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# The relationship between accounting profit and economic income

John Ryan

*University of Western Sydney, [jryan@uow.edu.au](mailto:jryan@uow.edu.au)*

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# The relationship between accounting profit and economic income

## **Abstract**

The reliance on economic concepts, most notably economic income, for the measurement of profit in financial accounting is misplaced. This paper explores the concept of economic income, contrasting it with the concept of profit in the conventional accounting model. The concept of individual economic income cannot be used for measurement of profit for a past period as the concept is based on the capitalisation of expectations and excludes "separate but correlated" concepts of profit and capital needed for capital maintenance.

## **Keywords**

profit, income, between, relationship, accounting, economic

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## **The relationship between accounting profit and economic income**

### **Abstract**

The ascendancy of economic concepts, most notably economic income, and reliance on them for the measurement of profit in financial accounting is misplaced. Schipper and Vincent (2003) and Justice Owen of the HIIH Royal Commission provide recent examples of the dominance of economic ideas. This paper explores the concept of economic income, contrasting it with the concept of profit of the conventional accounting model.

As Kaldor (1955) has shown, the Hicksian concept of individual economic income cannot be used for measurement of profit for a past period as the concept is based on the capitalisation of expectations, and excludes “separate but correlated” concepts of profit and capital, needed for capital maintenance. The Alexander/Solomons (1962) concept of variable income allowing for uncertainty is unable to escape the limitations of capitalised expectations. Attempts to develop support for a concept of current income from the economic model are also found wanting.

Acceptance of these conclusions has implications for identifying relevant criteria in conceptual frameworks to guide the setting of accounting standards.

Key words:

*accounting profit, economic income*

## Introduction

The motivation for this paper is to explain why economic income based on capitalisation of future expectations is unsuited for the measurement of past profit. A secondary motivation is to contrast and to reconcile the concepts of accounting profit and economic income by showing the different purposes for which each is suited. The largely conventional explanations of accounting profit have not been accepted, and the charge of R S Edwards (1938: 13) that “financial accounting appears to be without any adequate concept of income” remains unresolved<sup>1</sup>. In this spirited challenge against the traditional measurements employed in accounts, Edwards (1938) advocated the use of present values.

An impressive list of accounting theorists who accept present values as ideal measurements, and which accounting is prevented from applying for practical reasons, includes Solomons, 1961; Beaver, 1981, and more recently, Schipper and Vincent, 2003 . Yet, in spite of several authors (Kaldor, 1955; Shwayder, 1967; Ryan, 1969; Barton, 1974) demonstrating their lack of suitability for profit measurement, economic concepts continue to exert an influence on accounting practice. Indeed, Skilling only joined Enron as chief operating officer in 1990 when Lay, Chairman and CEO, agreed that the firm could use “mark-to-market” accounting. But in Skilling’s interpretation, mark-to-market allowed the entire estimated value arising from a contract to be booked on signing. Moreover, McLean and Elkind (2003: 39) claim that Skilling “had never let go of the consultant’s conceit that the idea was all ... that a business should be able to declare profits at the moment of the creative act that would earn

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<sup>1</sup> During 1938 Edwards had published a series of articles on “The Nature and Measurement of Income” in *The Accountant* that were regarded as so radical that his immediate boss at the London School of Economics, Rowland, publicly disavowed him in the same Journal, describing the articles “as dangerous nonsense made the more dangerous by the fog of words in which assumptions are disguised as truths” (Parker, 1999). His charge, however, simply echoed a similar claim Canning (1929b) attributed to economists nine years earlier. However, Canning did not prescribe a similar solution to that of Edwards.

those profit.”<sup>2</sup>

Two further aspects of the Enron affair are worth noting. First, within a short time of joining Enron, Skilling had persuaded the Audit committee of Enron’s Board, Andersen its external auditor, and the SEC to endorse the use of mark-to-market accounting. Second, in discussions of accounting methods, Skilling argued that mark-to-market reflected the “true economic value”, whereas he felt historical cost accounting (HCA) had lost credibility over the S&L crisis, still in “full swoon” in 1990 when he joined Enron.

Indeed, it is only since about this time that the US has apparently abandoned the prohibition on the use of “upwards revaluations” which had come to be generally applied in financial statements in the UK and commonwealth countries following the passage of the UK Companies Act of 1947. Disclosure of revaluations, particularly of major assets like land and buildings held over a long period, were welcomed by the market, thereby exposing one of the limitations of HCA in not disclosing the market selling prices of assets as part of normal financial reporting practice.

Furthermore, Justice Owens of the HIH Royal Commission stated that “[f]undamentally the accounting for a transaction should reflect the economic substance of that transaction” (Owen, 2003: VI, 319; emphasis added). Clause 4.1.8 of AASB 1001, *Accounting Policies*, stipulating the relevance and reliability criteria, requires the substance of a transaction to be reported rather than its form. It will be noted that in the above quote Justice Owens interpreted substance as “economic substance”, adding judicial weight to the significance of an economic approach<sup>3</sup>.

The aim of the analysis is to demonstrate that economic income, as an indicator of the

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<sup>2</sup> Skilling was in good company with this idea, which Irving Fisher (1930: 50) had labelled “psychic income”. Frankel (1949: 101) was caustic in his criticism of Fisher and other economists who attempted to apply the concept of psychic income, arguing that it led to “infinite regression” of “introverted observations”.

amount available for consumption, cannot cope with either actual or expected changes in cash flows, or with actual or expected changes in the rate of discount. Thus, while the economic model is relevant for valuing future expected cash flows, it is not designed to cope with the actual transactions on which measurement of profit for a past period is based. The research method employed is basically analytical, taking as its starting point the assumptions of the neoclassical economic model, which are introduced at the commencement of the analysis in the next part.

For the purpose of comparing and contrasting accounting profit with economic income, the secondary motivation, it is necessary to outline the basic accounting principles assumed for HCA. I have referred to Skilling's comment that HCA had "lost credibility" over the S&L crisis. Hence, for an overview of the HCA system, I have relied upon authorities from an earlier period when there was "general acceptance" of the basic principles. However, while this overview is sufficient for the purpose of the comparison with economic income, it is not intended as a full review explaining HCA. Accepting that accounting is a measurement and communication function, a full review would require an excursion into measurement theory, something beyond the scope of this paper.

Two authorities, Paton and Littleton (1940) and Vatter (1966), are relied on for the main assumptions underlying historical cost accounting (HCA). Vatter (1966: 74-75) drew attention to the universal professional acceptance of the principles of realisation and cost allocation, fundamental to any explanation of HCA. To "round out" these principles of the HCA system for my analysis two assumed objectives, or information needs, are included. These are, first, reporting to shareholders financial statements disclosing whether the paid in money share capital has been maintained before a dividend is declared, including profits available for dividend (the capital maintenance objective); and, second, the accountability of the directors to shareholders for the use of the money resources entrusted to their control (the stewardship objective).

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<sup>3</sup> As conceptual frameworks are intended to guide the setting of accounting standards, the interpretation of the overarching relevance and reliability concepts by reference to a particular standard is, on the face of it, odd.

For both of these purposes, monetary profit<sup>4</sup> is required to be a clear surplus, or excess, over and above the initial “paid in” money capital. A genuine or “true” surplus can only arise with an increase in the net amount of the money consideration of relevant transactions changing property rights of the entity. Transactions provide the fundamental measurements underpinning the general system for external financial reporting (Littleton, 1933; Paton and Littleton, 1940; Ijiri, 1967; Willett, 1987, 1988; Salvary, 1992; Gibbins and Willett, 1997).

The analysis is organised as follows. First, the lack of relevance of Hicks’ (1946)<sup>5</sup> concept of economic income for measuring profit for a past period is demonstrated, with Kaldor’s (1955) criticism highlighting the lack of the concepts of capital and profit. Second, attempts by Alexander (1950), and Alexander/Solomons (1962) to adapt economic income by allowing for future uncertainty are evaluated and found wanting. Third, Beaver (1981) returns to the basics of economic income in a simple example, in which the priority he accords economic valuation over profit measurement is challenged. Fourth, an article by Demsetz (1995) sets the scene for contrasting accounting and economic rates of return. Rayman (2006) elevates the rate of return to the rationale for financial reporting. Fifth, the weaknesses of the claim that market values of assets are surrogates for the capitalised present value of the asset’s future expected net cash flows are demonstrated. Policy implications for the setting of accounting standards conclude the paper.

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<sup>4</sup> This term “monetary profit” was used by the Institute of Chartered Accountants in England and Wales (1952) and by Schumpeter (1954) to describe a similar concept of profit as that outlined. Canning (1929a) also used the term “monetary profit” but without identifying clearly his intended meaning.

<sup>5</sup> Hicks’ (1946) oft quoted concept of individual economic income differs from the Fisherian notion in that Hicks defined income as the amount available for consumption after maintaining capital intact. Hence Hick’s definition excluded any consumption financed from capital whereas Fisher’s included it, and, conversely, savings, included in the Hicksian concept, are excluded from Fisher’s income. Yet, in Chapter XV on production Hicks (1946: 196) showed a similar understanding to Fisher of the role of actual cash flows for the measurement of profit of a firm.

## Why economic income is unsuitable for periodic profit measurement

Since the concepts of capital maintenance and personal, individual income outlined by Hicks (1946: Chapter XIV) have been the dominant influence on the thinking of accounting theorists they are analysed in detail from the perspective of profit measurement. Capital maintenance is obviously important to individual consumers so that they do not impoverish themselves<sup>6</sup>. The Hicksian concepts are first outlined, then an example is used to demonstrate their shortcomings. Kaldor (1955) is then drawn on to explain the conceptual deficiencies. This first part concludes with a summary of the differences between accounting profit and economic income.

Hicks (1946: 172-77) distinguished three approximations to his central meaning of income, expressed as “the maximum value which a [person] can consume during a week, and still expect to be as well off at the end of the week as he was at the beginning”. Concept No.1 defined income as “the maximum amount which can be spent during a period if there is to be an expectation of maintaining intact the capital value of the prospective receipts (in money terms)”. So capital value in this first approximation is a *capital sum* measured in money terms. Hick’s concept No.2 defined income as “the maximum amount that the individual can spend this week, and still expect to be able to spend the same amount in each ensuing week”. Capital in this second approximation is the *stream of current and future periodic expenditure* (on consumption). Concept No.3 modified this second concept by the introduction of *in real terms* to the future expenditure. For the analysis here it can be ignored as results similar to No.2 are obtained.

Consider an annuity of \$10,000 per annum payable on the last day of the year. Assuming a rate of interest of 5% per annum, the annual cash flow has a present value of \$200,000.

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<sup>6</sup> There is no rationale in economic theory for maintenance of the firm at a particular size, or level of capital, however defined. Indeed, according to economic theory, resources should flow to the most efficient firms with the inefficient liquidating. Capital maintenance for companies is a creature of the law for the protection of the right of creditors to precedence over shareholders in the settlement of their accounts. Edwards (1938) believed that the legal doctrine of capital maintenance inhibited development by restricting the mobility of capital.

Without any expenses the annual income to the annuitant is equal to the cash flow of \$10,000. In terms of the usual terminology annual income for the year ended at time t is:

$$Y_{(t)} = iPV_{t-1} = .05(200,000) = \$10,000$$

where

$i$  = discount rate

$PV_t$  = present value at time t of the future net cash flows discounted at  $i$ .

Relaxing the assumption of future certainty, let us assume that the first cash flow received is for \$11,000, and that the revised expectation is that the annuity will continue to be \$11,000 per annum in the future. There is no change in the rate of interest. Hence, at the end of the first year the annuitant will have the \$11,000 in cash and an asset valued at \$220,000 (the present value of the annuity of \$11,000 per annum discounted at 5%). Now in terms of Hick's concept No.1 "capital value" is interpreted as the "capitalised present value". If maintenance of this "capital value" is the objective, then income for the year is \$31,000; the \$11,000 cash receipt plus the \$20,000 increase in present value. There will only be the \$11,000 cash available for consumption whereas the present value profit calculation suggests that \$31,000 can be consumed.

A change in the interest rate used as the discount rate is now considered. Suppose the interest rate increases to 6% per annum on the first day of the period, with the expectation it would continue at that rate for the future, with the annuity being unchanged at \$10,000 per annum. The increase in the rate of interest would cause a fall in the present value of the annuity to \$166,667 ( \$10,000/.06). With the cash flow unchanged, income would now be \$10,000, minus the fall of \$33,333 in the present value, a loss of \$23,333. So, assuming this economic model was relevant, the individual consumer would have no income from this source, although there is no change in the cash amount received in respect of the annuity.

These two examples of change, first in the amount of the annuity, the sole cash flow, and second, in the interest rate, demonstrate that maintenance of the capital value, as capitalised present value, is fraught with difficulty, leading Hicks to develop Concept No.2 as an alternative approximation to the central concept, and one that could cope with changes in interest rates. Concept No.2 is based on maintenance of current and future expenditure on consumption, with current income being the amount that could be consumed "this period and

in all future periods”. Hence, if the amount of the annuity is expected to remain the same for the current and future periods, a change in the rate of interest would not have any effect on the consumption of the annuitant.

In this way, Hicks (1942), applying a method from Lindahl (1933), effectively argued that any unexpected change in value should be quarantined from current income. Kaldor (1955) agreed, regarding these unexpected changes as instantaneous revisions of capital. Thus, applying this approach, the individual could continue to spend on consumption the \$10,000 cash flow from the annuity received each year. This supports the notion in historical cost of capital as the amount directly or indirectly contributed by the owners, the amount of this capital contribution being separate and distinct from the present value of the assets. Accepting the present value of assets as relevant for the measurement of income and capital maintenance would cause fluctuations in individual income unrelated to the ability of individual consumers or shareholders to engage in consumption.

What these examples demonstrate is that the Hicksian concepts based on calculation of the present value of future expectations for the purpose of measuring income for a past period are unable to cope with a change in expectations, leading Hicks (1946: 177) to conclude that “we shall be well advised to eschew *income* and *saving* in economic dynamics. They are bad tools which break in our hands”.

Kaldor (1955) identified the specific reason why this is so in the Hicksian analysis. Capital has been interpreted as the *capitalised value* of the future income stream. Capital as such does not exist as a separate element, distinct from income - both are defined in terms of the future net cash flows. As Kaldor (1955: 64) demonstrated this approach eschews any connection between the notions of capital and income. He wrote:

In Hicks the source disappears as a separate entity - capital appears only as the capitalized value of a certain future prospect and income as the standard stream equivalent of that prospect. Capital and income are thus two different ways of expressing *the same thing, not two different things*. (Italics added; Hicks’ “same thing” is the “certain future prospect”).

The point is also demonstrated by contrasting maintenance of the current/future income stream with capital as a separate amount. Again quoting Kaldor (1955: 65):

...‘the maximum amount the individual can spend this week and still expect to be able to spend the same amount each ensuing week’ is thus not necessarily identical with ‘the maximum amount the individual can spend this week after maintaining his resources intact; and when the two differ, the former notion ceases to have any operationally definable meaning’. The reason for this is that Income and Capital are separate but correlative notions; and neither could be endowed with a definite meaning in entire abstraction from the other.

Put simply, present value concepts do not include “separate but correlated” concepts of capital and profit as these terms have been understood and applied by accountants in practice for measurement of profit for a past period. Capital as the term is used in external financial reporting denotes the contribution of economic resources to the entity by those with ownership rights; or, in the case of a company, the funds contributed by its beneficial owners, the ordinary shareholders. Capital constitutes a source of funds financing resources. Profit is the increase in those resources from their use, this increase accruing to those with ownership rights, or, in the case of a company, the beneficial owners; it is a genuine increase over and above the contributed capital. It is assumed, of course, that the economic resources are being measured on a consistent basis throughout this process of comparison.

Thus measurement of profit for a past period for the purpose of ascertaining whether capital - a paid in fund - has been maintained is an altogether different problem from measuring economic income for a future period using present values, i.e.,  $iPV_{t-1}$ . The concept of present values is based on the total future net cash flows expected from the economic resources less the amount of the discount, and as such it does not include a separate concept of capital (or economic resources for that matter). Moreover, the capitalised present value and economic income are based wholly on expectations whereas accounting profit is based on actual transactions, although it must be recognised that the amounts derived from transactions for assets existing at balance date depend on their cost less depreciation, or other “cost based” amount, being recoverable.

Under historical cost accounting the concept of depreciation is one of cost allocation providing for the recovery of the investment, or cost outlays, out of the revenue in determining the funds available for individual consumption, or for distribution to shareholders. This is in contrast to present value income where the equivalent to depreciation

is a combination of investment recovery, and changes in future expectations (either of cash flows or discount rates).

Using Kaldor's (1955) reasoning it was shown that present values do not incorporate separate but correlated notions of capital and profit, and that they do not include capital as a distinct identity independent of profit. Lacking the ability to express capital as a sum in its own right means in effect that capital maintenance is an empty concept. This is a fatal flaw in relation to measurement of periodic accounting profit for the purpose of disclosing funds available for distribution whilst maintaining the contributed money capital. Hicks (1946) had recognised the weaknesses of his concepts, and he had expressed surprise that accountants would try to adapt economic income for their purposes (Hicks, 1942). Hayek (1941: 131) observed that "for most practical purposes ... maintenance of money capital should suffice". Kaldor (1955) supported the accounting concept of profit, noting in particular the need for the realisation concept for taxation purposes.

Furthermore, any concept for measurement of periodic profit for a past period needs to be able to cope with all transactions in the existing market conditions, including any that were "unexpected". An example was used to demonstrate why the Hicksian concept of individual economic income based on "capitalisation" of expected future NCFs could not be used as an "ideal" in any sense for the measurement of periodic accounting profit. Indeed, as argued above, the concept of economic income, an ex ante concept, does not appear to have a definitive ex post counterpart. To conclude this part, the differences between accounting profit and economic income are summarised.

*The main differences between accounting profit and economic income*

<i>Item</i>	<i>Accounting profit</i>	<i>Economic income</i>
1. Fundamental measurements	Transactions (ex contracts)	Future expected NCFs
2. Cash flows	Actual, past	Future expected
3. Interest	Actual (per contract)	Selected discount rate
4. Separate concepts of capital and profit	Both present	Neither present

5. Concept of capital	Contributed money capital	“Capitalised” present value
6. Concept of profit	Periodic monetary gain $P_{(t)} = R_{(t)} - E_{(t)}$	Average “standard stream” $Y_{(t)} = iPV_{(t-1)}$
7. Concept of revenue	Executed contract of sale	Not distinguished
8. Depreciation expense	Allocation of net cost	“Change in present value”

### **Attempts to adapt economic income for accounting profit measurement by allowing for uncertainty**

Several writers who, in spite of the limitations of economic income, attempted to adapt it for measurement of accounting profit are now considered. Alexander (1950) presented the concept of variable income concept allowing for future uncertainty, and emphasising tangible equity change. Solomons (1961) reconciled a modified concept of economic income to accounting profit whilst aware of the difficulties in attributing increases in goodwill to management, or to factors external to the firm. Solomons continued this debate in his revision of Alexander’s contribution (Alexander/Solomons, 1962). In order to present the Alexander’s concept as modified by Solomons in 1962 as a continuing development, the analysis in this part commences with an overview of Solomon’s (1961) views. They are worth noting for their dismissal of the conventional purposes usually assumed for accounts, and for emphasising instead the relevance of financial statements for investment decisions.

Solomons (1961) selected “a guide to investment policy” as the purpose to be served by a concept of income, dismissing taxation and dividend determination as appropriate purposes for an income measure. With the respect to the latter he concluded:

It makes much more sense for the law to require, as it sometimes does, either that the *stockholders’ capital should be intact before a dividend is paid out of any excess*, or to require some defined margin of assets over and above those necessary to pay creditors’ claims before allowing the payment of dividends to stockholders. Either type of restriction is more effective in protecting the rights of creditors than one based on an income concept, ... (107). (Italics added.)

It is puzzling that Solomons apparently overlooked the relationship between the “excess”

over capital out of which a dividend could be paid, and a concept of profit consistent with that of capital.

Solomons (1961: 109-110) reconciled accounting profit and economic income in these terms:

Accounting income  
+ Unrealized changes in the value of tangible assets which took place during the period, over and above value changes recognized as depreciation of fixed assets and inventory mark-downs,  
- Amounts realized this period in respect of value changes in tangible assets which took place in previous periods and were not recognized on those periods,  
+ Changes in the value of intangible assets during the period, hereafter to be referred to as changes in the value of goodwill  
= Economic income.

He identified the realisation concept as the main difference between accounting profit and economic income.

Alexander (1950: 70) modified the present value model under conditions of uncertainty by advocating the concept of variable income for a business enterprise. This he defined as the “change in tangible equity plus the change in going value [goodwill] minus that part of these changes attributable to changes in expectations of future receipts”. Solomons felt that this concept of variable income of Alexander’s deserved more attention than it had received, and analysed it at some length. The derivation of the “mixed model” is explained, and an example used to analyse its practical implications.

The mixed model is derived from the relationships of the terms as previously defined. It follows from the present value definitions in conditions of certainty that:

$$iPV_{t-1} = NCF_{(t)} + (PV_t - PV_{t-1})$$

Thus income for a period is set equal to the net cash flow for that period plus (or minus) the change in present value. In conditions of certainty, with no change in expectations during the period, and assuming the expected net cash flows are realised, the equality will hold *by virtue of the definitions and the relationships postulated*. Nothing more fundamental should be read into this - those definitions and the relationships still suffer from the weakness highlighted by Kaldor (1955). Nevertheless, the expression on the right hand side has been used as an approach to the measurement of profit in conditions of uncertainty, with the change in present

value being regarded as “economic depreciation”. An example with a restricted life is used to highlight the issues.

Suppose that an investment expected to yield NCFs of \$400 per annum over the next three years is discounted at 10% per annum, management’s expected rate of return, giving a present value of \$994.74. After one year, the remaining PV is \$694.21. Assuming that expectations for the first year are realised, the NCF will be \$400. The change in present value for the year is \$300.53 ( $\$694.21 - \$994.74 = -\$300.53$ ). Economic income ex ante of \$99.47 ( $iPV_{t-1}$ ), is equal to its ex post counterpart, calculated from:

$$\begin{aligned} & \text{NCF}_{(t)} + (\text{PV}_t - \text{PV}_{t-1}) \\ = & 400 - 300.53 = \$99.47. \end{aligned}$$

This figure for economic income can be contrasted with accounting profit measured on the conventional basis. Suppose that the initial present value of \$994.74 was equal to cost of the investment (purchasing the NCF of \$400 p.a. for 3 years), and that the cost is to be depreciated equally over 3 years, at the rate \$331.58 per year. Expected accounting profit on this basis would thus be \$68.42 ( $\$400 - \$331.58$ ), and, assuming expectations were met, accounting profit would be the same for each of the three years.

However, once the assumption of future certainty is dropped, there are dangers in attempting to calculate economic income ex post from the NCFs and change in the present value. To demonstrate these dangers, suppose that at the end of the first year the NCF for the first year was \$450, and expectations of NCFs now expected in years 2 and 3 are revised to reflect improved trading conditions. The revised expected cash flows are now \$500 in year 2, and \$750 in year 3. The change in present value at the end of year one is now \$79.64 ( $\$1074.38 - 994.74$ ), and income for year one becomes  $\$450 + \$79.64 = \$529.64$ . Hence, as a consequence of the improved cash flow and expectations, economic depreciation has become economic appreciation. Expected accounting profit of \$68.42 is increased by the \$50 higher than expected revenue to \$118.42.

These relationships can be shown symbolically using the Solomon’s recasting of the economic model ex post by defining variable income and isolating the changes in expectations for future periods. V was used to represent the value of assets; R for net

receipts; subscripts 0 and 1 for the beginning and end of the period, and a and e for actual and expected values.

$$\begin{aligned} \text{Economic income (ex post)} &= \text{Variable income + unexpected gain, and} \\ V_{1a} - V_{0a} + R_a &= (V_{1e} - V_{0a} + R_a) + (V_{1a} - V_{1e}) \end{aligned}$$

Inserting the figures from the example at the end of first year this becomes:

$$1074.38 - 994.74 + 450 = (694.21 - 994.74 + 450) + (1074.38 - 694.21)$$

Hence

$$79.64 + 450 = 149.47 + 380.17$$

And

$$\$529.64 = \$149.47 + \$380.17$$

Explaining variable income for the period, Solomons (1961: 116) regarded  $R_a$  as equivalent to historical cost income before depreciation (\$450 in the example), and  $V_{1e} - V_{0a}$  as the “predictable change in value we ought to be measuring when we provide for depreciation”. However, it is more than this. With the expression  $V_{1a} - V_{1e}$  representing the unexpected change this period, it will include any increase in goodwill arising from *managerial decisions this period* but not foreseen by management at the start of the period. To this extent, variable income will not represent a full evaluation of managerial performance for the period. Revising ending expectations ( $V_{1a}$ ) when the period is over at least gives management the opportunity to decide what to include as arising from their decisions. But concentration on tangible equity change was intended to overcome the subjectivity of economic income, and here the opportunity for the management being evaluated to manipulate results is present. As Solomons conceded, distinguishing changes in goodwill arising from managerial actions from those which were not the responsibility of management, is an almost impossible task. With the figures given for this example, this issue was not directly addressed by it.

The main charge levelled against economic concept ex post is that of double counting. The \$529.64 not only includes the full revenue for the first year but also the change in present

value arising from the increases now expected in revenue for the second and third years<sup>7</sup>. It will be noted that the \$79.64 can be viewed as a net change comprising the unexpected gain of \$380.17 less the “economic depreciation” of \$300.53. The second criticism is that this concept is in not in any way comparable with its ex ante counterpart. Lindahl (1933) stressed that the concept of economic income as interest was forward looking, a form of “anticipated income”, and one which is thus relevant for consumption decisions, thereby suggesting that there is no real ex post counterpart to economic income.

However, Hicks (1946) believed that his concept of economic income No.1 ex post, when restricted to income from property, was “almost completely objective”, claiming that the capital values of the consumer’s property at the beginning and end of the period are assessable quantities. Parker and Harcourt (1969: 5) then relate this idea to a definition of *money income* which equals the money value of the individual’s consumption plus the increase in the money value of his capital assets. The related concept of capital maintenance is that the money income could all be consumed whilst maintaining the *money value of the individual’s capital stock intact*. This concept of money income should be distinguished from the accounting concept of monetary profit. While both concepts are transaction based, the “money value” of the capital stock under the money income concept is based on market selling prices, thus setting it apart from the measurement of monetary profit. For the latter, depreciation is cost based and while the “recoverable amount” rule permits market values to be used, they cannot be used to “write up” the value of assets. To do so would be contrary to the realisation concept, the main difference highlighted by Solomons (1961) between economic income and accounting profit. However, this concept of money income has dropped altogether the neoclassical reliance of economic income on capitalisation of expectations.

Variable income was developed to overcome the perceived weakness of economic income ex ante. It too is a hybrid measurement, comprising the \$99.47 interest on the opening present

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<sup>7</sup> Kaldor (1955: 56) stated in regard to this point - “that any notion of income which is *not* consumption implies adding together undiscounted values and discounted values - is really Fisher’s main contention”. Fisher also likened the adding of these two amounts as failure to distinguish the “fruit from the trees”.

value expected at the beginning of the period plus the increase in the revenue of \$50 for this period, which is part of an actual transaction. This example with a finite life draws out another feature of economic income which was not apparent in the rather simplistic earlier example using an annuity in perpetuity. That is, with progression through time towards termination the present value, and hence the interest on it, diminishes even though the expected periodic NCFs were the same. In contrast to expected accounting profit of \$68.42 for each of the three years, ex ante economic income expected at the outset was \$99.47, \$69.42 and \$36.36 respectively for years one, two and three.

Previously Lindahl (1933), Hicks (1942) and Kaldor (1955) were quoted in support of the proposition that changes in expectations should be excluded from economic income, being more properly regarded as revisions of capital. Assuming, then, that a basis of comparison was required between the “beginning of year” and “end of year” ex ante economic income, then the \$99.47 should be compared with the amount yielded by applying the rate of interest to the revised opening present value based on the actual cash flow and changed expectations of future cash flows. On this basis revised ex ante economic income would be \$138.53; a calculation too late to affect consumption decisions of the first year, now in retrospect.

This part is concluded by highlighting from the example the amounts the different income concepts would yield. Economic income ex ante is \$99.47; and if the ex ante concept were to be revised with period end knowledge, it would become \$138.53. The Alexander/Solomons (1962) variable income model measures economic income ex post as \$529.64, and variable income of \$149.47. These all differ from the amended accounting profit of \$118.42. The incompatibility of the Alexander/Solomons (1962) variable income model and accounting profit stems from the former retaining measurements derived from present values of expectations.

### **Beaver, and the “two sides of the same coin”**

Beaver (1981) takes us back in a simple and clear way to the neoclassical economic model to show the relationship between net cash flows (NCFs), economic income and valuation, and their implications for accounting profit measurement. The initial assumptions, including

certainty and perfect and complete markets, are carefully listed in his Table 3-1. Utilising these assumptions, he concludes that valuation of the NCFs is the primary function, with economic earnings being described as “redundant”. In the previous paragraph Beaver (1981: 84) had stated that “... in this setting, economic earnings fall out of the analysis as a by-product of the valuation process. Earnings and valuation are two sides of the same coin”.

This poses a dilemma: if indeed “earnings and valuation” are different sides of the *same coin*, how should a selection be made between them? As Beaver notes, given the NCFs, *present value* and *economic earnings* are linked by the discount rate. Once the cash flows and discount rate are given, the assumptions essentially set up a closed system which determines the outputs. Logically, given a closed system under the assumed conditions of perfect competition, there is no fundamental or “a priori” means of selecting, ordering or ranking related concepts such as valuation and earnings. One can start wherever one wishes. The fact that one set of concepts relates to the future, and the other to the past, is irrelevant.

In this situation, if the choice of starting point is not to be arbitrary, presumably it should be determined by the purpose of the decision. For example, if an investor is seeking to rank alternative production plans by calculating their present values, then economic valuation will be the logical point to start (Beaver and Demski, 1979). However, if an investor is seeking to calculate “distributable earnings” for a completed period, then earnings could be the starting point. Acceptance of purpose as the determination of the starting point for the analysis of the present value model would avoid an arbitrary selection.

A consequence of this approach would be to treat present value and earnings as truly different sides of the same coin. In this analogy, the essence of the coin would be the NCFs. Spinning this coin to the past would open the analysis to the relevance of other models for the measurement of periodic profit and related asset measurements. For example, it might be argued that investors in the securities markets desire disclosure of periodic accounting profit as an input into their valuation models. The point of this analysis, however, is to suggest that the precedence accorded by Beaver (1981: 85) of economic valuation, over financial accounting for a past period is not intrinsically fundamental; it simply results from his choice of starting point. It is also suggested that the point of entry into the present value model

depends on the purpose of the measurements; and that, independent of purpose, no particular valuation or income concepts should be accorded precedence.

This completes my analysis of economic income, finishing where it started with the neoclassical economic concepts (Hicks, 1946), with different but consistent arguments being used to refute the continued use of economic income as the ideal for measurement of profit for a past period. A related aspect of this discussion is the relationship of accounting and economic rates of return, which is now considered.

### **Accounting and economic rates of return: are they comparable?**

Fisher and McGowan (1983: 82) compared the accounting rate of return with the economic rate, and found it wanting. The frequent use of accounting rates of return as indices of monopoly power by economists and lawyers provided the context for their examination. They believed this use to be valid “only to the extent that profits are indeed monopoly profits, accounting profits are in fact economic profits, and the accounting rate of return equals the economic rate of return”.

The economic rate of return corresponds to the internal rate of return, being the rate at which the future NCFs should be discounted so that their present value equates to the investment cost. Provided this latter condition is met (that is, NPV is zero) it will also correspond to managements’ desired rate of return or weighted average cost of capital wherever either of these rates is used as the discount factor. The accounting rate of return expresses profit for the period as a percentage of the average investment calculated using book figures. Thus it is limited by the assumptions of the HCA model.

In responding to their criticism Demsetz (1995) carefully explained that accounting profit calculated for a past period is essentially backward looking, whereas economic income is based on the future. Demsetz (1995) acknowledged that different cash flows could be selected which would achieve Fisher and McGowan’s (1983) stipulated 15% economic rate of return, and agreed with them that it would be “pure happenstance” if the accounting profit rate were equal to the economic rate of return, emphasising that there is no necessary correspondence between the two rates.

However, the telling point of his rebuttal was that Fisher and McGowan's (1983) demonstration assumed knowledge of the cash flows over the life of the project, and with that knowledge the accountant too could prepare a report showing the rate of return over the life of the project. Indeed, in advising management on this investment, the management accountant would have isolated and estimated its present value from the net cash flows expected from the investment. Life is not quite as simple as that for the financial accountant called on to prepare a periodic profit statement for the past period based on actual cash flows for the whole firm as a continuing entity.

Demsetz (1995) then proceeded to challenge the authors' conclusion that the information provided by the accountant is useless by arguing that earnings have a useful role because they can be compared to expectations of earnings. Such a comparison will be valid provided the comparison is carried out in the same terms as were used in projections. Following reference to several studies on the information content of accounting profit data, Demsetz (1995) carried out his own research on 489 manufacturing concerns with accounting reports available over the period 1962 to 1981. Table 5.2 reported t statistics from regression across stocks of stock price on accounting profits per share over the period. Demsetz (1995: 101-4) concluded that "[o]verwhelmingly, contemporaneous accounting profit per share influences stock price in the expected direction".

It is significant that Demsetz (1995) expressed accounting profit as a rate in relation to share prices. This avoids calculating the accounting rate of return on the book amount of cost less accumulated depreciation for comparable firms with similar cash flows. Different patterns of cost allocation resulting from the use of different depreciation methods may cause the rate to vary. Of course, due to future uncertainty, it will not be possible to evaluate the pattern of cost allocation until conclusion of the project and even then the appropriate pattern may not be clear.

The economic rate of return suffers from an appearance of "circularity" in that the only potential reality included in the calculation is the future NCFs. The "capitalised" present value represents the future cash flows discounted at the selected rate, and economic income is the amount resulting from applying the discount rate to the period's opening present value. A

previous part discussed the difficulties of comparing the ex ante concept of economic income (\$99.47) with its ex post counterpart (\$529.64). They are not strictly comparable in that the ex ante concept relates wholly to the future, whereas economic income ex post includes changes of the immediate past period as well changes in the present value of future expectations. In the example, this means the inclusion of the increase in the cash flow to \$450, and the elimination of the “economic depreciation” of \$300.53, and the increase in the present value at year end due to the higher expected cash flows in the second and third years.

Accounting and economic rates of return each have their limitations, and their interpretation should include full knowledge of the different assumptions on which each is based, and thus their limitations when used for other purposes. Being prepared for different purposes, they are based on different concepts and thus they are not directly comparable.

### **The relationship of market values to the present values of future net cash flows**

An attempt has been made to establish a logical link between the current replacement price of an asset and its future expected net cash flows. Proponents of current cost accounting (Revsine, 1973, for example) have accepted replacement income as a surrogate for economic income. Barton (1974), himself an advocate of current cost accounting, refuted the argument that the use in external financial reports of current market values can be justified on the ground that they represent a valid measurement of the present value of future net cash flows. Advocates of this latter view generally accept economic income as the ideal for measurement of profit of the firm.

Adopting the usual assumptions of the neoclassical model Barton (1974) pointed out that the equality of market values and present values would hold only for the marginal purchase of a capital good, and that prior purchases would yield a positive net present value, or profits in excess of the discount rate. Perhaps this could be viewed as a “purchaser’s surplus”, analogous to consumer surplus. On this point, his analysis was accepted. In doing so, however, Revsine (1976) claimed that Barton (1974) had confused the equality of current market value and present value, with a surrogate relationship Revsine asserted existed between them. Another issue was the relationship of these concepts subsequent to purchase.

Lack of understanding of surrogation, however, was the principal charge levelled at Barton (1974).

In his response Barton (1976) drew attention to the fact that surrogates are only needed where the principal cannot be measured directly, and that evidence is required to show that the surrogate is a reliable substitute. Surrogation appears to be similar to argument by analogy, in which it is incumbent on the proponent to demonstrate that essential attributes are similar, conceptually and empirically. However, by being based on the assumptions of perfect competition, Revsine's argument is wholly analytical. In this situation, the remarks of Robbins (1937) and Larson (1969) distinguishing exactness at the conceptual or analytical level from exactness in measurement or application, are relevant.

Robbins (1937: 66) remarked:

Scientific generalisations, if they are to pretend to the status of laws, must be capable of being stated exactly. That does not mean ... that they must be capable of quantitative exactitude. ... But we need to state it in such a way as to make it relate to formal relations which are capable of being conceived exactly.

Following Carnap (1962), Larson (1969: 43) supported a similar notion of exactness at the conceptual level in these words: "Exactness simply means that the construct should be stated in such a way that its relations with other constructs will be clearly determinable". The essence of these statements is that at the conceptual level the formal concepts comprising the explanation, and their relationship, must be stated exactly; otherwise our explanation would be incomplete. However, it is recognised that the concepts may not be able to be applied or measured exactly, which is a problem of lesser significance than that of "conceptual inexactness" which strikes at the root of the explanation.

As Barton (1976: 161) pointed out present values could in theory exceed current market prices "by anything from zero to almost infinity". Barton (1976) also effectively refuted Revsine's (1976) criticism that he had failed to provide reasons for the statement that there is no necessary relationship between current replacement prices of existing assets and their present values after the date of purchase. The reasons, included in the text of the original article, had apparently not been understood. The main point is that the relevant value of the

asset is now its market selling price, which also permits a measurement of its opportunity cost. Robbins (1937) made the more general point that there is no logical value relationship between past prices and estimates of future prices. Based on the assumptions, Barton's (1974) analysis is supported in refuting Revsine's (1973) postulated "surrogate relationship", and the claimed relationship between market values and the present value of future NCFs.

In an attempt to sustain the surrogate relationship Cook and Holzmann (1976: 779) invoked the likelihood that, "in the long-run competitive case, product and asset market adjustments lead to the expectation of only normal profits" and, at the optimum long run asset level, "the total present value of all units purchased equals their total cost, and the average, or per unit, present value of all assets purchased equals their unit cost at the optimum asset level" (Cook and Holzmann, 1976: 784). This conclusion is challenged on two grounds.

The example used by the authors is based on a single fixed asset, additional units of which can be purchased over time. Perfect competition is assumed. Market participants are assumed to have equal knowledge and economic goals and there are no entry or exit barriers for either firms or resources (Cook and Holzmann, 1976: 780, n6). The "homogenous asset" (invested in by the single firm under analysis) has a multitude of buyers and sellers with the result that none can influence the price at which it is traded, and information on prices is restricted to that available in the current period. The authors characterise the firm as being faced by a marginal asset present value curve which first increases and then decreases, as might be expected over the normal product life cycle, although no information is given on the product produced by the firm.

First, the average is not the relevant motivating force. The firm will be motivated to expand production to take advantage of the opportunity to earn pure profits. This it will do immediately within the constraint imposed by its production function, the number of units already in production, and the demand for its product. The firm will expand investment in the fixed asset until the present value of the marginal unit is equal to or not less than its cost - the market price. Each period the firm calculates the number of additional units of the fixed asset to be bought so that its marginal investment equals the prevailing price.

Given that the firm invests in more than one unit, the intra-marginal units will earn pure profits thereby breaking the authors' assumed relationship between the average lifetime cost and present value of the unit. If the firm bought only one unit per period the cost price would be likely to follow the path given by the marginal present value curve in their Figure 5 (Cook and Holzmann, 1976: 784). However, the possibility of pure profits period by period would still remain if the present value for that unit exceeded the purchase price.

The firm would take its decisions in the light of the known market conditions prevailing at the time, and its expectations of future conditions. The fixed asset is but one of the several factors to be employed in the production of the firm's output, and a changing fixed asset cost may impact on the marginal rate of factor substitution or transformation. The lead time needed for integration of planned purchases into production may also modify the analysis. It will depend on many factors, including advertising, availability of staff and staff training, to name a few<sup>8</sup>. Assuming that these factors are taken into account, and that the firm constructs its marginal cost curve period by period, its long run cost curve will be made up from the relevant sections of the marginal cost curves.

With these cost curves all relating to the past, and with the restriction of price information to that currently available, the firm does not have the knowledge of future conditions to be able to calculate the average long-run present value which the authors assert is the factor motivating additional investment in the fixed asset. However, even if they did have that information, they would still be motivated by the marginal present value in investing in additional units period by period (the short run) where profits in excess of the long run equilibrium rate could be earned.

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<sup>8</sup> Butterworth (1982: 106) was scathing in his criticism of the related idea that current values can be taken as adequate predictors of future cash flows, calling it a "fatal fallacy" due to the failure to consider other factors besides the cost of the capital equipment which affect cash flows. He noted that the -

ability of a firm to generate future cash flows depends on its labour contracts, the quality of labour relations, its management skills, its technological supremacy, its research capability, its exploration and development resources, its command over output markets, and its command over factor markets other than the market for its capital assets.

And it would not forego the possibility of “pure profits” in the short run simply because they were perceived to be transitory.

In their analysis both Barton (1974) and Cook and Holzmann (1976) utilised the assumptions of perfect competition, and their analysis was very similar. The essential difference between them is that, whereas Barton (1974) limits his conclusions to those supported by the analysis, Cook and Holzmann (1976) appear to have stepped outside their assumptions to the prediction of an optimal long run equilibrium which, they argue, the firm is motivated to achieve.

### **Concluding comments**

The main motivation for this paper is to demonstrate in the current context that the concept of economic income based on capitalisation of the future expected NCFs is unsuitable for measurement of profit for a past period. The concept of economic income advanced by Hicks (1946), the concept most quoted in support of economic income by accounting theorists, was reviewed together with the criticism of Kaldor (1955) which highlighted the fatal lack of separate but correlated concepts of capital and profit, mandatory for capital maintenance.

Attempts by Alexander/Solomons (1962) to adapt the economic model to measure variable income are bedevilled by the difficulty of deciding how much of the change in goodwill should be attributed to the current management and included in income. In addition, as economic income ex post may include, in addition to the full NCFs for the current period, changes in the present value derived from changes in the expected NCFs of future periods, the charge of double counting is sustained. The fundamental weaknesses remain in the hybrid, variable income model, meaning that variable income itself is a mix of current cash flow and the rate of discount applied to period beginning expectations .

The fundamental role that Beaver (1981) accorded economic valuation over profit measurement was not found to be intrinsic, and the purpose of the measurements was proposed as a means for choosing which of these concepts should be given precedence in a particular case. Arguments justifying the use of current replacement prices by virtue of a

claimed relationship to the present values of future cash flows were evaluated and found wanting.

The common theme in the arguments scrutinised is that economic income provides an ideal concept that firms should apply in the measurement of accounting profit. Although many of the arguments used against this theme echo from the past, evidently they have not been persuasive, and hence they have been revisited. The insights gained in the analysis on the differences between accounting profit and economic income have been summarised. It is noteworthy that the economists Fisher (1906), Frankel (1949), Hayek (1941), Hicks (1942) and Kaldor (1955) regarded the traditional accounting system for external financial reporting as satisfactory for its purposes.

Demsetz (1995) effectively answered the rejection of Fisher and McGowan (1983) of the accounting rate of return simply because it differed from the economic rate. He pointed out that the financial accountant, given knowledge of the net cash flows over a project's life, could, like the economist, also calculate the internal rate of return for that project. He regards the accounting rate of return as providing a useful comparison with its expected counterpart, thus highlighting the fact that *ex ante* and *ex post* comparisons should be based on the same concepts of profit and capital.

The overall conclusion from my analysis is that economic income, or income concepts supposedly derived from it, should not be used to underpin the measurements used in external financial reporting. Another conceptual basis must be found. This conclusion has important policy implications for the setting of accounting standards.

While economic income has not been relied upon directly in the conceptual frameworks of the professional bodies, it appears to have been used indirectly to support certain concepts, for example, the concept of "fair value", under the rubric of "relevance". In addition, "economic substance" has been used to support measurements in financial statements. These are complex matters that will not be resolved easily. But a necessary starting point is to recognise that economic income, due to its demonstrated unsuitability for the task, does not provide an ideal for measurement of profit for a past period.

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