

CAPITAL MAINTENANCE AND THE MEASUREMENT OF CORPORATE INCOME

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This paper considers the impact upon measures of corporate income of a number of concepts of the maintenance of the existing capital of an incorporated trading enterprise. A main distinction is drawn between the maintenance of all the assets employed in trading and the maintenance of the net assets attributable to the owners. Measures of income and of rates of return to capital depend on whether all the assets, or only the net assets attributable to the owners, are being considered. There are three sections of the paper after an introduction. Section 2 is conceptual and section 3 illustrates the concepts, with figures for U.K. manufacturing industry in 1975 to 1977, in which the figures in company balance sheets are adjusted from book values to estimated replacement cost, and estimates are made of depreciation at replacement cost and of the consumption of stock (inventories) at replacement cost. These figures follow the concept of maintaining physical assets. I have added calculations which extend the concept of capital maintenance to all operating or trading assets, including monetary working capital; and which then calculate the amounts necessary to maintain the assets attributable to the owners of a business. The three main methods are: to apply a gearing adjustment to abate the additional capital maintenance provisions for operating assets (which are realized revaluations by reference to their original cost); to take into income additionally the geared (or debt financed) portion of unrealized revaluations; and—what is conceptually much the same thing—to count as the charge for debt only real interest (which may be negative) rather than nominal interest. Section 4 considers some problems of aggregation, particularly the derivation of aggregates for the sectors of the economy, when based on figures for individual enterprises using the various approaches to capital maintenance.

1. INTRODUCTORY

Much of the paper draws on the development by the U.K. accountancy profession of a system of current cost accounting: when it was first prepared an "Exposure Draft" [1] had been issued. Later this became an Accounting Standard [2] in substantially unamended form. These followed the 1975 report of the Sandilands Committee set up by the U.K. government [3]. The conceptual background was fully covered in a previous paper of mine [4] but the following outlines the salient features, in particular as regards the application of capital maintenance concepts. These are necessarily linked to the basis adopted for valuing assets. The Sandilands Report followed the concept of "deprival value," rather than economic value (i.e. the present value of expected net revenue), borrowing the concept from Professor Bonbright's book of 1937 [5]. This is the loss to the business in being deprived of the asset, in effect opportunity cost.

The concept of income was related to gain, in terms of the currency of the day (current values), after providing for the maintenance of assets at their deprival value. The Committee quoted Hicks's definition [6] and adapted it to read "the maximum amount which a company can distribute during the year, and still expect to be as well off at the end of the year as at the beginning." The system of

*This paper was presented to the 16th General Conference of the International Association for Research in Income and Wealth in August 1979. It was written in a personal capacity. I am indebted to Mr D. T. L. C. Lewis for his considerable help with figures, and to other colleagues in the Government Statistical Service and in the Inland Revenue for their assistance and comments. I am also most grateful for valuable comments from Mr E. B. Butler, Mr Stephen Collins, Professor H. C. Edey, Mr Martin Gibbs and Mr J. A. Knox. The views expressed are however my own and the responsibility for any errors is mine.

measurement proposed by the Committee implied that all physical assets (fixed assets and stocks/inventories) should be maintained out of current sales revenue at their deprival value, so that the operating surplus measured in this way, after deducting interest charges, would be the maximum distributable while remaining as “well off” at the end of the accounting period as at the beginning.

Operating surplus was distinguished from holding gains; and it has subsequently been recognized that holding gains have two elements: the element which is realized in the sense that the gain is on an asset which is then “consumed” by being treated as a charge against sales revenue—this gain is the difference between historical cost and deprival value at the time of consumption (whether as stock or in the calculation of depreciation)—and the element which is not so realised.

I call this concept of capital maintenance “pure Sandilands” later in the paper. It is very close to the concept of capital maintenance in the UN’s System of National Accounts (SNA). I also consider adaptations of this concept which look at the patterns of financing of assets in considering “well offness” and which, in effect, do not require all the provisions for the maintenance of physical assets at deprival value to come out of current sales revenue, provided certain other conditions are fulfilled.

Concepts of corporate income formulated in terms of the maximum amount distributable after maintaining the capital refer of course to the maximum distributable before tax. The maximum dividend consistent with maintaining the enterprise’s capital would need to take account of tax liabilities generated either by the operating surplus, or (in some systems) additionally by the distribution. It is beyond the scope of this paper to consider the theory or practice of corporate taxation, but evidently concepts of capital maintenance linked to the current or replacement cost of assets sit more easily with a tax system which also takes some account of the excess over original cost of the current or replacement cost of assets consumed in the process of trading. In the U.K., this is largely the case, though the additional tax reliefs are at present calculated from historical cost accounts rather than from replacement cost accounts.

The figures in section 3 are based on the analyses published by the U.K. Department of Industry [7, 8]. These relate to some 700 large listed (quoted) companies. The U.K. Accounting Standard [2] will also cover unlisted companies over a certain size.¹

2. CONCEPTUAL

2.1. *Gains and Asset Valuation*

When assets are used for trading the added value is conventionally broken down into the compensation of employees and the return before tax to the total of the capital employed. The latter includes transfers to providers of finance other than the owners and (through tax) to Government, and the balance accrues to the owner of the assets. When the assets are owned by a limited company, even though

¹The concepts are also applicable in principle to unincorporated enterprises, and to publicly-owned trading enterprises, except that the methods of calculating income on the net assets attributable to the owners may need adaptation when the capital held by the owners is wholly or mainly in the form of loan stock rather than equity.

ultimately the whole of the gain in the value of the assets (whether distributed or not) accrues to the owners of the company, the value that is put on this gain in any accounting period may well differ from the change in the market value of the owners' stake. In the system of national and sector balance sheets of the SNA, provision is therefore made for ascribing to the corporate sector its own "net worth," representing the excess of the value put upon the sector's assets, less liabilities to third parties, over the market value of the equity.²

If all assets, less liabilities to third parties, are regarded as forming a pool of net assets attributable to the owners, the increase in any period in the overall value of the pool of net assets (other than due to injections of new capital) can be regarded as stemming from operating surplus before provisions for capital maintenance, less these provisions, plus revaluations to the assets held during the period in which they are held.³ In the SNA, operating surplus after deducting the provision for capital maintenance is regarded as income—available for loan charges, for distribution, or to finance capital expansion—but the revaluations in the same period to existing assets tend to be regarded as part of the closing value of the assets (and therefore as an addition to the denominator of an income/asset ratio). The distinction between the capital maintenance provisions and the revaluations is difficult to draw, but is nevertheless crucial to the accounting structure, and to the distinction between income and capital.

This distinction must reflect the system used for the valuation of assets; if they could be valued at their "economic value" (the value, discounted to the present, of the future income stream), the problem of identifying capital maintenance provisions would disappear, since income would be identical to the increase in value of assets, measured in that way.⁴ At the other extreme—a pure cash flow system for measuring income—the problem also disappears; whilst there is *no* distinction between capital gains and income in the economic value (or increased-net-worth) system, the distinction is *obvious* when income is measured by reference to cash receipts less disbursements: a necessary and sufficient condition for income generation is that there should be an excess of cash inflows over outflows within an accounting period, and it is irrelevant whether cash is disbursed on current operating expenses or on the purchase of physical capital equipment. Under the historical cost system of most commercial accounts, the problem of distinguishing between capital maintenance provisions and revaluations is largely avoided, at considerable penalty in realism and usefulness when relative prices change.⁵

²This term has a different meaning from the usual one, when "net worth" refers to the value of a company's assets, less its liabilities, and thus also includes the market value of the equity.

³For completeness, (upwards) revaluations to liabilities such as issued debentures and loan capital should be deducted. Downwards revaluations will have the opposite effect.

⁴This was called the "increased net worth" concept of income by Bonbright in chapter 26 of [5]. The increase being considered is that in the current value of all net assets, physical and monetary, with the discount rate in nominal rather than in real terms. The concept is therefore distinct from economic depreciation defined as the decline in the real economic value of physical assets *in situ* at the beginning of the accounting period.

⁵All these ideas are developed at length by Bonbright in chapter 26 of [5]. He pointed out that the historical cost system (which he characterized as "prorated-receipts-and-disbursements") is, to some extent, a compromise between the two income concepts just described; though adding that the rules of "valuation" in the pure historical cost system are really nothing of the kind, being merely devices for amortising the original cost of the assets over their period of useful life.

The system of guidelines for national and sector balance sheets of the SNA [9] uses marketable value as the basis of valuation for assets that are readily marketable, but in the case of reproducible physical assets prefers replacement cost to realizable value.⁶ There are a number of reasons for this; for trading entities such assets are held for use, not for disposal, and there may be a substantial penalty on realization. The Sandilands Committee in the U.K. expected that replacement cost would be the appropriate basis for measuring “deprival value” in over two-thirds of cases. The underlying assumption is that the economic value of the reproducible physical assets held by a trading entity, if it could be measured, would usually exceed their replacement cost. With perfect knowledge and diminishing returns to incremental asset holdings, the number of assets held would not go beyond the point where the demand price of an additional asset (represented by its economic value) is equated to its supply price (replacement cost). In practice economic value is likely to remain higher than replacement cost; a collection of assets may have a higher economic value than the sum of the economic value of the assets taken individually; and there is imperfect knowledge on the economic value of assets.

2.2. Provisions for the Maintenance of Physical Assets

In the SNA guidelines [9], the operating surplus of the corporate sector is measured after provision for consumption of fixed assets valued at their replacement cost, and after provision for stock appreciation. If costs are rising, these provisions will exceed the depreciation provisions at historical cost and the historical cost of the materials consumed; the excess is regarded as part of cost (inputs). However, from the point of view of historical cost accounting these additional amounts can be regarded as the realization, in stages, of a revaluation surplus in relation to historical cost, or as realized holding gains, in the terminology of [3]. The realized holding gains are known in the U.K. Accounting Standard [2] as “additional depreciation” and the “cost of sales adjustment”—the latter corresponding to “stock appreciation” or “inventory valuation adjustment” in national accounts terminology.

The underlying capital maintenance concept of the SNA, like that of the Sandilands report, is that of maintaining physical assets or productive capacity. Operating surplus is struck after providing for the maintenance of the existing productive capacity and, after deducting interest payments and tax, operating surplus can be fully distributed to the owners of the equity without eroding productive capacity. The balance of operating surplus available for distribution constitutes a “real” return on capital, in the sense that the productive capacity is being maintained for the benefit of the owners, irrespective of whether the value put on the productive assets exceeds or falls short of the amount required to maintain the general purchasing power of the opening equity. The concept therefore differs from the “general purchasing power” method of inflation accounting, which regards as income anything in excess of this amount.

⁶Physical assets such as land are valued at marketable value, as are marketable investments. Monetary assets are generally at face value but assets denominated in foreign currencies may change their value in terms of domestic currency equivalent. See also [10].

2.3. *Wider Concepts of Maintenance of Assets Employed for Trading*

There are, however, reasons for doubting whether this relatively simple concept of capital maintenance is fully adequate. For one thing, if costs and prices rise, a business which needs a stable amount of physical capital (supporting a stable operating capacity) and is financed partly by debt rather than by equity, would retain the same money value of debt (non-current liabilities to third parties) as in all earlier periods, so that the structure of financing would change, with a progressively lower proportion of physical assets financed by debt and therefore (other things being equal) a progressively lower interest charge in relation to the money value of the operating surplus generated at a stable level of output.

Further, from the point of view of the business as a going concern, the capital employed is generally regarded in financial analyses as going further than the physical assets, and as including trade debtors and creditors, *viz.* lending less borrowing necessarily incurred as part of the normal operations of the business. There may be problems in deciding what is meant by “maintaining” these items, but it is a fair presumption that in a neutral situation the proportion of sales on credit, and the duration of the credit, will not change greatly, so that the additional finance required to sustain this trade lending, when selling prices are increasing, is—like the finance required for productive assets—a necessary part of the capacity to stay in business. Likewise the trade credit normally received on purchases is part of the continuing business situation.

Proposals were therefore made (e.g. by Martin Gibbs and in New Zealand [11] and [12]) that the current costs deducted before striking operating profit should include additional provisions for the maintenance of net monetary assets used in trading (which have been called “circulating monetary assets,” in some formulations including cash); and that there should be a credit to the operating account in the case of net trade borrowings (e.g. where a supermarket uses suppliers’ credit to finance stock), which would offset the provisions made for the maintenance of a stable volume of stock or trade lending. In the U.K. Accounting Standard [2], the term “monetary working capital” is used.

2.4. *Provisions for Maintenance of Capital Attributable to the Owners*

In addition to the assets employed for trading, defined as physical assets plus net monetary working capital, the total of the capital employed by a business includes long-term financial assets (investments) and any capitalised intangibles. The rate of return to total capital employed is measured before deducting interest charges (other than any on trade credit received); but the numerator of the ratio will depend on what is regarded as a charge or provision for the maintenance of physical or circulating monetary capital, and the denominator on how the written-down physical assets are valued.

The financing of the total of the capital employed can be broken down into two main components, non-trade borrowings from third parties and the liability to the owners (share capital and reserves). The return to the owners is measured under the historical cost system of accounting after deducting the interest charges on trade and non-trade borrowings. In the SNA and in the guidelines for national and sector balance sheets [9], it is implied that the return to the owners is income

after deducting both interest charges and provisions for the maintenance of physical assets at their replacement cost, and that the owners' stake is the excess of the written-down value of physical and other assets over liabilities to third parties.

It seems inappropriate, however, when considering the return to the owners of the business, as distinct from the return to the business itself on all its assets, for all additional capital maintenance provisions⁷ to be financed out of sales revenue, i.e., at the expense of amounts regarded as distributable; if debt is used as a source of finance of the assets it should also be used in like degree as a source of finance of the additional capital maintenance provisions.

There are four variants of this general proposal for measuring an abatement of the additional provisions for capital maintenance, when arriving at a measure of income accruing to the owners. The abatement is in respect of finance through debt rather than through equity. The four variants differ from each other in that the abatement applies to:

(a) both additional capital maintenance provisions on physical assets—which as mentioned in the first paragraph of section 2.2 above can be regarded as realised holding gains (representing the realization in stages of revaluation surpluses)—and unrealized revaluations to physical assets;

(b) only the additional capital maintenance provisions (realized holding gains) on physical assets;

(c) realized holding gains, unrealized revaluations to physical assets, and capital maintenance provisions for net monetary working capital;

(d) only realized holding gains (additional capital maintenance provisions to physical assets), together with the capital maintenance provisions for net monetary working capital.

Illustrative figures on bases (c) and (d) are given in section 3 below, using figures taken from the accounts of large manufacturing companies in the U.K.

Version (a) is that put forward by Godley and Cripps [13]; if the system of valuation is sound, there is no call to distinguish between realized and unrealized revaluations. A neutral position is one in which gains, whether stemming from operations or from revaluations, can be distributed up to the point of preserving the opening "gearing" (the proportion financed by debt) of the assets. If the "gearing gains"—the portion of the revaluations regarded as financed by debt—are fully distributed, it is necessary to borrow to replace their financing, but having done so the balance sheet gearing⁸ is unchanged. Difficulties could arise in measuring periodic income in practice where assets such as land and buildings are held whose marketable value may fluctuate sharply from year to year.

Version (b) is more "prudent." It was recommended by the U.K. accountancy profession in November 1977, as part of interim guidelines on current cost accounting [14]. A distinction is drawn between the realized holding gains (the additional capital maintenance provisions on physical assets) and unrealized revaluation surpluses on physical assets. When provision for depreciation on fixed assets is made at replacement cost, the excess of provisions over provisions at

⁷ Viz., additional depreciation and cost of sales adjustment (stock appreciation), and any provisions for the maintenance of circulating monetary assets.

⁸ Strictly, the gearing, defined in terms of the financing of only physical assets.

historical cost can be also regarded as the realization, in stages, of a revaluation surplus. Stock appreciation (known by the accountants as the “cost of sales adjustment”) is also a realized holding gain. The debt financed (or “geared”) portion of these realized holding gains is simple to calculate, being an apportionment of the additional capital maintenance provisions, excluding other (unrealized) revaluations to physical assets. Since this debt financed portion is part of the additional capital maintenance provisions—all of which would be included in profit under the historical cost system—the operating surplus, adapted to include this abatement of the additional capital maintenance provisions, will not usually exceed the historical cost profit.⁹

Version (c) was put forward by Martin Gibbs.¹⁰ It adapts Godley and Cripps for the extended capital maintenance concept described in the last paragraph of section 2.3 above. The measurement of gearing now accords with the usual definition of capital employed (as including net monetary working capital) and, in terms of this definition of capital employed, the debt financed portion of both additional capital maintenance provisions and unrealized revaluations can be distributed up to the point of unchanged gearing. Note however that the additional capital maintenance provisions no longer represent solely realized holding gains—the provisions for the maintenance of physical assets are treated as a cost, but also represent revaluations by reference to historical cost; the provisions for the maintenance of the volume of net monetary working capital are likewise treated as costs, or as charges against operating surplus, but they are costs with a difference: they do not represent purchases, nor revaluation surpluses arising by reference to historical cost (when inputs are brought into charge at a higher value than historical cost), but provisions for the financing of a pool of net trade lending.

Version (d) is that followed in the U.K. Accounting Standard [2]. It stands in relation to (c), as does (b) to (a). It is generally “prudent,” is consistent with the extended capital maintenance concept and with the concept that both realised holding gains and the capital maintenance provisions on net monetary working capital are distributable to the owners, to the extent that they are debt financed. For the reasons explained in section 3, it is the version which I prefer.

In version (c) gearing will be constant, if the debt financed portion of revaluations (realized or unrealized) is fully distributed, when the gearing of the total capital employed is calculated from the current cost balance sheet. In version (d), the gearing will tend to decline when there are unrealized revaluations.

2.5. *Gearing Gains and Interest Charges*

To repeat, all the above measures are concerned with the measure of distributable profit accruing to the owners, as distinct from the operating surplus accruing on the total capital employed, including debt. Operating surplus, if regarded as the return on total capital employed, is best measured before interest, and the surplus accruing to the owners, which includes the “gearing gains” on debt

⁹With the proviso that the current cost system also follows the normal accounting rule of charging both realized and unrealized *losses* as costs in the period in which they occur.

¹⁰*The Times*, 23 February 1976 [11]; a similar procedure was also used from 1977 in the accounts of ICI Ltd., with the added refinement of applying the gearing adjustment to gains and losses arising from changes in the rates of exchange applied to balances denominated in foreign currencies.

(viz., the abatement of additional capital maintenance provisions when the assets are partly financed by debt), is after deducting interest.¹¹

If the “gearing gain” on the debt used to finance part of the total capital employed is calculated in relation to the opening gearing, it is (in formulations (a) and (c)) equivalent to working out the *average* percentage increase over the year in the opening value ascribed to all physical assets, and applying this percentage to opening debt. (The complementary amount obtained by applying the same percentage to opening equity is the provision for maintaining its real value.) If therefore the percentage exceeds the nominal rate of interest, there is—in terms of the specific use to which the debt is applied—a specific positive return on the debt, which accrues as benefit to the owners. In the U.K. these returns were particularly high in the mid-1970s, largely because the nominal interest rate fell short of the increase in the general price level, i.e. there was a negative real rate of interest. If there is a negative real rate of interest, there is a transfer of potential purchasing power from the lenders to the borrowers (that is, the owners of the business); and if the specific return on the use made of the debt exceeds the nominal rate of interest there is an additional positive real return to the owners. Clearly the “gearing gains” need to be looked at in conjunction with the nominal interest charge on debt.¹²

An alternative method of calculating “gearing gains” (again in formulations (a) and (c) which take in unrealized gains) is, when calculating a provision for maintaining the real value of opening equity, to apply not the average percentage increase over the year in the opening value ascribed to all physical assets, but the percentage increase in a general prices index.

This is the approach adopted by Eisner.¹³ The two will differ to the extent that the increase in the prices of the mix of physical assets employed differs from the increase in the general prices index. In section 3.4 below the two approaches are compared using figures from the accounts of large manufacturing companies in the U.K.

It might appear that the inclusion, in the measure of income accruing to the owners, of the “gearing gain” (i.e. a reduction, in part, of the amount of capital maintenance provision that is treated as a cost), will mean that this measure is affected by the extent of gearing—being higher when a relatively high proportion of assets are financed by debt rather than by equity. However, if gearing is relatively high, the interest charge is also high in relation to operating surplus, so

¹¹Measures on both bases of the average rate of return for manufacturing companies are given in section 3 following. For the aggregate of listed companies in [7], which includes companies in distribution, measures were also given in the *Bank of England Quarterly Bulletin*, December 1978 [15] and were updated in the June 1979 *Bulletin*. [18]. For the return to equity, income was defined by the Bank on the lines of version (b) (the interim guidelines) in the December 1978 article, and version (d). (Exposure Draft 24) in the June 1979 article. In addition, both of the Bank’s articles show a “natural” gearing adjustment, equivalent to the decline in the real value of companies’ net monetary liabilities; this is similar to version (a), but only identical if the rise in general prices is the same as the rise in replacement costs of the mix of tangible assets held by companies. A further updating was published in December 1979 [21], including an analysis by sub-industrial groups similar to that for manufacturing given in section 4 of this paper.

¹²I am indebted to Martin Gibbs for drawing attention to this.

¹³See [16]. A similar approach, but excluding changes in the “real” prices of physical assets, is adopted in a Bank of England discussion paper—see [19].

that the only effect of relatively high gearing on this element of the measure of the surplus accruing to the owners is any excess of the gearing gain over the interest charge. (Of course, any system of measurement will include in operating surplus itself the main benefit of relatively high gearing, whether in the form of a net return exceeding the interest charge, or of volume gains through the additional assets employed.)

The recognition of “gearing gains” as part of the measure of income accruing to the owners implies, of course, that if they are distributed additional borrowing will be needed to finance the geared portion of the additional capital maintenance provisions. The additional borrowing will not however increase the balance sheet gearing, and may only serve to reduce the extent of a fall in the gearing when measured at current values. The underlying assumption is that debt and equity form a “pool” of finance for both physical and other assets.

An alternative way of considering the case for not charging all realized holding gains as costs (set against revenue) is the following. The “pool” of finance generates gains—operating surplus and realized holding gains. If the holding gains are entirely excluded from distributable income, it is tantamount to regarding them as entirely generated by equity and not at all by debt. If the holding gains are to be regarded as partly generated by debt and yet are entirely excluded from distributable income, there is double counting, as costs, of the realized holding gains (capital maintenance provisions) and of part of the interest charge.

On this approach one might exclude part of the interest charge from the costs set against the measure of distributable surplus, while charging all realized holding gains as costs; this is in contrast to including all the interest charge as a cost (reducing the measure of distributable surplus) and only charging as costs part of the realized holding gains. The effect of the alternative method would be similar—it would also tend to increase the measure of distributable surplus over that arrived at on the “pure” Sandilands basis and would also tend to limit the fall in the balance sheet gearing—but its scale would not necessarily be the same.

3. ILLUSTRATIVE

3.1. *Introductory*

All the figures in this section are derived from the U.K. Department of Industry’s analysis of the published accounts of large listed companies in manufacturing for 1975 to 1977 [7]. These figures relate to company groups, including overseas subsidiaries, but exclude companies mainly operating overseas. The basic figures were adjusted to “pure” historical cost, i.e. excluding any revaluations in figures at book value, and then to replacement cost, by the Department of Industry using methods initiated by the accountancy staff of the Monopolies and Mergers Commission [8]. They used indices similar to but rather broader than those published by the U.K. Central Statistical Office [20] to adjust the summaries by sub-industry group of the published accounts of individual companies.¹⁴ Corresponding figures are available for 18 industrial subgroups of

¹⁴I have used the average index for stock in each industry for calculating the provisions for the maintenance of “monetary working capital.”

manufacturing, and section 3.4 below illustrates the effect of differing circumstances, e.g. of changed gearing, using the industrial analysis of the 1976 accounts.¹⁵ It should be noted that the companies themselves were not following current cost accounting principles at the time in compiling their published accounts. It is a matter of conjecture whether their decisions about their dividends or about investment projects, or their price-setting policies, would have been materially different if they had been using the current cost system of accounting, but the adjusted figures nevertheless give a reasonable picture of their profitability and of rates of return to capital, given the increases in costs and prices that occurred in these years.

Table A annexed shows the calculation of gearing ratios on two possible definitions of "monetary working capital:" one narrow and one wide. The wide definition of monetary working capital is the difference between the total of tangible assets and the total of "net trading assets" as defined by the Department of Industry. It includes cash, holdings of treasury bills and of tax instruments less immediate tax liabilities, as well as trade debtors and creditors. The narrow definition of monetary working capital excludes the items other than trade debtors and creditors, which are therefore deducted from liabilities. Apart from some exceptions, this is the definition adopted in the U.K. Accounting Standard [2].¹⁶

Table B annexed illustrates for 1976 the method of deriving estimates of unrealized revaluations (holding gains) from the Department of Industry's figures.¹⁷

3.2. Main Results

Table 1 below shows the various measures of income accruing to the owners of a business.

¹⁵Cyclostyled background tables, showing how the results were derived, are available on application to the author (c/o Statistics Division, Inland Revenue, Somerset House, London WC2, England).

¹⁶The calculation of the gearing ratio, on the narrow definition of monetary working capital, is virtually identical to the method prescribed in the U.K. Accounting Standard [2], given the limitations of the available data. In section (a) of Table A annexed, the ratio is based on the total of assets, defined as fixed assets and stocks plus trade debtors less trade creditors, plus investments in company securities and capitalized intangibles. In the Accounting Standard, it is based on "net operating assets" defined as fixed assets (including trade investments), stock and monetary working capital. Monetary working capital is normally defined as trade creditors plus stock not subject to a cost of sales adjustment less trade creditors. The total used in this paper differs therefore from "net operating assets" by including any investments in company securities other than trade investments, any investments in gilt-edged securities etc. not identified as such in the Department of Industry's analysis, and capitalized intangibles not included in fixed assets; and by excluding certain cash (less overdrafts) which, exceptionally, can be included in monetary working capital, as defined in the Accounting Standard. See also [17], pages 27-30, from which it appears that investments in associated companies are regarded as trade investments.

¹⁷I should stress that this method of deriving the unrealized revaluations is an approximation and all the figures in this paper which include an adjustment for the debt-financed proportion of unrealized holding gains are also approximate. Two approximations are the following. First, a figure of acquisitions less disposals, derived from the balance sheet at "pure" historical cost, is carried without change into the analysis of the factors leading from opening to closing replacement cost. Since the amounts written out of the books in respect of disposals at replacement cost will be higher, this figure is too high and the derived revaluations are understated. Secondly, the figure of replacement cost depreciation is treated as if calculated at opening value. Since it has been calculated at average value, the deduction for depreciation should be lower if at opening value, also tending to understate the derived figure of revaluations.

TABLE 1
MEASURES OF INCOME (BEFORE TAX) TO OWNERS OF THE BUSINESS—1976
(Large listed companies in manufacturing, U.K.)

	<i>Capital maintenance concept</i>			
	Historical Cost	“Pure” Sandilands	Narrow MWC*	Extended to Include: Wide MWC*
	£ billion			
Trading profit before interest but after historical cost depreciation, and investment income	7.0	7.0	7.0	7.0
<i>Less</i> additional capital maintenance provisions:				
on tangibles	—	-4.4	-4.4	-4.4
on monetary working capital (MWC)*	—	—	neg.	-0.4
<i>Equals</i> operating profit (before interest) and investment income	7.0	2.6	2.6	2.2
<i>Plus</i> gearing adjustments:				
based on realized holding gains plus maintenance of MWC*			+1.0	+1.3
<i>Less</i> interest charges Net	-1.3	-1.3	-1.3	-1.3
based on realized and unrealized holding gains			+1.8	+2.3
<i>Less</i> interest charges Net			-1.3	-1.3
			+0.5	+1.0
Total distributable to owners, where gearing adjustment:				
excludes unrealized holding gains	<u>5.7</u>	<u>1.3</u>	<u>2.3</u>	<u>2.2</u>
includes unrealized holding gains			<u>3.1</u>	<u>3.2</u>

*Monetary working capital.

The effect of including gearing adjustments based on realized holding gains (that is, abatements of additional capital maintenance provisions, to the extent that they are financed by debt) is to increase the measure of the amount distributable to the owners materially; the differences in the capital maintenance provision for monetary working capital, depending on its definition, are partially offset by differences in the amount added through the gearing adjustment. The

inclusion of an adjustment for the debt-financed portion of unrealized holding gains further increases the measure of the distributable amount; to do so requires an alteration in the basis of calculating the gearing adjustment on the realised holding gains.¹⁸

Table 2 below shows the figures in Table 1 in the form of income-to-asset ratios, with corresponding figures for 1975 and 1977.

TABLE 2
INCOME TO ASSET RATIOS (INCOME BEFORE TAX)
(Large listed companies in manufacturing, U.K.)

	1975	Percent 1976	1977
1. <i>Net trading income before interest to net trading assets</i>			
Capital maintenance concept:			
historical cost	15.5	18.8	17.2
"pure" Sandilands	2.6	4.3	5.1
extended to include monetary working capital:			
narrow definition of MWC*	2.6	4.5	5.2
wide definition of MWC*	1.8	3.4	4.5
2. <i>Net trading and investment income after interest (and after any gearing adjustment) to shareholders' interest</i>			
Capital maintenance concept:			
historical cost	17.5	22.3	20.4
"pure" Sandilands	0.7	3.4	4.6
extended to include monetary working capital, and including gearing adjustments based on:			
<i>realized holding gains:</i>			
narrow definition of MWC*	3.8	6.2	6.6
wide definition of MWC*	3.5	5.7	6.4
<i>realized and unrealized holding gains:</i>			
narrow definition of MWC*	7.7	8.5	7.6
wide definition of MWC*	8.0	8.5	7.6

*Monetary working capital

In terms of the return to all assets (net trading income before interest in proportion to net trading assets) the first two measures are those published by the Department of Industry (see [8]). The other two versions of the measures at replacement cost are not very different; it is debatable whether a provision for the

¹⁸Current cost depreciation is unaffected, but instead of being analysed into historical cost depreciation and the balance (additional depreciation), it is analysed for this purpose into depreciation at the prices of the preceding year and the balance, being the adjustment from the prices of the preceding year to those of the current year. The additional depreciation on which the gearing adjustment is based is therefore reduced from £1.6 billion in 1976 and £2.2 billion in 1977 (in relation to historical cost—see Table B annexed) to an estimated £0.6 billion and £0.5 billion respectively (in relation to the prices of the preceding year). An alternative way of arriving at these figures is to calculate depreciation on the unrealized revaluation during the year in question. A note illustrating the concepts and methods is available on application to the author.

maintenance of cash (as included in the last, and lowest, figure) is sensible, but the inclusion of a ratio on this basis follows from the arrangement of the figures used by the Department of Industry under which all cash is included, as well as trade debtors less trade creditors, in the total of "net trading assets." The measures of the rate of return to the shareholders' interest, at replacement costs, vary a little according to the definition of monetary working capital—from 5.7 percent to 6.2 percent in 1976, when the debt-financed portion of only realized holding gains is regarded as ranking for distribution. The figures are higher however than under the "pure" Sandilands capital maintenance concept (3.4 percent in 1976), and generally they are higher than the corresponding measures of the return to all capital employed, indicating some advantage to the equity from the use made of debt finance.

The definition preferred by the U.K. accountancy profession, and by the present author, is that which treats operating profit on the narrow definition of monetary working capital, and regards the debt-financed portion of only realized holding gains as ranking for distribution. This yields estimates of the rate of return to the shareholders' interest of 3.8 percent in 1975, 6.2 percent in 1976 and 6.6 percent in 1977—which compare with the estimates of the rate of return on total capital employed of some $2\frac{1}{2}$, $4\frac{1}{2}$ and 5 percent respectively.

All the measures which include the debt-financed portion of unrealized holding gains are substantially higher. These measures seem open to objection however on several grounds. The unrealized gains may not be realizable even if valuations are prudent. They can fluctuate considerably, particularly in the case of real estate. Moreover, the distribution of unrealized profits was to be prohibited in the Companies Bill which lapsed on dissolution of the last Parliament in the U.K., and their inclusion in the profit and loss account will be prohibited under the EEC Fourth Directive.

3.3. Measures of Income to the Owners of a Business Based on the Concept of Maintaining the General Purchasing Power of the Owners' Stake

The measures of the provisions for capital maintenance and of income to the owners of the business, set out in the section above, regard the income to the owners as the residual revenue after providing for maintenance of the net trading assets and the investments of the business, at an appropriate level of balance sheet gearing. This has been called the "entity" approach and is distinct from the concept of maintaining the general purchasing power of the owners' interest in the business. Of course a direct comparison is possible between the market value of the ordinary shares at the end of the accounting period and the amount which would be needed to preserve the general purchasing power of the ordinary shares at their opening market value; any excess or shortfall, together with the dividend, represents the "real" return to the shareholder, which could be realised by the shareholder who buys at the opening and sells at the close. Equally, if the business is broken up or is acquired, the equity shareholder realizes a "real" return calculated by reference to the value put on the net assets of the business attributable to the owners, in comparison to the value which would have preserved the original purchasing power of the same assets.

There has therefore been interest in measures of periodic income using a capital maintenance concept related to the general purchasing power of the net assets attributable to the owners. These measures may have advantages from the point of view of aggregation of assets and liabilities across the sectors of the economy.¹⁹ They follow what has been called the “equity” approach to capital maintenance. They depend, however, like the measures of income following the “entity” approach, on the value that is put upon the assets and liabilities other than the equity, and on whether or not unrealized capital appreciation is taken into account. Perhaps two different types of measures can be distinguished, as set out below.

The first measure stems from the *general purchasing power system of accounting*, which accepts the historical cost basis of valuation and adjusts all values to a common price level in terms of general purchasing power. If the base is taken at some earlier period (rather than at the end of the latest period), the opening values of assets and liabilities other than the equity will simply be original values adjusted for subsequent movements in general prices. The equity will therefore have a value put upon it which exceeds (for rising general prices) its book value. The amount required to maintain the general purchasing power of the opening shareholders’ interest will be the increase in general prices times the opening value, or (if lags are to be avoided) the increase in general prices times the average of opening and closing values.

Figures are not available on this basis but in 1976, when general prices rose by 15.8 percent, the amount would be above £3.7 billion (calculated from the figures of the shareholders’ interest for all large listed manufacturing companies at “pure” historical cost) and possibly similar to £5.5 billion (calculated from the figures at current cost).²⁰

If one considers a situation of perfectly stable general and relative prices, the computation of profits after providing for depreciation at historical cost will provide for the maintenance of the shareholders’ capital. *If* all costs and prices rise in a similar proportion, additional amounts are required for the maintenance of the general purchasing power of funds invested in net assets attributable to the shareholders, and these match the additional provisions required to maintain the shareholders’ interest. The additional amounts on the assets side of the balance sheet will, however, include unrealized holding gains on the written down value of tangible assets, and on investments, as well as the realized holding gains represented by additional depreciation and the increase in value of a given volume of stock. (It is still assumed that *all* costs and prices rise in proportion to the general prices index.) It seems therefore that a form of adaptation of the historical cost system of accounting which provides for the maintenance of the general purchasing power of the equity is one that suppresses the unrealized holding gains to be taken into the

¹⁹Section 4 of this paper considers these questions in more detail. The measure given in section 3.4 below has the same advantage.

²⁰Applying the increases in prices during the year to the average of the opening value and of the closing value revalued to the opening price level. The formula is $\frac{1}{2}(o + c/p)(p - 1)$ where o is the opening value of the shareholders’ interest, c the closing value and p the closing index divided by the opening index (1.158 in 1976 and 1.110 in 1977). The index is the general index of retail prices.

definition of periodic income and that the measure of periodic income then corresponds conceptually to those in the bottom line of Table 1.

This approach has not been quantified but in my view it has little to commend it. It pays no regard to the actual value of the assets in which the shareholders' capital has been invested; when relative prices change, their value, and the amounts needed for the replacement of wasting assets, may change from their initial value in a way quite different from the movement of the general prices index.

The other approach attempts to combine features of *current value accounting* with a capital maintenance concept based on *preservation of the general purchasing power of the owners' stake*. It simply compares the total gains in the current value of assets attributable to the shareholders, realized or unrealized, with a capital maintenance *requirement*, taken as the amount that would be needed to preserve the general purchasing power of the owners' stake. In the figures in Table 3 below, the provision for maintenance of the owners' stake is the amount (£5.5 billion in 1976) which, as mentioned above, applies the increase in the general prices index in the accounting period to the owners' stake at current value, taking this as a proxy for the original capital revalued by the general prices index. If the value of the assets in which the shareholders' capital is invested in fact rises in the same proportion as the general prices index, the result would be the same as under general purchasing power accounting, the effect of inflation upon the capital maintenance requirement for the equity, and on the debt required, being matched by parallel increases in the value of the assets. If not, and when there is an excess increase in the value of assets, the excess is not treated as required for maintenance of the equity, but as available for distribution. There are however conceptual and practical problems in obtaining consistency in the valuation system underlying the depreciation provisions on assets whose use extends over more than one year, and it seems unlikely that this approach could be used in practice.

In Table 3 the total gains on all assets, which are however calculated after provisions for historical cost depreciation only, and whether realized or unrealized, are compared with the amount that would be needed to preserve the general purchasing power of the owners' stake (as measured at opening current value). In 1976, the implied rate of return of over 12 percent exceeds that of some $8\frac{1}{2}$ percent based on the gearing adjustment approach (see Table 2), largely because the increases of costs and prices reflected in the measure of total gains were higher than the increase of 15.8 percent in the general prices index which determines the capital maintenance requirement.

This approach takes account of the increase in the value of the assets of the business but does not provide for the maintenance of those assets as such—rather it provides for the maintenance of the purchasing power of the equity. The maintenance of the general purchasing power of the owners' stake in all the assets of the business is perhaps a minimum test of the success of the business, in the sense of a unit in which the capital has initially been entrusted; but the amounts needed to preserve the operating capability of the business are related to its net assets rather than to the equity finance of those net assets, and if depreciation (which is a provision for the maintenance of fixed assets) is to be allowed for on the

historical cost basis, there seems no reason why the capital maintenance provisions should not in general be related to the assets actually held. A more useful comparison on the financing side seems to be that between the increase in the market value of the ordinary shares and the increase which would be needed to preserve the purchasing power represented by the opening market value.

TABLE 3
A MEASURE OF INCOME TO THE OWNERS BASED ON THE MAINTENANCE OF THE GENERAL PURCHASING POWER OF THE OWNERS' STAKE

	£ billion 1976
Trading profit after historical cost depreciation and after interest ^a	5.7
Unrealized revaluations less depreciation ^b	4.4
<i>Equals</i> total gains less interest	10.1
<i>Less</i> provision for maintenance of owners' stake	5.5
Surplus to owners	4.6
Surplus to owners as a proportion of shareholders' interest (valued at current cost)	12.5%

^aAs shown in Table 1. Includes investment income. The analysis of this figure into its current cost components is as follows (for 1976, £ billion). Additional provisions for capital maintenance—additional depreciation 1.6, cost of sales adjustment 2.8, monetary working capital (wide definition) 0.4, total 4.8. Operating profit plus investment income 2.2. Deduction for interest charges 1.3. The same figures, after deducting the additional provisions, appear in Table 4 below.

^bUnrealized revaluations of £5.0 billion less depreciation on the revaluation of some £0.6 billion. The estimate is open to question, as a measure of unrealized revaluations based on a current value system is probably incompatible with the capital maintenance requirement based on the general purchasing power system which, in effect, determines the provision for additional depreciation.

3.4. *A Measure Using the General Prices Index to Measure the Distributable Portion of Holding Gains*

The last approach has a close resemblance to the measure including the debt-financed portion of realized and unrealized holding gains set out in Table 1. The general prices index is applied, on the liabilities side of the balance sheet, not to measure the capital maintenance *requirement* (as in Table 3 above), but as a proxy for the gearing adjustment which measures the debt-financed or distributable portion of holding gains. Unlike Table 3, capital maintenance is based on the assets used in trading using the current value system, so that we start with the current cost operating profit (before deducting interest) plus investment income. Interest charges are then compared with the "gain" in "real" terms on net borrowing arrived at by applying the general prices index to the average of opening and closing debt. This indicates negative "real" interest payments in 1975-77.

When the debt-financed portion of unrealized holding gains is regarded as appropriate for inclusion in income, the whole of the negative "real" interest can

be added, as shown in Table 4 below. This adds in a "gain" from negative "real" interest in respect of the unrealized gains to tangible assets. Again, the addition is in the same direction as the net adjustment for interest and gearing (based on both

TABLE 4
A MEASURE OF INCOME TO THE OWNERS BASED ON MAINTENANCE OF NET TRADING ASSETS, WITH A CREDIT FOR NEGATIVE "REAL" INTEREST ON BORROWING

	£ billion			
	1976		1977	
<i>Income includes debt-financed portion of unrealized holding gains</i>				
Current cost return, before interest ^a		2.2		3.0
Credit for whole of negative "real" interest ^b :				
"gain" on average borrowing	1.9		1.5	
less interest charges	-1.3	0.6	-1.3	0.2
		<u>2.8</u>		<u>3.2</u>
Rate of return to shareholders' interest at current cost		7.5%		7.4%

^aOperating profit and investment income, on the wider definition of monetary working capital, so that cash is not deducted from borrowing—see Table 1. An alternative approach would be to take the narrower definition of monetary working capital and treat cash as leading to a reduction in negative "real" interest.

^bThe total of negative "real" interest is the "gain" on borrowing (applying the increase in the retail prices index to the average of opening borrowing and of closing borrowing at opening prices using the same formula as in footnote 20), less nominal interest. In 1977, the average amount of net borrowing is £14.7 billion (Table A). The average of opening borrowing (£14.1 billion) and of closing borrowing revalued to opening prices (£15.2÷1.11) is £13.9 billion, so that the "gain" on average borrowing is 11 per cent of this, or £1.5 billion. In terms of opening borrowing, the "gain" is £1.55 billion and negative "real" interest is £0.25 billion: this can be reformulated as an average negative rate of real interest of 1 $\frac{3}{4}$ per cent, reflecting the 11 per cent increase in general prices, and an average rate of nominal interest of 9 $\frac{1}{4}$ per cent (1.3÷14.1). This average rate includes payments on long-term debt.

realized and unrealized holding gains) which is shown in Table 1, and could be of similar size if the rise in general prices were the same as the rise in replacement costs of the mix of tangible assets that is held by the business. In 1976, the measure of income to the owners of the business is £2.8 billion (a return to the shareholders' interest of 7.5 per cent). It is rather lower than that shown in Table 1 which takes in the debt-financed portion of unrealized holding gains: £3.2 billion (8.5 per cent). In 1977, the two measures are virtually identical.

3.5. Measures of Net Trading Income and of Income to the Owners, Analysed by Industrial Group

In this section I consider, in terms of an analysis by industrial group, the effect upon operating profit of extending the definition of capital maintenance; and the effect of taking into the measure of income to the owners a gearing adjustment, representing an abatement of the capital maintenance provisions in respect of the

proportion regarded as financed by debt. I take the narrow definition of monetary working capital and do not include the debt-financed proportion of unrealized holding gains, following the U.K. Accounting Standard [2]. The figures are for 1976 only.

As regards *net trading income*, for all manufacturing industry trade creditors exceeded trade debtors in 1976 so that the capital maintenance provision in respect of monetary working capital (narrow definition) is negative, and the return of net trading income before interest to net trading assets at 4.5 percent is slightly higher than under the “pure” Sandilands concept of capital maintenance (Table 2). However, in three of the six groups distinguished in Table 5, companies in aggregate were net lenders in respect of trade credit so that the return on the extended capital maintenance definition is the lower (or more negative). Amongst the net borrowers, those companies in the vehicles industry (included in the engineering and vehicles group in the table) had net creditors exceeding net debtors to a substantial extent (by nearly £600 million, of which £400 million was for British Leyland), which is a net negative component of nearly 30 percent of the aggregated net trading assets of British Leyland and of the other *listed* companies in the industry. The result is that in this industry the ratio of trading income to trading assets on the “pure” Sandilands basis was substantially worse in 1976 (over minus 5 percent) than on the extended definition now adopted in the U.K. Accounting Standard (about nil).

TABLE 5
NET TRADING INCOME BEFORE INTEREST IN PROPORTION TO NET TRADING ASSETS
(1976, percent)

	Food, Drink & Tobacco	Chemicals	Metal	Engineering and Vehicles, etc	Textiles, etc	Other	All Manufacturing
Historical cost	21.2	18.7	14.2	19.2	14.3	18.4	18.8
Current cost:							
“pure” Sandilands	6.5	5.8	-3.0	4.0	-1.3	4.6	4.3
SSAP16*	7.0	5.2	-4.4	5.0	-1.0	3.9	4.5

*The U.K. Accounting Standard [2].

The implication of large differences of this kind is of course that the net position in respect of monetary working capital is a continuing one (and indeed in 1975 these companies in the vehicles industry also had net creditors exceeding net debtors in aggregate by some 30 percent of their net trading assets).

Looking at the measure of *income to the owners*, it is convenient to remember two points mentioned earlier in this paper. First, to some extent the effect of the balance sheet gearing is offset by the interest charge—or, if a “gain” on average net borrowing is calculated and set against the actual interest charge, as in Table 4, the effect of interest upon the calculation of income to the owners is that of real

interest. Secondly, while the distinction between monetary working capital and net borrowing depends on the definition of the two, in the calculation of income to the owners the effect of any difference of definition washes out to some extent—a higher provision for maintaining monetary working capital being offset by a higher credit in respect of the debt-financed proportion of the capital maintenance provisions.²¹ The same would be true of the comparison between two companies which took their finance in different forms, e.g., through trade creditors or through a bank overdraft.

In terms of the same industrial groups, there is no clear evidence of an association between the extent of gearing and the net credit for the combined effect of the gearing adjustment and of the provision for monetary working capital, which simply reflects the lack of variation in the extent of the average gearing, for these groups. The figures are shown in Table 6.

TABLE 6
INCOME ATTRIBUTABLE TO OWNERS IN PROPORTION TO SHAREHOLDERS' INTEREST
(1976, percent)

	Food, Drink & Tobacco	Chemicals	Metal	Engineering, Vehicles, etc.	Textiles, etc.	Other	All Manufacturing
Historical cost	24.4	24.1	16.0	22.6	17.3	20.9	22.3
Current cost: "pure"							
Sandilands	5.6	5.9	-7.0	3.3	-4.2	3.5	3.4
SSAP16*	8.2	7.7	-3.7	7.3	0.3	4.7	6.2
Gearing—net borrowing to total net assets at replacement cost	22.4	22.8	26.2	19.2	22.9	22.6	21.8

*The U.K. Accounting Standard [2].

The inclusion of a gearing adjustment in the measure of the return to the owners increases the measure in relation to one following the "pure" Sandilands concept of capital maintenance. When it includes the gearing adjustment, the measure of the return to the owners exceeds for all industry groups the measure of the return on all capital employed, and this indicates some advantage to the owners in 1976 from the use made of debt finance.

An indication of the effect of abnormal gearing is given by the figures for two sub-industrial groups included within the column headed "Engineering, Vehicles, etc." Electrical engineering, with low gearing at 14 percent, achieved a rate of

²¹If unrealized holding gains are taken into the measure of income to the owners, the effect of any difference in definition washes out virtually completely.

return to the owners including the gearing adjustment of some 11 percent—a relatively small increase on the measure of the return on all capital employed (which is $8-8\frac{1}{2}$ percent depending on the definition). The vehicles industry, with a gearing on average of 41 percent, had a measure of return to the owners including the gearing adjustment of about nil, much the same as the return to all capital employed on the “extended” capital maintenance definition but notably better than the return to all capital employed on the “pure” Sandilands definition.²²

4. QUESTIONS OF AGGREGATION

4.1. *Introductory*

The conceptual system underlying the measurement of the balance sheet of the corporate sector taken in aggregate (and of the links between opening and closing balance sheets) ought to be capable of disaggregation into the balance sheets of individual entities; and the system proposed for individual entities should likewise be capable of aggregation into figures for the whole sector. In this section I look at current cost accounting as it applies to the accounts of individual commercial entities, from the point of view of aggregation of the figures. I therefore consider the measure of operating surplus which includes a provision for the maintenance of monetary working capital on the narrow definition, and of income to the owners which includes a net adjustment for interest and for the debt-financed portion of realized holding gains (where debt is defined consistently with narrow monetary working capital). These measures are those set out in the third column of Table 1. In the case of measures of income to the owners, I also consider the alternative set out in Table 4, where the net adjustment is for negative “real” interest and is based on a general prices index.

4.2. *Operating Surplus*

In the first place the problem of consistency in aggregation has to be faced in commercial accounts, for a closed group of trading entities—the company group. When the capital maintenance concept brings in provisions for the maintenance of trade lending and trade borrowing, it is in principle necessary to segregate intra-group claims, and it seems necessary that the price index applied to intra-group lending should be the same as that applied to intra-group borrowing. This would imply that ideally there should be some degree of disaggregation of the price indices applied in calculating the capital maintenance provisions on trade lending, beyond an average index appropriate to all sales on credit and an average index appropriate to broad groups of purchases on credit.

If the trading sectors taken in aggregate are net extenders of trade credit to the other sectors (the household sector, or the rest of the world), problems of aggregation may arise. If the trading sectors treat as a cost (a reduction in factor income) a provision for maintaining the finance involved in the net extension of

²²The gearing of British Leyland was some 46 percent and that of the aggregated figures for the other 30 listed companies in the industry was some 37 percent.

trade credit to the household sector—as final buyers—which is required when costs are rising, is this to be regarded as a reduction in the factor income of the whole domestic economy, or as a form of transfer from the corporate sector to the household sector? Part of the gross value added of the trading sectors is excluded from “operating surplus” (as defined by the U.K. accountants) even though it is not required for purchases, for the remuneration of labour, or for the maintenance of physical assets; part of net financial lending by trading entities is treated as a charge on current revenue.

It would not be particularly useful, it seems, for the production account of the whole economy to be adjusted so as to include provisions for the maintenance of net financial assets of the trading sectors, even when these are part and parcel of the process of trading; the alternative of treating the provisions as transfers would be tantamount to disregarding the U.K. accountants’ concept of operating surplus insofar as it includes such provisions, and to regarding the provisions as part of a net gearing adjustment to be taken into account in going from the concept of operating surplus to the concept of income distributable by the trading sectors to the owners of trading entities. If these provisions are regarded as transfers, analogous to the gearing adjustment,²³ the counterpart is seen in the “gain” to those who are net trade borrowers from the trading sectors.

As regards the aggregation of such provisions for the maintenance of financial claims, there will be no difficulty if there is uniformity in the definition of the types of financial claim which enter into the extended capital maintenance provisions. Thus, if they apply to trade credit and trade debit for all companies and other trading entities, including financial companies, or even to cash, there would be no problem of aggregation. But if any particular group of companies—for instance banks or other financial companies—were to regard as costs provisions for the maintenance of lending in the form of other types of financial claim, when provisions in respect of these claims are not made by *all* other entities, there will be inconsistencies of aggregation. Money may be the “stock in trade” of banks, but if “money” is a claim on another entity, there will be inconsistency of aggregation, unless the entity with the counterpart liability also treats it as part of working capital. This will lead to difficulties, for instance, in the consolidation of an aggregate for industrial and commercial companies and of an aggregate for financial companies.

This is unfortunately the case with the U.K. accountancy profession’s definition of “monetary working capital”—bank advances are in normal commercial practice regarded as part of the working capital of banks, that is as part of their capital employed, but bank overdrafts are regarded as part of the finance of the capital employed by industrial and commercial companies and are not deducted from monetary working capital as defined for them. An alternative approach would be to have a definition of monetary working capital which is uniform for all types of company, and to recognize “negative” gearing, for purposes of the gearing adjustment, in the case of companies who have an excess of assets over liabilities of the types that are not within the uniform definition of working capital.

²³This was the treatment proposed in the U.K. accountancy profession’s interim guidelines [14].

4.3. *Income to the Owners and the Gearing Adjustment*

In the usual case when non-trade borrowing exceeds non-trade lending, the effect of the gearing adjustment is to increase the measure of the surplus accruing to the owners. If this increased measure is fully distributed, part of gross revenue is being distributed rather than being applied to financing the maintenance of physical assets, implying that this financing can be found through additional borrowing (in nominal terms) from financial institutions. On the assumption of full distribution of the measure of surplus to the owners, the effects will be different from those arrived at under the “pure” Sandilands approach, if only operating surplus less interest was regarded as distributable under that approach. To the extent that distributions are in fact influenced by the measure of distributable surplus, the implication is that—in conditions of rising costs and prices—the degree of involvement of financial institutions in the financing of existing assets would be less on the basis of the “pure” Sandilands approach (under which the maintenance of existing physical assets is entirely out of current revenue) than under an approach including a gearing adjustment.

Moreover, still under the hypothesis of full distribution of the surpluses including a gearing adjustment accruing to the owners, what would be regarded as income by households must (all other things being equal) in part be retained by households as financial balances held with financial institutions, if the physical assets of the corporate sector are to be maintained. However, in conditions of rising costs and prices, the nominal financial balances of the household sector will tend to increase in any event so that incompatibility within the system would probably be unlikely to arise, quite apart from the possibility of the monetary authorities taking other action having an effect on the nominal amount of intermediation by financial institutions, for instance action affecting the structure of interest rates.

Except in the case of financial institutions, capital employed (defined as physical assets plus long-term financial claims plus capitalized intangibles plus net “trade” assets) will be financed by borrowing, net of non-trade short-term lending, and by equity. The situation in which non-trade short-term lending exceeds borrowing will be rare, but, if so, there is negative gearing. Consistency of aggregation requires that this negative gearing be recognized.²⁴

For financial institutions, the net assets employed are mainly monetary, and are mostly included as part of “monetary working capital” in the U.K. Accounting Standard. On this definition of monetary working capital, negative gearing will also be unusual. If, however, a uniform definition of the financial instruments included in working capital were to be adopted, and items such as bank advances and bank deposits were to be excluded from working capital, negative gearing for financial institutions would be the rule. However, a negative gearing adjustment in arriving at the measure of income to the owners would be in the same direction as a provision for the maintenance of monetary working capital, though not necessarily by the same amount. (The main difference between the two

²⁴If the capital maintenance concept is confined to tangible assets, monetary working capital will be included with borrowing in a single net gearing adjustment, as in [14]. In this case, negative gearing for an industrial company will be encountered more frequently.

approaches is the measure of operating surplus.) As mentioned above, lack of uniformity in the definition of monetary working capital leads to lack of consistency in aggregates of the *operating surplus* as compiled by individual companies, particularly when the aggregate covers both industrial and financial companies; but any such inconsistency will have a more limited effect on an aggregate of the figures of *income attributable to the owners*—the provision by financial companies for the maintenance of monetary working capital being largely offset, in the case of industrial companies, by the element of the gearing adjustment relating to borrowing from financial companies.

Aggregation of the figures of the gearing adjustment, as compiled from the accounts of individual companies, is affected by another difficulty. This stems from the calculation of the adjustment as a *proportion* (of net borrowing to net operating assets). This is the familiar problem faced on the aggregation of seasonal adjustments based on multiplicative as opposed to additive methods—for instance, is the seasonal adjustment to the index of production arrived at by calculating adjustments to the indices for sub-groups of industry and combining these adjustments with appropriate weights? In the calculations for section 3.5 above, it was possible to estimate the gearing adjustment for all manufacturing companies in two ways—as the total of the gearing adjustments calculated from the aggregated balance sheet for each of 18 sub-groups of manufacturing industry, and as the gearing adjustment calculated from the balance sheet for all manufacturing companies taken together. The discrepancies varied, according to the definition of gearing, from very little to about 2½ percent of the figure calculated from the balance sheet for all manufacturing companies taken together.

The same problem of aggregation is avoided if a credit for negative “real” interest is substituted for the gearing adjustment, as in Table 4. The credit for negative “real” interest is calculated by applying a single index (a general prices index) to the average of opening and closing borrowing. The gearing adjustment is equivalent to applying, to the average of opening and closing borrowing, an index which differs from company to company, reflecting the average of the changes in costs of the mix of tangible assets held by each company.

5. CONCLUSION

This paper has explored questions which are at the heart of both economic and commercial systems of accounting for corporate trading entities. Any system needs a consistent set of principles for the valuation of assets and liabilities. The economic accounts use replacement costs for the valuation of most tangible assets and to determine operating profit, but the corollary is that they may need a supplementary system for distinguishing, within the reconciliation account of the UN guidelines [9], between the revaluations or capital gains which should be regarded as part of the maintenance of the capital attributable to the owners and thus retained, and those which should be regarded as part of periodic income accruing to the owners, and thus as available for distribution. If such a system allocates to periodic income the net gains arising from a pool of assets to the extent that the pool is financed by debt with a fixed face value, and these amounts are distributed, the effect would be to leave the balance sheet gearing unchanged,

when the gains are measured as they accrue. An alternative is to measure them as they are realized. There are two ways of measuring the accruing net gains on assets financed by debt. One is to use as yardstick the change in costs and prices facing the company, which determines its real gains as borrower. The other is to use the change in prices facing the lender, which determined his real loss.

Commercial accounts provide a framework for such a system, in that they have always used a concept of income which is directly related to the change in the book value of assets and liabilities. The valuation system is however deficient if it does not take account of rising costs and prices. In my view the aim should be to follow current value principles when valuing assets and liabilities, and for measuring costs including depreciation. When they are on current value principles, commercial accounts can also be adapted to measure net gains arising on assets financed by debt with a fixed face value, in the same way as for the economic accounts. In the U.K.'s system of current cost accounting, debt-financed gains will be recognized only as they are realized, using the changes in costs and prices facing the company. The capital maintenance concept is also extended to cover all working capital. There are therefore some features which would create difficulties in aggregating commercial accounts to arrive at accounts for whole economic sectors; in particular, the provisions for the maintenance of working capital are based on a definition which is not uniform in terms of the financial instruments covered. But the concepts are generally very similar to those which might be used in the economic accounts extended to cover a wider concept of income accruing to the owners.

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ANNEX

TABLE A

LARGE LISTED MANUFACTURING COMPANIES (AVERAGE OF OPENING AND CLOSING VALUES)

CALCULATION OF GEARING RATIOS

("Pure" historical cost adjusted to replacement cost)

	1975	1976	1977
£ billion			
<i>(a) Narrow definition of monetary working capital (MWC)</i>			
Tangible fixed assets:*			
At "pure" historical cost	14.2	16.0	18.0
Cumulative revaluation	8.0	11.7	14.2
At replacement cost	22.2	27.7	32.2
Stock	13.7	15.7	18.0
Total tangibles	35.9	43.5	50.2
Monetary working capital (MWC):			
Debtors	10.9	12.5	14.4
Less creditors	-11.0	-12.9	-14.9
Net MWC	-0.1	-0.4	-0.5
Total of above	35.8	43.1	49.7
Intangibles and investments†	4.3	4.7	5.1
Total operating assets‡	40.1	47.8	54.8
<i>Financing</i>			
Liabilities to third parties‡	11.3	12.3	13.7
Less cash etc. and Treasury bills	-2.3	-3.1	-4.1
Current taxation	1.2	1.2	1.5
A. Total net borrowing	10.2	10.4	11.1
Shareholders' interest:			
At "pure" historical cost	21.9	25.7	29.5
Revaluation reserve	8.0	11.7	14.2
At current cost	29.9	37.4	43.7
B. Total financing	40.1	47.8	54.8
Gearing ratio: A as percentage of B	25.4	21.8	20.2
<i>(b) Wide definition of monetary working capital</i>			
Total assets (as in (a) above)	40.1	47.8	54.8
Add cash etc. and Treasury bills	2.3	3.1	4.1
Less tax payable this year	-0.4	-0.4	-0.5
= Net trading assets plus intangibles and investments (as defined by Dept. of Industry)	42.0	50.5	58.4
<i>Financing</i>			
Liabilities to third parties‡	11.3	12.3	13.7
Tax payable next year	0.8	0.8	1.0
A'. Total net borrowing	12.1	13.1	14.7
Shareholders' interest at current cost	29.9	37.4	43.7
B'. Total of financing	42.0	50.5	58.4
Gearing ratio: A' as percentage of B'	28.7	26.1	25.1

*Includes investments in unconsolidated subsidiaries.

†Investments exclude British Government Securities.

‡Including additionally intangibles, and any investments in company securities not included in "fixed assets" (as defined in the Accounting Standard).

‡ After deducting holdings of British Government Securities etc.

TABLE B
REVALUATIONS IN YEAR (1976)
(£ billion)

1. <i>Realized</i> (Dept. of Industry's estimates)	
Cost of sales adjustment	2.8
Additional depreciation	1.6
Total realized	<u>4.4</u>
2. <i>Unrealized</i> (Derived as shown below)	
On tangibles (fixed assets)	5.0
Total	<u>9.4</u>

Derivation of unrealized revaluations

	At "pure" historical cost (excluding any revaluations)	At replacement cost
Opening fixed assets*	15.0	25.0
Acquisitions less disposals (balance)	(3.9) →	3.9
	<u>18.9</u>	<u>28.9</u>
Less depreciation*	-1.8	-3.5
	<u>17.1</u>	<u>25.4</u>
Written down value of closing fixed assets at opening price level	17.1	25.4
Plus revaluations (balance)	—	(5.0)†
Closing fixed assets as valued*	<u>17.1</u>	<u>30.4</u>

*Department of Industry's figures (in both columns).

†Percentage increase on opening value (25.4—above) is 19.9 percent.