Hence, probable environment accidents or environmental regulatory violations ("probable ESG risks") would be recognized as contingent environmental stakeholders with contingent claims on GCV in going concern rating ("GCR"). In this economic analytical framework, ESG risks would be analyzed, disclosed and reported as follows:

1. Define the probability threshold for the probable ESG risks subject to GCR environmental audit. The accrual of probabilistic economic costs ("PEC") of the probable ESG risks, i.e.

an inventory of probits in a triple-entry journal, would be disclosed in 10-K/Q under the safe harbor protections of the Private Securities Litigation Reform Act of 1995.

2. Define the GCV materiality threshold for discharges of PEC of the probable ESG risks. The matching of economic costs of ESG risks in revenue recognition would be reported in financial statements.
3. Upon the probability threshold, the probable ESG risks would be recognized as a contingent environment stakeholder in GCR to change the notching order for issue GCRs. Custodians for the contingent environmental stakeholder, including insurance companies, would be defined subject to the amount of economic injuries.
4. Upon the GCV materiality threshold, PEC would be analytically discharged to affect GCV reallocations among regular stakeholders and the contingent stakeholder.
5. ESG related disputes would be subject to arbitrations by alternative legal discovery panels which are hybrid socio-legal institutions designed as a catalyst for the sociological evolution in jurisprudence for resolutions of ESG related conflicts (among other hybrid global social-political-economic conflicts)
6. GCV allocation to the contingent environmental stakeholder would be deposited in escrow accounts as environmental loss reserve to be distributed to the custodians upon actual materialization of the probable ESG risks.

Conclusion

ESG reporting in its current form, i.e. score-based equity analyses and ESG ratings, do not add any incremental probabilistic information to the investor economic calculus. Furthermore, it cannot be incorporated into the autonomous national accounting and legal systems given the lack of environmental legal personhood, double-entry accrual accounting and national sovereignty.

Going Concern ("GC") Economics is a new economic theory that would usher in the sociological evolution in jurisprudence for resolutions of hybrid global social-political-economic conflicts and triple-entry accounting to effectively incorporate ESG reporting into the GCR analytical framework.

I appreciate the opportunity to comment on the new SASB standards and would be happy to further discuss my comments.