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IMPACT OF GENERAL PURCHASING POWER ACCOUNTING
ON GREEK ACCOUNTS

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Submitted in partial fulfilment of the
degree of PH. D

UNIVERSITY OF STIRLING

April 1989



ACKNOWLEDGEMENTS

Now that this PH.D study has come to an end, I feel the need to express my sincere gratitude to several people without whose help this study would not have materialized.

First of all, I want to thank my supervisors, Professor D. Patz, now Professor at Oklahoma State University, who supervised the first part of the study (the conceptual one) as well as Professor C.W.R. Ward, Head of the Department and Deputy Principal of the University, who supervised the second part of the thesis (the empirical part). Their guidance, invaluable comments, patience, understanding and kindness are fully appreciated. I am deeply indebted to them.

Then I want to thank Professor B Sarsentis of the Piraeus Graduate School of Industrial Studies. He was appointed as a quasi-supervisor by the State Scholarships Foundation of Greece and I had to report quarterly to him as well. I am grateful to him for the valuable comments he made, the help he offered me in obtaining the data of the study and, maybe most importantly, for the encouragement and full support he gave me when I most needed it.

I am indebted to the State Scholarship Foundation of Greece for the financial assistance I was given, as

well as to the Certified Public Accountants of Greece for their enthusiasm for the project and their full support in getting the data needed from the companies audited by them. My thanks are also extended to Professor Grinyer of Dundee University because he contributed to the completion of this study in his own way.

Finally, I want to express so many thanks to an anonymous referee for her invaluable help in organizing the data obtained, checking for mistakes and making a lot of routine but time consuming calculations (simulation examples) in the early stage of development of a new technique used in this study for restating fixed assets. I am really deeply indebted to her.

This study is dedicated to the memory of my much beloved parents who died before seeing this thesis being completed as they wished.

ABSTRACT

This study addressed the inflation accounting problem with respect to Greece. This problem had been unaddressed despite the serious implications it may have on micro- and macro-decision making due to the high and persistent inflation Greece has sustained from 1973 and afterwards.

To accomplish the above purpose the general significance of inflation accounting as well as its specific significance for Greece was established by means of the existing inflation accounting literature and the economic setting of Greece. Following this, the relevance of GPPA rather than CCA to the Greek financial reporting was established by means of correspondence between specific features of GPPA and specific characteristics of the Greek setting.

After having established the a priori relevance of GPPA for Greece the potential usefulness of GPPA to the Greek users of accounts was established as well on an empirical basis. For this purpose the impact of GPPA on Greek accounts was approximated ex ante through detailed restatement procedures and estimation techniques.

It was found that inflation has a serious impact on earnings and especially on such important (for decision

making) financial parameters as tax rate, dividend payout ratio and return on capital employed. This impact of inflation on earnings does not seem to be systematic, and hence it cannot be estimated by use of HCA numbers. Therefore, GPPA should be adopted at least on a supplementary (to HCA) basis, if in the future the increase in the inflation rate continues to be as high as it was in the period examined by the study (ie 25% or so).

In addition to the main conclusion above, other conclusions drawn on the basis of the empirical findings obtained are as follows:

1. The Composite Age Technique used (mainly in the USA) for the restatement of fixed assets and depreciation does not work at all in the Greek case. In contrast, the Dichotomus Year Technique in the first place, and the Equal Additions Technique, in the second place, may be used for adjusting fixed assets not only in developing countries like Greece, but, perhaps in developed countries as well.
 2. Operation costs of GPPA can be saved by restating fixed assets and depreciation on an annual rather than monthly basis.
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3. Perhaps the Greek government should consider the taxes imposed on corporate net profits in times of high inflation because it was found that the effective tax rate is substantially different from the nominal one.
4. There are serious implications for the Greek businesses in the finding that in real term dividends are paid out of capital rather than out of income.
5. The profitability of Greek companies is low when measured in real terms. Hence, businessmen should exercise every effort to improve it. On the other hand, the Greek government should consider the prices control imposed.

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CHAPTER ONE

INTRODUCTION TO THE STUDY

1.1. Need for the Study

"Everything is changing ..."

Heraclitus

Persistent general inflation, coupled with the fact that price changes of items held or consumed by enterprises are not taken into account under Historical Cost Accounting, has led to a widespread questioning of the adequacy of conventional methods of financial reporting. This questioning started at least as early as 1918, and received its most intense attention during the 1970's when the more developed countries experienced high rates of inflation. Accordingly, various inflation accounting¹ systems have been proposed and adopted, to cope with the impact of price changes on accounts.

Several South American countries, which have experienced high and sustained rates of inflation for decades, have for some time operated systems of inflation accounting (i.e. Brazil since 1964, Chile since 1975, Argentina since 1979). More developed countries, such as the USA, the UK and Australia, have all been involved in experimentation with inflation accounting systems in recent years. Yet, Greece, which has also experienced high rates of inflation (e.g. average annual increase in

1. The term "inflation accounting" as used in the study denotes all accounting systems proposed to cope with the impact of price changes on accounts.

prices generally of 19.1% in the period 1976-1987), has made no attempt to address seriously the problem of financial reporting under inflationary conditions.

Inflation accounting, then, is an issue which remains virtually unexamined and unaddressed within the Greek context, despite the major implications which inflation can have for investor, managerial and governmental decision making generally. The present study is directed toward rectifying this anomalous situation, at least partially, by examining the least costly and complex of the inflation accounting alternatives, General Purchasing Power Accounting (GPPA), in terms of its potential relevance and usefulness with respect to the Greek setting.

1.2. Purpose of the Study

The principal purpose of the present study is to approximate, ex ante, the empirical impact of applying GPPA upon the reported earnings of a sample of quoted Greek manufacturing companies, and from the results obtained draw implications for micro-and macro-decision making in Greece. More broadly, the essential purpose of the study is to secure empirical (and other) evidence regarding the potential value of adopting general price-level adjusted reporting in Greece.

As will be explained more fully in subsequent

methodological sections, a combination of detailed GPPA restatement procedures and estimation models are employed to approximate GPPA results for the sample firms. This approach naturally gives rise to additional sub-purposes for the study. That is, the reliability of the results of the present study is of course directly related to the reliability of the estimation models employed. At the same time, the potential value of adopting GPPA (relative to the costs of its implementation and operation) is itself a function of the extent to which the results it produces can otherwise readily and accurately be estimated. Accordingly, the following sub-purposes are also pursued in the present study.

1. To examine the accuracy and reliability of the "Composite Age Technique" for estimating GPPA fixed assets and depreciation.

2. To examine the accuracy and reliability of the "Average Balance Technique" for estimating the GPPA gain/loss on monetary items.

3. To develop and test an alternative to the "Composite Age Technique", which explicitly considers the impact of fully-depreciated assets on estimation.

4. To compare GPPA applied to the restatement of fixed assets and depreciation on an annual versus monthly basis.

1.3. Significance of the Study

As noted previously, the present study is unique in terms of addressing in depth, and empirically, the inflation accounting issue relative to the Greek reporting context. It is also relatively unique in another sense. That is, by far the majority of empirical research on GPPA has been undertaken in the USA, and the generalisability of research to other countries, including the estimating techniques often employed therein, remains in doubt. This is because the impact of GPPA on accounts is a function of the inflation rate experienced and the inflation-sensitive characteristics of the companies under examination. Since inflation rate experienced and inflation-sensitive characteristics of companies are different for Greece, as it will be demonstrated in Section 4.3., this study will show whether the US empirical results are generalisable beyond the US case, and whether the estimation techniques possess inherent generalisability.

At the same time, the basic economic characteristics of Greek firms (e.g. small scales of operation, high degrees of concentration of share capital and so on), on which the assessed relevance of GPPA to Greek financial reporting must in large part rest, are to a greater or lesser extent common to many other countries which are in a similar stage of economic development (Section 3.6). Accordingly, the findings of the study at the theoretical

level, regarding the apparent relevance of GPPA in the Greek setting, should be generalizable beyond the Greek case. Moreover, countries like Italy and Spain have experienced almost the same rate of inflation as Greece and have companies with similar gearing as those in Greece (Section 4.3.). Thus the findings of the study at the empirical level, that is regarding the impact of inflation on reported accounting values, might likewise be generalizable beyond the Greek case.

Nevertheless it is the Greek situation and ultimately the question of whether GPPA should be adopted in Greece to which the present study directly relates. In securing a tentative answer to this question, pursuit of the main purpose of the study entails answering such questions as:

1. What is the real (as opposite to nominal) tax rate?

2. Have firms' dividends served to erode shareholders' real capital (i.e. capital expressed in general purchasing power terms)?

3. What is the real return (i.e. return expressed in general purchasing power terms) on total investment as well as on owners' investment?

4. How are price change effects distributed across time and firms?

Obtaining empirically-based answers to such questions is highly significant because they may have major implications for investor, managerial and governmental decision making in Greece. For example, it

the real tax rate is high, or higher than intended, then tax relief policies might be appropriate. Similarly, if indeed dividends have served to erode real capital, then Greek company law which requires the distribution of a certain percentage of earnings each year may warrant modification. The existing dividend policies of Greek companies likewise may warrant alteration. Then too, if real rates of return on investment are abnormally low (or negative) and they are distributed across firms in an unsystematic way, explicit disclosure of these differences via GPPA becomes relevant to a wide range of decision contexts at the firm, capital markets and public policy levels. If, on the other hand, the distributional effects of price changes are relatively systematic, they are potentially subject to reasonable estimation, or may even merely constitute scale-effects with little or no information content. Therefore, GPPA disclosures may not be justified in marginal information terms.

The empirical sub-purposes of the present study too possess readily identified significance. The extent to which already available estimation techniques accurately approximate the results of detailed GPP restatements, and the extent to which such techniques can be improved upon, determines the extent to which new information benefits can be expected to justify the costs of adopting and operating GPPA in Greece. Similarly, with regard to GPPA

itself, if adjustments to fixed assets and depreciation expense made on a monthly basis do not differ significantly from those made on an annual basis, the costs versus benefits issue is further clarified.

1.4. Approach of the Study

The empirical purposes of the study as presented in Section 1.2. presuppose (a) that inflation accounting is an important issue, particularly with respect to Greece; and (b) that GPPA is a potentially useful solution to the problem of accounting for the impact of price changes, again particularly with respect to Greece. Accordingly, Chapters II and III are devoted primarily to providing support for these two presuppositions regarding the a priori relevance of GPPA to the Greek reporting context. Methodologically, the crux of these two chapters lies in a coincidental analysis of, on the one hand, the characteristics and properties of the GPPA alternative, and on the other, the characteristics and properties of the Greek reporting setting, toward establishing logical correspondence and/or "goodness of fit".

Thus, in Chapter II the significance of inflation accounting is established. Specifically, the nature and salient aspects of the inflation accounting issue are outlined, including consideration of the nature of "specific" and "general" price changes effects, their

impact on an entity's wealth, the deficiencies associated with Historical Cost Accounting (HCA), the potential consequences of these deficiencies for effective decision making, and empirical evidence regarding these consequences. Following this, the prerequisites for reaching a solution to the inflation accounting problem (i.e. which of the alternatives proposed should be adopted) are briefly discussed, and the basic inflation accounting systems proposed are outlined. Finally, the historical experience with the inflation accounting issue is reviewed toward evidencing two things in particular: that the issue has been and remains important and contentious and that by no means has GPPA been effectively excluded from the choice set of viable solutions to the inflation accounting problem.

Chapter III in turn considers the basic economic profile of Greece, in order to establish the specific importance of the inflation accounting characteristics of the two main alternative solutions proposed to cope with the impact of price changes on accounts, GPPA and Current Replacement Cost Accounting. These then are juxtaposed with the main aspects of the Greek corporate sector and the stage of development of Greek Accounting, toward establishing a priori superior relevance for the GPPA solution. That is, a priori relevance is argued by way of the apparent correspondence between specific aspects of the Greek business environment and specific distinguishing features of the GPPA alternative.

Given the a priori relevance of GPPA as established

in Chapter II and III, in Chapter IV the significance of the study from an empirical point of view is established as well, and the data of the study are discussed. Chapter V and VI deal with realisation of the main empirical purpose of the study, that is, to approximate *ex ante* the results of applying GPPA to Greek accounts. Toward this end, a sample of 30 quoted Greek manufacturing companies is employed. Both detailed restatement procedures and estimation techniques are used to recast, in GPPA terms, the balance sheet and income statements of these companies for the six years 1976 through 1981. For subsequent detailed empirical analysis and interpretation of results, four financial parameters are concentrated upon: return on assets; return on owners' equity; effective rate of taxation; dividend payout ratio. Correlation analysis in particular is relied upon to assess distributional effects. Finally, the implications for micro-and macro-decision making in Greece of the results obtained are considered.

Organisationaly, Chapter IV establishes the general and specific importance of the empirical research undertaken overall by reference to the extant related literature. Additionally, it discusses the nature of the data gathered, the problems associated with their collection, as well as the representativeness of the data sample.

Chapter V focuses upon estimation techniques and sub-purposes 1-4 (Section 1.2.). Specifically, the origin of the estimation techniques used in the study is briefly

discussed. Additionally, the reasons for choosing the Davidson-Weil model instead of other sophisticated models available for GPPA restatement of accounts are given and the nature and operation of the Davidson-Weil model as well as the modifications to it made by the researcher are described. Following this, the reasons for developing the Dichotomous Year Technique and its variation (called Equal Additions Technique) for the restatement of fixed assets and depreciation are explained, the nature and operation of the methods are described in detail, and a comparison between them and the Composite Age Technique, used in previous studies for the restatement of fixed assets, is made. Also, within the limits of the data available, the apparent applicability and accuracy of the estimation techniques within the Greek context are tested, which provides a methodological base for the remainder of the study, as well as insight into the potential value of GPPA relative to its costs of implementation and operation (or alternatively, the reliability of the estimation procedures is tested as is apparent from the errors of estimate observed).

Chapter VI discusses the two general problems (i. e. cut-off date and index to be used) associated with the restatement of accounts. Following this, the specific restatement procedures employed to adjust each basic category of accounts are discussed in detail.

Chapter VII, in turn, reports the results obtained, particularly in terms of the four financial parameters (above) selected for detailed empirical analysis. These

results, and their implications for micro-and macro-decision making in Greece, are then considered in the context of the apparent need for and potential value in adopting GPFA in Greece.

Finally, Chapter VIII summarises the study in terms of its main findings, states the overall conclusions reached from the research (tempered by the limitations inherent in the study), and considers generalisability of these findings and conclusions to other countries which resemble Greece such as Spain, Portugal and Italy. The Chapter ends by providing directions for future research.

1.5. Limitations of the Study

The limitations of the study are as follows:

1. As stated in Section 1.3. the question of ultimate significance is the question of whether Greece should adopt an inflation accounting system, and if so which one. However, of the inflation accounting systems proposed, only the impact of GPPA on Greek accounts is examined because GPPA seems to be more relevant to the Greek case than the other main alternative, Replacement Cost Accounting (RCA). The case for GPPA rather than RCA, however, is based on a priori reasoning, not empirical evidence. Hence, the answer provided in the present study is, and must be a tentative.
2. The case made for adopting GPPA in Greece, and for improved decision making in Greece, is a priori. It is not empirically based on a cost-benefit analysis, or at least on the capacity of GPPA to predict future events which are of likely interest to the users of accounts. In a real sense then, use and usefulness per se are not assessed; rather, potential usefulness or analytically determined relevance is at issue.
3. Only four financial parameters (Section 1.4.) are extensively observed and analysed for the sample companies. Though an a priori case for the importance of these in decision making is made in the study, there is no guarantee that as good or better a case might exist for other financial parameters, and observation of these

would produce materially different results and conclusions.

4. The study is limited to one 30 company sample, drawn from one broad (manufacturing) industry, of a distinct character (quoted companies). It is reasonable to postulate that the impact of GPPA on accounts of firms in other industries (e.g. utilities, retail, banking) could be materially different because of different inflation-sensitive characteristics. A similar proposition might hold for unquoted companies, manufacturing ones or otherwise.

5. The Davidson-Weil model used previously in other US studies, is employed to estimate restated cost of goods sold and inventory. Unlike the models used to estimate restated fixed assets and depreciation, as well as to estimate gains/losses on monetary items, lack of data precluded any test of the validity of this model in the Greek (as opposed to US) context. This is a limitation since for all the estimation models used their "...general applicability is always suspect, and should be evaluated regularly for [their] continued validity under changing situations" (Petersen, 1971, pp. 11-12).

6. The majority of the accounts in the sample are restated by estimation procedures, rather than full detailed GPPA procedures. Though estimation of confidence intervals is attempted, it remains that this is done from small sub-samples.

7. Generalisability beyond Greece is somewhat hampered by peculiarities in the Greek setting, particularly as

regards land and buildings. As discussed later Greek companies of the 'société anonyme', or limited liability legal form, had to revalue their land, buildings and building installations according to specific guidance from the Ministry of Finance. Out of necessity, the amounts obtained from the revaluations as well as the dates of revaluations were used as acquisition costs and acquisition dates for GPPA restatement purposes. Thus, over-or under-restatement of those assets may have accrued in terms of comparable GPPA results, as a result of not using detailed historical information for their restatement. It should be noted however, that this probable comparability limitation refers primarily to the balance sheet rather than to the income statements, because only a small proportion of any over-or under-restatement affects (through depreciation of the year) the income statement.

In sum, the foregoing limitations derive primarily from the typical joint problem of data availability and of effecting a manageable study within a plausible period of time. The obstacles the Greek setting presents in this regard are discussed in greater detail subsequently.

CHAPTER TWO

THE SIGNIFICANCE OF INFLATION ACCOUNTING

2.1. Introduction

As noted in Section 1.1. Historical Cost Accounting (HCA) does not take into account price changes despite the serious implications this can have for investors and creditors, management of firm and government. It was also stated one purpose of this study is to examine the impact of General Purchasing Power Accounting (GPPA) on Greek accounts, and hence the potential relevance of this system to Greek financial reporting. However, before examining the effects of GPPA on Greek accounting measures, the significance of inflation accounting, should be demonstrated. It should also be shown that GPPA has been and still remains a viable solution to the problem of accounting for changing prices. Otherwise an empirical study on GPPA would be useless.

Accordingly, the main purposes of this chapter are the following:

- 1. To clarify the nature and importance of the broader issue of inflation accounting.*
- 2. To show that no fully satisfactory solution has been reached yet regarding the inflation accounting alternative to HCA, which should be adopted for financial reporting, and hence this problem is still open to consideration.*

3. To demonstrate that the GPPA alternative to HCA has been and still remains a viable (whole or partial) solution to the inflation accounting problem.

To these ends, in Section 2.2. the definition of inflation (and deflation) is given, and when and why price changes affect an entity's wealth is explained. Following it, the two broad deficiencies of HCA in times of price changes are illustrated and their consequences for decision making are briefly stated. The section ends by briefly presenting empirical evidence regarding the effects of price changes on accounts and the usefulness of inflation accounting generally.

In Section 2.3. the reasons for which no final solution has been reached to the inflation accounting problem (i.e. the problem of choosing among the inflation accounting alternatives proposed) are briefly presented and the prerequisites for the final solution of the problem are briefly stated. Following it, the basic alternatives to HCA proposed and their advantages and disadvantages are outlined.

Section 2.4. provides an overview of the historical evolution of inflation accounting. This overview aims at evidencing two things in particular: that the inflation accounting problem is controversial and that from the "solution choice set" GPPA has been and still remains a viable (whole or partial) solution to the problem of inflation accounting.

In Section 2.5. a summary of the discussion in the previous sections is given and conclusions are drawn

regarding the importance of inflation accounting, the prerequisites for reaching a final solution to the inflation accounting problem, and the current trends with respect to the alternatives to HCA.

2.2. The Inflation Accounting Issue

As noted in Section 1.1, the prices of goods and services are continuously changing. Such price changes are characterized in two ways, as (a) specific price changes (i.e. changes in the price of specific goods and services) and (b) general price changes or general price-level changes (i.e. changes in the prices of goods and services generally). The persistent increase in the general level of prices, which is necessary accompanied by a decrease in the general purchasing power of money, is called inflation, whereas the decrease in the general level of prices, and the increase in the general purchasing power of money, is called deflation.

General and specific price changes are not mutually exclusive events. That is, in a given period both types of price changes can occur, "specific" and "general". However, it should be noted that while it is possible to have only specific price changes in a given period¹, it is impossible to have only general price level changes.

1. The prices of some specific goods rise while the prices of some other specific goods decrease in such a way that the aggregate effect is neutral.

This is because when someone is talking about general price-level changes he is actually talking about specific price changes of a broad range of goods and services.

What causes specific price changes and general price-level changes is not the concern of this study. Only the effects which each type of price changes may have on the wealth of an entity is of concern. When and why price changes affect an entity's wealth, is examined in the following paragraphs.

When the prices of all goods (and services) change at the same rate and in the same direction, the wealth of an entity which holds goods and claims to services is not affected. This is because the exchange value of each of the goods (and services) has not changed. However, if an entity holds cash instead of goods, its wealth is affected in the sense that the general purchasing power of money (i.e. the money's ability to buy goods and services generally) has been changed due to the change of the prices generally.

In the case where the specific price of an individual good or goods changes while the general level of prices does not change, then the wealth of an entity which holds the specific good changes due to the change in the good's exchange value. But there is no change in wealth when cash is held instead, in the sense that the general purchasing power of money is intact.

Finally, when the specific prices of some goods change in the opposite or same direction as the general level of prices, but at a different rate than the

exchange value of the particular goods changes. The exchange value of cash with respect to its ability to buy goods and services in general changes, too, due to the change in the general level of prices. Consequently, the wealth of the entity which holds the specific good and cash changes.

According to what has been said so far the conclusion can be drawn that wealth held in the form of specific goods is affected by changes in the (specific) price of the specific good held, while wealth held in the form of money is affected only by changes in the general level of prices, provided that money is used for the purchase of goods and services generally. However, if at the time of price changes the money is going to be used for the purchase of specific goods instead, then the wealth of the entity which holds the money is affected only by the changes in the prices of the specific goods to be purchased, no matter if the general level of prices changes. This is because the purchasing power of money with respect to the specific goods to be purchased has changed due to the changes in the prices of these specific goods. The changes in the general level of prices leaves indifferent the entity since it will not use the money for the purchase of goods and services generally. By the same token if a specific good is held by an entity and at the time of price changes the good is going to be exchanged for the purchase of goods and services generally, then the wealth of the entity changes due to the changes in the general level of prices even if

the specific price of the goods does not change.

Accordingly, strictly theoretically speaking, the following general conclusion can be drawn: Wealth held in the form of specific goods is always affected by changes in the prices (specific prices) of the goods held; it can also be affected by changes in the general level of prices if the "intention" is to exchange the goods for the purchase of goods and services generally. Wealth held in the form of money can be affected either by only specific price changes or only by general price-level changes or by both types of price changes, depending on the "intended" use of money at the time of price changes².

In most cases it is very difficult to determine exactly each time what is the "intended" use of wealth, and hence to account for "general" or for "specific" price changes or for both types of price changes. Only assertions can be made since someone is dealing with "intentions".

This above statement is especially true with respect to the business entity, which holds goods and money for different purposes, acts in a continuously changing world, and in which different people have different interests in its wealth. Hence, before measuring business entity's wealth (i.e. financial position) and

2. Having said that, it should be noted as well that money is a medium of exchange. As such, in principle, the main purpose of holding money is to exchange it for goods and services generally. Hence, the plausible assumption is that money is subject only to the risk of changes in the general level of prices.

changes in wealth (i.e. income) someone should define clearly the main objectives of a business entity and ultimately the main objectives of financial reporting.

As will be seen in the next sub-section, there are no definite answers, and hence, general agreement, as regards the objectives of financial reporting. Only assertions have been made. Depending on the assertions made with respect to the objectives of a business entity, some people are in favour of using specific price changes in measuring financial position and changes in wealth of a business entity, others favour the use of general price-level changes, and some other people maintain that both types of price changes should be taken into account.

No matter whether it is the "specific" or the "general" or both types of price changes which should be taken into account for measuring wealth (this is examined in Section 3.3.), the point at issue is that price changes do affect the wealth of an entity, and therefore they should be taken into account. HCA, however, does not take into account price changes until revenue is reported. Hence, there is a widespread questioning of the adequacy of HCA to serve the needs of the users of financial reports under inflationary conditions - the "inflation accounting" issue.

Specifically, there are two broad deficiencies associated with HCA. The first one may be characterised as the "unit of measurement deficiency". That is, use of an unstable unit - money - for measuring income and

financial position instead of a stable one, that is, general purchasing power of money. The other deficiency may be characterised as the "valuation deficiency"³. That is, use of past historic entry values in valuing items instead of current - however defined - values.

The "unit of measurement deficiency" of HCA was crystallized by Sweeney many years ago:

3. The valuation deficiency of HCA independent from inflation and exists for over a century (Sterling, 1970, p.3.). However, the need for the resolution of this problem become imperative in times of price changes.

I had not progressed far, therefore, in my intense effort to make valuation more logical when I realised that the old, easy going treatment of a dollar as always remaining the same in value had to be discarded. For how could I measure with a ruler that was twelve inches long at one date, seven or eight inches at another date, and perhaps twenty or twenty-four at still another? Before I could proceed with any sound measurement of values, therefore, I had to have a sound money unit of measurement.

(Sweeney, (1964), p.44)

Since HCA does not use a homogeneous unit for measurement of financial position and income, Sweeney voiced three major objections against it. Firstly, HCA is irrelevant to the main purpose for keeping accounts, which is the determination of one's progress toward more consumption. Secondly, HCA adds and subtracts unlike items. Thirdly, HCA does not permit calculation of gains/losses on monetary items (Sweeney, 1964, pp 3.4, 7,15). These shortcomings deserve elaboration because they may have major consequences on decision making.

As regards the first shortcoming, HCA computes income as the difference in the equity capital between two periods without accounting for the impact of inflation on capital. In other words, HCA does not account for the reduced ability of capital to buy goods and services in general due to the rise in the general level of prices. As a result, HCA may overstate income of the period, and thus equity capital may be distributed to the owners as income of the period. Similarly, taxes may be paid out of capital rather than out of income. Another

consequence is that the return on owner's equity, which is widely used for performance measurement, may be overstated. Therefore, the users who use it as an input for decision making may be misled. For example the owners may pay extra bonuses to their management for a seemingly excellent performance or they may decide to continue investing in the same business while the real return (i.e. return which takes into account inflation) may be such that investment in another business may in fact be more profitable.

The second shortcoming of HCA is that it adds and subtracts unlike items. That is, current and past cost (pounds), such as wages and depreciation, are added together and they are, then, subtracted from current revenues (pounds), in order to determine income of the period; or past (historical) values of different purchasing power, such as buildings and machinery, are added together with current values, such as debtors, in order to get the total value of the financial position of an entity. But these values (pounds) are not additive, since they are unlike (i.e. values of different purchasing power). As a consequence, the financial position of an entity is usually understated while the income of the period is overstated. Hence, the users of financial statements, who use financial position and income as inputs for decision making may be misled. Another, consequence is that proper comparisons (at a point in time or over time) of the conventional financial statements cannot be made.

With respect to the third shortcoming of HCA, inflation impairs the intrinsic (as opposite to the face) value of money. That is, after a general price rise ~~the~~ ~~amount of~~ ~~money~~ ~~held~~ ~~at~~ ~~the~~ ~~time~~ ~~of~~ ~~the~~ ~~rise~~, one can buy fewer goods and services than could be bought before the increase in the general level of prices - "currency debasement". Accordingly, if an individual holds money in a period of rising prices he suffers a loss equal to the amount of money he holds multiplied by the rate of increase in the general price-level. But when he owes money he makes a gain in the sense that he will repay the loan with "cheaper" money. This gain/loss is called monetary gain/loss. HCA does not calculate such gains/losses, because it does not account for the impact of inflation or deflation on monetary items. As a consequence, under HCA the users of financial statements do not have the information of how effective the management of monetary resources is under inflationary conditions. For example, it is not known what is the loss from holding accounts and notes receivable in times of inflation, or what are the gains/losses from lending decisions, especially if the inflation is unanticipated.

The use of past (historic) entry values instead of current values for assets valuation (the "valuation deficiency" of HCA) results in three further shortcomings in the conventional accounting system. First, the financial position of an entity is shown in a mixture of past and current values (i.e. machinery and debtors). Second, earnings are shown when they are realised rather

than when they occur (i.e. marketable securities held whose prices have increased are shown at historical values). Third, past entry values (such as depreciation and cost of goods sold) are matched with current exit values (such as sales) for income determination.

One of the consequences of the first shortcoming is that historical cost balance sheet figures do not represent "a true and fair view" of financial position of the entity in the sense that they do not represent the current worth of an entity; that is, worth measured in current values (however defined). The current worth of an entity is, as it is argued, a more useful information to the users of accounts than its past (historical) worth⁴ because in the business world "bygones are bygones".

The usefulness of information on the current worth of an entity is reflected in the accounting practices of several countries. For example in the UK, Australia, and Greece revaluation of land and buildings at current costs are made periodically. Besides, companies in different countries value their stocks at current values and not on the basis of the "lower of cost or market" rule (the convention encountered under HCA). Since HCA does not take into account current values, information such as

4. In this respect, it is argued by the proponents of the "value to the business" valuation rule (which in the majority of cases equals current replacement cost) that the shareholders (and other users) "need to know what future benefits can be obtained from the assets which a company possesses, i.e. the amount of resources which each asset represents to the company. For this purpose it is the value of the assets to the company which is relevant" (Inflation Accounting Committee, 1975, p.75). By the proponents of net realisable value (NRV) it is argued that assets measured at NRV would provide a useful measure of "the cash potentially available to pay debts and to indicate the extent to which the various stakeholders' interests are covered by realizable resources" (Gray, 1977, p.250).

current ratio, debt to equity ratio, derived from conventional financial statements and used as inputs for decision making may be misleading.

Another consequence of the mixture of past and current values shown in the balance sheet statement under HCA is that proper comparison at a point of time between companies which have acquired their assets at different periods cannot be made. This is because the external user of balance sheet statements does not know whether there are "secret reserves" (i.e. fully depreciated assets still in operation), non-vendible assets and so on. In this respect, Chambers, a proponent of net realisable value, states:

Under accounting systems which allow optional valuation rules, the significance of the resulting figures is always open to doubt, and strictly no direct comparisons of financial magnitudes, rates, and ratios is possible.

(Chambers, 1975a, p.21)

The consequences of the second shortcoming are illustrated by Bell:

Not counting gains when they arise has the unfortunate consequence that when such gains are in fact realized, the gains earned over the full span of time during which the assets were held are attributed entirely to the period in which the gains are realized. This difficulty carries with it two implications: Firstly, it means that even though absolutely identical events occur in two periods, accounting data will normally yield a different figure for profits reportedly earned in the two periods, because the data for each period are influenced by data of past periods. Second, if holding gains are only reported when realized through sale, there is no way to determine in what periods holding

activities were successful and in what periods they were unsuccessful.

(Bell, (1971), p.20)

Finally, the product of matching past and current values for income determination is an income figure which does not fully reflect changes in wealth no matter whether the "balance sheet" approach or the "profit measurement" approach to profit measurement is employed. Thus, if income is defined as the difference between sacrifices (costs) incurred and benefits (revenues) obtained (the "profit measurement" approach), then it is argued that like should be compared with like. In other words, costs and revenues should be valued on the same basis (i.e. current values), not at different bases. Failure to do this results in an income figure which includes "inflationary" or "fictitious" (or holding) gains; that is, profits resulted from not taking into account price changes of current values. If Hick's definition of income as modified by Davidson (Sterling (ed.), 1971, p.98) is accepted according to which "[i]ncome is the measure of how much better off the entity is at December 31st as compared with January 1st", (the "balance sheet" approach), then someone should take into account current values and hence current worth of the entity in order to see how much better off the entity is.

In order for the reader to get a small but concrete idea of how different the income of a period can be if it is determined on the basis of current values rather than

on the basis of past (historical) values the following example is given.

Suppose that a business entity bought inventory for £100. One month later inventory was sold for £150 when the specific as well as the general level of prices rose by 15% and 20% respectively. After the sale more inventory was bought for £115.

According to HCA the income of the period is $£150 - £100 = £50$. However, for those who concentrate on the maintenance of the physical capital⁵ of the entity, and hence account for specific price changes (current costs) in measuring income and financial position, the real income is £35 ($£150$ sales - $£115$ replacement cost of inventory) and the "inflationary" or (realized) holding gain or capital maintenance reserve is £15. The underlying reasoning for this calculation is that in order to distribute £50 as income for the period, the entity must liquidate part of the 100 units bought. Hence, its operating capability (i.e. its ability to produce the same output as before the increase of the price of inventory) will not be maintained.

For those who account for general price changes only the real income is $(£150 - £100 \times 1.20) = £30$ and the inflationary gain (or capital adjustment) is £20. That is, for them profit is what can be distributed after the general purchasing power of financial capital has been maintained.

Finally, for those who account for current exit values for income determination but at the same time wish to reflect the need to maintain the general purchasing power of capital (i.e. shareholders' capital), the real gain is £60 (i.e. $£150$ stock + $£30$ cash - $£100 \times 1.2$). The calculation implies that if £60 is distributed as income of the period the general purchasing power of

5. For a definition of physical capital see Section 3,3,2.

shareholders' capital is intact. The fictitious profit or the capital adjustment is £20 since £120 rather than £100 is needed in order for the (shareholders') capital to buy the same quantity of goods and services as before the increase in the general level of prices.

Since income is considered to be one of the most important accounting measures useful to all users for decision making, failure to calculate the real income of the period, that is the income in which changes in current values are reflected, may have serious consequences on taxes and dividends to be paid⁶, investment and pricing decisions, management performance and so on (for more details see Sections 3.3.1 and 3.3.2.).

The claim that price changes substantially affect the wealth of an entity has been established empirically. For example, Price Waterhouse and Co.⁷ examined the impact of changing prices on the accounts of 120 industrial companies which had prepared supplementary financial statements for the financial year 1979, as required by the FASB's Statement of Financial Accounting Standards No.33.⁸ It was found that the effects of changing prices on (a) income from continuing operations,

6. Kirkman (1978) mentions (in pp.224,225) that in 1975 and 1976 non-finance companies in Australia paid dividends out of capital as a result of a loss in current cost terms after taxation.

7. J.E. Connor; "Inflation Reporting" Speech at the Financial Analysts Federation Conference (April, 1980) cited in *Journal of Accountancy* (July, 1980) pp.76,77.

8. This Statement called for the disclosure of both general (i.e. GPPA) and specific (i.e. CRCA) price changes impact on inventories, fixed assets, income from continuous operations, and monetary items (i.e. monetary gains/losses as a separate figure).

(b) return on net assets, (c) dividend pay-out ratio, and (d) effective income tax rate, were as follows:

	<u>HCA</u> %	<u>GPPA</u> %	<u>CA</u> %
Income from continuous operations	100.0	60.0	61.4
Return on net assets	16.3	7.9	7.9
Dividend payout ratio	32.8	69.2	68.5
Effective income tax rate	41.1	59.4	54.6

The study by Berry and Gray (1982), which examined only the impact of Current Cost Accounting (CCA) on accounts, found more substantial results. That is, for all 199 companies examined, the HCA and CRCA net profit was £4,614.1 and 1,293.8 respectively (more than 200% overstatement of profit); the average dividend cover was 3.04 and 1.04 respectively; and the current cost net profits attributable to shareholders⁹ were 27% of the corresponding historical costs amounts.

However, the fact that inflation affects the financial position and income does not necessarily mean that HCA must be replaced by inflation accounting. The fundamentally significant accounting issue is not the size of these effects but rather whether or not these effects are consistent over time. For if the impact of price changes on accounting measures is relatively

9. As it will be seen in Section 3.3.2., CRCA computes two profits: Current cost profit (from continuous operations) and current cost profit attributable to shareholders.

systematic, then it can be reasonably estimated from HCA figures and hence inflation accounting has little or no new information content (i.e. investors and managers can, if they wish, transform their historical cost information into "real" numbers on which basis they can then make decisions.

The empirical research regarding the distribution of price changes over time and firms has not generally yielded decisive results. Basically, the same applies to the empirical research conducted on the usefulness of inflation accounting (see Section 3.3.5.). Nevertheless the studies by Basu and Hanna (1975) and (1976) found that the effects of price changes on accounts are not constant over time. As for the usefulness of inflation accounting several studies such as those by Petersen (1975), Devon and Kolodny (1978), Short (1978), Arnold and El-Azma (1978), Baran et al (1980), Lustgarten (1982), Skerratt and Thompson (1984), Mazhin (1986), concluded that inflation accounting is more useful than HCA (for more see Sections 3.3.3. and 3.3.4.).

Therefore, the widespread questioning of HCA as an adequate system to serve the needs of users of financial statements under inflationary conditions is based not only on theoretical grounds but also on empirical evidence, though the empirical evidence is not very strong¹⁰ for the reasons which are given in Section

10. Other empirical studies have found that HCA is as useful or more useful than inflation accounting. For more about this issue see Sections 3.3.3. and 3.3.4.

3.3.5. What is required is the adoption of inflation accounting to remedy the mentioned deficiencies of HCA. The problem, however, is that it is very difficult to decide which of the price variation accounting systems proposed is the most adequate to cope with the impact of price changes on accounts, as it will be seen in the next section.

2.3. The Inflation Accounting Problem

As mentioned in the previous section, with respect to the price changes effects on an entity's wealth, some people account for only specific price changes, others account for only general price level changes, and some other people account for both specific and general price level changes. Thus, if an inventory bought for £100 is sold two months later for £150, and in the two month period the specific price of the inventory has risen by 20% while the general level of prices has risen by 10%, then for those who account only for the impact of specific price changes the real and inflationary (or holding) gains are £30 ($£150 - £100 \cdot 1.20$) and £20 respectively. For those who account only for general price-level changes the real gain is £40 ($£150 - £100 \cdot 1.10$) and the inflationary gain or the capital adjustment is £10. Finally, for those who account for both general and specific price changes the real gain from continuous

operations is £30, the gain attributable to shareholders is £40 and the inflationary gain (or capital adjustment is £10).

In a more complex example than the above, more solutions can be given. In other words, there is more than one alternative solution offered with respect to the way in which price changes should be reflected in income determination and financial position. Each one of these alternatives claims to be, and indeed seems to be under specific conditions, the best alternative. Hence, it is very difficult for someone to decide which of the many inflation accounting alternatives proposed should be adopted to cope with the impact of price changes on accounts - the "inflation accounting" problem.

The difficulty in solving the inflation accounting problem should be expected. In the absence of any agreement regarding the objectives of financial reporting and the qualities of financial reports the alternatives proposed are necessarily based on assertions regarding objectives and qualities of financial reports, and hence their suitability for financial reporting in times of price changes (i.e. assertions as for whom or whose income is measured, which unit of measurement and which valuation is the best and so on). However, assertions by themselves do not solve the problem. They rather perpetuate it if they are not accompanied by empirical proof¹¹.

¹¹ This does not imply that the researcher disregards normative theory since empirical studies without theory lack rigour. All he wants to emphasize is that assertions (and hypotheses) should be tested for their validity and practical usefulness. Otherwise, normative theories remain mere opinions and dogmas. This is especially true in accounting which is a primarily practical activity (for more see Section 4.2).

The empirical research, however, on inflation accounting, which could give definite answers to basic assertions, is very little and still in its infancy in order to give decisive results (see Section 3.3.5).

Hence, before a solution to the problem of inflation accounting is reached (if indeed there is one solution and not different solutions for different countries, or even different solutions within countries depending on the type and size of industry) empirically based answers should be given to some crucial questions which have not been answered yet, or they have not been answered properly.

The first basic question to be answered refers to the objectives of financial reporting. Significant efforts have been made in the developed countries toward answering this question (i.e. The Corporate Report in the UK, the Trueblood Report in the USA). However, the statements of objectives of the reports issued

....did not fully address all the fundamental issues: who are the users, what uses do they make of financial reports, what information do they require, and, also, what order of priority should be attached to the user groups in the case of a conflict of interest? More research is needed in this area.

(Scapens, (1981), p.119)

Also more research is needed on how the dominant groups of users and especially their needs are differentiated

among countries (i.e. developed versus developing countries) within countries (i.e. large firms versus small firms), and among industries within countries (i.e. service industry versus manufacturing industry).

The adequate answering of the objectives of financial reporting will facilitate the answering of other important questions: How should one define income and hence capital? Is it financial capital (i.e. money capital) or general purchasing power of financial capital, or physical capital (however defined) which should be maintained before any amounts can be distributed as income of the period? Should a one-all-pervasive concept of net income be adopted for external financial reporting, or different concepts for different purposes?

Another set of crucial questions to be answered refers to the desired properties of financial reports: What should the attributes (i.e. qualitative characteristics) of financial statements (and hence of the accounting systems) be? What order of priority should be attached to them? Is there any trade-off between attributes given that to some extent these attributes are usually mutually inconsistent (i.e. relevance versus reliability)?

There is no general agreement among the most important reports issued with respect to which are the attributes and which their order of priority should be. For example, whereas in the FASB's Statement of Financial Accounting Concepts No 2 (entitled Qualitative

Characteristics of Accounting Information) issued in 1982 it was concluded that "relevance" and "reliability" are the two primary qualities that make accounting information useful for decision making, in the Sandilands Report (of the UK) as well as in the Richardson Report¹² (of New Zealand) both attributes are not listed at all. Neither is there agreement on the exact meaning of some of the attributes. For example, the Trueblood Report and The Corporate Report define objectivity in a different way from the Sandilands Report (see Lewis et al, 1983, p. 12).

Empirical research could help in clarifying the issue of the desired properties of financial reports, and the trade-off among attributes (i.e. trade-off between relevance and reliability). Yet, this research has been little and its results, as have been produced, have not provided answers.

The final, but maybe more important, question to be answered regarding the inflation accounting problem refers to the costs involved versus benefits obtained from each one of the alternatives proposed. Maybe accounting alternative A renders more useful information than alternative B. If, however, the additional costs of implementing alternative A instead of B are greater than the additional benefits derived, then alternative B should be preferred.

The so called "cost benefit analysis" criterion is, perhaps, ideal, but it is very difficult, if not impossible, to be applied since apart from the serious difficulties involved with regard

12. Report of the Committee of Inquiry into Inflation Accounting (New Zealand Government Printer, Wellington, 1976),

quantification and valuation of costs and benefits¹³ which would accrue to each one of the constituencies involved (i.e. preparers and users), apart from the additional difficulties involved in reconciling the possible competing claims of user groups¹⁴, one cannot know all the costs involved and the benefits derived from the application of a new system unless he experiences it for some period. Because of these difficulties no empirical research has attempted to prove the superiority of one alternative over another (and over HCA) on a pure cost-benefit analysis basis.

Hence, inflation accounting is a very complicated problem still open to consideration (see also Section 2.4.). To reach a solution to it, many years of experimentation with inflation accounting and a lot of empirical work, (along with further conceptual research) which will give definite answers to the questions related to it, are required¹⁵. This empirical study is a small but significant step toward this direction.

Since no adequate empirical answers have been given to the crucial questions mentioned, interminable and inconclusive debates on alternative solutions go on for many years (Section 2.4.). The basic alternatives

13. Measurements of this kind are considered to be of the most difficult problems in economics,

14. Balancing of conflicting interests involves social value judgements which is a very subjective operation,

15. Perhaps even many years of experimentation accompanied by refined conceptual and empirical research may not be enough to reach a solution of general acceptance to the inflation accounting problem due to the different and conflicting interests of the users of the accounts, some of which may be proved intractable of solution without the government's intervention,

proposed in the inflation accounting literature are four: General Purchasing Power Accounting (GPPA), Current Replacement Cost Accounting (CRCA), Continuously Contemporary Accounting (COCOA) and Present Value Accounting or Economic Value Accounting.

GPPA aims at remedying the "measurement deficiency" of HCA. For this purpose it adjusts the HC accounts by use of a general index such as the consumer price index. That is, GPPA takes into account general price level changes, and hence, on the one hand, it reflects the maintenance of general purchasing power of shareholders' capital, and, on the other hand, it takes into account currency debasement by computing gains/losses on monetary items. The remedy of the measurement deficiency of HCA is considered to be the main advantage of GPPA. Its major disadvantage is that it does not change the valuation rule of HCA. Thus, financial position is not shown in current values (however defined) but at historic costs expressed in general purchasing power of money. Nevertheless, there are conditions under which **informationally** GPPA may be equivalent to CRCA, especially in contexts where the portfolio of goods and claims to services approximates the portfolio underlying the general price level index calculation (for more about GPPA see Section 3.3.1.).

CRCA aims at remedying the "valuation deficiency" of HCA. For this purpose it basically uses current replacement cost which, as it is maintained, ensures operating capability of the entity (i.e. ability to

produce a certain output) and, hence, continuity of the firm. Current replacement cost also provides useful information to the users of accounts with respect to pricing policies, performance measurement and future operating cash flows, as it is claimed. Main disadvantages of CCA are considered to be the fact that it does not account of the impact of general price level changes, that there are cases where replacement of assets cannot be made or it is not intended to be made, and that the system is complex in its application and, at least in the way it is now implemented, unreliable (for more about CRCA see Section 3.3.2.).

COCOA, principally developed by Chambers, is a current value system, as CRCA. It changes the valuation rule of HCA, as CRCA does, but it uses current exit values or net realisable values (i.e. market or selling prices realized in an orderly manner) instead of current entry values. Unlike CRCA, it takes care of the maintenance of general purchasing power of shareholders' capital, or of net assets, as Chambers prefers to call it. Main advantage of the system is considered to be the fact that financial position is shown in current worth or actual purchasing power, which is a useful information to the users of financial statements. Other advantages are claimed to be the intuitive appeal which exit values seem to have to common people (see Tweedie, 1977), the solution given to the serious problem of cost allocation over time by recording actual changes in

current values¹⁶, and the fact that general price-level changes are taken into account, even partially¹⁷. Main disadvantages of COCOA are considered to be the fact that non-vendible assets (i.e. specialized plant and equipment) will be assigned a zero value under COCOA, and that the market value of some other assets (i.e. long-term assets and work in process) may be less than the present value of their future benefits¹⁸.

Present Value Accounting is a current value system too, which calculates the value of an asset (or all of the assets of a business entity) by discounting the estimated future net cash flows (receipts less payments) to be generated by the asset(s). For this purpose estimated information is required regarding: (a) the amount of future benefits in cash terms, (b) the timing of future benefits, (c) the cost of capital over time over the future lifetime of the assets, and (d) the effects of price changes on future interest rates and, also on cash receipts and payments (Kirkman, 1978, p.135). This system of asset valuation, and consequently of measuring wealth, seem to be ideal from a theoretical point of view¹⁹. However, one may easily criticize it on

16. For example, the decrease (or increase) in current exit value of machinery in one financial year is the depreciation (appreciation) of machinery.

17. Partially in the sense that adjustments of accounts by use of a general index is not made, and hence monetary gains/losse are not calculated.

18. For a discussion about COCOA see Boersema (1978), ch.7.

19. Boersema ((1978), ch.5, p.19) claims that the economic value method of assets valuation is the "...underpinning of almost all theoretical financial frameworks or models[.]"

practical grounds. In a world shaped by uncertainty forecasting net cash flows for the whole life of an asset (like machinery) used to produce a variety of finished goods, and estimation of the discount rate to be applied seems to be a very difficult task, if not an impossible task. Moreover, the way of profit calculation (i.e. difference between net asset valuation figures at two points of time) under this system does not provide information on how an entity's resources have been utilized in the earnings generating process. Yet, there are special cases (e.g. life insurance industry) where the present value technique is most appropriate.

Maybe because of its very subjective nature the Present Value Accounting has gained very little support in the accounting literature. COCOA is gaining considerable support, especially among the teachers of accounting. However, GPPA and CRCA are the main alternatives which have gained the greatest support in the accounting literature and they have been adopted in several countries either on a permanent or on an experimental basis, as it will be seen in next section.

2.4. An Overview of the Historical Evolution of Inflation Accounting

As noted in Section 1.1. the questioning of the adequacy of HCA for financial reporting under

inflationary conditions started as early as 1918. At that time Middleditch jr. (see Whittington, 1980, p.233) called for balance sheet adjustments by use of a general index. At the same time Paton (see Whittington, 1980, p.233) made a distinction between general price-level changes and specific price changes and in a later (1920) article he pointed out the unit of measurement deficiency inherent in HCA (see Ketz, 1977, p.5). These articles evoked responses from other writers and many papers were written in the 1920s and 1930s which favoured general price-level accounting or current value accounting (Whittington, 1980, p.233).

However, the first comprehensive work about inflation accounting, was published in 1936 by Sweeney. Sweeney crystallized the "unit of measurement deficiency" of HCA, as noted in Section 2.2. However, he recognized that the correction of the measurement unit (i.e. use of a stabilized dollar) would not remedy also the second deficiency of HCA, that is, the "valuation deficiency". Accordingly, though his book was about GPPA, he voiced a preference for a combination of GPPA and Current Replacement Cost Accounting:

Since stabilized accounting [i.e. GPPA] is primarily concerned with the use of a homogeneous measuring unit and not with the method of valuation of such, it must be able to give effect to valuation at replacement cost, as well as to valuation at original cost ... in fact, stabilization based on cost of replacement will be found still more informative than stabilization based on original cost.

(Sweeney, 1964, p.44)

The arguments against HCA as an adequate system to serve the needs of users in times of changing prices were not without effect upon the professional accounting bodies. Thus, in 1936 the American Accounting Association (henceforth AAA) considered the effects of price changes on accounts. However, it concluded that because of the low rate of inflation experienced the issue was not significant at that time²⁰. The issue was discussed again by the AAA in 1941 and 1948²¹ with the same result. In 1951 the AAA amended its position and supported the use of supplementary GPP adjusted data:

Management may properly include in periodic reports to stockholders comprehensive supplementary statements which present the effects of the fluctuations in the value of the dollar upon net income and financial position.

The effects of price fluctuations upon financial reports should be measured in terms of the overall purchasing power of the dollar - that is changes in the general level of prices as measured by a GENERAL price index. For this purpose adjustments should not be based on either the current value or the replacement cost of specific types of capital consumed²².

20. For a discussion of the position taken by the US accounting bodies for the period 1936 through 1976 see Ketz, (1977), pp.6-15.

21. At about that time the official accounting bodies of the UK also considered the inflation accounting issue. They advocated the use of either GPPA or CAA. See Westwick, (1980), pp.353-73.

22. Committee on Concepts and Standards; "Price Level Changes and Financial Statements", The Accounting Review (Supplement, 1951), p.469, as cited by Ketz, op.cit., p.8.

At the same time one of the earliest empirical studies on current replacement cost accounting was published by Dean (1951). Three years later Dean published another case study on CRCA (Dean, 1954). Then, Jones (1955) and Corbin (1955) published two case studies on GPPA. The results of these studies were striking. For example, as regards the impact of specific price changes on earnings, in his first study Dean found that for each of the electrical manufacturing companies examined for the years 1935 through 1948, the aggregate historical and adjusted (for specific price changes) earnings were: \$896,898 vs \$419,724 , \$317,484 vs 92,099 and \$160,910 vs \$68,507 respectively. The gap between historical and adjusted (current cost) earnings was especially dramatic in 1947 (i.e. \$102,681 vs \$8,190), \$51,988 vs (\$12,312), and \$19,300 vs (\$829)) due to a surge of prices from June 1946 through 1947.

With respect to the impact of general price-level changes on accounts Corbin (1955) who restated the financial statements of a department store for a twenty year period (ending in 1953) found out that the average difference between GPP adjusted and unadjusted net income was 20 per cent of the reported income; the average difference with respect to reported and adjusted return to owners equity was 28 per cent of the reported return; the effective tax rates were 7 per cent higher on the average, and the dividend payout ratio was understated by 10 per cent on average; the sales and other growth indicators (such as plant and machinery) overstated the

company's expansion by 50 to over 100 per cent. Finally "the gains due to being a debtor and the losses from being a creditor amounted to several million dollars" (Corbin, (1955), p.269).

The above studies demonstrated not only the distorting effects of price changes on accounting measures but also the feasibility of inflation accounting. As a result perhaps of these findings²³, the two accounting bodies of the USA considered several times the inflation accounting issue in the 1950's and 1960's²⁴. But in all other countries the issue remained unaddressed and strict adherence to HCA persisted. The only few exceptions were some Dutch companies which practised (and are still practising) complete or partial forms of CRCA, and Brazil, which due to hyperinflation has practised since 1964 its own inflation accounting system²⁵.

23. For example, Whittington suggests that the work of Jones with the earlier work by Sweeney were "clearly a powerful influence on Accounting Research Study No.6 which was published by the American Institute of Public Accountants (AICPA) in 1963 (Whittington, 1983, pp.75-76).

24. For example, the AAA considered the issue again in 1957 and support for GPPA was reaffirmed. In 1966, however, the AAA amended its viewpoint and advocated multi-valued reporting; that is, current value (however defined) accounting and HCA, to appear in adjacent columns (Ketz, op.cit. pp.12-13). The other accounting body, namely the AICPA, published in 1963 the most comprehensive (up to that time) paper on GPPA (Staff of the Accounting Research Division, Reporting the Financial Effects of Price-Level Changes, Accounting Research Study No.6 (New York, AICPA, 1963).

25. This system updates (adjusts) all non-monetary items; that is all permanent asset accounts and all stockholders' equity. The adjustment is made by use of a government inflation index. See J. Cotrim "Inflation Accounting South American Style", Financial Times, World Accounting Report, (April, 1985, pp.7-10).

In the mid 1970's the western countries experienced high rates of inflation, and the inflation accounting issue received its greatest attention. Numerous articles, books, exposure drafts, statements, and reports were issued calling for some form of adjustments for the effects of price changes. GPPA was the most favoured accounting system for changing prices, advocated by almost all the developed countries. GPPA was supported by the USA (i.e. 1974 Exposure Draft on GPPA²⁶) and by the UK (Exposure Draft No.8 and non-mandatory Provisional Statement of Standard Accounting No.7: Accounting for Changes in the Purchasing Power of Money issued during 1973-74). Likewise, GPPA was advocated by France (recommendation - in 1976 - for supplementary general purchasing power adjusted financial statements), by Canada²⁷ and by Australia²⁸.

After the mid 1970's, however, following the recommendations of the Sandilands Report²⁹, GPPA was abandoned in the UK in favour of Current Replacement Cost Accounting or Current Cost Accounting (CCA) as Sandilands

26. Financial Accounting Standards Board, Financial Reporting in Units of General Purchasing Power, Exposure Draft (Connecticut: FASB, 1974). Previously, in 1969, the Accounting Principles Board also recommended the disclosure of general price-level information in supplementary notes (APB, Financial Statements for General Price-Level Changes, Statement No.3 (New York: AICPA, 1969).

27. In 1975 the Accounting Research Committee of the Canadian Institute of Chartered Accountants issued an exposure draft which called for GPPA disclosures.

28. The Australian Society of Accountants issued in 1974 an exposure draft which recommended GPPA.

29. Inflation Accounting Committee (IAC), Inflation Accounting, Report of Inflation Accounting Committee, cmd.6225 (HMSO, 1975).

characterised it. Five years of strong debate³⁰ regarding the exact form CCA should take followed the Sandilands Report. Then, in March 1980, Statement of Standard Accounting Practice No.16 (SSAP 16)³¹ was published and large companies began experimentation with CCA as prescribed in SSAP 16.

Following the UK lead, Canada and Australia abandoned GPPA and concentrated on the development of CCA. Several pronouncements have been issued to date in these countries, as well as in New Zealand³² where considerable research on CCA has been undertaken.

Australia's and New Zealand's late pronouncements are very similar to SSAP 16³³, except for the computation of the gearing adjustment (see Section 3.3.2.). Canada's latest pronouncement, however, (i.e. CICA's handbook: Reporting the Effects of Changing Prices,

30. ED 18, the so-called Hyde Guidelines, and ED 24 were issued before SSAP 16. For details about those pronouncements as well for a brief history of inflation accounting in the UK, see Westwick (1980).

31. Accounting Standards Committee, SSAP 16: Current Cost Accounting (London: The Institute of Cost and Management Accountants, 1980).

32. South Africa and Holland, too, recommended CCA, while the Institute of Chartered Accountants in West Germany recommended (in October, 1975) partial CCA; that is, adjustment of depreciation based on replacement cost and inventory adjustment by the aid of official government index numbers. (For the various international proposals on inflation accounting see, for example, W.P.Hanworth II, "A Comparison of Various International Proposals on Inflation Accounting: A practitioner's view", The International Journal of Accounting (Fall, 1980), pp.63-82.

33. For a comparison of the latest developments on inflation accounting see R.S.Gynther, "Accounting for Changing Prices: Developments in Australia and Overseas", The Australian Accountant, (August, 1982), pp.468-472.

December 1982) though it resembles SSAP 16 in many aspects, it also incorporates GPPA since it requires the disclosure of certain current cost information measures in constant dollars in order to help users to assess the impact of general inflation.

This widespread preference for CCA after the mid 1970's was due to the assertion made by its advocates that the CCA provided more useful information than HCA (or GPPA). Specifically, it was asserted that CCA is more useful than HCA alone for managers in the management of the business, for shareholders and for other users of financial reporting, in assessing the financial viability³⁴ of the firm and return on investment, and for pricing policy, cost control, and profit distribution³⁵.

However, there were strong objections to CCA. First, the asserted usefulness of the system was not supported by empirical research (see Section 3.3.4.). Second, it was argued by many that CCA lacked sound theoretical foundation, since it lacked generalisability. Specifically, it was argued that CCA is practically inapplicable to such large industries as banking and insurance (whose non-monetary assets were insignificant when compared to monetary assets), to the natural resources industry (since these resources were usually not renewable) and to the real estate industry (where net realizable value was considered to be more meaningful and

34. That is, that adequate funds are available to allow continuity of the entity as a going concern.

35. SSAP 16, op.cit. p.2 para.5.

was argued as inappropriate or misleading when prices were falling or the firms replaced different units³⁶.

The above as well as other limitations of CCA will be discussed in more detail in Section 3.3.2. What is more important to note here is that many of those who were strong supporters of CCA have lost their enthusiasm in the light of experience gained from experimentation with the system. For example, in the UK (the leading country in the development of CCA), the dissatisfaction with SSAP 16 has continued to grow with the passage of time.

The first reaction against CCA came by way of the findings of an interim report of the Accounting Standards Committee (ASC) of the UK in 1983. Morison summarizes the findings and recommendations of that report:

Most people believe that SSAP 16 should be substantially amended, many of those who were originally its supporters have lost their enthusiasm in the light of experience, and most users of accounts make little use of the information it provides; a balance sheet on a current cost basis is widely felt to be misleading, and the requirements should be dropped; a new standard should permit different methods of calculating the effects of changing prices, and the information on this should be incorporated in one set of accounts, not two; companies in certain industries find CCA to be inapplicable;...." (Morison, (1983), p.295).

In the light of the above findings, and in a climate in which the compliance with SSAP 16 was about 50%³⁷, the ASC issued in August 1984 ED 35: Accounting for the Effects of Changing Prices.

³⁶ See R.R. Sterling, "Limitation of Physical Capital" in Maintenance of Capital: Financial versus Physical, R.R. Sterling and K.M. Lemke (eds.), (Houston Texas: Scholars Book Co., 1982) pp. 3-58.

³⁷ See I.H. Davidson, "ED 35 Runs into First Waves of Criticism", Accountancy, (August, 1984) p.4.

ED 35 was considered to be the forerunner standard to replace SSAP 16. However, due to severe criticisms³⁸ (the ASC was accused of "flying in the face of reality"³⁹) not only ED 35 was withdrawn (after six months) but also SSAP 16 was made non-mandatory (in June 1985) whereas the Guidance Notes on SSAP 16 were withdrawn (see Accountancy, N. 1986, pp. 153-158).

The dissatisfaction and criticism of CCA, as it has been implemented in the UK, goes to such an extreme extent as to call for the ASC's complete abandonment of the issue. Graham Stacy, Technical Partner of Price Waterhouse (a company which has undertaken considerable work on the issue of inflation accounting), said:

While over the years I have contributed to attempts to introduce a standard on inflation accounting, I am nevertheless quite sure that now, whatever the contents of a new exposure draft or standard, it won't command support.

There is too much emotional debris around at the moment which needs to be tidied up and put away.⁴⁰

With respect to the propositions made to replace SSAP16, they are mainly of three kinds. The first kind of propositions attempts to reduce complexity and increase objectivity of CCA. Accordingly, simplified methods of CCA are suggested based on the results of empirical researchers on CCA undertaken by UK accounting

³⁸ ASC Chairman Peter Godfrey admitted: "In a sense, those who reckoned that the exercise was a waste of time could well be right. Analysing the comments on ED 35 very little that is positive has come from it". See N. Fitzgerald, "ED 35 is Dead and Buried - The Debate Starts Life Anew", Accountancy Age, (4 April, 1985), p.15.

³⁹ I.H. Davidson, op.cit., p.4.

⁴⁰ "ASC is Wasting Its Time on Inflation Standard", The Accountant, (12 June, 1985), p.3

bodies. That is, a broad-brush approach which uses only two indices for price changes adjustments (the all-stock index and a single-industry specific index), or an one-line adjustment (i.e. use of a single broad index of asset purchasing power) have been suggested (see for example Methven (1984) pp. 20 and 34 and Steele (1985)).

The second type of propositions aims at a combination of GPPA and CCA. Thus, it has been suggested by the Institute of Certified Management Accountants (now CIMA) of the UK that the current cost profit should be computed in the way suggested in SSAP 16. Then the revaluations of assets (such as revaluation of land) should be added and the GPPA adjustment to opening equity should be subtracted to find the "real gain available for distribution and business development and expansion" (see, Perks, 1985, p.16). Also it has been suggested in a study by the Institute of Fiscal studies that a CCA depreciation adjustment (Section 3.3.2.) along with GPP monetary and stock adjustment could give a true replacement cost measure (Hogan, 1984). Finally, it has been suggested by Tweedie and Whittington (1984) that a form of stabilized CCA or a CCA/GPPA system (i.e. a system based on measures of current costs in terms of money, each of which has the same general purchasing power) should be adopted⁴¹.

41. This proposition is not a new proposition Sweeney, Edwards and Bell (1961), Baxter (1975) to mention only a few writers have recommended a combination of the two main alternatives, GPPA and CCA. But there are differences among these writers with respect to the exact way in which the combination should be achieved.

The third kind of propositions calls for the complete abandonment of CCA and adoption of pure GPPA. That is, GPPA as a solution to the contentious problem of inflation accounting is gaining considerable support again in the UK especially among professional accountants. Thus, Graham Corbet, senior partner of Peat Marwick Mitchell in Europe, told the international conference of the National Association of Accountants in Paris that the adoption of GPPA instead of the "unworkable and wholly incomprehensible" CCA and its numerous variants:

... would have been a powerful tool in the hands of those who wish to make accounting information more relevant to the world we live in⁴²

Myddelton (1984b) is more specific than Corbet with respect to why GPPA is the appropriate system to be adopted. In particular he claims that CCA uses an unstable or unsuitable unit of measurement, and therefore comparability is lost; that accounting, like money, needs general acceptance which CCA lacks, since most people who used SSAP 16 do not want it any more that CCA is not a system for general inflation, as it was admitted in SSAP 16. In contrast, GPPA is a system for inflation and it

42. N.Tutt, "ASC Plan for Two Inflation Drafts", Accountancy Age, (25 April, 1985) p3.

fulfils the criteria which an accounting system should have according to the Sandilands Report. That is, GPPA is objective, realistic, prudent, comparable, consistent, and easy to prepare.

One result of the criticism and the propositions made to replace SSAP 16 was the proposition of the presidents of five of the leading accounting bodies of the UK that SSAP 16 should formally be withdrawn, on the one hand, and the forms of remedying the effects of price changes on accounts which are suggested in the book published (in 1986) by the Consultative Committee of Accountancy Bodies under the title "Accounting for the Effects of Changing Prices: A Handbook", on the other. (see Accountancy, N. 1986, pp.153-158). In this book it is recognized that GPPA has been and remains a viable solution to the inflation accounting problem⁴³.

The dissatisfaction with CCA in the other countries which followed the UK lead appears to be more or less the same as that noticed in the UK. For example, as mentioned by Oppons and Cherry (1987) in Canada the

43. In this book the following are written:

"1.9. The debate on which method to adopt when accounting for the effects of changing prices has generally been expressed in terms of a choice between two methods...(CCA) ...and...(CCP) accounting...".

1.10. Although the debate has often been expressed in terms of a straight choice between CCA and CCP, it is in fact necessary, when establishing a method of determining profit to specify:

- a) the basis that is to be adopted for valuing assets (the two must generally recognized being historical cost or current cost
- b) the capital maintenance concept that is to be used (the operating or financial capital maintenance concept) and
- c) the unit of measurement that is to be used (the nominal pound or the unit of constant purchasing power).

compliance with the CICA' latest recommendations was 22% in the first year of application of the recommendations while in the second year it dropped to 20%. The main reasons offered are very similar to those offered in the UK. That is, the recommendations were found to be <<.. too costly, subjective and of questionable value>> (Oppons and Cherry (1987), p.52). As regards Australia, the fact that only 1.2% of the companies disclosed CCA information⁴⁴, shows perhaps how useful the the system is considered by accountants and management.

With respect to the US developments on the inflation accounting problem since the mid 1970's the initial impression was that US, a predominant supported of GPPA, was moving toward CCA, too. In March 1976, and while experimentation with the 1974 ED of the FASB was in progress, the Securities Exchange Commission (SEC) issued the Accounting Series Release (ASR) No.190, Notice of Adoption of Amendments to Regulation S-X Requiring Disclosure of Certain Replacement Cost Data. The ASR 190 called for the disclosure of current replacement cost information for inventories, fixed assets, cost of goods sold and depreciation. However, in September 1979 the FASB issued the Statement of Financial Accounting Standards (SFAS) No.33. This Statement called for the disclosure of both the generic price level and specific price changes impact on fixed assets, inventory, depreciation, cost of goods sold, income of the period, and monetary gains/losses as a separate figure.

⁴⁴ "BD 35 Withdrawn - ASC Tries Again", Accountancy, (May, 1985), p.20.

SFAS 33 was issued not as a solution to the inflation accounting problem but as a means of experimentation (SFAS, para. 13) with both general purchasing power and current replacement cost information, the ultimate power and current replacement cost information, the ultimate goal being to reach a consensus on the usefulness of the main alternatives proposed. The enterprises were permitted to choose either historical cost/constant dollar accounting (i.e. GPPA) or CCA because the Board:

....believed that both methods would provide useful information but it had insufficient evidence to select one and reject the other (SFAS 33, para. 109).

The comment letters and public hearing indicated sharp divisions of opinion on the relative usefulness of historical/constant dollar accounting and current cost accounting. Comments from the users (emphasis added) of financial reports strongly supported a system that measured assets at current cost. Those comments appear to reflect the belief that current cost measures are more relevant than historical cost measures for the assessment of future cash flows (emphasis added). Many preparers, (emphasis added) of financial reports and public accounting firms favoured historical cost/constant dollar accounting. Their comments typically emphasised the lower cost (emphasis added) and the higher verifiability and representational faithfulness of historical cost/constant dollar accounting (para. 112).

How well SFAS 33 and its amendments⁴⁵ were received by the users and preparers of accounts is reflected in the three alternatives discussed in the Invitation to Comments of the FASB (see Swanson, 1984). The first alternative would require companies with significant amounts of inventory and fixed assets to continue to disclose current cost/constant dollar data. The second would require the disclosure of only historical cost/constant dollar data (the justification being that these data are less costly to prepare and verify than CCA/GPPA data). The third alternative would require CCA/GPPA for companies with significant amounts of inventory and fixed assets and rescind the disclosure requirements for other enterprises.

In December 1984, a new ED, Financial Reporting and Changing Prices: Current Cost Information, was issued by FASB which, as with SFAS 33, required from the large companies the disclosure of supplementary information but only on a current cost/general purchasing power basis. The companies were required to present the data in average-of-the-current-year units of (general) purchasing power. However, with the latest FASB's statement on financial reporting and changing prices (SFAS No 89 - Financial Reporting and Changing Prices), which supersedes FASB Statement No 33 and its subsequent amendments, the supplementary disclosure of current

45. SFAS 33 was modified several times with respect to the requirements of the companies which held specialized assets such as timber land and growing timber, oil and gas mineral resources, motion picture films.

cost/constant purchasing power information becomes non-mandatory for financial reports issued after December 1986. (See Journal of Accountancy, March 1987, pp.130-131). In this statement, in which measurement and presentation guidelines for disclosure are provided, entities are not discouraged from experimenting with other forms of disclosure.

Finally, it would be a serious omission in the present review of the history of inflation accounting if the developments regarding inflation accounting in South America were not cited, it being a continent which for several decades now suffers high rates of inflation⁴⁶.

Brazil adopted inflation accounting as early as 1964 because of the very high rates of inflation it experienced. Since that time considerable improvements to Brazil's inflation accounting system have been made. At present the law requires that all permanent asset accounts (such as investment, fixed assets, deferred changes, depreciation, and amortization) as well as all

46. In some cases the average annual rate of inflation increased by more than 500%. See for example, J.Cotrim, "Inflation accounting South American Style", Financial Times, World Accounting Report, (April, 1985), pp.7-11.

stockholders' equity accounts⁴⁷ must be adjusted by use of an index established by the Government, so that for the financial statements to reflect the effects of changes in the purchasing power of the Brazilian currency.

Chile is the second South American country which in 1975 adopted a comprehensive⁴⁸ inflation accounting system (i.e. pure GPPA, use of the consumer price index). Since then the basic modification to it has been that inventories are adjusted to replacement cost rather than to general purchasing power.

Following Brazil's and Chile's progress on inflation accounting, Argentina (1979), Uruguay (1979), and Mexico (1980), adopted accounting for changing prices. The Argentine system makes GPPA adjustments to (a) beginning-of-the-year balances of fixed assets and deferred charges, (b) depreciation and amortization, (c) monetary items. The system excludes inventories from adjustment. Uruguay's system is very similar to that of Argentina, whereas the Mexican system follows an approach similar to that of SFAS 33, namely the accounts are restated either by use of the consumer price index or by use of current specific prices. The Mexican inflation accounting system, unlike the other four South American systems mentioned, is not accepted for tax purposes.

47. It should be noted that the difference of these two restated accounts equals the gain (loss) on monetary items.

48. J.Cotrim, op. cit., p.7, says that Chile's system is perhaps "one of the most comprehensive and sophisticated systems of inflation adjustments".

2.5. Summary and Conclusions

As it has been demonstrated price changes affect the wealth of an entity. What type of price changes (i.e. "general" or "specific" or both types) affect it at a given time depends not only on the form in which wealth is held but also on the "intended" use of wealth at the time of price changes. Depending on the assertions made regarding intended use of wealth and changes in wealth (income), different people account differently for the effects of price changes on wealth.

HCA does not take into account changes in current values (however defined) - the "valuation deficiency" of HCA. Neither does it use a stable unit for measuring wealth - the "unit of measurement deficiency" of HCA. Hence, there is a widespread questioning of the adequacy of this system to serve the needs of the users of financial reports in times of price changes - the "inflation accounting" issue.

The lack of consideration of price changes under HCA may have a bad effect on accounting measures. Usually, financial position is understated and income of the period is overstated due to "inflationary" gains, that is, gains which are capital adjustments to price changes rather than earnings which can be distributed as income of the period. The understatement of financial position and overstatement of income may have serious consequences on a wide range of business decision making, such as

performance measurement, effective tax rate, dividend, investment and pricing policies and so on.

Empirical studies have demonstrated the substantial impact of price changes on accounts. Additionally, the usefulness of inflation accounting, have been demonstrated by several empirical studies, though there is no a clearcut answer on this matter yet. Hence, there is an almost universal agreement that some form of accounting should be adopted to cope with the impact of price changes on accounts. However, this universal agreement is characterized by an almost universal disagreement as to how exactly to account for price changes effects; which one of the inflation accounting systems proposed should be adopted - the "inflation accounting" problem.

The difficulty in solving the inflation accounting problem stems from the fact that the alternatives proposed are mainly based on assertions regarding their suitability for financial reporting. It seems that no solutions(s) can be reached unless adequate, empirically backed answers are offered to some crucial questions which have not been answered adequately.

The first set of questions to be answered refers to the objectives of financial reporting (i.e. users and uses of financial reports, and order of priority of the constituencies involved and of their needs). The answering of this set of questions will greatly facilitate the answering of what is income and how should be measured. Another set of questions to be answered refers to the desired properties of financial reports (i.e. attributes of financial reports, order of priority, trade-off between them). Finally, but perhaps more importantly, the "cost-benefit analysis" criterion should be adopted for final choice among the alternatives, or at least a surrogate of it.

Since up to date no definite empirical answers have been offered to the questions above, the debate on the broad problem of accounting for the effects of price changes goes on for many years. Numerous articles and contradictory exposure drafts and statements have been issued all over the world, especially during the 1970's when inflation reached high levels even in the developed countries. This indicates that the inflation accounting problem is a controversial problem but of paramount

importance, still open to consideration⁴⁹.

From what has been said in this chapter it follows that of the various inflation accounting systems proposed, two have gained the greatest support from theoreticians as well as practitioners: that is, GPPA and CRCA. GPPA was the favourite system during the early 1970's whereas CRCA was favoured after that period. However, in the light of experience with CRCA, this system has lost many of its supporters, mainly due to lack of general applicability, complexity, lack of reliability and high cost of operation. In contrast, GPPA has regained grounds in terms of its appeal to those who had rejected it, because it enjoys general applicability, and it is relatively easy in its application, reliable, and not as costly as CRCA.

The current trend in the developed countries, where experimentation with inflation accounting is mainly taking place, appears to be the adoption of a combination of CRCA and GPPA, that is, the adoption of a system which accounts for both types of price changes⁵⁰. Thus GPPA has been and remains considered a viable (whole or partial) solution to the inflation accounting problem in the developed countries. As regards the trend in the

49. It may indicate as well that perhaps there is no one "for all purposes" inflation accounting system which can serve equally all the needs of users. In such a case the need for a definite and clear answer regarding who are the dominant groups of users and which the order of priority of their needs becomes more imperative than before.

50. GPPA or CRCA or a combination of the two alternatives is suggested by the International Accounting Standard (IAS) 15 of the IASC (November 1981). This flexible international Standard reflects the international current mode with respect to the solution proposed to the inflation accounting problem.

developing countries, in South America, where inflation accounting has been adopted and operated for some years by several countries, GPPA is generally preferred to CRCA. As argued in the next chapter this is the a priori case for Greece too, and perhaps for the developing countries generally; that is GPPA seems to be seen to be a more reasonable solution to the inflation accounting problem than CRCA in countries similar to Greece, if not in more advanced and economically more sophisticated countries as well.

CHAPTER III

INFLATION ACCOUNTING ALTERNATIVES AND THE GREEK CONTEXT

3.1. Introduction

In Chapter II the general significance of inflation accounting was demonstrated but its relevance for Greece was not discussed. It was also shown that from the main alternatives proposed, that is GPPA and CCA, GPPA seems to be preferred to CCA in South American countries, and it was asserted - but not demonstrated - that this would seem to be the a priori case for Greece and for the developing countries generally. Hence, the purposes of this chapter are the following:

1. To establish the significance of the inflation accounting issue for Greece.

2. To establish the a priori relevance of GPPA to the Greek financial reporting.

Accordingly, in Section 3.2. the basic economic profile of Greece is outlined and the basic economic problems Greece faces are identified. Following this, these problems are related to inflation accounting and the importance of this for Greece is explained.

Sections 3.3., 3.4. and 3.5. relate to purpose (2) above. In particular, Section 3.3. portrays the nature

and operation of the two main alternative solutions to the problem of inflation accounting and outlines the advantages and disadvantages of each from a theoretical as well as an empirical point of view. The two alternatives are then compared, and two inferences are made: (a) that neither of the two alternatives is absolutely superior to the other, (b) that the advantages of GPPA appear to outweigh its disadvantages.

Statement (b) above seems to be particularly true in the Greek case because of the correspondence between GPPA features and features of the Greek setting. Hence, in Section 3.4. the Greek business environment is discussed, with an emphasis on the Greek capital and money markets, the Greek manufacturing corporate sector, and the stage of development of Greek accounting. Then, given the basic features of the two alternatives (Section 3.3.) on the one hand, and the basic features of the Greek setting (Sections 3.2. and 3.4.) on the other, in Section 3.5. the a priori relevance of GPPA to Greek financial reporting is established on the basis of the superior correspondence between features of GPPA and features of the Greek setting.

Finally, in Section 3.6. final conclusions are drawn and the applicability of those conclusions to countries which resemble the Greek setting is discussed.

3.2. The Greek Economic Environment

Greece is a small country and relatively poor by Western European standards with a population of about 9.5 million and a per capital national income of less than half of the UK. Its economic system is capitalist with private ownership predominant, but subject to some significant central planning and regulation by the government.

During the last twenty years or so, Greece's determined and sustained effort to grow and become an industrialized country has turned Greece from an underdeveloped country to a developing one. However, the gap in terms of economic development, and therefore standard of living, between Greece and most of the other EEC member countries is large. This is shown in Table 3.1, which provides concise comparable economic profiles of Greece and the other EEC member countries for the period 1975-1981.

In particular, table 3.1 shows that Greece is still largely an agricultural country; its standard of living is relatively low; it holds the last position as regards exports-imports; only its rate of growth and its investment as a percentage of its GNP are relatively high (but up to 1981 only). Finally, Greece has suffered the highest annual average inflation among the other EEC member countries during the period under examination (i.e. 1976-1981).

Table 3.1

Comparative Table of Basic Economic Parameters of Greece and Other EEC Member Countries

	Greece	Great Britain	Belgium	France	West Germany	Denmark	Ireland	Italy	Luxembourg	Holland	Spain*	Portugal*
MARK FORCE												
Thousands)	(3247)	24397	3751	21142	25265	(2470)	1149	20572	159	4669	11254	3951
Agriculture	(29.7)	2.6	3.0	8.8	6.0	(8.1)	19.2	14.2	5.7	6.0	18.9	28.4
Distribution Industry	(30.0)	38.0	34.8	35.9	44.8	(28.6)	32.4	37.8	38.4	31.9	36.1	35.7
Other	(40.3)	59.4	62.2	55.3	49.2	(63.3)	48.4	48.0	55.9	62.1	45.0	35.9
GROSS NATIONAL PRODUCT												
Annual Change 1975-80	4.35	1.6	2.84	3.3	3.55	4.6	3.95	3.85	2.35	2.55	2.15	5.2
of volume (%) 1980-81	(-0.25)	(-2.0)	(-1.25)	(0.5)	(-1.0)	(-0.5)	(2.0)	-	(-3.25)	(-2.0)	(1.5)	(2.5)
Per Capita	4,210	9,340	11,820	12,140	13,310	12,950	5,190	6,910	12,570	11,850	5,650	(2,430)
(\$ USA, current prices)												
INVESTMENT												
% of GNP Current Prices	23.5	17.8	21.4	21.2	23.6	18.3	27.9	20.0	25.3	21.0	19.6	20.9
PRIVATE CONSUMPTION												
% of GNP Current Prices	65.3	59.8	63.8	63.3	55.2	56.1	63.7	61.8	58.9	60.8	69.9	73.8
per Capita (\$ USA)	2,750	5,580	7,540	7,690	7,340	7,270	3,310	4,270	7,430	7,200	3,950	1,790
CONSUMER PRICE INDEX												
Dec. 1980 - Dec. 1981 (%)	22.5	12.0	8.1	14.0	6.0	12.2	23.3	18.1	8.0	7.2	14.5	25.0
Ave. Annual Increase 1976-81 (%)	18.5	13.4	6.1	11.2	4.4	11.0	14.5	17.2	5.7	5.6	18.0	22.0
IMPORTS (Goods, \$ USA)	10,627	120,152	71,679	134,852	185,854	19,322	11,153	99,702	71,679	76,874	34,177	9,305
EXPORTS (Goods, \$ USA)	5,190	115,176	64,499	111,311	191,688	16,742	8,502	77,908	64,499	73,841	20,824	4,638
DWELLING	14.2	4.5	7.15	7.0	6.3	5.8	8.2	2.4	6.0	6.4	7.0	3.9
Finished within the year			(1979)					(1979)	(1979)	(1979)		(1979)
/One thousand Inhabitants												
PHONES (per 1000 Inhabitants)	289	477	369	459	464	641	187	337	547(1979)	483(1979)	315	138
T.V. (per 1000 Inhabitants)	147	394	293	292	337	358	223	231	245	293	253	122

* They have joined the Common Market in 1985

SOURCE: The UECD Member Countries, 1982 Edition (The numbers in parentheses are estimated ones)

Greece faces three big economic problems today: (1) high inflation, (2) lack of real (economic) investment for industrial expansion, (3) unemployment¹. Unemployment is related to problem (2) since if there are no jobs being created by investment the new work force cannot be employed. In turn, problem (2) is negatively related, at least to a certain extent, to the first problem, inflation, since inflation may affect business badly, especially if it creates liquidity problems², which prevent any business expansion. Hence, inflation is a major and central problem.

Of course, it is not the purpose of inflation accounting to cure inflation. Its purpose is to reflect the impact of inflation on accounts. However, accounting for changing prices, by providing information on this impact could help various Greek policy makers in choosing effective policies to fight inflation, promote industrial expansion and reduce unemployment. For example, if unions and managers were fully aware of the inflationary (illusory) profits in times of high inflation, then unions might stop pushing for excessive wage increases and managers might feel constrained to reduce dividends paid to shareholders (and profits to be paid to employees when profit-sharing schemes are in operation). Such cuts, in turn, would help to generate internal funds available

1. See M.Drettakis, "Inflation and Unemployment with the Entry to the EEC", TA NEA February 19, 1985, p.11.

2. The depreciation and/or stock allowances made by government in some countries in times of high price changes constitute measures of relief to the liquidity problems which companies face in times of price changes. See, also, Kirkman (1978), pp.247-48.

for business expansion. Finally, provision of information on the effects of price changes in budgeting and planning systems should enable businessmen to make better arrangements regarding liquidity and, hence, protect their firms from business failure.

Accounting for price changes, as an input to governmental decision making, may help government too in its effort to promote business expansion and reduce unemployment. For example if the Greek government is fully aware of the illusory profits of businesses, it might then take measures to relieve firms from the pressures of inflation (such as liquidity constraints). Such measures might include modification of the present Greek law which requires the distribution of a certain percentage of corporate earnings as dividends. Such concern might also lead to the re-examination of its current economic inflation policy and associated regulatory constraints on prices, wages, taxation and investment.

Accordingly, inflation accounting is of particular significance for the Greek case. Its adoption is more imperative than it is for other Western European countries, since downward movement of inflation in Greece has been very slow in comparison to that of the EEC as a

whole³ and there is no immediate reason to believe that the comparative situation will rapidly improve in the near future⁴.

The problem, however, is which of the two main inflation accounting alternatives proposed, GPPA and CCA, seems to be more relevant to the Greek case. This problem cannot be answered in the absence of consideration of the two alternatives. Hence, the next section is devoted to the examination of GPPA and CCA.

3.3. The Main Inflation Accounting Alternatives Proposed

As noted in the previous section, in this section the two main alternatives (i.e. GPPA and CCA) proposed to cope with the impact of price changes on accounts are examined. Specifically, in Sections 3.3.1. through 3.3.4. the two alternatives are considered from a theoretical as

3. Thus, while after 1980 the average annual rate of inflation in the European Community went down relatively rapidly (i.e. from 14.3% in 1980 it went down to 5.5% in 1984), the downward movement of the average annual inflation in Greece was from 24.9% in 1980 to 18.1% in 1984 (M.Drettakis, op.cit. p.11). For 1985 the annual rate of inflation in Greece was more than 21% (TA NEA, November 12, 1985, p.16), while for the period May 1986-May 1987 the inflation rate was 17.7% for Greece and less than 6% for each one of the other countries of the common Market except for Portugal (TA NEA, June 26, 1987).

4. Developing countries and especially countries with heavy reliance on imported goods, like Greece, cannot control (and hence fight) inflation as effectively as the developed countries for many reasons. For example, a considerable part of inflation of these countries is imported and hence uncontrollable. This is especially true if someone takes into account that the poor, agrarian countries do not have great purchasing power so that to negotiate good prices for imported goods as is the case with the rich, developed countries.

well as an empirical point of view, with the aim of exposing their nature and operation, and identifying their advantages and disadvantages. Then, in Section 3.3.5., the two systems are compared to determine which one appears to be superior.

3.3.1. General Purchasing Power Accounting or General Price-Level Accounting

As noted in Section 2.2., one of the major deficiencies of HCA is the use of an unstable unit (i.e. money) for the measurement of income and financial position. The purpose of GPPA (or Constant Purchasing Power Accounting) is to remedy this deficiency by replacing the money unit of measurement by the general purchasing power unit. This can be done by restating the historical accounts, which are expressed in terms of money of different periods, into money of the same period or money of the same purchasing power.

The restatement, or translation, of the historical accounts is achieved by use of a general index (i.e. consumer price index or gross national product index). Such an index reflects changes in the general level of prices in a given period and, thus, it serves as a "rate of exchange" between historical and general purchasing power money.

The date adopted for the money stabilization process could be a set date in the past, or it could be the middle or the end of the current financial year. In each

one of the first two cases there are some practical advantages. However, the theoretical merits associated with the third case make it more meaningful and, hence, more attractive as it is shown in the following paragraphs.

The practical advantage of restating financial statements of different accounting periods in uniform general purchasing power of money of a past date, say, at the base year of the index used for restatement, is that for comparative purposes the financial statements do not have to be updated each time another statement is prepared. However, it is likely to be a source of confusion for users when statements for, say, 1980 are reduced to 1970 purchasing power terms.

The presentation of financial statements in mid-year purchasing power terms presents another practical advantage. That is, if it is assumed that many income items, such as sales, and wages, occur uniformly through the period, they will need no restatement because they will be expressed in terms of their midyear purchasing power. Hence, arithmetical work is avoided. Moreover, it is claimed (Kirkman, 1978, p.114.) that these average-for-the-year figures seem to be easier to understand than when they are restated in end-of-year (or beginning-of-year) terms. On the other hand, however, the gain/loss on monetary items (as well as the total net income of the period) expressed in mid-year general purchasing power on a statement purporting to present results to the end of the year will not be so meaningful to the users. The

distortion would be even greater if the balance sheet figures are expressed (for consistency) in mid-year purchasing power instead of current (end-of-year) purchasing power.

In contrast, financial statements stated in general purchasing power terms of the most recent year has the advantage that it is likely "to be more readily understood by financial statements users..." (FASB, 1974 Exposure Draft para.75.) since purchasing power of current period should be more familiar to them than purchasing power of a past period. If, indeed, the main purpose for keeping accounts is the determination of one's progress toward more consumption and the standard resource used for this purpose is general purchasing power, then it should be current purchasing power of interest to shareholders (and investors in general) rather than past general purchasing power. Another important reason which suggests end-of-period general purchasing power is that if a combination of CCA and GPPA is considered to be the appropriate solution to the inflation accounting problem then, given that CCA uses current values, the only sound way to measure gains/losses on non-monetary items is to use current general purchasing power, too.

Accordingly, the presentation of financial statements in current general purchasing power terms has some readily agreed merits. For this reason most accountancy bodies have recommended an end-of-year

system⁵ for comprehensive GPPA (i.e. FASB's 1974 Exposure Draft).

In the restatement or adjustment process the age analysis of the accounts to be restated is crucial as can be seen from the general formula for restatement:

$$\text{account} \times (\text{index at date of restatement} / \text{index at age of accounts}) = \text{restated account}$$

The above factor by which the accounts are multiplied in order to be restated is called conversion (or restatement) factor or transformation coefficient.

For restatement purposes the balance sheet items are divided into monetary and non-monetary items. Monetary items are cash and claims to cash that are fixed in terms of numbers of money units regardless of changes in prices. As such they need no restatement (they are expressions of current purchasing power by themselves). Non-monetary items are those items not defined as monetary and they have to be restated because they are typically expressions of historical purchasing power.

The classification of the balance sheet items into monetary and non-monetary is essential: whereas for the non-monetary items no gain/loss is computed, for the monetary items a gain or loss (depending on whether an entity is a net debtor or a net creditor) is calculated. These gains/losses are called monetary gains/losses and are equal (assuming uniform flows) to the average net monetary resources held during a period multiplied by the inflation rate of the period. They constitute a unique feature of GPPA and are claimed to show the effectiveness

5. A notable exception is FASB's SFAS No. 33, which has recommended mid-year general purchasing power

of the management of monetary resources during inflation⁶

For the non-monetary items no gain or loss is computed because GPPA does not change the valuation rule of HCA, and hence, it does not take into account specific price changes. The failure to reflect specific price changes constitutes the major weakness of GPPA, as will be seen later in this section.

If specific price changes were also taken into account under GPPA, then a gain (loss) would be computed for the non-monetary items as well. The gain or loss would be equal to the aggregate positive (negative) difference between (current) specific values (however defined) of non-monetary items and GPP-restated values of the same items. Thus, supposing that a firm has a non-monetary asset bought for £100 when both specific and general price indices stood at 20. Now the two indices stand at 100 and 80 respectively. In such a case the non-monetary gain is equal to $(100 \times 100/20) - (100 \times 80/20) = £100$.

In practice the classification of some of the balance sheet items into monetary and non monetary presents considerable difficulties (e.g. are foreign currency or deferred income taxes monetary or non monetary items?) despite the guidance given in the GPPA pronouncements⁷. This difficulty arises because the properties of some monetary items are blurred. That is, several monetary items have a value which is fixed, and another value which is no fixed (i.e. bonds, shares, bills which can be sold and so on - see Wanless, 1976).

6. To be exact the gains/losses from holding monetary items during inflation as calculated by GPPA is only one part of the information needed to determine the effect on the firm from holding those items. The other set of information needed is the income or cost derived from those items. Thus, the GPPA loss from holding accounts and notes receivable during inflation must be compared with the net gain from granting credit (i.e. gains from increased sales and from goodwill minus losses from bad debt expenses and increased record keeping costs). On the other hand, the gain holding a liability during inflation may or may not be exactly offset by the interest on the principal received (See Bradford, 1974).

7. For example, SFAS 33, Appendix D.

Accordingly, depending on the specific circumstances, an item which is usually classified as monetary may be non-monetary and vice-versa. Also depending on interpretation (i.e. strict or liberal) of the definition given to monetary and non-monetary items, people may classify items in different ways. Hence, great care must be exercised in classifying the balance sheet items, especially in cases where the amounts of monetary items are more significant than those of the non-monetary items⁸.

Another implementation problem with GPPA which presents some difficulties is the cut-off date. This problem arises (in the first year of restatement) when long-term assets and/or capital funds have been acquired many years ago. In practice it is usually very difficult to go back more than twenty to twenty five years due to lack of appropriate records of the items contained in the accounts. Fortunately, it is usually the case that the useful life of the majority of a firm's fixed assets items is less than twenty years.

Finally, a third implementation problem with GPPA is determining what general index best reflects the purchasing power of money (or the general price-level changes) and therefore, is the most appropriate to use⁹. In the 1960's and 1970's the Gross National Product

8. Thus, the empirical study of Wanless (op.cit.) demonstrated how easily monetary gains/losses, and therefore GPPA profits, can be manipulated in such cases.

9. For a comprehensive discussion of the price index problem see C.Tierney "The Index Number Problem" in Staff of the Accounting Research Division, (1963), Appendix C; or Kirkman (1978) Ch. 3; or Whittington (1983) pp.64-73 & 84-90.

Implicit Price Deflator index (GNP) was mainly favoured. However, in the current inflation accounting literature the consumer price index is mainly advocated¹⁰.

With the exception of the above difficulties the implementation of GPPA is relatively easy. This is because GPPA is based entirely on HCA, and so does not change the valuation rule. Only the unit of measurement changes. In other words, GPPA-adjusted financial statements constitute a transformation of historical cost statements from one base of measurement (i.e. money) to another (i.e. general purchasing power of money). The only difference between the two systems is the monetary gains/losses which are computed under GPPA.

Since GPPA is based on HCA, it retains all its merits such as objectivity, simplicity, accountability, verifiability, auditability, feasibility (as field tests have shown), understandability and lower cost of operation than CCA. Further, it is claimed (see, for example Kirkman, 1978, p.128) that GPPA is or may be useful regarding cover of dividends or lack of it in real (GPPA) terms, effective tax rate and rate of return on investment in real terms. This is because GPPA is based on a capital maintenance concept whereby profit of the period is what can be distributed after the GPPA-adjusted shareholders' capital has been maintained.

Boersema (1978, pp.3,4) referring to the general purchasing power financial capital (employed by GPPA)

10. It was recommended in SFAS 33, Mexico's Statement on inflation accounting, by Chile, and so on.

cites (among other) the following merits of it:

It is readily definable

All amounts in the financial statements can be stated in a constant measuring unit.

Comparability among enterprises is, therefore, achieved since the same yardstick of performance, general purchasing power, is used for all [firms].

Shareholders wealth, general purchasing power, is maintained so that funds are, over time, available to deploy in other areas than those in which they are presently invested.

Purchasing power capacity maintenance does not mandate "excessive" price increases. Normal profits will be reported as long as selling prices are adjusted to reflect general price-level changes. It will report the favourable impact of inflation or debt; it does not report exclusively the negative impact of price changes.

It provides better management guidance in that it best encourages managers to innovate in new areas.

In addition, Boersema argues that GPPA is used in practice (e.g. Shell's investment appraisal approach) for investment appraisal. That is, an investment is seen as worthwhile if the purchasing power of the capital to be invested in a project is recoverable in addition to a real return on that capital.

Hawkins (1980) cites another interesting benefit of GPPA. He maintains that GPPA "adds a further impetus toward productivity improvement". To back his argument he brings this example: If a machine produces 100 units at a

cost of £1 per unit and the nominal production cost rises at a constant rate of 10% over a three years period, HCA reports a cost of £1 per unit for each of the three years, assuming that productivity can be increased at a rate of 10% per annum. Under GPPA, however, assuming a rise of 10% in the consumer price index over the same period, the cost per unit is declining from £1 in the first year to 83 first-year cents in the third year (i.e. £1 100/121). Accordingly, the benefit inherent in the use of GPPA is that it makes productivity gains over the years to be more impressive, than they appear under HCA. "This adds an extra incentive for managers to emphasize productivity in real terms" (Hawkins, (1980), p.124).

Finally, Casey and Sandretto cite additional benefits, which may be obtained from the use of internal inflation-adjusted accounting systems (IAS), that is, GPPA or/and CCA:

1. Managers would be less inclined to retain outmoded plant and equipment for the sake of improving their ROI, since ROI would be deflated for all segments of the business because it is no longer based on historical cost¹¹.

2. Companies would be more inclined to add to debt capital to finance innovative investment because real financial leverage would be seen as less, and perhaps significantly less, than it now appears under the historical-cost basis.

.....

11. As a result, productivity might be improved, according to the authors, because old plant and equipment is partly responsible for the poor productivity records of the US industry.

4. IAS can change the focus of managers through the messages it sends to the company's suppliers of materials and labour. If the company cannot sustain price increases for its products or pay higher wages, it can show the data generated by IAS to these suppliers. Then the company will be freed from having to reconcile higher historical cost based profits with its reluctance to pay more for material and labour.

(Casey and Sandretto, (1981), p.154).

However, as it is the case with every system, GPPA has its disadvantages too. The most frequent arguments raised against this system in the literature¹², briefly stated, are as follows:

- GPPA is irrelevant for pricing decisions and planning decisions because it does not take into account the changes in the specific level of prices utilized by the entities and therefore, being relevant to them.

- It does not ensure continuity of the firm, and it is irrelevant for dividend decisions, tax purposes, and performance measurement, because profit is what can be distributed without impairing the firm's operating capability (or physical capital) rather than the general purchasing power of shareholders' capital.

- The balance sheet figures are meaningless because they represent neither current values nor historical cost.

- Its unit of measurement (i.e. general purchasing power of money) is an abstract measurement unit (existing only in the statistician's mind) and therefore, it is difficult for the users of financial

12. For a comprehensive elaboration of the merits and weaknesses of GPPA (and current value accounting - however defined) see Boersma (1978).

statements to understand money measured in such terms.

- General purchasing power does not exist or it cannot be quantified (i.e. be measured by an index), since every entity holds and consumes its own specific goods and services¹³.

The majority of the above arguments against GPPA stems from the fact that GPPA does not change the valuation rule and, thus, it does not account for specific price changes. It is basically for this reason that many people reject GPPA and favour CCA, which changes the HCA valuation rule by current entry values. The CCA system is outlined in the following sub-section.

3.3.2. Current Cost Accounting or Current Replacement Cost Accounting

This system concentrates on the maintenance of the physical capital of a firm as opposed to the maintenance of the nominal financial capital or the general purchasing power of financial capital. According to the proponents of this concept of capital maintenance, current operating profit of a firm is what can be distributed without impairing its productive capacity or operating capability (i.e. its capacity to provide goods and/or services with its existing resources¹⁴ in a

13. Inflation Accounting Committee (1975), pp.12-13.

14. According to SSAP 16 these resources "are represented in accounting terms by the net operating assets at current cost" (para.39). In turn, net operating assets "comprise the fixed assets (including trade investments), stock and monetary working capital dealt with in a historical cost balance sheet" (para.38)

relevant period). Thus, physical capital is defined as an output¹⁵ rather than an input quantity (i.e. physical assets possessed by a company) but nonetheless a specified physical quantity. The current operating profit is calculated by matching against business revenue the current rather than the historical cost of the resources consumed in the earning of that revenue.

Accordingly, long term assets and stocks are valued and shown in the balance sheet at their value to the business¹⁶ (which normally equals current replacement cost) rather than at their historical cost. Any gains (losses) arising from holding fixed assets and stocks in time of rising (falling) prices constitute the so-called holding gains (losses) or cost savings.

There is disagreement¹⁷ among the advocates of CCA as to whether these holding gains (losses) are income of the period of just adjustments of an entity's physical capital (a capital maintenance reserve). This disagreement is reflected in the various CCA pronouncements as well. However, generally speaking holding gains/losses are excluded from the current cost operating profit.

15. This definition (i.e. operating capability) is encountered in the latest pronouncements of the standard setters in the UK, the USA, Canada and Australia.

16. The value to the business is based on the deprival value concept, where deprival value is equal to the minimum loss a company would suffer if it were deprived of an asset. The value to the business is, then, its written down net current replacement cost (NCRC) except in the situations where NCRC is greater than both net realisable value (NRV) and economic value (EV). In the latter case value to the business is NRV or EV whichever is the greater.

17. See, for example, R.M.Skinner, "The Impact of Changing Prices : The Canadian Position" in Sterling and Lemke (eds), (1982) pp.154-156.

Under a pure CCA system in order for the income and balance sheet statements to be expressed in current cost terms, four adjustments are made to the historical cost figures¹⁸: the depreciation adjustment; the cost of goods sold adjustment; the monetary working capital adjustment; and the gearing adjustment.

The first three adjustments are necessary for the computation of the current cost operating profit and they are shown as a "current reserve" account in the balance sheet. The fourth adjustment is made in order for CCA to show the current cost profit attributable to shareholders.

With respect to the calculation of these adjustments, the depreciation adjustment is calculated as the difference between depreciation based on the current cost of fixed assets and depreciation calculated on the historical cost basis.

The cost of goods sold adjustment (COSA) is computed as the difference between the current cost of stocks and the historical cost of stocks. The method usually employed for the computation of COSA, is the Averaging Method. This method adjusts the value of historical stocks at both the beginning and at the end of the year (period) to the average prices paid during the year (period).

18. CCA in its pure form implies abandonment of HCA. However, since historical cost figures possess qualities such as objectivity, accountability, auditability, and verifiability, the majority of the CCA pronouncements requires (or required) the disclosure of current cost accounting data as a supplement to the historical cost data.

The third adjustment, the monetary working capital adjustment (MWCA), along with the COSA, allow for the impact of specific price changes on the working capital employed in the business. Accordingly, it is calculated in the same way as the COSA; that is, by adjusting the value of opening and closing monetary working capital (usually defined as debtors minus creditors)¹⁹ to the average index of the year which reflects the averaging prices paid during the year for the purchase of stocks.

The fourth adjustment, the so-called gearing adjustment, emanated from the need to account for the impact of price changes on shareholders' capital. It is calculated in the case in which the entity is a net debtor and it shows the gain accruing to shareholders in times of price changes since creditors will be repaid in fixed money units. Significant differences exist among and within²⁰ countries which favour CCA with respect to the exact way this adjustments should be calculated.

In SSAP 16 of the UK the gearing adjustment is calculated by multiplying the sum of the three current profit adjustments mentioned, that is, the realized holding gains (losses) by the factor Average Net

19. Some differences between the various CCA pronouncements arise here with respect to which items do constitute monetary working capital.

20. For example, for differences of opinion with respect to the calculation of gearing adjustment in the UK see Lewis et al., (1983), pp.198-99.

Borrowings²¹/Average Equity + Average Net Borrowings. New Zealand computes the gearing adjustment using the same formula as SSAP 16, with the only difference being that all gains (realized and unrealized) or all increases in the Current Cost Reserve Account are taken into consideration. Finally, Australia computes gains on loan capital, and therefore profit attributable to shareholders, by multiplying loan capital by the increase in the consumer price index during the year. The gain is then shown in a separate account called Gain on Loan Capital Reserve.

CCA is not based on HCA, as is the case with GPPA. Because of this (mainly), as well as because CCA as a comprehensive accounting system is a "new" one which has started being developed later than GPPA, CCA's implementation problems are considerably greater than those of GPPA and they constitute one of the reasons that many people in the UK have lost enthusiasm for it²².

One of the most serious implementation problems is the determination of the current cost of fixed assets, especially of used fixed assets or of fixed assets which

21. Net borrowings are defined as the excess of "(a) the aggregate of all liabilities and provisions fixed in monetary terms (including convertible debentures and deferred tax but excluding proposed dividends) other than those included within monetary working capital and other than those which are, in substance, equity capital over (b) the aggregate of all current assets other than those subject to a cost of sales adjustment and those included within monetary working capital" (SSAP 16, para.45).

22. The findings of relevant empirical studies conducted on behalf of the Institute of Chartered Accountants in England and Wales and edited by Carsberg and Page (1984) are that the majority of the companies did not experience great difficulties in implementing CCA. The reason for this, however, as Archer and Steele maintain, seems to be the fact that "some very broad approximations or other short-cuts were employed in arriving at the current cost figures" (Archer and Steele, (1984), p.406).

will be replaced by technologically different (modern) assets²³ (Steele (1985), p. 148), as well as the calculation of the net recoverable amount ²⁴ of an asset.

The calculation of the COSA presents many difficulties too, when a firm produces a variety of products, or where the firm will not replace a unit with another of the same specification. As regards the MWCA, its application "is fuzzy because of difficulties in classification of assets and liabilities as between operating and financing and the lack of any clear consensus as to whether specific borrowing should be associated with specific assets" (Skinner (1982) , p. 150). The same applies to the calculation of the gearing adjustment.

To eliminate complexity and increase the objectivity of CCA, the current cost adjustments are basically implemented by use of specific price indices which have been constructed for that purpose in countries which advocate CCA. However, apart from the problems of how representative are the specific price indices²⁵ of the

23. According to Scapens et al. (1983. p.129) the treatment of modern equivalent assets "is probably the most difficult theoretical issue in CCA".

24. "Recoverable amount is the greater of the net realisable value of an asset and, where applicable, the amount recoverable from its further use" (SSAP 16, para.43).

25. In the UK, one of the few countries where a wide range of specific price indices for fixed assets and stocks are published, the dissatisfaction from the use of those indices is evidenced in comments like the following: "We use the CSO [Central Statistics Office] indices but they do not really apply to us" (Scapens et al. (1983), p.122). Also, in the empirical study of Wolnizer (1983) concerning the problem of cost indexation for steel inventories, the conclusion was that the use of specific indices "may distort the financial statements of companies whose inventories do not tally with the regimen of the index". Finally, in the study of Boys and Rutherford (1984, p.118), one of the reasons offered for management's lack of enthusiasm for CCA was the lack of a suitable or acceptable index for revaluing fixed assets.

prices actually incurred by each individual firm, on the one hand, and how ²⁶ these indices are used by the companies, on the other, it seems that the use of them has not solved the problem of complexity of CCA. That is why in empirical studies conducted in the UK, simplified methods (i.e. use of a single broad index of assets purchasing power) have been suggested for implementing CCA (see Section 2.4).

Notwithstanding the serious implementation problems of CCA, its advocates maintain that the system is the appropriate one, claiming explicitly or implicitly that the merits of this system outweigh its disadvantages.

The merits of CCA most frequently cited elsewhere in the literature²⁷ are, briefly stated, the following:

- CCA ensures maintenance of productive capacity (or operating capability) and, consequently, continuity because profit is what can be distributed without impairing entity's operating capability.
- For the reason above CCA provides better information than HCA (or any other inflation accounting system) with respect to the taxes and dividends to be paid, and management performance.
- CCA provides better information too regarding the overall efficiency of current trading operations, because current replacement cost is taken into account, and thus a distinction is made between current

26. The study by Scapens et.al. (1983) indicated (wide and)sometimes unquestioning (mechanical) use of indices.

27. For a discussion about the asserted merits of CCA see, for example, SFAS 33 and Revisine and Weygandt (1974).

operating profit (resulting from the firm's operating activities) and holding gains (resulting from the firm's holding activities, such as stocks, investment etc.).

- Since current replacement cost is taken into account, CCA provides a better basis than HCA for budgeting and planning and, as a result, it leads to better pricing and output decisions.

- Finally, and most importantly, investors, creditors and other users are in a better position to assess management efficiency and probable future profits, and consequently future cash flows. The latter follows since, according to Revsine (1973), current replacement cost income is a "leading-indicator" of future operating cash flows.

However, there are objections to CCA as well.

Specifically, it is argued that CCA lacks general applicability ²⁸ because:

- Replacement of the assets is assumed, yet there are many cases where the same asset will not or cannot be replaced (i.e. oil and gas industry). Hence current replacement cost is irrelevant.

- In the case of falling prices, or if a firm trades in the same market i.e. stock market), CCA gives unacceptable results²⁹.

It is also argued that:

- Current exit values (i.e. market values) are more useful to the users of financial

28. For a discussion of the shortcomings of CCA see R.R. Sterling, "Limitations of Physical Capital" in Sterling and Lemke (eds), (1982) pp. 3-59.

29. That is, in the case of decreasing costs CCA understates profit and, thus erodes financial capital due to holding losses being debited to reserves. In the case of trading firms CCA always shows a zero profit due to the fact that selling prices and replacement costs are the same.

statements than current entry values, because only the first ones inform the decision maker what is the actual purchasing power of an entity and what economic sacrifice is made by holding entity resources in their existing form.

- Under CCA current revenues are matched against futures costs (i.e. current replacement cost of fixed assets). Therefore, the profit figure obtained is a figure of "what it might be". It is neither transaction-based income nor real economic income (i.e. income measured in general purchasing power terms).

- Even if replacement cost is the right valuation basis, the income statement under CCA does not reflect changes in real worth since the holding gains are not dichotomized into real holding gains and the inflationary element.

- The continuity assumption on which CCA is based is invalid and unnecessary. In the uncertain and continuously changing business world, where quick adaptation to new situations is needed for survival, the entity has only a definite life in its existing form (Sterling, 1968).

With respect to the productive capacity concept used by CCA, it is argued that:

[t]he 'existing productive capacity' of the enterprise is difficult to define in the context of today's environment. Enterprises continue as going concerns but frequently expand into new areas or products and discontinue other areas or products. In this environment, the concept of 'existing productive capacity' may, at best, be hard to define and at worst, may distort economic realities³⁰.

30. Accounting Research Committee, C.I.C.A. Discussion Paper, Current Value Accounting August, 1976, p.56, as cited by Boersema (1978), p.19.

Since the unit of measurement is not changed under CCA, additional disadvantages of CCA arise, according to its opponents:

- Under CCA comparability over time is lost. For example, it is difficult for someone to place a sound interpretation on a five years summary which shows an annual increase in CCA earnings per share of, say, 30% unless he incorporates the annual rate of general price-level changes.

- Shareholders are not able to see from a current replacement cost balance sheet whether their interest in the enterprise has been maintained in real terms (i.e. in general purchasing power terms).

Finally, another set of arguments against CCA refers to the stage of its development, as well as to the costs of its operation. That is, several issues remain unsettled, such as backlog depreciation, treatment of intangible assets, valuation of long-term liabilities and computation of the gearing adjustment³¹. In addition, the measurement of financial position and income is not only more costly than under HCA or GPPA but also very

31. For example, in the UK many people are dissatisfied with the way in which the gearing adjustment is calculated under SSAP 16. Hence, other methods for the calculation of the gearing adjustment have been proposed (See Lewis et al, 1983, p.198).

complex and subjective due to difficulties in determining current cost in many cases.

From the above discussion concerning advantages and disadvantages of CCA, it follows that what one group of people sees as a strength of the system (i.e. adoption of the physical capital maintenance concept and of current replacement cost as a valuation basis) another group of people sees the same thing as its weakness. This is the case as regards the characteristics of GPPA too. Accordingly, in the next two sub-sections an overview of the empirical literature of both alternatives, GPPA AND CCA, is undertaken in order to see whether the asserted merits and demerits of these systems are supported by the empirical findings.

3.3.3 Empirical Research on GPPA

The empirical literature on GPPA is very poor in comparison to the conceptual literature on the same subject. The reason is that there was a great lack of data on GPPA. Firms, if they prepared GPPA financial statements, typically prepared them for themselves and/or for the authoritative bodies upon request. They did not typically release them to the public.

Since the investigation of the feasibility and the effects on accounts of an alternative accounting system is the preliminary step toward establishing its usefulness, on the one hand, and because of the lack of massive data on GPPA, on the other, the first empirical

studies conducted on GPPA were case studies.

Some of the earliest case studies are those of Jones (1949 & 1955). Jones demonstrated that general price-level adjustments are feasible and that inflation has a serious impact on accounts. Basically, the same conclusions were drawn from other noteworthy case studies conducted by Corbin (1955), Hendriksen (1961), Dockweiler (1969) and Rosenfield (1969) in the USA, and Baxter (1959) and Percy (1970) in the UK.

The objective of other case studies conducted was the identification of problems of implementation and interpretation of GPPA adjusted accounts. For example, the Wanless (1976) study of a co-operative society demonstrated some of the difficulties in distinguishing between monetary and non-monetary items and the consequences on income due to different classification of the items.

In another case study (i.e. nine air carriers examined for the period 1958-1968) McKenzie (1970) considered the ability of GPPA versus HCA to predict (a) future income as a function of past income values, and (b) percentage return to investors by use of financial ratios. The conclusions drawn were that (a) historical cost income values were slightly better predictors of their own future values than GPPA income values, and (b) adjusted financial ratios were not better predictors of return to investors than unadjusted financial ratios. The (b) conclusion was reaffirmed in another study (based on the same data) of McKenzie (1975), where the rankings

of the firms were found not to change when GGP adjusted financial ratios were used instead of historical cost ratios.

The conclusions of the case studies are necessarily limited to the firms studied³². Because of it other empirical studies employed different methodologies in order to examine large quantities of data, and hence to achieve generalisation of their results. These methodologies are the estimation and simulation techniques (see Section 4.3).

The first estimation studies were basically concerned with the impact of general inflation on accounts. Such studies were conducted by Cutler and Westwick (1973), Buckmaster and Brooks, (1974), Davidson and Weil (1975), Parker (1977), and Flink et al (1978), and they found a serious impact of general price-level changes on earnings. This impact was different for individual firms

32. The small quantity of data under examination does not permit generalisation of results (see Section 4.2.1.)

and for different industries due to different inflation-sensitive characteristics of each firm and each basic industry³³.

Since there is no information content on GPPA if its impact on accounting measures is constant over time, other studies examined the pattern of GPPA's impact on accounts over time. Thus, Petersen (1973) found that the impact of GPPA on income was material but constant over time, and hence he concluded that GPPA has no information content for the users of financial statements. His conclusion was reaffirmed by McKenzie (1975) and by Ketz (1983). Ketz, in particular, examined 119 companies for a period of 19 years, and using correlation tests he found that divergence between GPPA and HCA earnings is likely to occur only in the case of a sharp increase in inflation, as was the case in 1973-1974. However, the opposite conclusion was drawn in the studies conducted by

33. For example, Cutler and Westwick found that of the 137 companies (quoted on the London Stock Exchange) which were examined, 104 showed lower GPP earnings than historical cost earnings whereas 33 companies showed higher GPP earnings. The median change in earnings from historical cost to GPP was a drop of 20 per cent while the quartiles were a drop of 43 and 1 per cent respectively. Parker found that for the year 1974 the impact of adjusting for general price-level changes was very little on the aggregate net income of the 1050 firms examined. However, for individual firms and various groups of firms the impact varied widely.

Basu and Hanna (1975) and (1976). That is, the impact of GPP adjustments on accounts is material and not constant over time (8 years were examined 1967 to 1974).

The above mentioned estimation procedures based studies of Basu and Hanna also addressed two of the main implementation problems of GPPA, namely, choice of index and choice of cut-off date. Basu and Hanna found no differences in results when the Gross National Product (GNP) index was substituted for the Consumer Price Index (CPI). They also found that it does not make much difference (for the first year or restatement) if a cut-off date which goes back twenty five years or so is used.

In the FASB's (1977) Field Tests study, which addressed the problem of implementation of GPPA thoroughly, it was found that the restatement of fixed assets was the most time consuming. The most serious problems encountered by the companies participating in the study were those of restating Construction in Progress (i.e. where date of completion is different from dates of capital expenditures) and treatment of Foreign Currency and Deferred Income Taxes (i.e. are they non-monetary items?). Another serious problem was that of Equity Investments for which the 1974 ED of FASB required first restatement of the books of the affiliated companies and then application of the equity method. Many affiliated companies were unwilling or unable to completely adjust their statements.

More recently, empirical studies have examined the utility of GPPA vis-a-vis HCA. The majority have

investigated the usefulness of GPPA to investors. The results obtained were inconclusive. For example, the estimation-procedures-based studies of Petersen (1975), Devon and Kolodny (1978), Short (1978), Baran et al (1980), employing different statistical tools and different approaches to establish usefulness³⁴, concluded that GPPA is more useful to investors than HCA. Basically, the same conclusion was drawn by Smith and Anderson (1986) who examined the effect of using SFAS No 33 disclosures (i.e. CCA and GPPA) for comparisons of corporate returns for one year (i.e. 1980).

However, in other estimation studies conducted by Morris (1975), Basu (1977), as cited by Whittington (1983, p.92), and by Hillison (1979), the conclusion was that GPPA data does not convey information beyond that transmitted by HCA data. Basically, the same conclusion was drawn by Beaver and Landsman (1983), and by McDonald and Morris (1984), who examined the impact of SFAS 33 disclosures (i.e. GPPA and CCA upon stock prices. Beaver and Landsman, in particular, are categorical:

34. That is, relative degree of association between alternative accounting measures of earnings and security prices behaviour, or association between systematic risk and alternative accounting measures.

The findings of no additional information content to Statement 33 earnings variables is clear-cut. None of the Statement 33 variables is able to show consistently significant additional explanatory power over the three-year interval, 1979 through 1981. (Beaver and Landsman (1983), p.11, as mentioned by Bublitz et. al. (1985), p.2).

When the usefulness of GPPA to investors was examined not only vis-a-vis HCA but also on a supplementary (to HCA) basis the results obtained seem to support the asserted usefulness of the system. Thus, in the estimation study of Baran et. al. (1980) a small superiority for GPPA over HCA in explaining bond ratings was found, and when a combined set of (GPPA and HCA) data was employed the explanatory power of the new set was greater than either HC of GGP adjusted data alone. The last conclusion was reaffirmed by Matolcsy (1984). Namely, he found that there is a joint information content of GPPA and HCA numbers (but not a marginal information content of GPPA).

Since the decisions of inventors, creditors and other people who have an active interest in the affairs of a business entity are based on expectations regarding the future of the entity, it follows that the so-called "informed investor" (or creditor and so on) would prefer an accounting system which produces accounting measures on the basis of which he can predict the future prosperity of the entity. Hence, several studies have tested the ability of GPPA numbers versus HCA and CCA numbers to predict income, bankruptcy and cash flows.

The findings of the studies which tested the ability

of GPPA versus HCA and CCA to predict income were inconclusive. Thus, the simulation study of Simmons and Gray (1969) investigated the self-predictive ability (i.e. the ability of a past value to predict its future values) of three alternative income measures (i.e. HC, GPP and CC net income). The authors found that GPPA net income was the best predictor in two out of four cases examined³⁵. The simulation study of Arnold and El-Azma (1978) examined the ability of six accounting measures of income³⁶, to predict (under conditions of certainty) economic income³⁷, measured in both money and real purchasing power terms, and assumed to be the "ideal" against which accounting measures may be evaluated. The conclusion was that "[t]hrough current cost methods produce(d) significantly better approximations to

35. That is, GPP income performed better when both the specific index for merchandises and fixed assets were fairly close and moving at the same direction as the general index. In the third case, where the general index was rising but the specific index was falling, replacement cost provided the best prediction value followed closely by historical cost. In the fourth case, where the opposite held true regarding the movement of the two indices, the historical cost income proved to be the best indicator of its future values.

36. That is, historical cost, GPP adjusted historical cost, replacement (current) cost, realisable value, value to the firm and discounted present value were used as well as three capital maintenance concepts.

37. Economic income was defined as the increase in capital value of a firm during a period after allowing for dividends paid and capital introduced. In turn, economic (capital) value of a firm at a point in time was defined as the discounted present value of all net cash distributions a firm is expected to make in the future.

economic measures than (did) the historical cost method, none of the methods investigated provide(d) a good approximation to either economic measure". Finally, Buckmaster et. al. (1977) found that of the three accounting systems examined (i.e. HCA, GPPA and CCA) historical cost income was the best predictor of its future values³⁸.

Studies which have examined the usefulness of GPPA vis-a-vis HCA (and CCA) in predicting bankruptcy or future cash flows were also conflicting. For example, in their estimation procedures based study, Norton and Smith (1979) found that both GPP adjusted and unadjusted ratios exhibited the same ability to predict bankruptcy. Ketz (1977) or (1978b) found that HCA and GPPA do not predict bankruptcy well (although GPPA did a better job than HCA), whereas Bazley (1972) in a simulation study found that there was no significant difference among the abilities of the three alternatives examined (i.e. HCA, GPPA and CCA) to predict failure. Short (1980), in turn, found that the inconclusive results obtained with respect to prediction of business failure by means of financial ratios were due to the fact that the grouping

38. Another conclusion drawn from the study was that "regardless of the underlying nature of predictive differences, predictive ability is relatively insensitive to changes in the rate of change of prices in an inflationary period".

or structure) of financial ratios was very similar under HCA and GPPA. As regards the prediction of future cash flows, Al-Tassan (1983) found no clear indication that GPPA or HCA is superior to the other.

The empirical studies mentioned so far are based on the examination of financial data per se. Another kind of empirical research conducted on GPPA is based on the opinion of the preparers and users of financial statements. These opinion studies can be divided into two categories. The first category includes studies which seek an answer to the question: Do the users (and preparers) of financial statements consider inflation accounting as useful or more useful than HCA? The second category seeks an answer to the question: Do the users of financial statements use inflation accounting information for decision making?

Noteworthy opinion studies which fall into the first category are those of Estes (1968), Dyckman (1969), Heintz (1973), and Miller (1982). Estes found that the overwhelming majority of the three groups of users studied (i.e. Institute of Chartered Financial Analysts, National Association of Bank Loan Officers and Credit Men, and Financial Executive Institutes) considered current cost information useful. Seventy per cent of the respondents believed that GPPA information would be useful, too. The findings obtained by Dyckman (who used as subjects financial analysts) and by Heintz (who used students as subjects) were that GPPA was not more useful than HCA. Finally, Miller's findings were inconclusive

with respect to which of the three alternatives examined (i.e. HCA, GPPA and CCA) was the most useful system.

The studies of Benston and Krasney (1978), Casey and Sandretto (1981), Berliner (1983), and Maksy (1984) fall into the second category. Benston and Krasney (who surveyed the practices and opinions of investment officers of sixty-two large life insurance companies) found out that at least 74 per cent of the 59 respondents did not request other than historical cost data for many items such as cost of sales, depreciation, unrealized gains or losses, net profit etc. Also, the majority of the respondents preferred historical cost, as currently defined, as a uniform valuation basis. Casey and Sandretto, who surveyed Fortune's "500" largest companies found that about half of the respondents provided management with inflation-adjusted data; that is, GPPA, CCA or a combination of them, depending on the situation at hand. Basically, the same results as those of Casey and Sandretto were obtained from the survey by Arthur Young and Company (Berliner, 1983) with respect to the use of SFAS 33 disclosures. However, Maskey's studies showed that SFAS 33 disclosure did not have a significant effect on the decision making process of bank lenders.

Summarising the empirical research on GPPA, this has established the feasibility of the system as well as its impact on accounting measures. However, the results regarding the pattern of that impact over time and the usefulness of GPPA vis-a-vis HCA generally have been inconclusive for the reasons to be mentioned in Section

3.3.5. Inconclusive also are the results obtained with respect to the usefulness of GPPA not only vis-a-vis HCA but also vis-a-vis CCA. Only the usefulness of GPPA on a supplementary (to HCA) basis seems to be supported by the scanty empirical research. As will be seen in the next sub-section, inconclusive also are the results obtained regarding the usefulness of CCA vis-a-vis HCA.

3.3.4. Empirical Research on CCA

For the reasons mentioned in the previous Sub-section, the empirical research on CCA is also not voluminous, and the first empirical studies conducted are again case studies.

Two of the earliest case studies are those of Dean (1951 and 1954), which were referred to in Section 2.4. The conclusion drawn by Dean and especially by Gress (1972) regarding feasibility of CCA, was that current cost adjustments (by means of appraisals, quotations and special price indices) are both objective and feasible. Basically, the same conclusion was drawn by Hope (1974). However, Dockweiler (1969) did not share this view. For him the practicability of determining current cost data was doubtful.

As regards the effect of CCA on income, Dean and Gress found that it was serious. Dockweiler and Hope, however, failed to find any serious impact and offered the reason that inflation (i.e. general and specific price changes) was mild (i.e. below 4% in both cases).

Field studies conducted later demonstrated the distorting effects of CCA on earnings. Good examples of such studies are the already mentioned studies by Price Waterhouse (1980) and that of Berry and Grey (1982), both based on actual current cost data. Other studies, along the same line are those of Philips and Drew (listed in Gibbs and Seward, 1979), as discussed by Whittington (1983, p.139), or Moore (1980) and of Thomson (undertaken on behalf of the ICAEW and edited by Carsberg and Page, 1984). These studies found as well that the impact of CCA on accounts is serious. Thomson, in particular, found that the ratio of actual current cost profit (as defined in SSAP 16) to historical cost profit was 0.50 on average. However, the inter-company pattern of historical and CC profits was similar for the two years examined (i.e. 1980 & 1981). If this relationship, which was present as well in the findings of the study conducted by Ashton (1985) - SSAP 16 data used for one year), is found to be stable over a longer period of time than that examined by Thomson, with a higher rate of price changes than that prevailing in the two year period examined, it will mean that CC profit figures do not have new information content since in such a case they can easily be determined by users from HC data.

Regarding the usefulness of CCA, many of the empirical studies conducted concentrated on the predictive ability of the system. Studies along this line other than the already mentioned (Section 3.3.3) studies of Simmons and Gray, Arnold and El-Azma, and

Buckmaster et.al. are the estimation studies by Frank (1969) and Mensah (1983). Frank found that CC income was not a better predictor of its own future value, or of the future value of HC income than was HC income. Mensah failed as well to find any significant additional ability in the CCA data to predict bankruptcy. His conclusion is basically in agreement with that drawn by Bazley (1972) (Section 3.3.3). In contrast, Mazhin (1986), using actual (reported) CC data produced in accordance to ASR 190 (USA), found that past CC income numbers are good predictors of future CC income.

As regards the ability of CCA to predict future cash flows - one of the most important assertions made regarding benefits of this system - the simulation study of Friedman and Selto (1981) failed to support this assertion, whereas White (1983) found instead that HCA was a better predictor than CCA or GPPA. Thus, perhaps, with the exception of the study of Arnold and El-Azma, CCA was found not to have predictive ability over and above that provided by HCA data.

Lack of usefulness of CCA was more strongly reaffirmed in many other empirical studies which examined the utility of CCA to shareholders and investors using actual CC figures. For example, Cheyara and Boatsman (1980), Beaver et.al. (1980 and 1982), Ro (1980 and 1981) and Comisky et. al. (1982) measured the impact of ASR No. 190 disclosures on security returns. Using different methodologies they all came up with the same conclusion. Namely, there was virtually no announcement impact on security prices. This suggests that, for whatever

reasons, the disclosures were judged by investors to have no significant marginal information content. This conclusion was reaffirmed by Schaefer (1984), who used SFAS No 33 data, by Brayshaw and Miro (1985), who examined the impact on stock prices of SFAS 33, SSAP 16 and Hyde Guidelines disclosures respectively, by Board and Walker (1985), who used SSAP 16 data, by Olsen (1985), and by the estimation-procedures-based study of Bernard and Ruland (1987).

However, in the study conducted by Bublitz et. al. (1985), who re-examined the impact of ASR No 190 and SFAS No 33 disclosures, it was found that the ASR No 190 disclosure had no incremental explanatory power. In contrast, the SFAS No 33 disclosure did have significant explanatory power above that provided by HC numbers. As for the study by Peasnell, Skerratt and Ward (1987), who examined the announcement impact of SSAP 16 disclosure on share returns, it was found that "CCA information has a small but significant impact on stock returns in the days up to announcements. However, CCA does not seem to be the driving force behind long-period returns (Peasnell et. al. (1987), p.14.

Since one of the explanations given for the no information content to investors of CCA figures was that CCA information was already impounded in stock prices from other sources of information, Abdel-Kahlik and McKeown (1978) as well as Freeman (1983) tested this assertion. Abdel-Kahlik and McKeown rejected the assertion, whereas Freeman concluded that since the

financial market leads industry-wide trends in product costs by many months "any contemporaneous financial marker reactions to the SFAS No 33 data would be difficult to document" (Freeman (1983), p.58).

Bar-Yosef and Lev (1983) tested another assertion made by the advocates of the two main alternatives; namely, that CCA and GPPA are useful for dividend decisions, using mainly the SFAS 33 disclosures for two years (1979 & 1980) they found that dividend decisions are explained better by historical cost earnings than by CCA or GPPA earnings. (For more about empirical research on CCA see De Berge and Shriver (1987).)

Before ending the review of the empirical studies conducted on CCA it is worthwhile mentioning the studies undertaken on behalf of the ICAEW and concerned with the costs and benefits of CCA, as defined in SSAP 16, as well as the use of the system made in Great Britain. An important characteristic of these studies, which have been edited by Carsberg and Page (1984), is that their conclusions are based either on actual CC figures or on the experience of the users with CCA.

Three of the ICAEW studies examined the use of CCA information by users of financial reports. Thus, Bayliss examined the use of CCA in the media by analysing press cuttings and brokers' circulars for a selected period of time (i.e. 1982 and 1983). The results obtained were that the overwhelming majority of media did not make use of CCA information; and when it made such use, the information was of secondary importance to the HCA

information. The other two studies, conducted by Boys and Rutherford, and by Carsberg and Day, considered the use of CCA information by institutional investors and stock brokers. Despite the fact that the companies interviewed by Boys and Rutherford had shown an active interest in CCA³⁹, the conclusion drawn was that the financial institutions made little use of CCA information. As to the results obtained by Carsberg and Day, these "...can be described as a weak vote of support for current cost accounting" (Carsberg and Page (eds) 1984, p.166.) The

39. These companies had been taken from institutions which had assisted the ICAEW in various ways as regards CCA.

basic conclusion of these studies is in agreement with that drawn by Berry et. al. (1985) who examined the use of CCA information made by bankers who make corporate loan decisions.

Two other studies examined the use of CCA by management and by governmental bodies respectively. The conclusion drawn from Percy's study (i.e. six groups of managers of six large manufacturing firms were interviewed) was that CCA information was used mainly for dividend decisions and performance measurement. To a lesser extent CCA was used in budgeting and planning. The conclusions drawn by Hargreaves and Sherer were that CCA was used by government in (a) policy formulation, in conjunction with HCA information; (b) monitoring public sector trading organisations (pure CCA alone used); (c) monitoring and regulating private sector enterprises, in conjunction with HCA information.

The study by Carsberg and Page measured the costs of preparing CCA information. Estimated data regarding costs of CCA were provided by four accounting firms which interviewed eighteen of their clients (companies) for this purpose. From the results obtained the authors concluded that the costs of preparing CCA information are

quite low⁴⁰.

Two other ICAEW studies, conducted by Page and Carsberg respectively, concentrated on implementation problems of CCA. The findings of Page are consistent with those of Scapens et. al. (1983). That is, wide and sometimes unquestioning use of indices (especially for valuing fixed assets), which in many cases did not relate to actual experience, poor availability of foreign indices for CC adjustments on overseas assets, misunderstanding of the MWCA and difficulties in determining the amount of cash/overdrafts to be included in it, no reassessment (by many companies) of useful lives of fixed assets due to difficulties imposed and no consideration of technological change in arriving at CC fixed assets and depreciation figures. "Perhaps as a result of this, such companies tended to consider the results as <uncertain> or <subjective>" (Page, in Carsberg and Page (eds) 1984, p.207). More disappointing for the supporters of CCA are the findings of Carsberg who examined the measurement of assets in special cases⁴¹. That is, the results obtained were, on the one hand, that the majority of the companies avoided the measurement of technological changes or they

40. That is, the media annual costs were 0.007% of turnover (but the individual costs varied from 0.001% to 0.021% of turnover); the extra audit charges accounted to two to three per cent of total fees; the time spent was estimated to 155 hours per year and 214 hours for the first year of preparation.

41. Mineral and natural resources and measurement of assets which will not be replaced by identical ones.

did not use rigorous procedures for this purpose, and therefore the figures obtained did not reflect economic reality. On the other hand, all the companies operating in specialized industries emphasized the inappropriateness of the concept of maintaining operating capability.

The usefulness to investors of CCA disclosures as defined in SSAP 16 was examined by several ICAEW studies. The studies by Appleyard and Strong, Board and Walker, and Page showed that CCA disclosures were either unimportant to investors or no more useful than HCA disclosures. The study of Skerratt and Thomson, however, found that CCA disclosures were useful to investors. The last conclusion is in agreement with that drawn in previous studies conducted by Greenball (1968) and by Lustgarten (1982).

Finally, the ICAEW study of Archer and Steele examined many aspects of CCA. The authors surveyed (mainly by means of questionnaires) the opinions of a very large sample (i.e. 494 out of 1,510 listed companies initially included in the sample). Basically, their main conclusions were that the majority (75%) of the listed companies did not welcome SSAP 16; only 8% of the respondents prepared CCA-based management accounts; CCA was considered by many respondents as either unimportant to their business and too complex, or subjective, unreliable and misleading; the technical difficulties of CCA had been circumvented rather than solved satisfactorily, and therefore CCA information was

considered to be of poor quality.

In summarising, the empirical research on CCA has shown the substantial impact of the system on accounting measures such as earnings, effective tax rate and so on) as a result of not taking into account specific price changes. The implementation, however, of CCA presents some serious problems which have been circumvented rather than solved by companies. As a result, CCA figures are considered by many unreliable and misleading. As for the usefulness of the system, the empirical findings have been indecisive though the majority of the studies demonstrated that CCA information is either unimportant to users of financial reports for whatever reasons or not more useful than HCA information.

Accordingly, neither GPPA nor CCA have been shown empirically to be superior to the other or to HCA. The reasons for this are explained in the next sub-section, in which a crucial evaluation of the two main alternatives is made. Since the empirical research on inflation accounting is very little and has not produced decisive results, the evaluation is necessarily based on the theoretical advantages and disadvantages of the two inflation accounting systems, in the first instance, and on the related empirical evidence, in the second instance.

3.3.5 A Critical Evaluation of GPPA and CCA

As it has been shown, the distorting effects of general and specific price changes on accounts have been established empirically. However, the empirical findings regarding the asserted usefulness of each of the main alternatives have been inconclusive. This should have been expected because "this type of research is still in its infancy and has yet to yield decisive results" (Whittington, 1983, p.94).

In other words, it is too early for the empirical research to yield definite answers regarding the usefulness of inflation accounting. Preparers have still to learn how to accurately implement the "new" systems of accounting for price changes, especially CCA systems, so that the users may consider them reliable and so rely on them rather than on HCA systems for decision making. Users have still to learn how to interpret and how to use the new information⁴². Similarly, researchers have still

42. The findings that investors rely on HCA rather than on inflation accounting for decision making may simply mean that the investors do not know how to use the new inflation accounting information (the learning effect interpretation-Watts and Zimmerman, (1980)).

to learn from their mistakes and from the limitations 43 of their studies (methodological deficiencies).

Maybe one main reason that inflation accounting numbers have not been found to be useful in decision making in several studies is that the adjusted (CCA or GPPA adjusted) numbers have been generated from estimation techniques or price indexes which are susceptible to measurement errors. Indeed, the main estimation models used for GPP adjustments, that is., the Petersen, the Davidson-Weil, and the Parker models have never passed a rigorous test (see Sections 4.3 [REDACTED] [REDACTED] As for the CC data generated, not only the use of specific indexes have been found empirically to be sensitive to measurement errors (see De Berge and Shriver (1987), p.76) but also the effort and attention paid (at least by several companies in preparing CC numbers was such (see Archer and Steele (1984) that many people believe that the CC numbers generated are a garbled version of HCA numbers⁴⁴.

43. These mistakes and limitations refer to the methodologies and assumptions employed, time period as well as length of the time period examined, and estimation procedures utilised. Additional mistakes and limitations refer to the possible errors in the choice of the dependent and independent variable(s), omitted variables and (in the case of the opinion studies) the kinds of questionnaires and subjects used as well as the percentage of non-response (the methodological defects interpretation - Watts and Zimmerman, (1980)).

44. Indeed, in the Beaver et. al. (1982) Study CCA data (i.e. ASR 190 data) were found to have no additional explanatory power as regards share prices. One of the interpretations given for it was that CCA numbers were merely a garbled version of HCA numbers.

As for the contradictory results obtained, the methodological deficiencies of the empirical studies seem to have contributed greatly to it. For example, the study of Beaver et. al. (1982) showed that the different results obtained by Easman et. al. (1979) regarding usefulness to investors of CCA disclosures were due to the different methodologies employed by the two studies; that is, cross sectional approach versus time series approach, which was - wrongly according to Beaver et. al. - used by Easman et. al. Also in the study of Morris and McDonald (1982) the conclusion drawn was that SFAS 33 information was impounded in Stock prices. However, another study (McDonald and Morris, 1984), mentioned in Section 3.3.3, using different methodology rejected the hypothesis that the SFAS 33 disclosures were already impounded in security prices and accepted the irrelevance conclusion drawn from other studies. Finally, Samuelson and Murdoch (1985) maintain that the statistical tests used in the already mentioned study by Baran et. al. (1980) were not valid. They claimed that when an appropriate test was applied to the data used by Baran et. al. GPPA earnings were shown not to be superior to HC earnings.

Whilst the superiority of either of the two main alternatives has not been established at present, it seems that the advantages of GPPA outweigh its disadvantages, as will be demonstrated in the following paragraphs.

Basically, there are three differences between GPPA

and CCA. The first difference concerns the unit of measurement, that is, money versus general purchasing power of money. The second difference refers to the valuation rule, that is, current replacement cost versus constant money of historical cost. Finally, the third difference concerns the capital to be maintained, that is, entity's physical capital (usually defined as operating capability) versus shareholders' financial capital expressed in general purchasing power terms.

With respect to the first difference, the general purchasing power unit for measurement, and consequently comparison, appears to be the appropriate choice. Decision making involves comparison. Comparison, in turn, presupposes measurement⁴⁵. One cannot compare two things unless one measures the attribute (property) in which one is interested. In the case of a business entity which holds and consumes economic resources, the attribute to be measured is utility (of these resources). The unit or the standard used for measuring utility is money because it is accepted widely in exchange for other resources (goods) and, hence, it is the means by which the utility of goods can be related to one another. In

45. "Measurement is concerned with a process of comparing or ranking objects in respect to some specific property" (Sterling, 1970, p.75).

other words, money possesses the dimensions of utility, for goods and their consumption (see Sterling, 1979, pp. 30-37).

In times of price changes however the money's command over goods and services in general (i.e. its general purchasing power) is "notoriously fickle" (Rosenfield, 1972, p.27). Hence, this standard of measurement (of utility) has a serious defect. Its size changes. Because of it proper measurement cannot be made, as pointed out by Sweeney many years ago (Section 2.2.). Money should be stabilized so that for the money units to be **additive**. The "... additive property makes the measurement more useful, more informative, in a wider range of problem-situations by a greater variety of receivers" (Sterling, 1979, pp.101-102).

General purchasing power of money is a stable unit. Moreover, this unit possesses the same dimensions (properties) as the object (utility) to be measured (i.e. it denotes command over goods and services), it seems to be familiar to different classes of users (as it will be seen subsequently) and, hence, it allows general comparison. Finally, it appears to be relevant to the users because money is not of itself a valuable commodity. Its value depends on what it buys, as pointed out by Keynes many years ago:

A man does not value money for its own sake but for its purchasing power - that is to say, for what it will buy. Therefore, his demand is not for units of money as such, but for units of purchasing power. Since however, there is no means of holding general purchasing power except in the form of money, this demand for purchasing power translates itself into a

*demand for an "equivalent" quantity of money.
(Keynes (1930) p.53)*

Hence, in times of unstable prices general purchasing power of money should be used as the unit of measurement rather than money per se.

The opponents of GPPA argue that general purchasing power of money is not familiar to users, that users have difficulty in understanding it. However, the more and more frequent expression of economic parameters in constant (GPP) terms, the use of GPP in business activities (e.g. contracts, such as rent payments of a long period, are linked to a general index) as well as the greater and more frequent use of GPP adjustments by government (i.e. use of them in the UK tax system - see Myddelton (1984a, p.110) makes people more and more familiar with it. In short, persistent inflation has made people realize that it is not money per se but general purchasing power of money which is of importance, and hence they become familiar with this concept.

Of course, the consumer price index, which is usually used to measure general command over goods and services, is not a perfect device. This, however, should not suggest that general purchasing power cannot be quantified, as is argued by some people, and hence inflation should be ignored. As was suggested by Keynes many years ago, "it is better to be approximately right than precisely wrong". Neither should the parallel argument be justified according to which: "it is incorrect to assume that a wide-ranging index such as the

Retail Price Index can be a measure of the rate of inflation equally appropriate to all individuals and entities" because "the rate of inflation varies for different individuals and entities..." (Sandilands Report, para. 28). The sparse empirical evidence shows that:

the impact of inflation is remarkably constant across income groups, suggesting that the concept of inflation (and, hence, the concept of general purchasing power of money) is meaningful to different individuals.
(Peasnell and Skerratt, 1978, p.55)

CCA does not change the unit of measurement for measuring financial position (wealth). Since, however, it changes the valuation rule, the balance sheet figures reflect current values (i.e. current purchasing power). As such, the figures are additive and consequently comparable at the balance sheet date. Therefore, the new valuation rule (i.e. current values) eliminates the "unit of measurement deficiency" of HCA as regards measurement of financial position at a moment of time.

In a multi-period context, however, the "unit of measurement" deficiency of HCA is present, too, under CCA. The balance sheet figures are not comparable because they are expressions of different purchasing power. In order to become comparable they should be adjusted by a general index.

As regards the income statement, which is prepared under CCA and is purported to reflect changes in wealth, the monetary units, in which the costs (sacrifices) and

the revenues (benefits) of a period are expressed, are not additive since they represent values of different purchasing power (i.e. current values of different sub-periods). Hence, the calculation of changes in wealth under CCA is somehow erroneous, at least from a theoretical point of view. Things become even worse regarding comparability of income figures in a multi-period context.

The lack of comparability of CCA figures as a result of the use of an unstable unit of measure is recognized even by the proponents of CCA. Thus Bell states:

The fact of the matter is that comparison among firms at a moment of time, and of trends in one firm over time, serve as the primary valid reason for adjusting properly constructed income and balance sheet data for changes in the value of the dollar (Bell (1971), p. 26).

This is seemingly why the majority of the companies examined in the mentioned (in Section 3.3.4) study by Percy adjusted their CCA figures by use of the retail price index in order to study long-term trends in sales,

dividends, profits etc.⁴⁶.

Another consequence of not changing the unit of measurement is that CCA does not account for "currency debasement" caused in times of inflation (see, for example, Lewis et al. (1983), p. 203). However, the calculation of the MWCA and gearing adjustment have somehow reduced the magnitude of this shortcoming⁴⁷.

Accordingly, GPPA seems to be superior to CCA as regards unit of measurement employed. Apparently, that is why many academic writers, who are not satisfied with historical cost as the valuation base, such as Sweeney, Baxter, Sterling, Whittington have proposed a form of Current Value / GPPA for measuring financial position and profit.

With respect to the second difference, GPPA does not change the valuation basis. It does not take into account specific price changes. As a result, it does not compute gains/losses on non-monetary items as it does with the monetary items. Also, the balance sheet figures do not represent current values (however defined). This seems to be the main serious weakness of GPPA. In

46. Lack of comparability of prior year CCA figures was found too in the empirical study by Archer and Steele (Section 3.3.4).

47. This is so because the gain/loss on short-term as well as long-term monetary assets calculating under GPPA, and the MWCA and gearing adjustment calculated under CCA, have the same objective; that is, to account for the impact of price changes on monetary items. Hence, the closer (and at the same direction) the movement of general and specific price changes the less the difference between GPPA and CCA gains/losses on monetary items, provided that for the calculation of the gearing adjustment both realized and unrealized holding gains are taken into account.

contrast, CCA changes the valuation rule and it uses value to the business, which normally equals current replacement cost. That is, it takes into account, the movement of specific prices. Therefore, it can be applied even in the absence of inflation.

However, if the valuation rule must change, it is not clear if it should change to replacement cost over, say, exit value or even estimated economic value. That is, there is widespread questioning of the underlying rationale for current replacement cost and its validity. In general, two main reasons have been offered for the use of current replacement cost as the valuation basis: (a) maintenance and prediction of cash flows; (b) maintenance of operating capability and, hence, continuity of the firm. As will be seen later in this sub-section, the conceptual and empirical evidence does not support the first rationale, whereas the second rationale presupposes a "steady state firm"⁴⁸.

Even for a "steady state firm" the rationale of the current cost valuation basis is doubtful, at least as regards assets whose replacement is not of immediate concern (i.e. long-term assets). This is so for three reasons:

48. A firm whose volume and nature of business do not change over time.

Firstly, Chambers (1975b), among others, has shown that in the case of increasing costs depreciation charges do not adequately serve to maintain the operating capability of the entity. That is, the accumulated depreciation provision is inadequate to cover the cost of replacement (the backlog depreciation problem).

Secondly, in the study by Archer and Steele (Section 3.3.4) the second ;most frequently cited reason for not preparing CCA information for internal decision making was that the benefits derived did not outweigh the costs involved. This should be especially true in the case of long-lived assets, given that their replacement is not of immediate concern to managers as is the replacement of stocks, on the one hand, and given the uncertainty surrounding their replacement, and the serious difficulties involved in determining their replacement cost in a reliable and objective way, on the other. In fact, in the study by Archer and Steele the third most frequently cited reason for not preparing CCA information for management was that:

...current costs - particularly for fixed assets (emphasis added) and depreciation - are largely hypotheses (emphasis added) rather than facts. Moreover, these hypotheses are arbitrary or subjective in

*nature*⁴⁹

(Archer and Steele (1984), p. 396)

Basically for these reasons Skinner (in Sterling and Lemke (eds) (1982), p.165-166) is inclined to accept the adjustment of those assets by use of a general index. It is perhaps for these reasons as well that Chile uses specific price indices for inventory adjustment and a general price index for fixed assets adjustment.

Thirdly, and maybe more important, it does not appear to be right to charge the income of the period (through depreciation), and the consumer (through increased selling prices), with the increased current replacement cost of these assets, especially when it is not known what the actual replacement cost of them will be. That is, there is a social issue involved in applying CCA to be discussed later in this sub-section.

In any way the alleged superiority of the current cost valuation basis, and hence the alleged superiority of CCA over GPPA as regards valuation of assets, depends on how good surrogate for specific price indices, usually used for CCA adjustments, is a general price index. If a general index can be satisfactorily substituted for specific indices, then much of the asserted merits of CCA

49. Perhaps it was valuation of fixed assets at current replacement cost in particular which the author of the editorial in Business Week (August 9, 1976, p.80) had in mind when he suggested that when accountants apply CCA "...they wind up in a curious dream world where companies subtract savings they did not incur to derive earnings they did not make".

(which are based on the fact that CCA takes into account the movements of specific prices) is abrogated and GPPA becomes an attractive inflation accounting system.

Unfortunately, little research has been conducted on the comparative impact of using a general index in lieu of specific price indices. What little research is available does, however, show that there are cases where GPPA is a good surrogate for CCA. For example, Boersema (1978) points out (in Chapter VII, p.4) that empirical work of Dockweiler and Dickinson indicated that, at least in two cases, the replacement cost balance sheet data were quite similar to the GPP data and that a very high correlation (i.e. 0.97) was found to exist between the Canadian consumer Price Index and the specific index for Building Materials - Non-Residential, Steel and Metal Work. Bourn et al. (1976) found that the Retail Price Index was very highly correlated with almost all of the stock indices published in the UK. This finding was reaffirmed by the empirical results of a study conducted on behalf of the Institute of Fiscal Studies of the UK⁵⁰. Peasnell and Skerratt (1976) found that aggregation of price information by industry does not produce results significantly different from the general price index⁵¹.

50. The authors of the study argued that "[u]sing the CCA depreciation adjustment with GPP monetary and stock adjustments [they] found that a true replacement cost measure could readily be constructed that combined simplicity with robustness" (Financial Times, May 11, 1984).

51. On the other hand, however, in analyzing US specific price indices the authors found that current prices can be much better approximated through this type of index.

Finally, Thomson (1984) found cases where the retail price index was a good surrogate of specific prices of stocks and fixed assets ⁵².

With respect to the third difference between CCA and GPPA, that is physical capital versus GPP-adjusted financial capital, it seems that this difference is the most crucial as regards income measurement given the Hick's definition of income⁵³, which is widely adopted in the accounting literature. This is so because the capital (i.e. welloffness, wealth) maintenance concept chosen provides the benchmark which can be used to determine whether or not income has been earned.

If it is shareholder's capital expressed in general purchasing power terms (i.e. general purchasing power capital) which must be maintained before distributing any profit, then GPPA (or a combination of GPPA and CCA) is more relevant than CCA for income determination per se and, consequently, for dividend decisions, performance measurement, taxation and planning. The opposite holds true if it is physical capital⁵⁴ that must be maintained.

52. One of the conclusions in the study by Thomson was that estimates of COSA and MWCA derived from historical cost data did not well approximate the actual values. However, "[t]o the extent that estimates of the COSA and depreciation adjustment did prove successful, use of the RPI turned out to be as good as attempting to pick out specific prices that matched the individual companies' stocks or fixed assets" (Thomson (1984), p.346).

53. "A man's income [is] the maximum value which he can consume during a [period] and still expect to be as well off at the end of the [period] as he was at the beginning" (in Sterling and Lemke (eds) (1982), p.196).

54. Of course, CCA can incorporate financial capital or physical capital depending on whether holding gains/losses are included or not in current cost income. However, all the CCA pronouncements favour the physical capital maintenance concept explicitly or implicitly. Hence, the CCA model and the physical capital maintenance concept are intertwined.

Of course, as Revsine ((1982), p.75) points out:

[t]he problem of selecting a capital maintenance concept for external financial reports is not one in which there is a 'right' or 'wrong' answer.

.....
In general, no one concept of capital maintenance is inherently and universally superior to others.

However, in light of the conceptual arguments advanced, which are supported by empirical findings in some cases, it seems that financial capital (and hence the GPP adjusted financial capital) is superior to physical capital. To be specific, physical capital is a not readily definable concept, is difficult to apply and lacks general applicability.

Physical capital is not a readily definable concept because it is usually defined by the CCA pronouncements and authors as operating capability ⁵⁵. Operating capability, in turn, is defined as the ability of a firm to provide goods and services with its existing resources. However, such a definition can be readily understood and implemented only by those businesses not subject to significant changes in their operations. In other words, the operating capability notion is closely tied to a static economy, to enterprises locked into their present lines of business indefinitely. "Outside of these situations the concept is 'ill-defined and ambiguous' (Lemke (1982), p.294).

Since the physical capital concept is ill-defined it

55. See, for example, SSAP 16 or Ma ((1982 , p.199).

is difficult to apply. Among the most serious difficulties are the measurement of technological changes and the measurement of net recoverable amounts⁵⁶. This is evidenced in the ICAEW empirical studies, and in particular in those by Carsberg, and by Archer and Steele⁵⁷ (Subsection 3.3.4).

Finally, the physical capital maintenance concept lacks general applicability since it is unable to cope with the dynamics of a changing economic and technological environment. In particular, physical capital (defined as operating capability) is not applicable in the cases of specialized assets, trading firms, and decreasing costs⁵⁸ (see Sterling (1982), p.3-58). This inability is, as Lemke ((1982), p.319) argues, "a critical limitation - a decisive (emphasis added) reason for rejection of physical capital maintenance"⁵⁹.

56. Measurement of net recoverable amounts exists in the case where replacement cost is greater than either net realisable value or economic value.

57. Carsberg, referring to these two problems, concludes that if preparers and auditors "...try to apply the concepts [i.e. those of technological changes and recoverable amounts] as set out in SSAP 16 the measurements are, they feel, excessively subjective; and if they avoid application of the concepts and rely on mechanical indexing, the numbers fail to reflect economic reality." (Carsberg (1984), p. 146). Also, Archer and Steele, referring to the technical difficulties in implementing SSAP 16 state that many respondents "...had circumvented the difficulties rather than solving them in a way they consider satisfactory. Hence, the resultant accounting information was reckoned to be of poor quality (Archer and Steele (1984), p. 350).

58. In the mentioned (in Section 3.3.4) study by Archer and Steele the most frequently cited reason for not preparing CCA-based management accounting was the inapplicability of CCA to the respondents' type of business (i.e. service industry sector, distribution, long-term contracting, commodity brokers, and similar businesses).

59. Sterling is more categorical than Lemke on this aspect. He argues that "[i]n time all firms must either adopt to changing tastes and changing technology by replacing with different units or fail to adopt and die. Thus, physical capital measures eventually become inapplicable to all living firms to all going concerns" (Sterling (1982), p. 24).

The above-mentioned limitations of physical capital, which, according to Baxter (1984, p.405), are "formidable defects" and "...in the long-run they must surely bring physical capital into disrepute", have been empirically evidenced in relevant studies (Section 3.3.4) undertaken on behalf of the ICAEW, and especially in the study by Archer and Steele. For many respondents in those studies CCA information was considered to be too complex to understand, inappropriate for their business, as well as subjective, unreliable (because of mechanical use of indices or of other methods used to circumvent imposed difficulties), and misleading⁶⁰.

In contrast, financial capital, and consequently the GPP adjusted financial capital, does not suffer from such serious limitations. It is clearly definable⁶¹, easy to apply, and it has general applicability since it "...has the flexibility needed to cope with a dynamic environment" (Lemke, (1982), p.321).

At least on theoretical grounds, then, financial capital seems to be as attractive as physical capital, if not more attractive than it. In fact, the majority of the writers and discussants participated in the Symposium held at the University of Alberta favoured the financial capital maintenance concept rather than the physical capital

60. Basically the same reasons have been offered for the lack of enthusiasm for CCA in the USA (Baxter, 1984).

61. Financial capital of a firm is the money value of assets invested by shareholders as well as the retained earnings.

maintenance concept (see Sterling and Lenke (eds) (1982)).

Perhaps it is for the reasons mentioned above that CCA standard setters resort to the financial capital concept in order to cope with problems imposed by the limitations of the physical capital concept with respect to income determination. For example, in the Guidance Notes of SSAP 16 it is suggested that certain seasonal items of inventory which will not be replaced with similar products to be treated as monetary working capital. For computing the adjustment of this working capital para. 102 permits the use of a general index. However, as Lee ((1982), p.188) points out "[t]his recommendation is more akin to financial rather than physical capital maintenance"⁶².

Apart from the basic inability of physical capital to cope with the dynamics of change, the logic of this concept raises a fundamental social issue, as Milburn ((1982), pp.98-103) argues. That is, according to the physical capital theory, selling prices should reflect the increase in current replacement cost so that the firm gains the same increase in physical capital (the same profit) that would have been had if no change in purchase

62. Another example of asymmetrical treatments found in the CCA models is that some cost decreases are debited to the profit and loss account, the justification being that such decreases impair the financial viability of the entity. However, such treatment is difficult to justify theoretically, since it is the physical capital which must remain intact, not the financial capital.

prices had occurred. This, however, seems to be wrong from a consumer's point of view⁶³, because according to Milburn ((1982), pp.98-99):

...expensing replacement cost gets cause and effect reversed[.] [The] entity's operations might be looked upon as a series of ventures - each one consisting of a cycle of investing in inputs, processing these inputs and then selling the resulting output. The normal sequence is to invest and then recover the cost of that investment plus a profit margin through sale. It is not normal to sell an output and simultaneously buy and process the related inputs at prices existing at time of sale"

Milburn's argument deserves very careful consideration. In the absence of any definitive empirical evidence concerning the usefulness of either capital maintenance concept, the implications of the assumptions made with respect to the business cycle are sweeping. If the business cycle is from money to physical units to money, as the financial capital concept suggests, that is, if one invests money in a business (by means of which goods and services are purchased) with the aim to generate more money through the selling of the purchased goods (and services), then the validity of the physical capital is abrogated as regards income measurement as is explained subsequently. The opposite holds true if the business cycle is from physical units to money to physical units.

63. Empirical support for such a view is encountered in some countries (such as Greece, Canada), where companies (such as oil and gas companies) are forbidden by government to raise selling prices to reflect current cost increases until inventories bought at the old prices are seen to be exhausted.

At least in a capitalistic world⁶⁴, the business cycle is from money to physical units to money since the overriding purpose of being involved in a business (venture) is to generate more money than that invested in the business (venture). This is evidenced in several writings. For example, in SFAS 33, para.138 is stated that "[t]he main purpose of investment by shareholders and others is to earn a return that is available, sooner or later, in cash to meet personal expenditures". Also CICA's exposure draft explicitly states that "[b]usiness enterprises, like other investors, invest cash in assets with the objective of earning more cash" (Accounting Research Committee, (1979) para.3).

Accordingly, and as is the case with every venture, in order to see how successful a business venture has been, the cash outflows or sacrifices made should be matched against the cash inflows or benefits obtained. In times of inflation and when there is a lag between costs and benefits, their measurement should be made either on a discounted cash flow basis or both measures should be adjusted for the change (decrease or increase) in the purchasing power of the measurement unit-money⁶⁵.

64. It can be argued that in a communistic world the overriding purpose of an entity is to provide society with goods or services (physical capital). Accordingly, it may be said that the business cycle is physical units to cash to physical units and, therefore, the physical capital concept is relevant for income determination (the more goods generated with the existing resources, the more successful the entity).

65. Of course, such a way of profit measurement does not solve the problem of the valuation basis. However, it clearly precludes physical capital of being relevant to income determination.

That the business cycle is from money to physical units to money, and therefore financial capital (or GPP adjusted financial capital in time of inflation) is relevant for income determination, is clearly evidenced in the following paragraph concerning problems of CCA measurement of specialized assets:

The companies [in the extractive industries] were generally agreed that their operating philosophy made the concept of maintaining operating capability inapplicable (emphasis added). Basically; each possible project was assessed as a separate venture (emphasis added). It was undertaken if it seemed to offer the prospect of a satisfactory rate of return. Replacement with a venture of a similar kind would usually be impossible - because no really similar ventures would exist. One of the basic causes of hostility to current cost accounting seemed to be that profitable projects - on a discounted cash flow basis - would be made to appear unprofitable on a current cost basis simply because they were not generating enough cash to undertake a hypothetical and practically impossible replacement.

(Carsberg, in Carsberg & Page (eds)

(1984), pp.142-3).

The fact that in a "steady state firm" the business ventures are of a same (or similar) repeatable nature, does not constitute a reason for the Business cycle view to change from money → physical units → money to physical units → money → physical units. Nor does it constitute a reason for a change in the way profit should be calculated. Repetition or not of particular business ventures has nothing to do with the nature of the business cycle per se, and accordingly reporting upon them.

The proponents of CCA may argue that this kind of

reasoning pertains to the owner of the firm and/or to the consumer. From an entity's point of view the business cycle runs from physical units to money to physical units. Hence, the entity earns a profit only after its physical capital (its existing resources) has been maintained.

Yet, it seems to be a fallacy in this kind of reasoning. The entity is a fictitious person; a creation of people. As such it cannot exist independently of its creator(s), important in its own right⁶⁶. It cannot have and pursue its own objective(s), it cannot earn its own income. The entity is only a means through which its creator(s) tries to materialize his main objective. In a capitalistic world he created it, and he can wind it up, if he thinks that it cannot satisfactorily serve his objective(s) any more, that is, to earn more money than that invested in the business.

Of course, it does not slip the researcher's mind that the business entity more and more is viewed as being a collection of different stakeholders each of which has a right in the business affairs. However, the objectives of the business entity are set primarily by the owner or the board of directors (who act on behalf of the majority of shareholders).

66. See, for example, Baxter (1975), p. 70.

Accordingly, the owner (or stockholder) is the dominant group⁶⁷ among the participants in the affairs and fortunes of the firm. Hence, shareholders' interests are the dominant interests which should be accounted for in the measurement of wealth and changes in wealth. In times of inflation these interests should demand a GGP adjusted financial capital maintenance concept⁶⁸ because the well-offness of the stockholder depends on his buying power as a consumer (Sterling (1982), pp. 34-37).

However, let us take the view for a moment that the entity is a collection of different stakeholders of more or less equal rights and that the primary objective of the entity is to make a profit for the benefit of each of these stakeholders⁶⁹. Let us suppose as well that the Value Added Statement is the appropriate report for this purpose since according to the Corporate Report of the Accounting Standards Steering Committee ((1975), p.49) this statement shows "...how value added has been used to pay those contributing to its creation".

67. This view, the so-called proprietary approach, is the dominant one in the accounting constituency of the capitalistic countries. This holds true even in North America where there are many large firms, not family owned.

68. It is assumed that a single-valued income is the principal output of the accounting process and this income is of main interest to shareholders.

69. In fact, a survey conducted amongst the chairmen of 300 of the largest UK quoted companies showed that this was considered to be the primary objective for the majority of the participants (see Accounting Standards Steering Committee (1975), pp.37-38).

If this is the case, then it is self-evident that financial capital (and in times of inflation GPP adjusted financial capital) must be used to measure the profit accrued to each stakeholder (i.e. employees, providers of loan and of equity capital, and government). Only for the profit accrued to the business entity per se (i.e. reinvestment) it could be argued that the physical capital maintenance concept is more appropriate. But then one cannot measure value added (i.e. profit) by using two different benchmarks at the same time.

Finally, supposing that the entity is a collection of different stakeholders and that their main objective is the firm's continuity. In such a case "...is there a persuasive economic rationale.....- a demonstrable relationship between maintaining physical capital and maintaining the ability to earn income?" (Milburn (1982), p.99).

The above question relates to the assertion that the superiority of physical capital (and of current replacement cost), over financial capital (and historic cost), lies in its predictive ability as regards future cash flows. Here again the sparse empirical evidence does not support either capital maintenance concept (Sections 3.3.3 & 3.3.4). As regards the theoretical evidence, Sterling ((1982), pp37-56) has demonstrated that the physical capital maintenance concept has nothing to do with prediction of cash flows. This view is shared

by many authors, such as Butterworth⁷⁰ and Carsberg. Carsberg in particular, a proponent of CCA, states that:

[t]he predictive ability approach does not require the identification of an income number and it is agnostic (emphasis added) as far as capital maintenance is concerned. It asks no more than the provision of a good deal of information, well organized and clearly labelled.

(Carsberg (1982), p.71)

It would seem, then, that the superiority of either of the two main alternatives has not yet been established empirically. At the same time, it is arguable that GPPA is preferable to CCA, because GPPA seems to be superior to CCA with respect to capital to be maintained, unit of measure used, and therefore comparability, and in terms of reliability, verifiability, accountability, auditability, understandability and costs of operation⁷¹.

⁷⁰ He states: "The fallacy arises because future cash flows are a function of all the factors of production and not just of the capital assets factor on which analysts tend to focus. The ability of a firm to generate future cash flow depends on its labour contracts, the quality of its management skills, its technological supremacy, its research capability, its command over factor markets other than the market for its capital assets" (Butterworth (1982), p.106).

⁷¹ Of course, the study by Carsberg and Page (Section 3.3.4) found that the costs of preparing current cost information were quite low. However, the reliability of these findings may be limited. They are based on data provided by only four accounting firms. These firms interviewed only 18 companies which were not randomly selected. Not only was the sample very small and non-random but also the data referred to estimated, not actually incurred current costs. Further, almost all of the studies conducted on behalf of the ICABW and concerned with implementation of CCA pointed out that not only users, but also many of the preparers did not believe in the figures produced. The reasons given for this was that the preparers did not take care in arriving at them and used very broad approximations or other short-cut methods (see, for example, Carsberg and Page (eds.) (1984). pp.205 and 406). If this, too, is the case with the sample of the study by Carsberg and Page, then, the low costs findings may not be especially accurate.

The only initially appealing advantage of CCA over GPPA seems to lie in its valuation basis, but here only with respect to a "steady state firm", with only upward movements of prices. Yet, even in such a setting real informational superiority is doubtful⁷², especially with respect to long-lived assets, and depends on the degree of association between a general price index and situationally applicable specific price indices (i.e. the greater the association the less the superiority of the current replacement cost over the GPP-adjusted historical cost valuation basis).

A preference for GPPA over CCA for external financial reporting is more strongly supported in the Greek case. This is so because of the correspondence between specific aspects of the Greek business setting and specific aspects of the GPPA alternative. Hence, in the next section the Greek business content is examined in order to identify its specific aspects.

72. Though the advocates of CCA claim that current replacement cost is superior over historical cost (or GPP adjusted historical cost) especially with respect to internal decision making, the practical experience in the UK and the USA shows that managers make little use of CCA (see the mentioned study of Archer and Steele, as well as the article of Baxter (1984). It is claimed that the little use of CCA made by managers is due to the managers' ignorance about the benefits of the "new" system. However, as Professor Homgren argues "[m]anagers live in a highly competitive environment, and they will adopt a new system if they think it will improve decisions without jeopardising their personal objectives" (Baxter, 1984, p.404). Besides, in the mentioned study of Archer and Steele reasons other than understandability of CCA by management were mainly cited for not preparing CCA for managerial purposes (i.e. only 10% of the non-preparers said that CCA was too complex for management to understand (Archer and Steele, 1984, p.396).

3.4 The Greek Business Context

3.4.1 Introduction

Accounting is the product of its environment. Environmental factors such as economic development, size and legal form of companies, degree of sophistication of users of financial reporting and so on influence the degree of sophistication of the accounting systems, the quantity and quality of disclosures an enterprise is willing (or obliged) to make, the accounting standards, principles, and procedures applied, and so on⁷³.

Accordingly, the problem of accounting for price changes, which is addressed in this study, cannot be examined in the absence of consideration of the environmental factors which influence accounting generally in Greece. Hence, the microeconomic⁷⁴ environment in which a manufacturing firm operates, in particular the capital and money markets, the manufacturing corporate sector, and the stage of development of Greek accounting, are discussed in this section. The aim of this discussion is to identify those factors which are particularly relevant to the application of GPPA in Greece.

73. For a comprehensive discussion about environmental influence of accounting see Arpan and Radebaugh, 1981, Chapter 2.

74. The macroeconomic environment has already been discussed in Section 3.2 .

3.4.2 The Greek Capital and Money Markets

The Greek capital market has been underdeveloped. The flow of financial resources into it is very low in comparison to that of other developed or developing OECD member countries (see table 3.2). It is estimated that it absorbs less than 10% of total investment⁷⁵. It is also estimated that less than 2.5% of the firms in the legal form of société anonyme (i.e. public limited company), which can go public, are listed in the Athens Stock Exchange⁷⁶ (ASE), the only stock market in Greece.

It is beyond the scope of this study to deal with the reasons⁷⁷ which have contributed to the inadequate development of the Greek stock market. For the purposes of this Section it is enough to note that the insufficient development of the Greek stock market is reflected in the fact that the active investors in Greece are limited to a few tens of mainly retired middle class people, industrialists and banks. It is also reflected in the absence of professional financial analysts in Greece who could give proper advice to prospective small and middle class investors, and thus protect them from

75. Bank of Greece, The Greek Economy, Volume II (Athens: Bank of Greece, 1982, p.165).

76. Thus, at the end of 1978 only 79 out of 3556 manufacturing companies in the form of sociétés anonymes were listed with the ASE.

77. Perhaps the most important reasons are the reluctance of the family-controlled (see Section 3.4.3) Greek firms to go public because they do not want to loose control of their firms, and the rather bad image the Greek investor has about stock market transactions. The latter makes him reluctant to buy corporate shares whose yield is lower than the yield on bonds and bank deposits.

being exploited by people involved in the stock market transactions game⁷⁸. Likewise it is reflected in the declining number⁷⁹ of stockholders in the ASE who do not seem to be sophisticated enough⁸⁰ to do their job, in the thinness⁸¹ of the ASE and, finally, in the very little presence of books and/or articles referring to the Greek stock market.

In the absence of a sufficient development of the primary (i.e. public⁸² issue of securities) and especially of the secondary⁸³ market and, consequently, in the absence of alternative financial assets, the money-saving public invests its savings in real estate

78. Small and middle class investors which constitute the money-saving public in Greece have almost no idea, or they have a faulty idea, about stock transactions (Niarchos, 1972, pp.31-32). Their ignorance has been exploited in the past. This happened especially in the period 1972-1973 when the boom in the stock market occurred (see p.56 of the ASE Annual Bulletin, 1981). Then small investors formed long queues to buy shares of new listings whose prices had been driven beyond reasonable limits. As a consequence of the artificial increases of share prices many investors suffered great losses, especially between 1974-75 when stock prices fell drastically (see p.56 of the ASE Annual Bulletin, 1981). These losses have perpetuated the unfavourable image the public used to hold (Niarchos, 1972 p.31) about the stock market. There are many who associate capital market operations with gambling.

79. Thus, from 250 active brokers before World War II their number is now reduced to 28.

80. Membership in the ASE, which is a close-knit semi-government organization, depends on connections with existing brokers and the ability to pay the entrance fee, rather than on special qualifications of the candidate. To become a broker (in case of vacancies) a university degree (major in business administration or economic is required from 1972 onwards) and the approval of the ASE Committee and that of the majority of 3/5 of all brokers are required.

81. With respect to the "thinness" of the ASE, Niarchos wrote in 1972 that "[w]ith the exception of a few industrial corporations and 4-5 banks shares, a single order to buy or sell even a very small number of securities is liable to lead to a significant price fluctuation before it is fulfilled" (Niarchos, 1972, pp.40-41). This situation prevails to this day.

82. Private placing of securities is almost non-existent in Greece.

83. That is, the organized stock exchange market. For the activities of the non-organized or "over the counter" stock market in Greece there are no statistical data.

Table 3.2
SECURITY ISSUES ON VARIOUS OECD DOMESTIC
COUNTRIES AS A PERCENTAGE OF GDP

Country of issue	Type of Security	1970	1971	1972	1973	1974	1975	1976	1977	1978	Average
Greece	Shares	0,15	0,12	0,89	0,39	0,19	0,20	0,77	0,14	--	0,35
	Bonds	0,51	0,90	1,01	0,37	0,22	0,12	0,23	0,46	--	0,39
France	Shares	1,11	0,92	0,95	0,94	0,84	0,68	0,57	0,60	--	0,82
	Bonds	1,54	2,26	2,16	2,64	1,16	2,37	1,96	2,06	--	2,02
Japan	Shares	1,49	1,17	1,54	1,27	0,68	0,89	0,66	0,73	0,63	1,13
	Bonds	4,03	5,67	7,18	6,17	5,64	8,08	9,60	9,40	10,48	7,36
Italy	Shares	1,91	1,73	1,97	2,64	0,80	1,47	1,36	1,30	1,53	1,63
	Bonds	4,88	7,98	8,61	12,70	5,11	11,10	5,99	12,17	11,60	8,14
Netherlands	Shares	0,18	0,12	0,04	0,09	0,04	0,24	0,07	0,15	--	0,11
	Bonds	2,11	2,31	1,86	1,02	1,37	2,48	1,54	2,68	--	1,92
Spain	Shares	2,75	2,54	2,67	3,29	3,60	2,45	2,63	1,66	1,73	2,59
	Bonds	1,53	1,96	2,50	2,87	2,57	2,60	2,07	2,50	1,76	2,26
U.K.	Shares	0,16	0,45	1,09	0,19	0,15	1,25	0,86	0,56	--	0,59
	Bonds	1,21	7,06	0,81	2,46	1,30	5,80	4,89	7,23	--	3,85
U.S.A.	Shares	0,88	1,22	1,12	0,86	0,45	0,71	0,65	0,61	--	0,81
	Bonds	4,61	4,40	3,58	3,18	4,19	7,02	7,69	6,96	--	5,20

OECD Financial Statistics, 13, vol. 1 p.815

and gold sovereign hoardings. However, the largest proportion of private savings is attracted (at least temporarily)⁸⁴ by the money market or the banking system. Through the banking systems, the size of which is large (Halikias, 1978, p.4) considering the state of Greece's economic development, a large proportion of private savings⁸⁵ is channelled to economic sectors and especially to manufacturing⁸⁶.

Of the various Greek banks the commercial ones play the most important part⁸⁷ in the development of the manufacturing sector⁸⁸. These banks prefer to provide manufacturing with short-term rather than long-term lending, because the first is less risky and more profitable than the other. Hence, firms finance fixed investment with short-term loans, which is an unsound financing policy and leads to the formation of short-term liabilities which exceed the long-term ones.

84. Until the total or the largest part of the capital needed for the purchase of real estate is accumulated, the private savings are usually deposited with the banks.

85. In 1980 and 1981 the various deposits constituted 81.50% and 82.16% of the total liabilities on the consolidated balance sheet of the Greek commercial banks (see Bank of Greece, Monthly Statistical Bulletin, August 1984).

86. The per cent of bank credit to manufacturing rose from 38.60% to 42.37% of the total bank credit to the Greek economy between 1976 and 1981 (see Bank of Greece, Monthly Statistical Bulletin, August 1984, p. 36).

87. Thus, in 1976, 72.5% of the total private deposits were with the Greek commercial banks, 18.9% with the Postal Savings Bank and the remainder with the other banks. The picture is slightly different for the consequent years (see Bank of Greece, Monthly Statistical Bulletin, series).

88. During the period 1975-1981 on average around 56.5% of the commercial bank credit to economic sectors went to manufacturing and mining industries (see Bank of Greece, Monthly Statistical Bulletin, August 1984).

Commercial lending was based, at least through the period under examination (i.e. 1976-1981)⁸⁹, not on the potential profitability of the candidate firm but firstly on the guarantees provided by it (i.e. usually real estate property more than enough to cover the loan) and secondly on any special relations existing between the banks and the management of the firm. This is because commercial banks in most cases were (and still are to a considerable extent) neither interested in⁹⁰, nor in a position⁹¹ to evaluate the development prospects of a firm (Halikias, 1978, p.193). They did not ask from their clients (firms) for elaborate accounting information relevant to lending decision making. Consequently, they have indirectly contributed to the low development of accounting in Greece.

89. From 1982 onwards the Greek government, with the help of the (new) governors of the banks, tried to alter the old attitude of banks regarding lending decisions. Potential profitability, and hence continuity of the firms, as well as their social contribution are considered the primary criteria employed for lending.

90. In the period under examination the commercial banking system was characterised by an oligopolistic structure. In the middle 1970's two commercial banking groups controlled about 90 per cent of the total assets of the Greek commercial banking system (Halikias, 1978, p.15). Now the government controls the overwhelming majority of the Greek banks since the Greek state holds more than 50% of their shares.

91. Now the situation is changing. Key personnel with good knowledge (at a Master or even PhD level) in finance (and in microeconomics) have been or are being hired by the majority of the Greek banks and many seminars in financial analysis and in modern lending in general are taking place.

The terms of lending as well as the criteria employed by the Greek credit market with respect to financing business activities have shaped to a considerable extent the degree of competitiveness⁹², the size, the financial structure, and the degree of sophistication of management of the Greek corporate manufacturing sector. This level of sophistication is examined in the next section.

3.4.3 The Greek Corporate Manufacturing Sector

The Greek corporate manufacturing sector is defined here to include all the firms in the legal form of *société anonyme* (hereafter SA)⁹³ and limited liability company⁹⁴. According to the 1978 census⁹⁵ the corporate manufacturing sector included 30.51% (or 5,543 enterprises) of the total number of Greek manufacturing establishments (manufacturing and handicraft industries), and accounting for 44.31% (or 294,719 persons) of the total people employed in the manufacturing (and handicraft) sector. As regards industrial production the

⁹² Old and large industrial firms have easier access to bank borrowing, especially to the long-term type, than the small but potentially profitable firms (Halikias, 1978, p.166). This constitutes an obstacle to the development of a competitive manufacturing industry.

⁹³ A company in the form of SA is similar to a public limited company in Great Britain. That is, a SA is a shareholder's company whose shares confer limited liability and can be held by Greeks, legal entities and foreigners. The minimum capital requirement is 5 million drachmas.

⁹⁴ The limited liability company (EPE in Greek) is similar to the private limited company in Great Britain. It can be set up by at least two persons. The minimum capital required is 200,000 drachmas and the liability of the partners is limited to the amount of capital contributed by the,. Unlike the SA, the EPE cannot go public.

⁹⁵ See National Statistics Service of Greece, Census of Industrial and Commercial Establishment, 1978 Volume 2 (Athens 1981), p.438.

corporate manufacturing sector accounts for the largest part of manufacturing as a whole since the unincorporated and other companies are of very small size⁹⁶ and the majority of them are within the handicraft industry. Hence, in this aspect it can be argued that the term Greek corporate manufacturing sector stands for manufacturing as a whole.

Maybe the most striking characteristic of the Greek corporate manufacturing sector is its very small scale of operations . According to the 1978 census 4,300 enterprises or 77.57% of the Greek corporate manufacturing sector employed 1-49 persons, 568 firms (or 10.25%) employed 50-99 persons, and the remaining 675 enterprises (or 12.18%) employed more than 100 persons. On the average 53.17 persons were employed per company. For manufacturing as a whole (including the handicraft industry) 5.2 persons on average were employed versus 14.25 persons employed in the same year in Spain⁹⁷, and 63.92 persons employed (on average) in the UK in 1977⁹⁸.

Another important characteristic of the Greek

96. They employ on average less than 3 persons.

97. Instituto Nacional de Estadística; Censo Industrial de España - 1978.

98. Business Statistics Office, Business Monitor, Report on the Census of Production, HMSO 1977, p.246.

corporate manufacturing sector is the family type⁹⁹ of business. The typical Greek enterprise is family controlled with family holding the key positions within the firm. Even in the case of large Greek firms, upper-level management is not in the hands of well-educated professional managers but rather in the hands of the relevant family, regardless of the specific qualifications required for the job. As a result, the quality of management is low and the conservatism in the running of business very present.

With respect to the low quality of management and the conservatism of Greek businessmen, Halikias writes that:

...most of the existing larger industrial enterprises, to which bank finance is more easily accessible, are not in a position to single out and exploit new opportunities for development, or they might not be interested in exploiting such opportunities. Many of these firms have persevered with their traditional (emphasis added) activities and are not capable of, or even interested in, adjusting to changes in the technological conditions or to new market requirements.

(Halikias, 1978, pp.193-194).

As a consequence of the low quality of management, the profitability of the Greek corporate manufacturing

99. From data given by another PhD researcher, who is studying the factors affecting stock prices in the ASE, it was calculated that on average during the periods 1969-1974 and 1975-1980, 74.5% and 71.6% respectively of the bearer equity shares of the listed non-financial corporations were in the hands of one family. Also according to the 1978 census entrepreneurs together with members of their families accounted for 25.38% of total employment in manufacturing. See also Halikias (1978), p.202.

sector is very low in comparison to that accepted in the English-speaking countries. Thus, as shown in table 3.3 the ratio of net profits to total funds employed in the Greek corporate manufacturing sector during the period 1976-1981 ranged from 1.1% to 2.3%, while the accepted levels in the English-speaking countries are 10% to 12%. These low average figures are due to the fact that for the same period more than one third of the total enterprises suffered losses (see table 3.4).

Other characteristics of the Greek corporate manufacturing sector are its heavy reliance on borrowed funds and especially on short-term loans (Table 3.5); its monopolistic or oligopolistic structure (Halikias, 1978, p.202) and the tendency of Greek industrialists to devote part of their funds or profits from industrial activity to other non-industrial activities such as trade (preferably import trade), shipping, building and other activities of lower but more certain yield (Halikias, 1978, pp.199-201). Finally, there is the relatively poor quality of the accounting systems used by the Greek corporate manufacturing sector. The next section is devoted entirely to the examination of the stage of development of Greek accounting due to the important part it plays in the consideration of adoption of an alternative accounting system.

T a b l e 3,3
PROFITABILITY OF OWN AND TOTAL FUNDS*

Years	Ratio of Net Profits to		Net Profits Plus Depreciation to		Net profits plus Depreciation and Financing expenses to	
	Own Funds(%)	Total Funds(%)	Own Funds(%)	Total Funds(%)	Own Funds(%)	Total Funds(%)
1976	7,1	2,3	26,2	8,5	36,9	12,0
1977	4,9	1,5	19,7	6,1	31,7	9,8
1978	3,8	1,1	18,4	5,4	32,6	9,5
1979	8,0	2,1	23,6	6,3	40,5	10,8
1980	7,8	1,8	24,5	7,4	46,7	11,0
1981	5,4	1,2	22,1	5,1	47,4	10,9
1973-75	11,9	4,0	26,4	8,8	36,3	12,1
1976-78	5,2	1,6	21,2	6,5	33,5	10,3
1979-81	6,9	1,7	23,3	5,6	45,2	10,9

Source: Federation of Greek Industries, The State of Greek Industry, series

*In reality the profitability of the Greek manufacturing is a bit better than that presented in the table, since the fees paid by firms to the administrative (family) personnel seem to be higher than those paid in the free market. However, this should not basically alter the picture of profitability presented by the table.

T a b l e 3,4
DISTRIBUTION OF NET PROFITS OF MANUFACTURING
CORPORATE SECTOR (In million drachmas)

Analysis	1976	1977	1978	1979	1980	1981
1, Number of enterprises	1931	2307	2520	2680	2860	3074
Net profits	8611	6707	5735	13079	14373	11975
2, Number of Enterprises with losses	606	853	947	981	1065	1141
Amount of losses	5267	7472	9827	9584	14970	23810
3, Number of Enterprises with Profits	1325	1454	1573	1699	1795	1933
Amount of profits	13877	14179	15562	22663	29343	35785
Distribution of the Profits Above :						
- Reserves and Retained Profits	6746	6447	6364	10729	14524	18162
- Dividends	5229	5695	6621	8514	11048	12090
- Taxes etc,	1902	2037	2577	3420	3771	5533
Percentage Distribution of Profits ;	(%)	(%)	(%)	(%)	(%)	(%)
- Reserves and Retained Profits	48,6	45,5	40,9	47,3	49,5	50,8
- Dividends	37,7	40,2	42,5	37,6	37,6	33,6
- Taxes etc,	13,7	14,3	16,6	15,1	12,9	15,5

Source: Federation of Greek Industries, The State of Greek Industry, series

Table 3.5*

Greek Manufacturing: Balance Sheet of Firms of SA and Ltd. Co. Form

1976 - 1981 (In Percentage)

	1976	1977	1978	1979	1980	1981
Number of firms	1931	2307	2520	2680	2860	3074
Fixed Assets	44.6	42.7	42.0	39.2	38.1	39.9
Stocks	25.6	25.3	25.3	27.1	29.3	28.4
Claims	26.7	28.9	29.4	30.3	29.4	28.4
Cash	3.1	3.1	3.3	3.4	3.2	3.3
Total Assets	100.0	100.0	100.0	100.0	100.0	100.0
Short-term liabilities	45.3	46.8	48.9	52.0	54.0	55.8
Long-term liabilities	22.2	22.2	21.9	21.2	22.5	21.2
Total liabilities	67.5	69.0	70.8	73.2	76.5	77.0
Equity	32.5	31.0	29.2	26.8	23.5	23.0
Total Fund	100.0	100.0	100.0	100.0	100.0	100.0

* The tables of the Federation of Greek Industries are based on data compiled, classified and elaborated by it in co-operation with the Institute of Economic and Industrial Research. The data, in turn, are based on the published financial statements of firms in the form of société anonyme (SA) and limited liability company employing capital over 500,000 drachmas (i.e. large scale manufacturing).

Although the large scale manufacturing companies in Greece constitute about half of the companies of the Greek manufacturing corporate sector (i.e. in 1978 out of 5,543 establishments in the form of SA or Ltd. Co. 2,520 employed capital over 500,000 drachmas), when someone is referring to them he is basically referring to the "manufacture" since these companies account for the largest part of industrial production (see Federation of Greek Companies, The State of Greek Industry in 1979, (Athens, 1980, p.16.)

3.4.4 The State of Accounting in Greece

Greek Accounting, like Greek industrial development, is not advanced. The accounts are regarded as primarily fiscal documents, and hence there is virtually no difference between financial accounting and tax accounting¹⁰⁰ (see table 3.6) which presents the balance sheet and income statement of a typical Greek firm). As for management accounting, with the exception of a very few multinational enterprises, it is hard to find in Greece a well-organised cost center, and not easy to find firms which apply some form of standard cost systems.

The main reason for the underdeveloped state of Greek accounting is that the majority of businessmen do not grasp the significance of accounting information, or appreciate its usefulness to them. Hence, they do not value accounting much, and the accounting profession is a rather poorly paid profession. Because of this as well as

¹⁰⁰ Business Law (especially the Companies Act 2190/1920) and tax law (especially the Tax Data Code) play a predominant role in Greek accounting. Among other things they state which accounts and in what form must be presented in the balance sheet and income statements as well as what must be the accounting treatment of some items (i.e. treatment of foreign exchange gains/losses). Consequently, the better an accountant masters these laws the more the respect and salary he gains from the company.

because of government's policy¹⁰¹ followed with respect to accounting, the accounting profession does not attract individuals of high calibre who could contribute to the promotion of Greek accounting¹⁰².

Accordingly, the skills and education of those practising accounting are relatively low¹⁰³, and the accountant's role in the Greek economy and public affairs generally is relatively weak. Greek accountants work mainly as book-keeping personnel or as sole practitioners primarily concerned with individuals' financial affairs and especially tax matters. There are almost no articles in the few business magazines on important accounting issues, such as accounting for price changes, cost allocation, methods of inventory valuation etc., except for articles referring to tax accounting issues. There are also no widely respected accounting associations which enable people wishing to make a career in accounting to obtain professional qualifications of high calibre, and therefore to secure a truly professional status.

101. No university degree and/or other specific qualification are required by law in order for someone to practice accounting despite the significant social role accounting plays. Besides, despite the importance that the published financial statements are supposed to have for their users, up to 1977 someone could sign such statements as a chief accountant without holding a university degree or having at least a certain period of time working with an accountant.

102. Generally speaking, the qualifications of the students entering the Management Schools of Greek universities are not as high as the qualifications of those entering other university schools such as medicine, engineering, mathematics or law.

103. It is estimated that more than fifty percent of people working as accounting personnel are graduates of secondary schools with little or even no school training in accounting (Source: Personal interview with the largest organization of professional accountants in Greece, that is, the Panhellenic Association of Accountants).



Table 3.6.

A. LEKKAS AND BROS. Knitting Company, S.A.

BALANCE SHEET AS AT DECEMBER 31, 1977. 7th Year

In Drachmae

ASSETS	1977		1976		LIABILITIES
	1977	1976	1977	1976	
I. FIXED ASSETS					
Land:					
— 30, Averof Str.	9,800,000	9,800,000			
— 38, Averof Str.	20,000,000	20,000,000	29,800,000		105,000,000
Plant buildings, 30, Averof Str.	14,676,293	14,676,293			
Less: Depreciation	5,180,208	5,180,208	9,496,085		7,005,670
Plant buildings, 38, Averof Str.	26,535,513	26,152,683	26,152,683		2,166,507
Less: Depreciation	—	—			503,063
Plant Buildings, E.L. 147/67,					
30, Averof Str.	23,029,806	23,029,806			
Less: Depreciation	8,773,181	8,773,181	14,256,625		3,369,849
Machinery	40,421,985	38,682,557	27,780,830		806,876
Less: Depreciation	12,631,135	12,859,089	16,981,167		10,465,370
Machinery, E.L. 147/67	41,513,882	40,855,180	24,574,229		25,404,104
Less: Depreciation	24,532,715	24,574,229	24,655,542		10,762,009
Machinery, L.D. 331/71	28,655,936	26,976,208			
Less: Depreciation	4,000,394	3,865,151			
Office machines	635,995	601,180			
Less: Depreciation	241,718	241,718	394,277		3,369,849
Furniture and fixtures	2,982,988	2,853,985			806,876
Less: Depreciation	1,366,113	1,366,113	1,596,875		10,465,370
Transport equipment	2,569,827	2,569,827	1,882,725		25,404,104
Less: Depreciation	687,102	687,102			87,097,500
Tools — Instruments	457,914	457,914			
Less: Depreciation	152,140	152,140	305,774		25,404,104
Investments (shares in a subsidiary Company)			61,459,600		
Special assessment, L. 257/76 (instalments payable in 1978 of Drs. 565,540)			2,973,672		
Total Fixed Assets	218,128,685	218,128,685	206,399,191		187,164,751
II. CURRENT ASSETS					
a. Inventories					
Raw materials	39,334,522	35,856,544			
Products:					
— yarns	5,889,104	9,601,196			
— fabrics	13,953,879	85,573,285			
— clothes	508,673	20,451,930			
Merchandise	640,711	348,615			
Spare parts	1,180,292	449,098			
Supplies	203,645	1,690,662			
Packing materials	12,767	351,222			
By-products	65,350	8,109			
Packing, third parties	7,332,684	129,921			
Foreign credits		15,458,526	165,593,014		
b. Receivables					
Customers	75,035,243	47,025,613			
Sundry debtor accounts	76,286,053	39,248,347			
Advances to suppliers	8,873,072	103,671			
Notes receivable	1,197,441	7,224,508			
Notes pledged at Banks	53,217,806	36,273,996			
Securities pledged	2,230,000	1,220,000			
Total Current Assets	368,432,629	301,015,243	311,096,135		263,591,613
III. AVAILABLE FUNDS					
Cash	3,685,928	3,687,132			
Sight deposits	401,150	190,730			
Total Assets	604,648,392	604,648,392	511,292,296		511,292,296

I. CAPITAL AND RESERVES

Share capital (1,323,000 X Drs. 105 each)

Reserves

a. Taxed

— Ordinary reserve

— Special bonus shares reserve, L. 542/77

— Extraordinary reserve

— Net profit carried forward

b. Tax-free

— E.L. 147/67 Investments

— E.L. 147/67 Working capital

— L.D. 1078/71

— L.D. 331/74

c. Share premiums reserve

Contributions in course of capitalisation

Revaluation surplus, L. 542/77

Total Capital and Reserves

II. LIABILITIES

a. Long-term debt

Bank loans

Notes payable in foreign currency

b. Current liabilities

Maturities within the ensuing year of long-term loans

Credits under pledge of notes

Export credits

Notes payable at home

Notes payable in foreign currency

Suppliers

Sundry creditor accounts

Advances from customers

State taxes

Contributions

Dividends payable, prior years

Dividends payable, current year

Total Long-term Debt and Current Liabilities

Holders of letters of guarantee	3,000,280	2,483,280	12,615,822
Holders of bills of our acceptance as security	25,000	15,641,102	3,000,280
GRAND TOTAL		15,641,102	15,099,102
		620,289,494	526,391,398

NOTES: 1. Mortgages and liens exist upon the real property and machinery of the Company to secure loans, the outstanding balance of which at December 31, 1977 amounted to Drs. 75,470,704.
 2. Following decision of the Extraordinary General Meeting of the Shareholders held on May 5, 1977 (Government Gazette/TAE — EPE 1889/7.6.77) the Company's share capital was increased during the year by Drs. 33,915,000 by capitalisation of the revaluation surplus under L. 542/77, of Drs. 10,762,500, according to the relevant provisions of the above law, and by shareholders contributions in cash of Drs. 23,152,500.
 3. Some of the items of Balance Sheet and Profit and Loss of the year 1976 have been restated for comparability purposes.
 4. The significant accounting principles used by the Company will be disclosed in the Report of the Board of Directors to the Extraordinary General Meeting of the Shareholders.

PROFIT AND LOSS ACCOUNT

	1977	1976
GROSS PROFIT		
Less: — General Administrative expenses	6,301,734	4,574,768
— General selling expenses	12,602,918	11,363,458
— Financial charges	7,218,985	10,353,541
— Depreciation not charged to cost	—	574,686
— Bad debts written off	—	355,000
— Special assessment, L. 257/76	681,410	2,997,879
Plus: Non-operating income		
	29,516,866	26,805,047
	52,599	80,000
	29,569,465	43,613,021
Less: Non-operating losses		
Special export expenses, art. 35, L.D. 3323/55	39,310	96,936
	2,855,368	2,060,495
NET PROFIT		
Plus: Extraordinary reserve for distribution	3,440,489	6,986,456
Balance of net profit, previous year	503,063	—
	30,618,339	48,442,046

G.C. LEKKAS
 Vice-Chairman
 Board of Directors

Note: The dividend of Drs. 25 p.s. with tax, will be paid after approval of the Balance Sheet by the Ordinary General Meeting of the Shareholders.

AUDITOR'S REPORT

To The Shareholders of A. Lekkas and Bros. - Knitting Co., S.A.

I have audited the above Balance Sheet of A. LEKKAS and Bros. — Knitting Co., S.A. at 31st December, 1977 and the results of its operations for the year then ended. My examination was made in accordance with the requirements of Article 37 of the Companies Act of Greece (L. 2190), and also in conformity with the standards of auditing accepted by the Institute of Certified Public Accountants of Greece and accordingly included such tests of the accounting records and such other auditing procedures as I considered necessary in the circumstances. I obtained all the information and explanations, including statements of all Branch operations which I needed for the purpose of my audit. I have found that the books of account as required by existing laws have been kept by your Company, and that the above financial statements are in agreement therewith. A proper production cost account has been kept in the books. It is noted that: 1) No fixed assets depreciation has been computed. This depreciation, according to P.D. 88/73, amounts to Drs. 20,005,526 of which Drs. 959,444 refer to the revaluation surplus of buildings according to L. 542/77. Likewise, it should be noted that also last year's depreciation which amounted to Drs. 8,769,797, was lower by Drs. 8,700,000 than that arising from the application of the rates of the above Decree. 2) The account "Investments" includes shares of a subsidiary company which started its productive activity in 1977. The shares of this company are not quoted and the company is not being audited by the Institute of Certified Public Accountants of Greece. It should also be noted that the receivables accounts include a claim against the above company of a total of Drs. 20,615,786. 3) The bonus shares received by a Societe Anonyme in which the Company participates, have been presented, in accordance with L. 542/77 as interpreted by the circular No. F. 477/189/14.2.78 of the Ministry of Finance, at their face value and the resulted difference has been shown in the account "Special bonus shares reserves, L. 542/77". 4) The

production cost has been charged with selling expenses (agents' commission etc.) of Drs. 3,158,297 and with financial charges (loan interest) of Drs. 6,083,296, which should have been charged to the "General Selling Expenses" and "Financial charges", as in the previous year. The increase in the inventories cost, arisen therefrom, and the corresponding increase in profits it has been difficult to be determined. However, on the basis of approximate estimations (allocation between goods in stock and goods sold) it reaches an amount in the order of Drs. 3,500,000. 5) The account "Customers" includes balances, that have not moved, approximating Drs. 4,000,000 transferred from the previous year. The major part, (Drs. 2,600,000 approximately), of these balances arises from past years. 6) The Gross profit comprises, as in the previous year, the total of subsidiaries provided for, in general, which corresponds to the year's reports, on the basis of the maximum rates. Likewise, a provision of approximately Drs. 9,100,000 for export subsidies, of prior years has been included. The corresponding provision made in 1977 amounted to Drs. 27,300,000. A part of the above subsidies provided for (Drs. 3,800,000 of which Drs. 3,000,000 refer to prior years exports) represents customs duties refunds computed by the Company by estimation. 7) The results have not been charged with accrued interest of approximately Drs. 730,000 on long-term bank loans, relating in principal — interest instalments, due on January 1, 1976. No change in the inventory evaluation method has been made or compared with that of the previous year, except as stated in our notes 1, 3, 4 and 6 above. In my opinion, subject to the preceding notes, the above Balance Sheet, Profit and Loss Account and Appropriation Account present fairly the financial position of A. LEKKAS and Bros. — Knitting Co., S.A. at 31st December, 1977 and the results of its operations for the year ended on that date in conformity with legal requirements and accepted accounting principles applied on a basis consistent with that of the preceding year, except as above.

Athens, April 30, 1978
 A.C. LEKKAS
 Chairman
 Board of Directors

C.B. MANITSAS
 Chief Accountant

APPROPRIATION ACCOUNT

	1977	1976
Ordinary reserve	1,333,739	2,072,780
Dividend for the year	27,562,500	42,000,000
Directors' fees	600,000	1,000,000
Income tax on retained profit	765,305	2,866,203
Net profit carried forward	356,795	503,063
	30,618,339	48,442,046

The only respected accounting organization is the Soma Orkoton Logiston (hereafter SOL). SOL is usually rendered in English as the Institute of Certified Public Accountants. The SOL is a semi-governmental body governed by a Supervisory Board and not by its members. Membership to it is rendered (in case of vacancies) by not very difficult examinations.

At present the SOL's members number 420 (i.e. 200 registered accountants and 220 support staff). The Greek certified public accountants are salaried public employees. As such they are not allowed to set up their own practices. They usually operate on the premises of the firms being audited.

All listed companies, banks and insurance companies, as well as the companies of the oil industry are liable to auditing by the SOL. The same applies to any other firm whose net assets amount to at least 400 million drachmas (Ministerial Decision K3/2098, 16-8-83). The primary purpose of the SOL's audit is to ensure compliance with Greek legal requirements and with some standards set up by the SOL. These standards resemble the Anglo-American ones and they are supposed to be followed by all Greek firms. However, it should be noted that the SOL is not strong enough to effectively regulate the Greek accounting profession. Hence, its role as a standard setting body is relatively weak.

With the exception of the SOL's audit, auditing in Greece is essentially rare, exercised by a very limited number of mainly foreign accounting firms which have branches in Greece. The main reasons for the lack of auditing in Greece are the small size and the family character of firms. The Greek entrepreneurs do not want to have their activities scrutinized because they are afraid that business secrets will be made public¹⁰⁴.

Since auditing services were (and still are) not sought in Greece, in the university schools of Business Administration auditing was not taught at all up to the early 1970's. Now only an optional course of elementary auditing at best is offered in these schools. Hence, in Greece, with the exception of the certified accountants, there are not many qualified auditors.

In concluding, due to the businessmen's and government's rather low respect for accounting and accountants, as well as due to the small size of firms and the distrust of accounting disclosures, Greek

104. It should be mentioned that some years ago the Athens Stock Exchange asked for the confidential disclosure of sales (i.e. cost of goods sold and sales are not disclosed in the published financial statements). Only 40% of the listed companies supplied the ASE with such data. This provides some indication of the secrecy adopted by Greek businessmen, and of the existing distrust of accounting disclosures in Greece.

accounting and especially auditing are not very advanced. Fortunately, however, in the last few years businessmen as well as government have started to recognize the usefulness of accounting for micro- and macro-decision making and planning. Thus, corporations are now seeking accountants who have not merely some experience in book-keeping, but also theoretical background in accounting and business administration generally. Also, companies have started to modernize their accounting departments by computerizing their accounting systems ¹⁰⁵. Moreover, government is asking, through its ministries, for more and more accounting information in order to formulate better its economic policies and plans.

Notwithstanding the recent efforts toward modernization, Greek accounting still has a long way to go before it reaches a level equivalent to that of accounting in the Anglo-American countries today. This factor, as well as the other characteristics of the Greek business environment discussed previously, bear particular relevance of GPPA to the Greek setting. This relevance is considered in the next section.

105. More than 70% of the 25 corporations visited by the researcher had started or were about to start the computerization of their accounting systems.

3.5 The Relevance of GPPA to Greek Financial Reporting

In this section the a priori superior relevance of GPPA (rather than CCA) to the Greek financial reporting is established. This is done (in the sections to follow) by means of correspondence between each one of the specific features of the Greek setting (identified in Sections 3.2 and 3.4) with those of the GPPA rather than CCA (identified in Section 3.3).

3.5.1 Family-Owned Firms

In the case of management-controlled¹⁰⁶ firms theorists largely agree that managers give absolute priority to the continuity and growth of the corporation because their own present and future is intimately bound up with that of the (particular) corporation (Donaldson 1965, p.129). Therefore, they will exercise all their power to stay in business even if the business venture does not seem to be very successful from the owner's (shareholder's) point of view. Similarly Baxter (1984,

106. That is, (usually large) firms with diffuse ownership whose managers have considerable discretion in guiding the affairs of their firms.

p.405) argues that the notions "continuity, 'maintenance of productive capacity', "staying in business" have an appeal to managers. These notions, however, are the central theme of CCA (see Sections 3.3.2 and 3.3.5). Hence, it could be argued that, other things being equal, managers should prefer CCA to GPPA (and to any other inflation accounting system) for profit measurement if, as is claimed, it is physical capital maintenance which ensures continuity of a firm. This might be a reason why empirical evidence suggests that the large corporations (which are usually management-controlled firms) support CCA more than the small corporations (Archer and Steele, 1984, p.350).

In contrast, in the case of owner-controlled¹⁰⁷ firms the main objective, the paramount goal for a rational owner is (or at least should be) maximization (or optimization) of the value of the owner's capital invested in the business¹⁰⁸, not maximization (or optimization) of the entity's physical capital, and consequently not continuity of the firm per se. This is because the owner is a real person. As such he is a qua consumer and, hence, he is indifferent to quantity

107. That is, firms whose management is in the hands of the owner - shareholder.

108. In this respect the Study Group on the Objectives of Financial Statements, appointed in 1971 by the American Institute of Certified Public Accountants, argued that the primary goal of every business firm is to increase its monetary wealth so that in the long run to return the maximum amount of cash to its owners.

changes given constant values (Sterling, (1982), p.35). His demand is not for physical units but for units of money (and in inflationary times his demand should be general purchasing power adjusted units of money according to what has been said in Section 3.3.5), which enable him to obtain a variety of goods. Continuity (and growth) of the business venture should be of prime interest to the owner of the firm if and only if the business in its present form successfully serves the paramount goal; if not, it may be to his interest to wind it up. Hence, the rational owner (or shareholder) should prefer financial capital adjusted for general price-level changes as a benchmark for measuring income (i.e. business success), and ultimately he should prefer GPPA to CCA .

In the Greek case firms are family-owned (Section 3.4.3) and hence owner-controlled. Moreover, as argued by Psilos, Greek industrialists "...are generally inclined to indulge in conspicuous consumption" (emphasis added) (Halikias 1978, p.197) rather than to reinvest their profits in the business. Therefore, ceteris paribus, for income measurement the Greek businessman, being primarily a consumer, should prefer GPPA to CCA, which is intertwined with the physical capital maintenance concept.

3.5.2. Small Size of Firms

The empirical evidence suggests that CCA is

particularly unpopular with the smaller listed companies (see, for example, Archer and Steele (1984), p.350). This is so mainly because the additional costs and implementation difficulties involved in preparing CCA information are greater, ceteris paribus, for a smaller company than for a larger one. Another reason should be the fact that the smaller the company the more owner-controlled its orientation is and, hence, the less the preference for CCA, according to what has been said previously in Section 3.5.1.

One of the most striking characteristics of the Greek manufacturing firms is their very small size (small scale of operation - Section 3.4.3). Therefore, it is very likely for CCA to be unpopular with the Greek firms.

In contrast, GPPA may be favoured¹⁰⁹ by the Greek companies because, being based on HCA, it presents less implementation difficulties, better reliability, understandability, accountability, lower cost of operation than CCA, and it takes care of the ownership interests since under GPPA the emphasis is on earnings for the equity.

3.5.3. Stage of Development of Greek Accounting Profession and Management

With the exception of mainly a few Dutch companies, CCA was an entirely "new" accounting system up to 1970's.

109. The majority of the smaller businesses of the UK responded favourably to GPPA when asked. For example, 86 per cent of them responding to the Sandilands questionnaire thought that GPPA would be useful for determining "real" return on capital (Myddelton, 1984, p.110).

It is still unfamiliar for the majority of firms around the world. Also, this system lacks a theoretical foundation of general applicability¹¹⁰, many issues of it remain unsettled (Section 3.3.2), and there are many of implementation problems (Sections 3.3.2 & 3.3.5). After several years of experimentation in developed countries such as the UK and the USA this system has been abandoned by the majority of companies on the grounds that it is too complex to understand and too subjective, or inappropriate and unreliable (Archer and Steele, (1984), p.350, and Baxter, (1984), p.403).

When this is the case for countries with sophisticated accounting profession and management as regards acceptance of CCA, one would expect acceptance to be less likely for Greece. This is because of the low quality of the Greek accounting profession and management, the conservatism which characterizes the Greek business community, and the lack of any guidance on behalf of the Greek accounting standard setters (i.e. the SOL) with respect to inflation accounting¹¹¹ and to CCA in particular. Hence, the chances for this "new", complex, subjective, and still experimental system to be voluntarily adopted by the Greek companies are minimal; only the government might impose it, and politically

110. See, for example, Ma.R. "Current Cost Accounting and Physical Capital: An Australian Perspective" in Sterling & Leake (eds) 1982, pp.195-224.

111. Because of the lack of any guidance on behalf of the SOL or any other Greek accounting association with respect to accounting for price changes, a big Greek cement company stopped its efforts to estimate the effects of price changes (i.e. GPPA and CCA) on its accounts when it encountered insurmountable (especially for implementing CCA) problems (Source : Personal interview).

this seems an unlikely prospect. But even in such a case (i.e. imposition by government), there are considerable doubts that this system would be workable and would serve the purposes it is intended to serve given the unsophisticated accounting and management personnel of Greece.

In contrast, GPPA is an objective, reliable, and easily verified accounting system. Being based entirely on HCA, its implementation and understanding of its results is not expected to pose many problems to Greek accountants and management, though familiarity with GPPA and relative guidance for its implementation is also lacking in Greece. GPPA is almost "ready to go" in the sense that there are almost no unsettled issues, as is the case with CCA. Basically, the only serious unsettled issue is the nature and treatment of the monetary gains/losses (i.e. accounting validity of these gains/losses and appropriate place to report them)¹¹².

Of course, it can be argued that the lack of popularity of CCA even in the well-developed countries is due to the difficulty of absorbing a "new" technique quickly. With the passing of time familiarity with it will be gained and the now serious implementation problems will be resolved. However, LIFO required decades to become familiar and somewhat acceptable in the Anglo-American countries (Baxter, (1984), p.403). Though

¹¹². For example, in view of some comments on the Exposure Draft of SFAS No 33 about the usefulness of the monetary gains/losses, the Board concluded that these gains/losses should be shown separately and not as part of income from continuous operations (SFAS No 33, p.76).

permissible by law, it is still not applied by Greek companies, despite its obvious tax advantages in recent times of considerable price changes. Given the conservatism and the unsophisticated accounting and management setting of Greece, it would likely require decades for Greek companies to become familiar with CCA and accept it, if they would ever accept it.

3.5.4. Lack of Use of Greek Accounting for Internal Decision Making

It has been argued that one of the most important merits of CCA is its use for internal decision making and especially for pricing policies. However, in Greece accounting is seldom used for internal decision making (Section 3.4.4) Standard cost systems as well as budgeting and planning are seldom in operation. Besides, the strict price-control imposed by the Greek government leaves little room for price-setting considerations.

Therefore, CCA as a system suitable for internal decision making is of little appeal to the Greek companies. Of course, from this does not follow that, in contrast, GPPA would have an appeal to the Greek firms. However, it surely precludes an important asserted merit of CCA of being relevant to the Greek case. Consequently, it weakens the case for CCA at the expense of GPPA, and of any other inflation accounting system to which CCA is claimed to be superior in this respect.

3.5.5. Pervasiveness of the Legalistic Approach

Expected relief from taxation is one of the implicitly or explicitly cited reasons for preference for CCA as regards external financial reporting, the so called tax relief hypothesis (see, for example, Watts and Zimmerman, 1980, p.105). Accordingly, it is argued in the accounting literature that "[t]o succeed a system on inflation accounting must be acceptable for tax." (Baxter, (1984), p.403). This is especially true in the Greek case where there is almost no distinction between financial and tax accounting (Section 3.4.4).

The theoretical as well as the empirical evidence for the time being do not support CCA as a basis for taxation (see, for example, Grinyer and Nixon, (1985)). This is so mainly because of the subjectivity of CCA, its complexity and the lack of general as well as uniform application by firms. In the Greek case, in particular, the chances for CCA to be accepted for tax purposes seem to be minimal because the subjectivity and complexity problems of CCA will be enlarged due to the low level of development of Greek accounting and auditing. The adoption of CCA by the small Greek companies, given the unsophisticated accounting personnel, would open a Pandora's box of verifiability problems.

In contrast, the chances of GPPA being accepted for tax purposes in Greece should be much greater. This is because GPPA, being based on HCA, is objective, reliable, applicable to all firms under whatever circumstances of

price changes and less complex to implement and audit than CCA.

3.5.6. Government Unwillingness

There are three reasons which seem to suggest that the Greek government would be reluctant to support CCA rather than GPPA, if an accounting system for changing prices was considered desirable due to high rates of inflation experienced in Greece. These reasons, stated in order of their importance, follow below.

(a). Monopolistic or oligopolistic manufacturing industry

How selling prices are actually determined is a controversial subject. Accountants often suggest that costs are the most important factor in price setting. On the other hand, economists suggest that prices are determined by market forces. In any case, in a monopolistic or oligopolistic situation, the supplier would be more inclined to increase prices if his accounting records show considerable increases in cost prices than he would be under a situation of high competition (Kirkman, (1978), p.236). Hence, under a monopolistic or oligopolistic situation, CCA may cause the so-called cost-push inflation.

In the Greek manufacturing industry an oligopolistic situation prevails (Section 3.4.3). Therefore, it should be very unlikely that the Greek government, which tries hard to contain inflation and has supported price control systems even in times of price stability, would be

willing to support a system which encourages price increases. In contrast, GPPA does not mandate excessive price-increases since there may be specific price increases but not general price increases. Consequently, GPPA should have greater chances than CCA to be accepted for external financial reporting by the Greek government.

(b). Social considerations

The physical capital theory and, hence, CCA, by encouraging price increases¹¹³ raises a social issue (Section 3.3.5), since price increases have a bad effect on the consumer's budget. Past experience shows¹¹⁴ that the Greek government has always been on the side of the consumer in times of sharp price increases, and it has forbidden price increases before the pipeline of stock at the earlier cost had been exhausted. Hence, it is rather unlikely the Greek government would support an accounting system whose underlying philosophy leads to a conflict with the consumer, given the oligopolistic situation prevailing in Greece.

In contrast, GPPA does not mandate excessive price increases, as mentioned; and what is more important, GPPA is not characterised (as is the case with CCA) by a philosophy which reverses the "cause and effect" pattern. Price increases due to increase in the inflation rate are

113. The reader should recall that one of the main assertive merits of CCA is that it aids price policy. For example, as Sterling ((1982), p.14) points out SFAS No 33 "...alludes to the possibility of selling prices being closely related to current costs".

114. When the last devaluation of the Greek currency took place in October 1985, heavy penalties were imposed on those businessmen who had raised the selling prices of imported goods (such as cars, t.v. sets etc.) bought before the devaluation of the Greek currency.

based on a real fact (i.e. increase of prices of final products generally). Hence, they should become more acceptable by people and government than price increases which are based on hypothetical events; that is, increases in the finished goods produced by a firm (or industry) due to increased replacement costs of fixed assets which may not be replaced or may be actually replaced at lower costs than those prevailing at the time of sale of the finished products. Therefore, in this respect GPPA as an accounting system for price changes should be more acceptable by the Greek government than CCA.

(c). Formulation of incomes policy

Greece has introduced, effective from 1982, the indexation of wages and salaries on the basis of the consumer price index. In view of that indexation, GPPA as a system for profit determination might be preferred by the Greek government for the reasons which are explained below.

Firstly, both employees' and owners' income, which are the company's most important stakeholders, will then be determined on a common basis; that is, by taking into account inflation. Such a common basis should help government in its efforts for a better distribution of business income among the company's stakeholders. For example, if in a given year or in a number of years the owners' profit expressed in units of general purchasing power is greater than in the previous year(s), then government may decide (a) to redistribute some of the

extra profit made by the owners through the imposition of a special assessment tax, or (b) to increase the lower level of wages¹¹⁵. By the same token, if the profit of owners is low then government may exercise all its power to persuade the unions and especially the General Confederation of Greek Workers not to demand excessive wage increases.

Secondly, a common basis for employees' and owners' income determination may help negotiations between the General Confederation of Greek Workers and the Federation of Greek Industries regarding the National Collective Labour Agreement signed each year by them and, hence, avoid workers' striking. Negotiations between unions and industrialists might be helped in the sense that if it is true that the wage claims of the unions are mainly based on the shrinkage of the general purchasing power of their wages due to increases in the consumer price index, then proprietors could use the same argument (i.e. shrinkage of the general purchasing power of their income) in order to persuade the unions against excessive wage increases. Such an argument advanced by the industrialists qua consumer should be more pervasive¹¹⁶ than an argument for no or not excessive wage increases based on a decrease in company profits as measured by use of a specific (industry or company) price index, especially if the latter index rises more rapidly than the Consumer Price Index.

115. In Greece, the Ministry of Work determines the lower level of wages.

116. *Ceteris paribus*, you cannot prove someone's argument wrong if this argument shares the same basis with yours.

3.5.7. Diversification of Business Funds

As mentioned previously in Section 3.5.1, the Greek businessman is primarily a consumer rather than an investor. As such an index which measures the changes in prices in general, like the Consumer Price Index, should be of relevance to him. However, another characteristic of the Greek industrialist is his propensity to diversify his capital resources among various business activities instead of using them solely to develop his main industrial activity toward optimum size (Section 3.4.3). Hence, an index which measures the changes in prices of investment goods in general (i.e. a general investment purchasing power index) should be of relevance to him, too.

A general investment purchasing power index does not exist, at least for the time being, even in the well-developed countries. From the indices available, the consumer price index, which is used in GPPA, should be a better surrogate for a general investment purchasing power index than a specific (company or industry) price index, which is usually used in CCA. This is because the prices of the investment goods generally are rather better reflected in the prices of the final goods which are included in the consumer price index (a general index) than in the prices of certain specific goods. Therefore, even if not only maintenance of general purchasing power but also maintenance of general investment purchasing power are relevant to Greek

businessmen in times of price changes, then, again, GPPA should suit them better than CCA as regards profit measurement.

3.5.8. Heavy Reliance on Borrowing

According to some commentators, in the case of highly leveraged firms, GPPA may give a misleading impression as regards profitability since the monetary gains computed under GPPA would be high¹¹⁷. Moreover, it is argued that, since the monetary gains/losses are not pocket money¹¹⁸, businessmen would oppose GPPA if these gains were included in the profit statement for tax purposes.

In the Greek case monetary gains should be high because of the heavy reliance of the Greek firms on borrowing (Section 3.4.3). Hence, at first sight it seems that this characteristic of the Greek setting does not favour GPPA. However, this should not necessarily be so for the following reasons:

First, since Greek firms rely heavily on short-term loans rather than on long-term loans (Section 3.4.3) monetary gains could be high under CCA too because of the monetary working capital adjustment.

Second, it is not necessary for the monetary gains/losses to be part of the profit from continuous

117. The HC and the GPP earnings per share of Grand Metropolitan in 1974 were 7.3 p. and 35.2 p. respectively (Myddelton, (1984), p.74).

118. In the sense that they constitute gains/losses in terms of purchasing power of money not gains/losses in terms of money per se.

operations¹¹⁹ so that for the profitability ratio computed on the basis of that income to be high and perhaps misleading.

Third, it is not necessary for the monetary gains/losses to be part of the taxable income as well¹²⁰, which could make GPPA unattractive to Greek businessmen.

Four, in times of inflation the interest payable usually increases in order to compensate for the loss in the general purchasing power of money. Since this interest is tax-deductible, the gain from borrowing during inflation should be taxable too, especially if such a gain may be distributed, as it is argued (see Petri and Shawky (1983)). The sound businessman, who will repay his loans with "cheaper" money should not oppose GPPA if these monetary gains are taxable because in a real sense these gains are "...an offset to reported interest expense[.]" (Davidson et al., (1976), p.108).

Supposing, however, that the monetary gains/losses were taxable and because of it Greek businessmen would oppose GPPA and favour CCA instead. In such a case then the Greek government would have a good reason to support GPPA rather than CCA. This would be so because GPPA would become (in the government's hands) a good instrument for reforming the now unfavourable financial structure of the Greek companies (see table 3.5).

119. Thus, in SFAS 33 these gains/losses are reported separately from income from continuous operations.

120. Under CCA taxes are usually imposed on current cost operating profit minus interest payable. That is, the gearing adjustment is excluded from taxes (see, for example, SSAP 16).

To be specific as regards the above argument, if firms with high leverage would have to pay much more money in taxes than firms with low leverage, solely because of the monetary gains, then they might decide to retain more industrial profits rather than to resort to borrowing from credit institutions; or they might decide to resort to the capital market to raise equity capital. The resort to the capital market would help the development of that market and, concurrently, it would help Greek companies drop their narrow family character which is at least partly responsible for the unsatisfactory development of the Greek corporate manufacturing sector.

Accordingly, the heavy reliance on borrowing works in favour of GPPA rather than in favour of CCA; or at least it favours as much CCA as GPPA.

3.5.9. Costs Considerations

The costs involved in implementing CCA are higher than those involved in implementing GPPA for two reasons mainly: (a) The costs of constructing internal indices (i.e. development and running costs) are present only in implementing CCA. (b) The education costs, that is the costs of educating preparers, auditors and users of CCA information on how to prepare and interpret it, seem to be higher for CCA than for GPPA. This is because CCA, being a "new" system, has more serious implementation problems to solve than GPPA, which is entirely based on HCA.

That the cost of implementing CCA are higher than the costs of implementing GPPA should be especially true in the Greek case. This is because of the lack of well organized and well-equipped accounting departments, the low quality of Greek management, the almost complete absence of published specific price indices, and the lack of any familiarity¹²¹ with CCA.

Of course, it could be argued that the costs of implementing CCA are about the same with those of implementing GPPA when specific price indices prepared by government are used. However, given the almost complete absence of specific price indices in Greece, there is considerable doubt that the Greek government which up to now has shown no interest at all in the accounting for changing prices issue¹²² will be willing to bear the costs involved in the construction of such indices.

In concluding, in the lack of any empirical evidence of superiority of CCA over GPPA, it is very unlikely for both businessmen and government to support CCA rather than GPPA as an accounting system for changing prices, given the lower costs of operation of GPPA over CCA. It could be argued as well that even if CCA were shown to be superior to GPPA it still remains impractical for Greece.

¹²¹ Among other things calling in of experts from abroad is needed.

¹²² In 1982 the Federation of Greek Industries expressed fears about the erosion of capital due to inflation and called for the Greek government to appoint a committee to consider the inflation accounting issue and make recommendations. However, the Greek government did not respond at all to that proposal.

3.6. Final Conclusions and Relevance to Other Countries

In this chapter it was demonstrated that the inflation accounting issue is of particular significance in the Greek case because inflation is the major problem of the Greek economy, and inflation accounting, by showing the bad effects of inflation on company profits, may help Greek policy makers to take the right measures for fighting price increases and currency debasement. The fighting of inflation, in turn, would contribute, at least to a certain extent, to the solution of the other two big problems of the Greek economy, that is lack of industrial investment and unemployment, because these two problems are related to the central problem, inflation.

It was also demonstrated in this chapter that the alleged superiority of each of the two main alternatives over HCA and/or over the other has not been established empirically up to now. Yet, GPPA seems to be preferable to CCA as regards, unit of measurement (and therefore comparison), capital to be maintained reliability, verifiability, accountability, auditability, understandability, and costs of operation. CCA seems to be superior to GPPA as regards assets valuation but only with respect to a "steady state firm" with only upwards

movements of prices.

Finally, it was demonstrated that GPPA seems particularly preferable to CCA in the Greek case because of the correspondence of (almost) each one of the features of GPPA with those of the Greek setting.

Beyond immediate significance, the last finding may extend to other countries with environmental settings which resemble the Greek setting. Such countries are predominantly the developing countries.

As is mentioned by Holzer et al. (1984, Ch. 19), the developing countries are rather poor, agrarian countries, their economy is to a greater or lesser extent a planned economy, their industries are on average rudimentary, characterized by a small scale of operations (and therefore low level of business complexity), low profitability, low levels of literacy and therefore conservatism, poor internal management and control, and poor accounting systems. Also, in these countries the presence and role of investors is weak since the firms are usually in the hands of a few people who dominate the industries and run their businesses by and for themselves. Finally, the rate of inflation is high in these countries in comparison to that of the developed countries, there is usually at best one capital market, and there is a mutual distrust between business taxpayers

and authorities¹²³.

In particular, the conclusion drawn here about the relevance of GPPA to Greek financial reporting might be applicable to Italy, Spain and Portugal, all of them members of the European Economic Community. This is because in the period under examination Spain and Portugal have experienced about the same rate of inflation and levels of economic development as Greece (i.e. agrarian countries, see table 3.1). Private ownership of firms and a small scale of operation (especially in Portugal) are pervasive. As regards Italy, it too has experienced about the same rate of inflation as Greece, the legalistic approach to financial reporting is pervasive as in Greece and Portugal (see Arpan and Radebaugh (1981) p.42), the accounting profession is not well developed, the presence of shareholders is weak, a mutual distrust between taxpayers and authorities exists (see Lafferty (1975) pp.186-189). Like the Greek and Spain companies, the Italian quoted¹²⁴ companies are of a family character

123. Some times the similarities between developing countries are striking. Thus, in Perera's article (1975) the similarities between Sri Lanka's setting and Greek setting are very strong (i.e. poor agricultural countries, firms in hands of a few people who are reluctant to have their shares quoted, one inefficient market, association of capital market operations with gambling, little public information about investment opportunities, accountants which are more experts in law than in accounting, mutual distrust between taxpayers and authorities and so on. Having said that, however, does not mean that striking dissimilarities between the same countries do not exist, too, since as Perera mentions in his article (p.86) "a particular environment is unique to its time and locality". Hence, a conclusion drawn about one developing country does not necessarily mean that it is applicable to another developing country, as well.

124. The big unquoted Italian companies are controlled by government.

Table 3.7
 Balance sheet of Non-Financial Enterprises of Selected
 OECD Member Countries.
 % Distribution, Year 1977

Country	Greece	USA	U.K.	Italy
Number of firms (listed companies)	48	N.A.	649	514
A S S E T S	100.0	100.0	100.0	100.0
1. Non Financial Assets	75.3	73.2	64.5	56.5
1.1+1.3 Net fixed tangible and intangible assets	47.6	56.7	35.3	31.8
1.2 Stocks	27.7	16.5	29.2	24.7
2. Short-term Financial Assets	21.1	20.8	29.9	30.9
2.1 Trade credit extended	14.2	12.1	23.1	20.8
2.2 Other	6.9	8.7	6.8	10.1
3. Long-term Financial Assets	3.6	6.0	5.6	12.6
F U N D S	100.0	100.0	100.0	100.0
4. Equity	31.2	58.5	48.0	16.1
4.1 Share capital	14.3	NA	10.6	8.5
4.2+4.3 Reserves + Provisions	16.9	NA	37.4	7.6
5. Short-term Liabilities	41.4	17.8	39.2	49.2
5.1 Loans from banks	24.1	5.7	9.6	18.8
5.2 Trade credit extended	6.9	8.8	NA	15.8
5.3 Other	10.4	3.4	NA	14.6
6. Long-term Liabilities	27.4	23.7	12.8	34.7
6.1 Loans from banks	22.3	2.1	2.5	NA
6.2 Other	5.1	21.6	10.3	NA

Sources: (a) OECD Financial Statistics, 1979
 (b) Balance sheet statements of 48 quoted Greek manufacturing corporations

and rely heavily on borrowing (Tjoannos and Venieris (1974) pp.16 and 14 correspondingly). In fact, the reliance on borrowing of Italian quoted companies is heavier than is the case for Greek companies (see table 3.7).

CHAPTER FOUR

THE SIGNIFICANCE OF THE EMPIRICAL STUDY AND THE DATA GATHERED

4.1. Introduction

Having established the general (Chapter II) as well as the particular significance (Section 3.2) of the inflation accounting issue, and having demonstrated (Chapter III) that GPPA seems to be more relevant to the Greek setting (and perhaps to other similar settings) than CCA, the significance of the study has been established as well at the theoretical level. This, however, is not enough. Empirical substance and concrete meaning to the advanced theoretical arguments should be given in quantitative terms as well for the reasons to be explained in this chapter. To give such a substance to the theoretical arguments advanced adequate empirical accounting data must be gathered and then be restated and analyzed.

Hence, the purpose of this chapter is twofold. That is, to demonstrate, generally and specifically, the significance of the empirical research undertaken in this study, on the one hand, and to discuss the data gathered and their representativeness, on the other. To this end, Section 4.2 explains why an empirical study rather than a conceptual one is undertaken. Following it, the types of

empirical research and their advantages and disadvantages are outlined. In Section 4.3 the reasons are explained why the approach which combines the case study with the estimation procedures based study was adopted for accomplishing the purpose and the sub-purposes of the study. Finally, in Section 4.4 the nature of the data gathered, the criteria employed for its selection, the problems encountered during the data gathering phase and means employed to solve or overcome them are discussed. Discussed is as well the representativeness of the sample firms chosen for GPPA restatement.

4.2. Why an Empirical Study

The development of accounting has been the product of two kinds of research: the **conceptual** (or theoretical) research and the **empirical** research. The main characteristic of conceptual research is that with a **priori** reasoning and assumptions it tries to explain the accounting world, to offer solutions to accounting problems. Hence, its conclusions are not based on the examination of real world data but on internally consistent logic. In turn, empirical research mainly tests the **a priori** assumptions using actual data and statistical tools, toward either acceptance of these assumptions (and their underlying theory), or their rejection (or refinement) and the development of new hypotheses (or theories).

Consequently, the two kinds of research are complementary. As Whittington (1983, p.142) puts it:

...empirical studies without theory lapse into mere description and theoretical studies which have no empirical testable assumptions or implications give rise, at best, to unverifiable normative assertions and, at worst, are totally irrelevant to accounting as a practical activity.

Yet, despite its importance, for reasons which are beyond the scope of this study the empirical research in accounting has been little in comparison to the conceptual one. Perhaps this is especially true in the area of inflation accounting, where little research has been conducted mainly due to the lack of relevant data up to late 1970's (Section 3.3.3 & 3.3.4). That is why Whittington (1983, p.204) argues that "[t]he rôle of research in advancing the debate on inflation accounting should include a much greater emphasis on empirical studies than has been the case in the past".

Hence, there is an imbalance between conceptual and empirical research. This imbalance should be redressed¹. The plethora of the *a priori* arguments (and hypotheses) should be tested for their validity and practical usefulness since accounting is a pre-eminently practical activity. In this way the mentioned elsewhere in the accounting literature growing gap between academic

1, Referring to this subject Whittington states: "Hitherto, much more attention has been given to theory than to empirical testings, and it is important for the development of the subject, that this imbalance be redressed" (Whittington, 1983, p.142)

accountants and practitioners, between theory and practice will probably close, provided that the main concern of the empirical studies will be for the quality of the hypotheses tested, or for the value of the results rather than for the rigour of the statistical tools used².

This study is an attempt to close the gap, to link theory and practice, since it tries to verify or reject hypotheses about the effects of inflation on such important parameters as dividends, tax burden e.t.c. These parameters are of practical interest to the users of financial reports (Section 1.3). Consequently, the results of this empirical study should be of particular importance to them.

4.3. Why a Field Study on the Impact of GPPA on Greek Accounts

Having established the significance of empirical studies generally, the specific significance of this particular field study on the impact of GPPA on Greek accounts should be established as well. In doing this three questions should be answered:

(a) Why a study on GPPA rather than on other systems of accounting for price changes?

2, According to some commentators there is a tendency by some researchers "...to emphasise the methodology rather than the results". This may lead to sterile academic trivia (Tricker, 1979, p.8).

(b) Why a field study rather than other types of empirical research?

(c) Why a study on the impact of GPPA on Greek accounts rather than a study on the usefulness of GPPA, especially when similar studies have been conducted in other countries?

With respect to the first question, it was made clear by review of the history of the price changes accounting issue that the two main alternative solutions proposed are GPPA and CCA. Of these two systems, it was shown in Section 3.5 that GPPA seems to be more relevant to Greek financial reporting. Additionally, in Greece there is a lack of relevant data for making CC adjustments (i.e. lack of specific price indices).

As regards the second question, there are four types of empirical research: (a) case studies, (b) simulation studies, (c) field studies, and (d) opinion studies.

Case studies have the great advantage that due to the small quantity of data under examination (i.e. usually a few firms are examined), the entire process under observation is capable of very careful scrutiny. The main disadvantage of these studies is their limited generalizability. In other words, the statistical sample under consideration is not large enough to permit valid generalization of the findings obtained.

A main advantage of the **simulation studies** is that they permit the examination of broader situations than the case studies and, therefore, their findings are potentially more generalisable. Another important

advantage of these studies is that the researcher is able to eliminate variables not relevant to his purpose, to control the impact of some variables and to manipulate other variables in order to achieve his purpose. The main disadvantage of simulation studies is the possible lack of realism³ (i.e. the simulated environmental relationships chosen - the model - may be unrealistic), especially in the case of business research where the researcher has to deal with a continuously changing world and an infinity of variables.

With **field studies** generalization of the findings is achieved, because broad situations are examined. Since no simulation models are used in these studies, the possible lack of realism of the simulation studies is eliminated. However, in the case of empirical research on inflation accounting in countries where no adjusted data can be provided by companies the use of estimation techniques in field studies becomes necessary⁴. In such a case the validity of the findings of the studies depends on the accuracy of the estimation techniques used. Hence, the estimation techniques used must be validated before being used.

With respect to **opinion studies**, this type of research cannot be conducted in Greece, because the Greek users of financial reports are not sophisticated enough

3, See, for example, Arnold and El-Azma (1978) p.33.

4, Due to the great number of data under examination it is almost impossible for a researcher to make detailed GPP (or CC) adjustments and complete his study within the time period specified for a PH.D degree.

and the majority of them have little, if any, knowledge about the alternatives to HCA. Therefore, the opinion of the Greek users will be of no value as regards the inflation accounting problem.

This study adopts a research approach which tries to achieve, to the possible extent, careful scrutiny of the data under examination, and hence realism, and especially precision (usually attainable in the case studies), as well as generalisation of the findings (which is a main characteristic of the field studies).

To these ends, detailed information about acquisition cost and age of fixed asset items have been gathered for eight Greek companies (the first sub-sample of the study) and detailed (monthly) restatement procedures are applied. Moreover, for six other companies (the second sub-sample of the study) detailed annual information has been gathered and annual restatement procedures are applied. Also, for nine companies (the third sub-sample of the study) monthly balances for monetary items have been obtained and a calculation of monetary gains/losses is executed⁵ on a monthly rather than annual basis. Then the restatement of the remaining firms in the total 30 company sample is executed by use of estimation techniques.

By combining the case study with the estimation study five important things are achieved:

5, Unfortunately no detailed restatement of stocks has been executed due to the lack of available information,

First, a careful scrutiny of the data of the sub-samples is made and, hence, a deep insight into the problems of a detailed GPPA restatement of a good deal of different Greek firms is obtained.

Second, the generalisability of the estimation techniques used mainly in the USA for GPPA restatement of fixed assets and calculation of monetary gains/losses is tested by comparing the results obtained through detailed restatement with those obtained by use of these techniques. Concurrently, the validation of these techniques used in the study for the restatement of the remaining firms in the total 30 company sample is achieved.

Third, generalisation of results as regards impact of inflation on Greek accounts is achieved, since a fairly large (for the Greek case) sample of 30 companies is restated.

Four, the performance of a new alternative to the Composite Age Technique is tested by comparing the results obtained through detailed fixed assets restatement of the first sub-sample with those obtained by use of the alternative under consideration.

Five, the accuracy of a detailed restatement of fixed assets and depreciation made, however, on an annual basis rather than on a monthly basis is tested.

The significance of these achievements has already been stated in Section 1.3 and it is further clarified while answering the third question.

In answering the third question it should be noted

that a study on the impact of GPPA on accounts is basically a study on (potential) relevance, and consequently usefulness, of GPPA. This is because material and temporally varying impact on financial parameters such as net profit, dividends, effective tax rate, return on investment and so on should have an effect on the decisions made by the users of financial statements, and hence it should be a useful information to them.

Of course, impact of GPPA on financial parameters which are useful in decisions making, and consequently (potential) usefulness of GPPA, is not so rigorous⁶ as it is usefulness of GPPA defined as predictive ability (i.e. prediction of future earnings, or bankruptcy e.t.c.). However, a study on predictive ability of GPPA should not be undertaken unless there is enough empirical evidence that the system has a material and temporally varying effect on financial parameters used in decision making. Additionally, given the purpose and sub-purposes of the study as well as the serious constraints regarding data gathering in Greece, (Section 4.4) the testing of the predictive ability of GPPA numbers as well would make the study unmanageable within a plausible period of time.

The relative (mainly USA) findings regarding impact

6. It is not so rigorous in the sense that in this study it is not specified how big the general price changes should be in order to have a material effect on decision making. It is reasonable to believe, but nevertheless asserted, that a material and temporally varying impact of GPPA on the financial parameters employed in the study affects decision making. In contrast, it is self-evident that business decisions are based on expectations about the future prosperity of the firm. Hence, the accounting system which has the ability to predict such important things as future earnings, cash flows and bankruptcy are indeed useful.

of GPPA on accounts over time are indecisive. Hence, more empirical research is needed in this area. Besides, the USA findings are not necessarily applicable to other countries, like Greece, which have experienced different rates of inflation and have companies with different inflation-sensitive characteristics, as it will be shown subsequently. That is why Ketz recommends in his PH.D dissertation: "Different time periods and different countries need to be studied to see whether the conclusions herein are generalisable to other time periods and to other nations." (Ketz, 1977, p.157).

To be more specific, there are the following good reasons which suggest that this research is worthwhile.

1. Different rate of Inflation

The impact of GPPA on a business entity is a function of the inflation rate and the inflation-sensitive characteristics of the particular entity under examination. Statements like "...had inflation been running at 25% industrialists would be falling over themselves to apply the standard" (The Accountant, 2 February, 1984, p.7) or "...you do not survive on historical cost" in countries with high inflation (Baxter, 1984, p.403) imply that the rate of inflation should be the most crucial of these two variables. That is why in many of the USA empirical studies conducted on GPPA is suggested explicitly or implicitly (for example, McKenzie, PhD Dissertation 1970 p.124) that if the inflation rate was higher, the results might be different.

As table 4.1 shows the inflation rate applicable to the majority of the (UK and) USA estimation studies concerning impact of GPPA on accounts is very low⁷ in comparison to that prevailing in the period covered in this study. Therefore, ceteris paribus, it is expected that the impact of GPPA on Greek accounts will be materially different from that observed in the (UK and) USA. In this sense, this study is relatively unique.

2. Different inflation sensitive characteristics

These characteristics are the gearing or leverage, (i.e. the total liabilities to total assets ratio), the assets composition (i.e. non monetary versus monetary items) as well as the timing and magnitude of the flows of these items.

Due to the distrust of accounting disclosure in Greece it is practically impossible for a researcher to get information about the timing and magnitude of the flows of the resources mentioned above. As regards gearing and assets composition, table 3.7 shows that whereas the Greek manufacturing companies have a materially⁸ different leverage from the UK and USA companies, their assets composition is significantly different from only the UK companies. However, there are material differences among the three countries with respect to the composition of the non-financial assets

7, More or less the same applies to all empirical studies on GPPA conducted in the UK and the USA,

8, A 10% difference is usually considered as material. See, for example, Rose et al. (1970) p.142 or Dopuch-Watts (1972) pp.181-182,

T a b l e 4,1
Estimation Procedures Studies on Impact of GPPA
on Accounts and Related Inflation Rates

Study	Period Examined	Year of Inflation	Inflation (Deflation) Rate		
			Greece C P I (%)	USA CPI (%)	UK RPI (%)
Cuttler-Westwick (UK)	before 1973	1960	3,5	N, A	1,8
Backmaster-Brooks (USA)	before 1974	1961	(0,0)	N, A	3,8
Davidson-Weil (USA)	1973	1962	0,2	1,2	2,3
Parker (USA)	1972-74	1963	1,3	1,6	1,9
Petersen (USA)	1960-69	1964	1,5	1,2	4,8
Mo-Kenzie (USA)	1958-67	1965	4,9	1,9	4,6
Ketz (USA)	1962-80	1966	4,0	3,3	3,7
Basu-Hanna (USA, Canada)	1967-75	1967	(0,0)	3,0	2,4
FASB's Field Tests	1972-74	1968	2,7	4,7	5,8
This Study	1976-81	1969	2,1	6,1	4,8
		1970	1,7	5,5	7,8
		1971	2,9	3,3	9,0
		1972	6,6	3,4	7,6
		1973	30,7	8,8	10,6
		1974	13,4	12,2	11,9
		1975	15,6	7,0	24,9
		1976	11,7	4,8	15,1
		1977	12,8	6,8	12,1
		1978	11,5	9,0	8,4
		1979	24,8	13,3	17,2
		1980	26,2	12,4	15,1
		1981	22,5	N, A	12,0

Note: For Greece and the UK the inflation rate was computed by the formula:

$\text{Dec. Year}_t / \text{Dec. Year}_{t-1}$

Sources: National Statistical Service of Greece, Ketz (1983) p.53, and Accountancy, February 1982, p.13.

(i.e. fixed assets versus stocks). Hence, and given that depreciation and cost of goods sold have a material but different (in size) effect on earnings, due to different ages of fixed assets and stocks, the impact of GPPA on Greek earnings is expected to be different from that on the (UK and) USA earnings.

Mainly because of higher gearing ratios and rates of inflation the monetary gains/losses of the Greek companies are expected to be much bigger than those of the (UK and) USA companies. Consequently, the difference between restates and historical earnings is expected to be less than that found in previous relevant studies. In such a case the often heard complaints that in these times of inflation dividends are paid out of capital, taxes are imposed on capital rather than on (real) earnings of the period, and the real (as opposed to nominal) return on owner's investment is less than that indicated by the HCA figures may not be justified.

In contrast, if, in spite of the expected bigger monetary gains, the restated earnings are significantly less than the historical earnings, then the Greek policy makers should take the necessary measures to offset the effects of inflation on earnings. Such measures could include alteration of the tax rate, easing of price control, modification of the law concerned with dividend distribution e.t.c. (See Section 3.2).

Since Italy and Spain have experienced about the same rates of inflation during the period under examination (table 3.1) and their companies exhibit

similar gearing as Greece⁹, the empirical findings of the study **might** be applicable to a certain extent to these two countries too. In this respect, the significance of the study is enlarged.

3. Inconclusive findings

As shown in Section 3.3.3 the USA findings as regards impact of GPPA on accounts over time are inconclusive. Therefore, more empirical research on this crucial matter is needed since, regardless of magnitude, if these effects are systematic or they merely constitute scale-effects, then there is little or no information content in GPPA disclosures.

4. Test of generalisability of the estimation techniques

The estimation techniques which are employed in this study have been mainly used in the USA. They have been tested for their accuracy but these tests were not

9, See Tjoannos-Venieris (1974) pp.19-20). Of course the study of Tjoannos and Venieris covered the period 1967-1969. However, there is no obvious reason to suppose that material changes have since occurred in the gearing of the Italian and Spanish companies. In fact, table 3.7 shows heavier reliance on borrowing for the Italian companies than for the Greek ones.

rigorous enough¹⁰. Therefore, a test of accuracy using Greek data, which are different from the USA data, is valuable in two respects:

First, it will be shown whether or not these techniques possess inherent generalisability (i.e. applicability to different times and different countries).

Second, if these techniques work well in the Greek case this will strengthen the partial support about their accuracy which stems from the not so rigorous validation tests already performed in the USA. This is because it would be rather peculiar for a technique (model) developed within a particular setting to work well in another different setting and still not to reflect accurately its particular setting from which it has emerged.

10. Ketz (1978), who tested the Petersen, the Davidson and Weil and the Parker estimation models from which the techniques used in the study are derived (see Section 4.3), did not use an adequate sample for this purpose (i.e. 9 air carrier firms were used to validate the models). Because of this Ketz suggests (p.156) that further research should be done to alleviate the limitations inherent in his validation test. Walther, who tested the Davidson-Weil model, used GPP adjusted data prepared by companies under SFAS No 33 requirements. Since the FASB encouraged experimentation and use of short-cut techniques for restatement, this research "...does not provide evidence concerning the extent to which estimation techniques may have used" (Walther (1982) p.383). Hence, to the extent short-cut methods have been used for GPP restatement by sample companies, instead of actual detailed restatement procedures, the Walther's test is of limited validity (i.e. It shows only the differences between the Davidson-Weil model and the short-cut methods applied by the companies). Baran et al, (1980a), who tested the Parker model, compared the estimation figures with actual restated data provided by ten companies and concerning one or two (in some cases) year periods. Their small sample does not permit generalisation of their results. Thus, apart from Walther's test, all other validation tests were not extensive enough to permit generalisation of their results as regards accuracy of the three models mentioned.

**5. Development of a better technique for the
restatement of fixed assets and depreciation**

Walther (1982), who tested the Composite Age Technique widely used in the USA for the restatement of depreciation, found that this technique exceeded by an average of 13,73% the figures reported by 459 companies participated in SFAS No 33 requirements. This finding served as an impetus to the researcher to carefully examine this technique, to identify its main weaknesses and to try to improve it by developing an alternative to it called Dichotomous Year Technique (see Section 5.3).

To the extent to which the new technique performs better than the Composite Age Technique, the study will make a significant contribution to the GPPA empirical research literature. That is, a better technique will be available to those outsiders wishing to restate fixed assets and depreciation and to insiders who wish to restate but do so at low cost.

**6. Test of accuracy of detailed restatement of fixed
assets and depreciation on an annual rather than
monthly basis**

One of the main reasons that many firms are unwilling to prepare inflation accounting information (GPPA and/or CCA) is the additional costs involved for such disclosures. This study investigates the possibility of reducing the costs involved in implementing GPPA by testing the accuracy of restating fixed assets on an annual rather than monthly basis. This is a small but significant step toward further clarifying the costs

versus benefits issue of adopting and operating GPPA in Greece and in other countries. If no material differences exist between monthly and annual restatement of fixed assets, then the costs of implementing GPPA are reduced since less clerical work is required for an annual restatement of fixed assets. This is to the benefit of preparers and users of GPPA data and the GPPA alternative becomes more attractive than before.

Having established the general as well as the specific significance of the study, the next section is devoted to the discussion of the data gathering process of the study.

4.4. The Data of the Study

4.4.1. The Sample Selection

As already mentioned, this study examines the impact of GPPA on the accounts of 30 quoted Greek manufacturing companies for the six year period 1976-1981. The criteria employed for choosing quoted companies instead of other companies are:

- (a) reliability of accounting data;
- (b) availability of detailed information for GPPA restatement purposes;
- (c) stability of accounting procedures and policies;
- (d) chances of application of GPPA by Greek companies.

With respect to the first criterion, as mentioned in Section 3.4, the quoted Greek companies are subject to audit by SOL, the only official and well respected audit organisation in Greece (Section 3.4.4). Therefore, the published balance sheet and income statement data of the quoted companies seem to be more reliable than the accounting data of other companies not subject to audit by SOL.

As regards the availability of detailed accounting data which are essential for GPPA restatement the evidence is that the quoted companies have well organised (by Greek standards) accounting departments. Therefore, it seems reasonable to believe that more unpublished detailed information regarding the nature and exact age of accounts may be available from these companies than from other companies. Also the published financial statements of the quoted companies are necessarily accompanied by the Auditor's Report according to the Companies Act 2190/1920.

For an "outsider" the Auditor's Report is a reliable source of very useful information for the restatement of accounts as will be seen later on in this chapter. For example, they contain the date of revaluation of land and buildings (see Section 6.4) and the value of shares given to shareholders as a result of the capitalisation of the net surplus value generated from that revaluation (see Section 6.6). The reader of the report is also informed whether there is obsolete merchandise, whether the investment in other companies is shown at acquisition

cost or at "lower cost or market", whether penalties and other charges paid to the tax authorities have been capitalized rather than being charged to the profit and loss account, whether or not the firm has changed the method of stock valuation (and its accounting policies) in general, and, if so, what has been the numerical effect on earnings, and so on.

The third criterion (i.e. stability of the accounting procedures and policies), was employed in order to increase the validity of certain assumptions inherent in the estimating techniques used in this study. Provided that, in principle, the accounting procedures and policies are more stable in the larger, more established firms than in the smaller firms, it seems reasonable to believe that the sample companies which are among the largest and more established Greek companies, fulfil this criterion.

Finally, the quoted Greek companies were chosen for examining the impact of GPPA on earnings because if some form of inflation accounting is going to be required in Greece, the requirements will probably be restricted to these companies as has been the case with other countries (eg. U.K.) which have incorporated inflation accounting into their financial reporting.

From the quoted companies only the manufacturing ones are included in the sample of the study because, due to the lag between input and output as well as due to the heavy reliance on permanent capital, the impact of inflation is more severe on these companies than on other

companies.

Of course, many of the trade companies as well as some of the companies in the utility industry may severely be affected by inflation as well. However, only very few (i. e. less than eight) trade companies and even fewer utilities have gone public in Greece. Additionally, less than five of the quoted commercial companies had reliable data in the period under examination. Hence, any conclusions drawn would be necessarily restricted to these companies only. Because of this, trade and utility companies have been excluded from the sample.

Having discussed the nature and the criteria employed for the selection of the sample, the next subsection is devoted to the problems encountered in collecting the data and the means employed to solve them.

4. 4. 2. The Data Gathering Process

It is not an exaggeration to say that the data gathering phase of this research proved to be, if not the most difficult, surely the most frustrating part of this project.

Of course, the researcher, being himself a Greek with some accounting experience knew beforehand that the collection of the data needed was not going to be an easy task due to the secrecy surrounding the accounting information in Greece (and especially information about sales and cost of goods sold) on the one hand, and due to the almost complete lack of any data bank in Greece which

would provide the researcher with any needed accounting data upon payment. However, the difficulties encountered were beyond any anticipation.

So that other researchers wishing to do research in Greece might benefit from the experience gained in the prosecution of this project, the data gathering process, the problems encountered and the means employed to solve or overcome them are discussed in the paragraphs to follow as well as in Chapter 6.

Given the main purpose and the sub-purposes of the study, the aim of the researcher was to gather as much detailed information from GPPA restatement as possible. For this purpose the published balance sheet and income statements were not enough at all. Access to the companies' records was needed.

The first attempt to get access to detailed company records ended in failure despite the fact that the researcher has been furnished with and presented two letters of recommendation, one from the Greek Scholarships Foundation and the other from the President of one of the two Greek investment banks, which stressed the practical importance of the project and the strictly confidential treatment of data. The quoted companies did not provide even fixed assets information which is not considered as confidential as it is the information about sales, cost of goods sold or even about monthly claims and liabilities.

Finally, the researcher turned to the SOL, which keeps detailed records of the accounts of the companies

audited by it and which was very interested in the impact of inflation accounting on Greek accounts at that time. The President of the SOL told the researcher that he was bound by law to give such information. However, as the overwhelming majority of the Certified Public Accountants were very enthusiastic about the project they decided to help the researcher by exercising all their power to persuade the companies being audited by them to render the researcher as much information as possible.

Thirty quoted companies responded favourably to the SOL's request and promised to render the needed accounting data and information. However, only nineteen¹¹ of them kept their promise and gave the researcher partial access to their records. Specifically, eight companies furnished the researcher with details (daily) fixed assets data (the first sub-sample of the study). Another six companies gave annual fixed assets data (the second sub-sample of the study). Four and three companies included in the first and second sub-samples respectively, as well as two other companies, released their Trial Balances of the last two or three years of the period under examination (the third sub-sample of the study).

By aid of the first sub-sample the accuracy of the Composite Age Technique as well as the accuracy of the Dichotomus Year Technique, both used for restatement of

11. Finally, three of these companies were dropped due to serious discrepancies existed between detailed and published fixed assets data.

fixed assets, was tested. Additionally, by aid of the same sub-sample the accuracy of the restatement of the second sub-sample, which was made on an annual rather than monthly basis, was tested. Finally, from the trial balances (i.e. the third sub-sample of the study) monthly balances of monetary items were obtained and used for the validation of the Average Balance Technique employed in the study for computing monetary gains/losses.

From the Annual Reports very useful information for the restatement of accounts was obtained, such as method of stock valuation, types of securities held, analysis of the various items included in an account, which helped very much the separation of the monetary from the non-monetary items (i.e. sometimes, in the "various debtors" account advances from customers were included) and so on. For those companies for which Annual Reports were not obtained the needed information for the restatement of accounts was obtained by phone calls (or by correspondence).

The secrecy surrounding the disclosure of accounting information coupled with the fact that the computerisation of accounting in Greece had not started at that time necessitated the researcher spending almost four months writing down the detailed (i.e. daily and annual) fixed assets data as well as more than half of the data of the trial balances. The collection of the data in the premises of the companies proved to be very beneficial to the quality of this study since during the time spent in writing the data the researcher took the

opportunity to make closer acquaintance with the accounting staff of the companies which helped him to get information and answers to questions which he could not obtain otherwise.

Unfortunately, neither detailed data about inventory and cost of goods sold were given to the researcher, nor the annual cost of goods sold figure per se. Because of it, not only the researcher could not validate the three sophisticated estimation models more frequently used for the restatement of inventory and cost of goods sold (see Section 5.2) but also he could not even apply any of these models. Hence, the annual sales figure was needed desparately because having that information, and given that the Greek income statement starts with the Gross Margin figure, the cost of goods sold figure could be obtained. Consequently, any of these models could be applied.

Only eight companies gave to the researcher the annual sales figure. For the remaining companies the annual sales were obtained upon payment from a private Greek organization called ICAP. These figures are reliable for the following two basic reasons:

Firstly, the job of ICAP, which is a well respected organization in Greece, is to give to his clients very confidential business information on the one hand, and to appraise the performance of the companies in the form of société anonyme and limited company, on the other. Since the sales figure is one of the most important confidential information sought by many clients and since

an appraisal of performance cannot be based on faulty sales figures, it follows that ICAP should pay much attention so that for its information to be accurate.

The second reason is the fact that after two years from his second attempt to get detailed accounting data the researcher managed to get the sales figure from another nineteen companies. The figures obtained were compared with those given by ICAP. Differences existed for only three companies and they were so small as to be negligible (i.e. less than 3% discrepancy for only some of the years of the period under examination.

The second unanticipated problem encountered during the data-gathering phase of the study was to get detailed fixed assets information, not included in the books from which the detailed fixed assets data were obtained.

The first piece of this information referred to the specific amounts and related ages of the advances for fixed assets appearing in the balance sheet statements. These advances had taken as date of acquisition the date of transfer to their proper account (i.e. machinery and/or buildings) rather than their earlier date of capital expenditures needed for restatement purposes (see Section 6.5).

Finding the exact individual amounts and related ages of these advances proved to be very cumbersome, since this information was usually written on a piece of paper left somewhere after the recording of the advances in their proper account. Taking into account that in the year 1982 information was sought about things which had

occured at least up to seven years ago, the reader should realise that much time and effort and much more goodwill on behalf of the accounting staff of the companies was needed in order to furnish the researcher with this type of information.

When the information above could not be obtained information was given about the average time interval of capital expenditures occurrence and transfer of advances. How this information was used for restating the advances as well as how the researcher overcame the problem of getting other pieces of information (such as data and selling price of retirements) not included in the books given to him by the companies, is discussed subsequently when the nature of each basic category of accounts and the problems associated with their restatement are discussed.

Finally, the third problem was to obtain the balance sheet and income statements (as published in the Government's Gasette) for those quoted Greek manufacturing companies for which no detailed fixed assets information were given. This problem was created when the application of the DYT became necessary, which requires balance sheet and income statements which go as far back as in 1967 (see Section 5.3).

Most of the companies did not have all statements needed by the researcher. Many of them did not have even the numbers and dates of publication of the Government's Gasette which contained the financial statements needed; or perhaps they did not want to spent time and effort to

find the statements or to give information about their publication in the Government's Gazette. Finally, some of the public employees of the Ministry of Commerce, where copies of the published financial statements are kept, were not kind enough to give to the researcher photocopies of the statements. On the contrary, they gave him hard time even to furnish him with the information needed so that for the researcher to locate them in the numerous volumes of the Government's Gazette, issue for Société Anonymes and Limited Companies.

Having obtained the detailed fixed assets data, the next step was to check for discrepancies between analytical and balance sheet fixed assets data. Some of the discrepancies found were due to mistakes made by the researcher while writing down the data and they were corrected accordingly. Some other differences were due to omissions or mistakes made by the accounting staff of the firms.

When no explanation could be offered for the discrepancies, and their magnitude was less than five per cent of total net fixed assets, then the balance sheet figure of each basic category of fixed assets were adjusted to the corresponding figures of the analytical data obtained. When the unexplained discrepancies exceeded the mentioned percentage, then the obtained accounting data were judged to be unreliable and they were dropped. Thus two companies for which detailed

monthly and annual fixed assets data had been obtained were dropped from the sample of the study¹².

The last step in the data gathering process was to scrutinize the balance sheet and income statements of those companies for which no detailed data had been obtained. The Auditor's Report was very helpful in this respect.

As a result of the scrutiny several companies were dropped from the initial sample because the seasonality of their businesses or their unstable accounting policies and procedures followed during the period under examination could undermine the validity of the assumptions (e.g. even flow of purchases during an accounting period) which are inherent in the estimation techniques used in the study. Several other companies were dropped because of the serious mistakes found in their financial statements or because some of the balance sheet and income statements for the period 1967 (or 1968) to 1975, which were needed for the application of the Dichotomous Year Technique, were missing. Finally, the companies which had been closed down after the period under examination were also dropped, since, essential information for GPPA restatements (e.g. method of inventory valuation) could not be obtained.

12. The company No 08 of the first sub-sample of the study was not dropped despite the fact that for the year 1976 the difference between total depreciation of the year as appeared in the detailed data was significantly less than the depreciation as appeared in the published income statements. The reasons for not dropping the company are two: First, this serious discrepancy refers only to depreciation (not fixed assets) and only to one year. Second, the chief accountant of the company told the researcher that the detailed data were much more reliable than the published data.

Thus, 33 companies were finally dropped from the initial sample of 64 quoted Greek manufacturing companies, leaving 31 companies which constitute the sample of the study. To thirty of these companies GPP adjustments were applied while for one company (i.e. the company No 06 of the first sub-sample) only restatement of fixed assets for validation purposes was made due to the seasonality of its businesses (i.e. wine and spirits company). The main business as well as the names of the companies of the sample of the study are presented in table 4.2a and 4.2b except for the names of the companies of the first and second sub-samples which are disguised as promised to these companies.

To obtain the mentioned sample of the study as well as to make it ready for GPPA restatement more than one year was spent. Much of that time could have been saved if the attitude of businessmen (and of some accountants) as regards release of accounting information to be used for research purposes was different, if the accounting departments were better organized, and if there was a data bank which could render accounting information to prospective researchers.

It is really frustrating the fact that while in the developed countries the accounting research is encouraged in several ways, in Greece research in general and especially the accounting research is not subsidized. On the contrary, a lot of obstacles are raised against it not only by businessmen but also by some public employees.

T a b l e 4,2a

1st and 2nd Sub-Samples of the Study

Name of company	Type of Business
01 company	Textiles
02 company	Steel wire ropes
03 company	Metallurgical products
04 company	Soaps
05 company	Textiles
06 company	Wines and Spirits
07 company	Textiles
08 company	Metallurgical products
09 company	Artificial silk
10 company	Boxes of corrugated paper
11 company	Construction materials
12 company	Baking yeast, glucose etc products
13 company	Flour mills
14 company	Textiles

T a b l e 4,2b

Remaining Companies of the Sample

Name of company	Type of Business
15 "AEVAL"	Chemical
16 "ALLATINH"	Flour, cookies and biscuits
17 "ANATOLIA"	Carpets
18 "ELAÏS"	Olive products
19 "HERACLES" G, Cement Co	Cement
20 "THERMIS" Manufact, Co	Metallurgical products
21 "KERAMIA ALLATINH"	Claytile, brick etc products
22 "METKA" S,A	Metal products
23 "NADUSSA" Spinning Mills	Textiles
24 "PAVLIDES" S,A	Chocolate products
25 "A, G, PETZETAKIS" S,A	Plastics
26 Flour Mills "C, SARANTOPOYLOS"	Flour mills
27 "TITAN" Cement Co	Cement
28 "TRIA ALFA"	Textiles
29 "SHEET STEEL" S,A	Sheet steel
30 "HALYPS" Cement Co	Cement
31 "HALKIS" Cement Co	Cement

It is hoped that the results of this study will be of significant practical importance to many people. If so it is hoped that the study will contribute a little to the change of attitude toward accounting research in Greece and its usefulness. It is also hoped that the computerization of the accounting information which has started in the Ministry of Commerce, will constitute a data bank of accounting information to prospective researchers. Such a thing will pave the way for more accounting research in Greece, which is needed so much.

4. 4. 3. The Representativeness of the Sample

As mentioned in the previous sub-section, more than half of the companies which constituted the initial sample of the study were finally dropped from the sample for several important reasons. Hence, no general conclusions can be drawn about the population (i.e. quoted Greek manufacturing companies) on the basis of the results of the sample of the study unless the sample is a representative one.

Even if the sample of the study is a representative one the results of the study may not be generally applicable. This is so because, as already mentioned, the evidence is that the quoted companies are rather large and well established firms. As such one would expect that these companies should have somewhat similar rather than different inflation sensitive financial characteristics. A similar financial structure, in turn, may result in a

bias as regards impact of GPPA on Greek accounts of manufacturing companies generally.

Fortunately, it seems that the financial structure of the sample firms is characterized by enough variability so that to lessen the bias mentioned. This seems to be especially true with respect to capital sensitivity characteristic.

Specifically, as can be seen from table 4.3, the average proportion of fixed assets plus investment tends to be quite variable during the years under examination with the median fixed assets (plus investment) structure occurring between 40 to 50 per cent. The average proportion of inventory and the inventory turnover, however, appears to be less variable than that of fixed assets plus investment (see tables 4.3 and 4.4).

The observed less variability of inventory and inventory turnover does not necessarily mean that the companies of the sample are significantly different from the population of "manufacture" as a whole. It might mean simply that for some reasons the companies in the form of Société Anonyme or Ltd Company tend to have an inventory level which lies usually between 10 to 30 per cent of total assets, and an inventory turnover which lies usually between 1 to 3 times.

Finally, with respect to the average net monetary position, one of the most important financial characteristics as regards GPP adjustments, it should be mentioned that only three out of the thirty sample firms

T a b l e 4,3

FREQUENCY DISTRIBUTION

(1) Average* F, Assets + Investment / Aver, T, Assets
 (2) Average Inventory / Aver, Total Assets

Group	Frequency	
	(1)	(2)
0,01 - 0,09	-	2
0,10 - 0,19	2	10
0,20 - 0,29	7	9
0,30 - 0,39	5	3
0,40 - 0,49	8	4
0,50 - 0,59	3	2
0,60 - 0,69	2	-
0,70 - 0,79	2	-
	<u>31</u>	<u>30</u>

T a b l e 4,4

FREQUENCY DISTRIBUTION

Average Inventory Turnover*

Group	Frequency
1,00 - 1,99	9
2,00 - 2,99	8
3,00 - 3,99	2
4,00 - 4,99	4
5,00 - 5,99	2
6,00 - 6,99	3
7,00 - 7,99	0
8,00 - 8,99	1
11,00 - 11,99	1
	<u>30</u>

* Simple Average of the six years period.

Defined as cost of goods sold divided by average inventory.

are net creditors (see Table 4.5). The remaining companies are net debtors and they seem to be characterized by enough variability as regards degree of net debts.

Having established the empirical significance of the study and having discussed the data gathered and their representativeness, the next two chapters are devoted to the discussion of the tools used in order to accomplish the main purpose of the study; that is, to restate Greek accounts.

Table 4,5

FREQUENCY DISTRIBUTION
Average Net Monetary Position / Aver. T. Assets

Group	Frequency
0,01 to 0,09	1
0,10 to 0,19	2
.....	-
-0,01 to -0,09	3
-0,10 to -0,19	3
-0,20 to -0,29	8
-0,30 to -0,39	8
-0,40 to -0,49	3
-0,50 to -0,59	1
-0,60 to -0,69	1

	30