

INFORMATION TO USERS

This reproduction was made from a copy of a document sent to us for microfilming. While the most advanced technology has been used to photograph and reproduce this document, the quality of the reproduction is heavily dependent upon the quality of the material submitted.

The following explanation of techniques is provided to help clarify markings or notations which may appear on this reproduction.

1. The sign or "target" for pages apparently lacking from the document photographed is "Missing Page(s)". If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting through an image and duplicating adjacent pages to assure complete continuity.
2. When an image on the film is obliterated with a round black mark, it is an indication of either blurred copy because of movement during exposure, duplicate copy, or copyrighted materials that should not have been filmed. For blurred pages, a good image of the page can be found in the adjacent frame. If copyrighted materials were deleted, a target note will appear listing the pages in the adjacent frame.
3. When a map, drawing or chart, etc., is part of the material being photographed, a definite method of "sectioning" the material has been followed. It is customary to begin filming at the upper left hand corner of a large sheet and to continue from left to right in equal sections with small overlaps. If necessary, sectioning is continued again—beginning below the first row and continuing on until complete.
4. For illustrations that cannot be satisfactorily reproduced by xerographic means, photographic prints can be purchased at additional cost and inserted into your xerographic copy. These prints are available upon request from the Dissertations Customer Services Department.
5. Some pages in any document may have indistinct print. In all cases the best available copy has been filmed.

**University
Microfilms
International**

300 N. Zeeb Road
Ann Arbor, MI 48106

8515630

Goma, Ahmed Tawfik

EMPIRICAL INVESTIGATION OF THE INFORMATION CONTENT OF SPECIFIC
PRICE CHANGE DISCLOSURES

City University of New York

PH.D. 1985

University
Microfilms
International 300 N. Zeeb Road, Ann Arbor, MI 48106

Copyright 1985

by

Goma, Ahmed Tawfik

All Rights Reserved

EMPIRICAL INVESTIGATION OF THE INFORMATION CONTENT
OF SPECIFIC PRICE CHANGE DISCLOSURES

by

AHMED TAWFIK GOMA

A dissertation submitted to the
Graduate Faculty in Business in
partial fulfillment of the
requirements for the degree of Doctor
of Philosophy, The City University of
New York.

1985

COPYRIGHT BY
AHMED TAWFIK GOMA
1985

This manuscript has been read and accepted for the Graduate Faculty in Business in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

4/29/85
date

Steven L. Lustgarten
Chairman of Examining Committee

4/29/85
date

Michael J. ...
Executive Officer

Professor Steven Lustgarten

Professor Victor Pastena

Professor In-Mu Haw
Supervisory Committee

The City University of New York

ACKNOWLEDGEMENTS

Since work leading to a doctoral dissertation is never truly undertaken alone, I would like to express my sincere appreciation to a number of individuals who helped me to complete my degree. My appreciation, in particular to my supervisory committee: Professors Steven Lilien (chairman), Steven Lustgarten, Victor Pastena and In-Mu Haw. My deepest appreciation to professor Lilien for his help and encouragement throughout my study in the Ph.D. program.

I am also thankful to the members of the Department of Accountancy of Baruch College, and in particular to Prof. Martin Benis (chairman) for his help and great advice and encouragement since the first day of my study toward Ph.D. at Baruch College. I am so grateful to the Ph.D. program's executive office Dean Sidney Lirtzman and his staff for their assistance.

I am so grateful to my home country, Egypt, for the financial support to study for the Ph.D. in the United States. My sincere thanks to my colleagues at the Faculty of Commerce, Al Azhar University in Egypt, in particular, Professor Ezzat El Sheikh for support and encouragement.

Finally, I wish to express my special appreciation to my wife, Suma, whose patience almost ran out a couple of times, but whose sacrifice went beyond limits. Our sons Sherif and Tawfik whose noise made work at home

almost impossible, provided the joy that made all hardships surmountable.

If this can be dedicated to any one, it must be to my mother and the spirit of my wonderful father who died twelve days before defending my dissertation.

TABLE OF CONTENTS

<u>Chapter</u>	<u>Page</u>
I	INTRODUCTION..... 1
A.	Historical Background..... 1
B.	Statement of the Problem..... 7
C.	Objectives and Characteristics of the Study..... 9
D.	Research Methodology..... 11
E.	Limitations and Expected Contribution 13
F.	Organization of the Study..... 14
	Footnotes..... 16
II	THEORETICAL RELATIONSHIP BETWEEN SPECIFIC PRICE INFORMATION AND STOCK PRICES..... 17
A.	Theoretical and Empirical Relationship Between Inflation and Stock Return.... 17
B.	Predictability of Accounting Income Models: Exit and Entry Value Systems.. 24
1.	Exit Value Accounting..... 24
2.	Entry Value or Replacement Cost Accounting..... 26
C.	Theoretical Relationship Between Replacement Cost/Current Cost Income and Stock Prices..... 36
	Footnotes..... 45
III	LITERATURE REVIEW OF MARKET STUDIES OF INFORMATION CONTENT OF SPECIFIC PRICE CHANGES..... 47
IV	METHODOLOGY AND RESEARCH DESIGN..... 70
A.	Hypotheses..... 70
1.	Aggregation and Segregation of Holding Gains..... 71
2.	Industry Analysis..... 72
3.	Regulation vs. Nonregulation..... 75
B.	Sample Selection..... 76
C.	Test Period and Data Collection..... 79
D.	Testing the Information Content (Models and Expectation Forms)..... 80
1.	Testing the First and Second Hypotheses..... 82

TABLE OF CONTENTS (continued)

<u>Chapter</u>	<u>Page</u>
2. Testing the Third and Fourth Hypotheses.....	84
E. Dependent Variables.....	86
F. Independent Variables.....	88
1. Historical Cost Income.....	88
2. Realized and Unrealized Holding Gains.....	89
3. Firm Size.....	92
G. Deflator.....	94
Footnotes.....	96
V EMPIRICAL RESULTS AND DATA ANALYSIS.....	98
A. Analysis of Information Content of Unexpected Historical Cost Income.....	100
B. Analysis of Association Between Firm Size and Unexpected Stock Return.....	104
C. Analysis of Association Between Unexpected Holding Gains and Unexpected Stock Return (Test of Three Expectation Forms).....	104
1. Analysis of Association Between Unexpected Holding Gains and Unexpected Stock Returns The First Expectation Form.....	107
2. Analysis of Association Between Unexpected Holding Gains and Unexpected Stock Returns - The Second Expectation Form.....	118
3. Analysis of Association Between Unexpected holding Gains and Unexpected Stock Returns - The Third Expectation Form.....	131
4. The Three Expectation Forms Reconciliation.....	131
D. Analysis of Association Between Holding Gains and Stock Returns Within and Across Industry Portfolios.....	137
E. Analysis of Association Between Unexpected Holding Gains and Stock Returns in Regulated and Unregulated Industries.....	155
Footnotes.....	168
VI SUMMARY AND CONCLUSION.....	170

TABLE OF CONTENTS (continued)

<u>Chapter</u>	<u>Page</u>
APPENDICES.....	175
Appendix A: Mean and Standard Deviations of Regression Variables Under First and Second Expectation Forms.....	175
Appendix B: Correlation Matrix Coefficients.	178
Appendix C: Comparison Between Calculated Holding Gains and Reported Holding Gains on FAS 33 Data Bank.....	179
Appendix D: Errors in Reported Data on FAS 33 Data Bank.....	181
Appendix E: Regression Results Using Calculated Holding Gains for 1979-1981.....	182
Appendix F: Regression Results for the Three CAR Subperiods Under First and Second Expectation Forms.....	183
BIBLIOGRAPHY.....	190

LIST OF TABLES

<u>Table</u>	<u>Page</u>	
1	Classification of The Total Sample Firms Into 22 Portfolios.....	78
2	Regression Results Relating Cumulative Abnormal Stock Return to Unexpected Historial Cost Income.....	101
3	Regression Results Relating Cumulative Abnormal Stock Return for 52-week to Firm Size.....	105 ⁵
4	Regression Results Relating Cumulative Abnormal Mean Return for 52-Week Period to Unexpected Values of Elements of Realized and Unrealized Holding Gains- Aggregations (First Expectation Form).....	110
5	Regression Results Relating Cumulative Abnormal Mean Return for 52-Week Period to Unexpected Value of Elements of Realized and Unrealized Holding Gains- Segregation (First Expectation Form).....	115
6	A Comparison Between the Significcance of Aggregation in the first and Second Models with the Segregations in the Fourth and Fifth Models (First Expectation Form).....	117
7	Regression Results Relating Cumulative Abnormal Return to Unexpected Realized, Unrealized, and Total Holding Gains (Second Expectation Form).....	120
8	Comparison Between Adjusted R-square for the Three Models in 52-week period (Second Expectation Form).....	124
9	Regression Results Relating Cumulative Abnormal Return for 52-week period to Segregation of Realized and Unrealized Holding Gain Elements (Second Expectation Form).....	127

LIST OF TABLES (continued)

<u>Table</u>	<u>Page</u>
10 Comparison of Significance of Aggregation in First and Second Models with Segregation in Fourth and Fifth Models....	129
11 Regression Results Relating Cumulative Abnormal Returns to Realized, Unrealized, and Total Holding Gains (Third Expectation Form).....	132
12 Summary of Significance Levels for the Three Models of RHG, UHG, and THG under the Three Expectation Forms.....	134
13 Cross-Sectional Results Within Industry- First Model of RHG and Level of Significance.....	139
14 Cross-Sectional Results Within Industry- Second Model of UHG and Level of Significance.....	140
15 Cross-Sectional Results Within Industry- Third Model of RHG & THG and Level of Significance.....	141
16 Cross-Sectional Results Across Industries First Model of RHG and Level of Significance.....	147
17 Cross-Sectional Results Across Industries- Second Model of UHG and Level of Significance.....	148
18 Cross-Sectional Results Across Industries- Third Model of RHG & THG and Level of Significance.....	149
19 Regression Results Across Industries- Industries Which Were Significantly Different.....	154
20 Cross-Sectional Regression Within Regulated and Unregulated Industries.....	157

LIST OF TABLES (continued)

<u>Table</u>		<u>Page</u>
21	Comparison Between HCIN Model and the Three Models Including RHG, UHG and RHG & THG in Terms of Adjusted R-square in Regulated and Unregulated Industries.....	160
22	Cross-Sectional Regression Across Regulated and Unregulated Industries.....	162
23	Comparison Between the Regression Results of All Sample Firms and Grouping Firms to Regulated and Nonregulated Portfolios-52-week period.....	166

LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
1	Estimation and Test Period	88

CHAPTER I

INTRODUCTION

Inflation has been a dominant phenomenon in the 20th century. In recent years, the Securities and Exchange Commission (SEC) and the Financial Accounting Standards Board (FASB) have required companies to disclose specific price change data within their financial reports. Several studies have investigated the information content of such disclosures and these studies have reached different conclusions. This chapter reviews the historical background of inflation accounting, the research objectives and methodology of this study, and the limitations of the research and its contribution. The last section describes the organization of the study.

A. Historical Background

As early as 1922 William Paton noted that because the purchasing power of the dollar is subject to change over a period of years, accountants deal with an unstable and variable unit. Therefore, comparisons of accounting statements which are unadjusted for purchasing power changes are always unsatisfactory and often misleading.

Henry Sweeny was the first to offer a possible solution for reporting inflationary effects when he proposed a systematic recognition of price-level fluctuations in a series of articles and publications in the 1920's and 1930's. Sweeny's thinking was heavily influenced by the devastating inflation in Germany

following World War I. In 1936 he developed the technique called stabilized accounting, which is known today as constant dollar accounting. He categorized assets and liabilities into monetary and non-monetary items, and recommended that monetary assets be stabilized in terms of purchasing power with a deflator such as the cost of living index. Further inventory and fixed assets should be adjusted on each balance sheet date. He attempted to differentiate realized and unrealized income from price level changes.

However, several theorists, such as Griffith (1937) and Bowers (1950), criticized Sweeny's stabilized accounting system. They pointed out the problem of determining a single index from so many indices for various price movements.

In 1961, Edwards and Bell advocated that replacement cost accounting be used as a vehicle for dichotomizing the conventional accounting income into current operating profit and holding gains. They argued that the dichotomy would improve the predictive ability of a firm's future cash flows. Revsine (1970) agreed with Edwards and Bell and argued that financial statements based on replacement cost may be particularly relevant to users interested in predicting both future operating flows of the firm and future distributable operating flows to investors in the firm.

However, Drake and Dopuch (1965) and Parakash and Sunder (1979), among others, criticized Edwards and Bell's approach arguing that the dichotomy of current operating income and holding gains are not determined independently. Hence separate income figures are not useful in evaluating different kinds of decisions, such as operating and investment decisions. Chambers (1966) argues that replacement cost or buying prices do not indicate the present capacity of the firm on the basis of present holding. The selling price or realizable value, which is similar to current cash equivalent in the ordinary liquidation, is uniformly relevant at any point of time for possible future actions in the market.

The effects of inflation in financial reports have been recognized by several standard-setting bodies within the accounting profession. In 1947, 1948, and 1953 the Committee on Accounting Procedure, and in 1965 the APB (in APB Opinion No. 6) considered accounting problems related to sharp increase in the general level of prices. Several of these pronouncements were concerned with the amount of depreciation to be charged against current income for facilities acquired at lower prices. The Committee concluded that depreciation charges should be based on historical cost, but gave full support to the use of supplementary financial schedules, explanations, or footnotes by which management might explain the need for retention of earnings because of the effects of inflation.

The AICPA published ARS No. 6, "Reporting the Financial Effects of Price Level Changes," in 1963. In June 1969, the APB issued APB Statement No. 3, "Financial Statements Restated for General Price-Level Changes." The statement recommended that "historical-dollar" financial statements be supplemented by general price-level information. But the APB stopped short of requiring general price-level information for presentation of financial position and results of operations in conformity with generally accepted accounting principles.

In December, 1974, the FASB issued Exposure Draft, "Financial Reporting in Units of General Purchasing Power." That exposure draft proposed requiring supplementary disclosure of specified financial information, stated in units of general purchasing power, in addition to financial statements presented in units of money. In November 1975, the Board announced that a final statement on general purchasing power accounting would not be issued that year, pending additional analysis of the results of a field test of the exposure draft provisions conducted by a large number of companies.

In March 1976, the SEC issued Accounting Series Release No. 190 (ASR 190) requiring companies to disclose, in their 10K reports, the replacement cost data of cost of goods sold, inventories, productive capacity, and depreciation. The SEC has aimed to provide information to

investors that would assist them in obtaining an understanding of the current cost of operating the business which cannot be obtained from historical cost financial statement alone. A secondary purpose was to provide information that would enable investors to determine the current cost of inventories and productive capacity as a means of understanding the current economic investment in these assets existing at the balance sheet date.

In September 1979, the FASB issued Statement of Financial Accounting Standards No. 33 (SFAS 33) requiring companies to present, in their annual reports, supplementary information concerning: (1) general price adjustment for income from continuing operation, and the purchasing power gain or loss in net monetary items, (2) current cost of income from continuing operation, inventory, plant and equipment at the end of the fiscal year, and (3) the increase or decrease in current cost amounts of inventory and property, plant, and equipment, net of inflation.

The Board believes that this statement meets an urgent need for information about the effects of changing prices. The Board asserts that if this information is not provided, resources may be allocated inefficiently; investors and creditors' understanding of the past performance of an enterprise and their ability to assess future cash flows may be severely limited, and people in

government who participate in decisions on economic policy may lack important information about the implication of their decisions.

The Statement of Financial Accounting Concepts No. 1 (FASB, 1978) states that the objective of financial reporting is "to provide information that is useful to investors and creditors and other users in making rational investment, credit, and similar decisions." The criterion adopted by FASB is that information should aid investors "in assessing the amount, timing, and uncertainty of prospective net cash inflow to the enterprise." To achieve these objectives by current cost disclosure, the FASB issued an invitation to comment on SFAS 33 including the following:

- (1) Do the disclosures explain changes in stock prices better than do historical cost reports?
- (2) If so, what elements in the disclosures account for the superior explanatory power?
- (3) Are there certain types of assets for which the disclosures appear to have greater explanatory power?
- (4) How does the statistical behavior of the information in the supplementary disclosure compare to the behavior of corresponding information in the historical cost data?

B. Statement of the Problem

There are complex issues concerning the effect of replacement cost data on stock market prices. For example, there has been information available for estimating replacement cost in the market before the disclosure required by SEC in 1976. Value Line Investment Survey published replacement cost forecasts as early as November 1976. In addition, Falkenstein and Weil (1977) had published procedures for developing replacement cost estimates as late as March 1977. Gheyara and Boatsman (1980) stated that even if evidence of information content is found, it is not clear whether Value Line forecasts have been used by market agents in forming expectations. Therefore, one is unable to ascertain whether the information content is due to the disclosure required by SEC, estimates based on Value Line or Falkenstein and Weil procedures. Even controlling for these events by excluding these firms which have been estimated in Value Line, the problem still exists as to whether the market agents have made expectations based on other sources. They point out other methodological issues.

For example, there are some differences of opinion regarding the effects, if any, that public disclosure or replacement cost data would have on common stock prices. One view is that, prior to the public reporting of replacement cost data, market agents were systemically

misled in the sense that their expectations of future cash flow did not take into account unreported holding gain data. In other words, common stocks were priced as if any forthcoming holding gain disclosures were expected to be zero. An alternative view is that, if replacement cost were useful in security valuation, accurate forecasts of the replacement cost amounts would have been utilized prior to their disclosures by reporting firms.

Several studies have investigated the incremental information content of replacement cost/current cost (RC/CC) data. Beaver, Christie and Griffin (1980), Gheyara and Boatsman (1980), Ro (1980), and Beaver, Griffin and Landsman (1982) have examined the stock market response to the ASR 190 disclosures of replacement cost. Based on their results, they concluded that ASR 190 disclosures contained no new information. Beaver and Landsman (1983) also concluded that current cost earnings have no information content. Noreen and Sepe (1981), Lustgarten (1982), Haw and Lustgarten (1984), and Bublitz, Frecka and McKeown (1984) performed a similar analysis and found some evidence of information content.

However, these studies either did not explicitly consider investors' prior expectations about the ASR 190 and FAS 33 or they assumed that any difference between the disclosed RC/CC data and historical cost data was entirely unanticipated. This assumption could be held prior to

1976, but it is questionable afterward because of the availability of replacement cost data. In other words, the investors' expectation is a critical factor in investigating the information content of RC/CC disclosures. Further, some studies ignored the role of cost of goods sold in computing holding gains for 1976-1978 (e.g., Beaver, Griffin and Landsman, 1982).¹ Furthermore, these studies did not control for the effect of firm size² and industry membership.³

C. Objectives and Characteristics of the Study

The objective of this study is to investigate the information content of specific price change data disclosed according to ASR 190 and SFAS 33, using improved methodologies. The study seeks to analyze multiple information signals, adopting different alternatives for market expectation forms, using a longer time series of specific price change data, and controlling for size and industry effects.

The study has its own characteristics and hence its contribution as follows:

- (1) The study uses several alternatives for market expectations since there is no well developed theory to represent how market agents forecast specific price change information. Most studies adopted the previous year's historical or replacement cost

income as a proxy for market expectation of the current year's RC/CC income. This study incorporates three alternative forms of market expectations about RC/CC disclosure: (1) the assumption that the RC/CC of depreciation, cost of goods sold, plant and equipment and inventory of the current year are expected to equal that of the previous year adjusted by the expected inflation rate, (2) the assumption that holding gains of the current year are expected to equal that of the previous year and (3) the assumption that holding gains of the current year are expected to equal that of the previous year adjusted by the expected inflation rate. In doing so, the study covers three possible bases for market expectations about RC/CC disclosure.

- (2) There is little theoretical justification regarding variables to be used to detect possible information signals from the disclosed specific price change data. Hence, each study uses a different set of income variables and reaches different results. To overcome such limitations, the study incorporates comprehensive income variables by adopting all possible sets of income variables as informational signals; (1) unexpected historical cost income, (2) unexpected realized holding gains, (3) unexpected unrealized holding gains, (4) segregated variables

of unexpected realized holding gains (i.e., depreciation and cost of goods sold), (5) segregated variables of unexpected holding gains (i.e., net plant and equipment, and inventory).

- (3) The study attempts to control for the industry membership since the relative price changes are not constant across industries. Examination across and within industries are conducted.
- (4) Since regulated industry has its own characteristics, which are different from those of non-regulated industry, the study tests for possible different market responses to current cost disclosure from those two industry groups.

D. Research Methodology

To investigate whether RC/CC disclosures have incremental information to investors over and above that provided by historical cost income, four hypotheses have been tested. The first hypothesis examines the association between unexpected specific price income and unexpected stock return. The second hypothesis examines whether the segregated elements of realized and unrealized holding gains have incremental information different from those of aggregated figures. The third hypothesis tests whether there are some difference in association among industries. The final hypothesis examines whether there

are some differences between regulated and unregulated industries.

To test these hypotheses three regression models are used, each having three forms of market expectation concerning RC/CC disclosures. The sample includes all companies on Compustat Replacement Cost Tape and FAS 33 data bank that meet the selection criteria. All of the sample firms were used to test the first and second hypotheses. The sample was divided into 22 industry portfolios to test the third hypothesis. Further, the sample was divided into regulated and unregulated companies to test the fourth hypothesis.

The study used multiple regression techniques. The dependent variable is the cumulative abnormal return which was computed by applying the market models using weekly stock returns. The cumulative abnormal return was calculated for the 52 weeks before the disclosure date. Additionally, it was calculated for the 31 weeks ending 5 weeks before the end of the fiscal year, the 14 weeks around fiscal year end, and the 7 weeks around the disclosure date. The independent variables are represented in the three regression models to test for information content of realized holding gains, unrealized holding gains, and total holding gains, respectively. Unexpected historical cost income and size variables were added to each regression model to control for historical

cost income and firm size respectively. To accept or reject the hypotheses, t-values are used to test the significance of variables. Also, adjusted R-squares were used to evaluate the models.

E. Limitations and Expected Contribution

The samples in this study are selected to meet ASR 190 and SFAS 33 size requirements and hence the inference drawn from the results will be limited to these populations. On the other hand, the study used disclosed data required by the SEC and FASB. The inference drawn from the results will be limited to those disclosures rather than those advocated by Edward and Bell and Revsine among others. Moreover, the study includes unexpected historical cost income, firm size and unexpected holding gains in regression models. Therefore this study may be omitting some important variables and subject to other measurement errors.

Nevertheless, this research is expected to provide some evidence in examining the information content of specific price change disclosure. Three regression models and three market expectation forms are used to examine the incremental information content of unexpected realized, unrealized and total holding gains in cross-sectional analysis. Further, the study classified companies into portfolios and conducted the test within and across

industries. Moreover, the companies were classified into regulated and unregulated. In doing so, the research is expected to provide additional evidence concerning the incremental information content of RC/CC disclosure and whether industry membership is an important factor in investigation of such issues and hence its implication in setting disclosure requirement by FASB and SEC.

In addition, the study considers segregated elements of realized and unrealized holding gains after screening the data and segregating depreciation and cost of goods sold on Replacement Cost tape. This is an important issue to answer the FASB question to determine which elements accounted for the incremental information and hence its implication in revising the disclosure requirements.

F. Organization of the Study

Chapter II examines the theoretical relationship between RC/CC information and stock prices. Further, it provides the theoretical foundation for the empirical test described in Chapter IV. The first section in Chapter II examines the theoretical and empirical relationship between inflation and stock returns. The second section provides analysis of the usefulness and predictability of accounting income models, such as exit and entry value accounting systems during inflation. The third section provides some theoretical considerations on the

relationship between replacement cost information and stock prices.

Chapter III reviews market studies examining the association between replacement cost information and stock returns. The emphasis is on those market studies published in the last four years concerning examination of information content of RC/CC disclosures required by ASR 190 and SFAS 33.

Chapter IV presents methodology and research design. It describes the hypotheses, sample selection, test period, data collection, and the regression models used. It also describes the procedures used to compute realized and unrealized holding gains and the deflator used in the study.

Chapter V presents the empirical results. The first section reports the results of examining the information content of unexpected historical cost income. The second section presents the association between firm size and unexpected stock return. The third section presents the cross-sectional analysis in testing the first and second hypotheses under the three market expectation forms about RC/CC disclosure. The fourth section presents the regression analysis within and across industry portfolios. The last section presents the regression analysis within and across regulated and unregulated industries.

Chapter VI presents summary, conclusion and implications of the study.

CHAPTER I

FOOTNOTES

1. Beaver, Griffin and Landsman (1980) stated that approximately 80 percent of firms included depreciation in computing realized holding gains leads to incorrect figures for both realized and total holding gains.
2. Banz (1981) found that firms with very small market value (relative to the rest of the market) had large and positive residual returns. On the average, small NYSE firms have had significantly larger risk adjusted returns than large NYSE firms over a forty year period, but the effect is not very stable over time. Also, Reinganum (1981) found that a portfolio of fifty small firms experienced average 'abnormal' return of nearly fifteen percent per year for at least two years.
3. Freeman (1983) points out the importance of controlling for industry membership in investigating information content of RC/CC disclosures.

CHAPTER II
THEORETICAL RELATIONSHIP BETWEEN SPECIFIC PRICE
INFORMATION AND STOCK PRICES

The objective of this chapter is to discuss the theoretical relationship between information provided by specific price change data and stock market prices as a framework for examining empirically the incremental information content of RC/CC disclosures. The first section examines the theoretical and empirical relationship between inflation and stock return. The second section examines the usefulness of exit and entry value models in measuring specific price income and their predictability. The final section examines the theoretical relationship between specific price earnings and stock returns.

A. Theoretical and Empirical Relationship Between
Inflation and Stock Return

During an inflationary period, the investor expects that real stock return will not be affected by inflation. Fisher (1930) noted that the expected nominal interest rate can be expressed as the sum of an expected real return and an expected inflation rate, and the proposition that expected nominal returns contain market assessments

of expected inflation rates can be applied to all assets. As a quantity theorist, Fisher hypothesized that the real and monetary sector of the economy are largely independent. Therefore, Fisher asserted that the expected real return is determined by real factors, like the productivity of capital, investor time preferences, and tastes for risk, and that the expected real return and the expected inflation rate are unrelated. Under this condition, the expected nominal return on the asset varies in one-to-one correspondence with the expected inflation rate, and the expected real return on the asset is uncorrelated with the expected inflation rate.

In the same direction, the classic Fisher-Williams model started from the proposition that the real returns to the ownership of capital goods will be invariant to the general price level. These returns depend fundamentally upon production function, or input-output relations and factor proportions which are invariant to the general price level. They held that the real rate of interest would also be invariant to the price level *per se*. Since both the flows of real return and the real capitalization rate are invariant to inflation, the real present value of these flows is also unaffected either by current inflation or by the expectation of future inflation. This invariance of real values means that current money values will vary in direct proportion

to the general price level, making nominal capital gain (in before-tax percentage terms) on unlevered equity equal the rate of inflation. In the classical framework, the owners of levered equity benefit from an additional capital gain (even in real terms) whenever there is an unanticipated increase in the rate of inflation expected to prevail in the future (Lintner, 1975, p. 270).

In recent years, the empirical evidence shows that both real and nominal rate of return on common stocks have been negatively related to both anticipated and unanticipated inflation (e.g., Fama, 1975; Lintner, 1975; Bodie, 1976; Jaffe and Mandelker, 1976; Nelson, 1976; Fama and Schwert, 1977). Also, the risk premiums are similarly negatively correlated with inflation. Lintner (1975) stated that the annual data on equity holding periods returns, including dividends, since 1934, and 1948 both similarly reject the classical model, and the risk premiums are similarly negatively correlated with inflation. Also, both stock return and risk-premiums on twenty years of monthly postwar data show a negative impact of inflation which rejects the classical model with a t-value of about 5.

Furthermore, Friend and Hasbrouck (1982) have stated that inflation has depressed not only stock prices and realized real market rate of return on stock, but also real dividends and earnings per share. Their results show

that with a one percentage point increase in sustained inflation, the decline seems to be somewhat more than ten percent for real economic earnings per share.

Fisher's hypothesis has been challenged by these findings. Some economists tried to give an explanation to this conflict. One explanation relied on net tax burden or the effective tax rate on corporate source income. As the inflation rate increases, the effects of historical cost depreciation and FIFO inventory valuation reach limited points, while the advantage conferred by deductibility of nominal interest payment rises linearly. A simulation analysis by Hasbrouch (1981) suggests that under reasonable parameter assumptions and the depreciation rules in effect prior to 1981, the level of sustained inflation at which the net tax burden would be equal to that with no inflation is probably about twenty percent per year. Nicholas (1980) examined the effect of inflation on the real value of the equity and stated that since depreciation expenses are charged in terms of monetary units, inflation will lower the real value of fixed income claims and increase the real value of the tax authority claims and may reduce the real value of the equity. By the same reasonings, Feldstein (1980) argued that inflation increases the effective tax rate on corporate source income. He stated that:

When the inflation rate is steady, share prices rise in

proportion to the price level to maintain a constant ratio of share prices to real earnings. In contrast, an increase in the expected future rate of inflation causes a concurrent fall in the ratio of share prices to current earnings. Although share prices then rise from this lower level at higher rate of inflation, the ratio of share prices to real earnings is permanently lower. This permanent reduction in the price-earnings ratio occurs because under prevailing tax rules, inflation raise the effective tax rate on corporate source income (Feldstein, 1980, p. 839).

From a different perspective, Lintner (1975) asserted that the relative dependence on external financing necessarily varies directly with realized inflation rate. He stated that:

Even if the company's unit sales growth and real rates of return on operation and assets and its collection experience are fully maintained at a constant level, this greater relative dependence on outside financing, required by an increase in realized inflation during any period, will necessarily reduce the real rate of return realized on its equities during the period, because it involves a deadweight dilution of the real returns on owning equities over the period. If the added financing required to maintain real rates of growth is obtained by added debt, the after tax-cost of the debt not otherwise required will directly reduce real returns to equity owner even though the company's real profits are maintained. Alternatively, if the added financing is obtained with new equity issues, even if the new issues price is initially the same, the owners of the previously outstanding shares wind up owning a smaller fraction of the company's total equity, and their real return will have been impaired even though the company's real returns have been fully maintained (Lintner, 1975, p. 273-4).

Fama (1981) added more explanation for the behavior of stock return during inflation. He hypothesized that the negative relations between stock returns and inflation are proxying for positive relations between stock returns and real variables which are more fundamental determinants

of equity values. The negative stock return-inflation relations are induced by negative relations between inflation and real activity which in turn are explained by a combination of money demand theory and the quantity theory of money. As predicted by the proxy effect hypothesis, the results show that the more anomalous of the stock return-inflation relations disappear when both real variables and measures of expected and unexpected inflation are used to explain stock returns. To test his proxy hypothesis, Fama investigated the relationship between real common stock return (adjusted by CPI) and the real variables, then to inflation measures, and finally to combinations of real variables and inflation measures. To identify the real variables which are potentially important in the determination of stock returns, he considered the capital investment process.² In other words, an increase in the general level of real activity puts pressure on the existing capital stock, raising the average return on the existing stock and thus inducing increased capital expenditures. He identified the capital expenditures ratio and the real rate of return on capital measured by replacement cost basis to be the most important variables in the determinations of real stock returns.

Another avenue of explanation concerns factor prices. Economic Report of the President (1981) indicated

some evidence that compensation of employees as a share of total cost and profit of nonfinancial corporation increased slightly in the inflationary period of the 1970's. Kravise and Lipsey (1982) show that some effect of inflation on corporate earnings is attributable to the higher rise in the cost of goods which are purchased abroad in the 1970's, such as petroleum and other raw materials, than in those purchased domestically. This would imply that part of the inflation effect is attributable to the source of inflationary pressure during the 1970's and much of these effects operating through the cost of goods might ultimately be expected to be reflected in selling price.

The regulatory burden imposed by government during a higher inflationary period may give another explanation to negative inflation impact. Friend and Hasbrouck (1982) stated that while this might help explain the negative relationship in 1970's, it would not explain the similar relationship between inflation and market returns in earlier periods or in other countries. Moreover, among the motor vehicle, chemical and petroleum industrial groups, which have probably been most affected by adverse regulation, only the motor vehicle industry seems to have suffered a larger-than-average negative impact of inflation upon economic profit (Friend and Hasbrouck, 1982, p. 16).

B. Predictability of Accounting Income Models:

Exit and Entry Value Systems

In an inflationary environment, the question arises about which value system is most useful in making rational investment decisions. Two value systems have received considerable attention over time; sale value (exit value) and replacement cost value (entry values). This section examines these two value systems and their usefulness in predicting future cash flows.

(1) Exit Value Accounting

The exit value can be defined as current price at which asset could be sold. Raymond Chambers is probably the leading advocate of the use of exit prices. he explains this approach as follow:

At any present time all past prices are simply a matter of history. Only present prices have any bearing on the choice of an action. The price of a good ten years ago has no more relation to this question than the hypothetical price twenty years hence. . . Excluding all past prices, there are two prices which could be used to measure the monetary equivalent of any nonmonetary good in possession, the buying price and the selling price. But the buying price, or replacement price, does not indicate capacity, on the basis of present holdings whereas the selling price does (Chambers, 1966, p. 121).

Chambers asserted that the primary function of accounting is to present retrospective and contemporary monetary calculation as a guide for future action in markets. He argued that replacement cost or buying prices does not indicate the capacity of the firm on the basis of

present holding whereas the selling price or realizable value, which is similar to current cash equivalents in the ordinary liquidation, is uniformly relevant at a point of time for possible future actions in the market. He assessed this argument on the basis that whenever someone lends, invests or purchases, he is acquiring some value that exists now as well as some values that are predicted to exit in the near and distant future. This means that present selling prices of the assets held (and the selling prices that will exit immediately after purchase) are relevant to the decision. Hence, the price of stock ought to depend upon the presently existing exit value of the firm as well as depending upon the future cash flows of the firm.

However, the exit value model has been criticized by many theorists. Additivity is an important assumption in the Chambers' model. He assumes that the net realizable value of an asset A plus that of an asset B equal the net realizable value of both assets together. This assumption cannot be validated since assets interact with each other. Larson and Schattke (1966) criticized this assumption and stated that each property is nonadditive due to their separate and distinct characteristics.

Benston (1967) pointed out a problem in Chambers' model concerning measurement of inventories at resale price which include raw materials and work in process.

Furthermore, Ma (1974) pointed out some inconsistencies in Chambers' model such that bonds held as assets should be adjusted to their current cash equivalent while bonds as liabilities should be shown at the contractual amount.

(2) Entry Value or Replacement Cost Accounting

Two different kinds of entry value have been proposed. (1) Current price of replacing an identical asset, and (2) current price of replacing equivalent service potential. Edwards and Bell (1961) advocated the use of the first approach. They stated that:

It must be remembered that it is not the current cost of equivalent services provided by the fixed asset over some time period which we wish to measure, but the current cost of using the particular fixed asset which the entrepreneur chose to adopt and is still using. It is that particular decision that the entrepreneur wishes to evaluate on the basis of accounting data. It may well be that he then may wish to compare these data with opportunity cost data relating to selling and/or replacing the fixed asset, but in order to make this decision about the future, he must have information about the actual present and past (Edwards and Bell, 1961, p. 186).

AAA Long-Lived Assets Committee favors the use of the second approach - the price at which equivalent service potential could currently be purchased. The committee stated that the value of asset service potential at the acquisition date is presumed to be at least as great as its purchase price. In most cases, purchase price provides the only objective evidence of the value of the service potential embodied in the asset. However, the

committee asserted that the current cost of obtaining the same or equivalent service should be the basis for valuation of assets subsequent to acquisition as well as the date of acquisition.

Paton and Paton (1952, p. 325) offer support for the latter approach in this way:

It should be understood that the significant replacement cost is the cost of providing the existence capacity to produce in terms of the most up-to-date method available. Thus it is largely a waste of time to estimate the cost of replacing an obsolete or semiobsolete plant-unit literally in kind; such an estimate will neither afford a basis for a sound appraisal of the property nor furnish a useful measure of current operating cost. The fact of interest is what it would cost to replace the capacity represented in the existing asset with a machine of modern design.

The Securities and Exchange Commission followed this approach in ASR 190 and defined replacement cost as the lowest amount that would have to be paid in the normal course of business to obtain new assets of equivalent operating or productive capability. SFAS 33 defined current cost of the property, plant, and equipment as the current cost of acquiring the same service potential (indicated by operating costs and physical output capacity) as embodied by the asset owned. However SFAS 33 stated some alternative propositions to measure current cost. In sum while ASR 190 rejected Edwards and Bell's approach, SFAS 33 adopted their original approach. Revsine (1970) argued that under ideal conditions, the two approaches will often provide

similar results but Edward and Bell's method will provide less measurement error.

However, the appropriate current price concept depends on the uses made of financial statement information. Because the information needs by various users may differ, the relevant current price concept may also differ. Revsine (1974) suggested that financial statements based on current replacement cost (entry value) may be particularly relevant to users interested in predicting future operating flows of a firm and future distributable operating flows to investors in the firm. In other words, the current replacement cost of assets serves as an estimate for the future cash flows required in replacing assets' services used during the period. These estimated future cash flows will affect the availability of resources for maintaining or increasing operating capacity and for making distributions to investors.

McKeown (1974) suggests that the financial statements based on current selling prices, or exist values, may be particularly useful in assessing the liquidity of a firm because exit-value statements measure assets at the net amount that could be realized from their disposal within a short time of the balance sheet date.

Edwards and Bell (1961) attempted to explain

the usefulness of the income based on exit value and that based on current replacement cost in measuring the firm's profitability. They asserted that the best measure of the profitability of a firm can be achieved through the use of sale price (exit value) or realizable profit and that the change in market value for a period provides the best approximation of short-run profit. However, they concluded that the current replacement cost income, business profit, provides the superior long run measure.

Edwards and Bell segregate the gains or losses in the firm into two distinct types of profit making activities. One is related to the use of assets in the operating activities which results from the excess of sales over current cost expenses and they call it "current operating profit." The other activity involves the holding of assets over a period of time and they call it "cost savings." They claim that since these two activities are involved in very different types of decisions and have varying patterns of repeatability, investors cannot evaluate the efficiency of a firm's operations without dichotomizing the net profit figure into operating profits and the cost savings.

A cost saving is 'realizable' when the current cost of the asset increases during the period. This is the maximum amount of gain or loss which accrues to the firm as a result of the holding activity. A cost saving is

'realized' when the asset has been used in the production process or sold. An 'unrealized cost saving' is the portion of value change in assets which have not been sold but still owned by the firm at the end of the period. The sum of current operating profit, realized cost saving and realized capital gains represents realized profit during the period. The combination of current operating profits and all realizable cost saving (holding gains) represents 'business profit' which managers attempt to maximize.

Edwards and Bell asserted that current operating profit is essentially the long-run profit associated with the existing process of production carried on under existing conditions. They state that current operating profit can be used for predictive purposes if the existing production process and the existing conditions under which that process is carried out are expected to continue into the future. Then current operating profit indicates the amount that the firm can be expected to make in each period over the long run. Current operating profit evaluates the firm as a going concern while realizable operating profit cannot perform this function.

However, Parakash and Sunder (1979, p. 19) criticized the dichotomy and stated that for the two profit making activities to be independent, it is necessary and sufficient that the holding risks of the firm's assets be separable; that is, it should be possible for the firm to

hold the assets without also having to carry the economic risk of specific price changes. Also, Drake and Dopuch (1965) argued that the dichotomy of current operating income and holding gains are not determined independently. Hence these separate income figures are not useful to evaluate different kinds of decisions such as operating and investment decisions.

As a follower of the decision usefulness school, Revsine (1973) agreed with Edwards and Bell and stated that in order to emphasize the different origin of each income segment, replacement cost income is fragmented into two components, operating profit and holding gains and this dichotomization is intended to allow users to separately evaluate management's operating and holding activities. Further, Revsine supported Edwards and Bell's alternative justification that the holding gains component is not important per se; rather, it is separately reflected because we wish to remove the effect of price changes from those of operating performance. In other words, Revsine argued that financial statements based on replacement cost may be particularly relevant to users interested in predicting future operating flows of a firm and future distributable operating flows to investors in the firm.

Beaver, Kennelly and Voss (1968, p. 677) maintain that before we empirically test the predictive ability of

a concept, the theory supporting such contention must be developed. Revsine followed their viewpoint and argued that empirical research should be conducted to specify a relationship between accounting information derived from a replacement cost system and its usefulness for users' decision making. This argument is consistent with those of Beaver (1973, 1981) and Gonedes and Dopuch (1974). They argued that one criterion being employed by empirical research is the predictive ability. A role of empirical research is important in providing evidence on actual and expected consequences and it is inconceivable to select optimal accounting alternatives without assessing the impact of their actions on security prices. However, Revsine asserted that since a well-developed theory did not exist in such an area, the empirical study could not be conducted without theoretical foundation to support the relevance of replacement cost accounting.

Revsine stated that the justification for the dissemination of replacement cost reports to investors is based on the assumption that replacement cost income is a surrogate for economic income. The notion that replacement cost income represents an indirect measure of the results of economic income (indirect measurement hypothesis) has never been examined by its proponents. Revsine (1970) developed a priori model which can be used to assess the theoretical validity of the indirect

measurement hypothesis.

Revsine proposed two methods by which an income concept could conceivably generate information for predictions: (1) the lead-indicator method, and (2) the extrapolation methods. The extrapolation method centers on the predictive ability of the current operating profit component. The lead-indicator concept, on the other hand, involves not just the current operating profit component but rather total replacement cost income.

The extrapolation approach involves the current operating profit portion of replacement cost income by locating trends in past accounting data and extending these trends into the future for estimating future dividend flows. However, forecasts based on existing levels of operating profit are in essence, simple trend analyses. Revsine (1973) stated that one of the primary deficiencies of trend analyses is that such extrapolations can never anticipate turning points. Such changes can be incorporated into later forecasts only after they occur. Furthermore, whenever there is a lag between the period of asset purchase and the periods in which an asset generates increased flows, the early period operating profits do not necessarily provide an appropriate basis for estimating future operating flows.

Revsine has placed great emphasis upon the lead-indicator method. In other words, the replacement

cost income represents an indirect measure of the results of economic income. He utilized the correspondence between them in perfect and imperfect competitive economy. He derived, theoretically, that replacement cost income is virtually identical to economic income in a perfectly competitive economy. Most replacement cost income concepts promulgated contain two general components: (1) an operating profit segment, and (2) a price change segment. In the terminology of Edwards and Bell, these components are called current operating profit and realizable cost savings, respectively. In a perfect competitive economy, the current operating profit component of replacement cost income is equal to the expected income component of economic income. In similar fashion the second component of replacement cost income - realizable cost saving - is a direct counterpart to the second component of economic income - unexpected income. Given that each component of replacement cost income is equal to its counterpart component of economic income, total replacement cost income must also equal total economic income.

Under conditions of imperfect competition, Revsine derived that current operating profit is merely an approximation of expected income. An approximate correspondence can also be attributed to the cost savings and unexpected income components. He stated that:

Even in imperfect competitive economies, asset prices approximate the average net present value of asset revenue generating potential. Theoretically, changes in asset revenue generating potential precipitate appropriate changes in asset price. Proponents of the indirect measurement hypothesis apparently would contend that just as market price is related to asset net present value, so too the change in asset market price is related to change in asset net present value. Therefore, realizable cost saving, measured as the change in the market price of held assets, approximate unexpected income for a period, measured as the change in the net present value of asset revenue generating potential. . . . However, there are a priori grounds for questioning the validity of the posited relationship between changes in asset prices and changes in service potential in realistic economies (Revsine, 1970, pp. 516-7).

Barton (1974) criticized that approach arguing that even though economic income is ideal, it is useless from the accounting practical view because economic income is an ex-ante concept and current market price is not a surrogate for present value of assets. Further, he argued that current replacement cost of assets should not be used as a surrogate for present value because the expected value of assets is not always equal to present value of assets.

So far, Revsine has placed a theoretical framework for the correspondence between replacement cost income advocated by Edwards and Bell and economic income which can be basis for empirical investigation about the predictive ability of specific price data information. Beaver, Kennelly and Voss (1968) suggested predictive ability as a criterion for evaluation. They stated that

theory provides an explanation why given alternative is expected to be related to the dependent variable and permits the investigators to generalize from findings of simple data to a new set of observations. Consequently, a complete evaluation involves both a priori and empirical consideration.

C. Theoretical Relationship Between Replacement Cost/ .
Current Cost Income and Stock Prices

As discussed in the previous section, there are two distinct correspondences underlying the relationship between total replacement cost income and total economic income: (1) that the current operating profit component of replacement cost income is an indirect measure of the expected income component of economic income, and (2) that the realizable cost savings component of replacement cost income is an indirect measure of unexpected income component of economic income. The relationship between replacement cost income and economic income rests, in part, on the assumption that changes in asset prices are in direct response to changes in the level of net cash flow expected to be generated by assets. However, there are a priori grounds for questioning the validity of the posited relationship between changes in asset prices and changes in service potential in realistic economies.

Revsine (1970, p. 517) stated that:

In an aggregate sense, this relationship between realizable cost savings and unexpected income is probably valid. Barring changes in the discount rate, etc, such a relationship between asset prices and asset cash flows must exist in the long run for the economy as a whole. However, for any individual firm in the economy there is no necessary relationship between movements in asset prices and movements in cash flows.

There are three possibilities regarding asset market price changes and changes in the service potential of assets to a firm. Future cash flows resulting from asset operation could change in the same (Type A) or opposite direction (Type C) or remains constant (Type B) with asset price change. The close correspondence between movements in each should be predominant in order to validate the indirect measurement hypothesis. Revsine (1970) asserted that if we can demonstrate that, theoretically, Type B and Type C price changes can be expected to occur with some frequency in realistic situations, and if we can further show that such price changes precipitate divergence between total replacement cost income and economic income, then the essence of the indirect measurement hypothesis must be questioned. Nevertheless, their possible existence, however infrequent, makes the relationship between replacement cost income and economic income uncertain and makes the indirect measurement hypothesis a potentially dangerous generalization.

However, theoretical arguments linking replacement (or current) cost earnings and security return have

adopted either of two approaches; strict income measurement or an information perspectives. The first approach can be adopted if the prices are assumed to act as if the market structure is perfect and complete.³ Assuming this setting, the relationship between the various earnings measures and security returns is straightforward. Post-holding gain net income would be equal to the security return defined in terms of dividends and stock price changes. The ratio of the market value of common equity to the value reported under replacement cost accounting would be one, and there would be perfect, positive correlation between post-holding gain net income and security return. Moreover, there are special cases where the pre-holding gain net income can be interpreted as a measure of the real rate of return⁴ (Beaver, Griffin and Landsman, 1982, p. 17).

The major implication of perfect and complete markets is that a market price readily exists for every asset, claims and security. Moreover, there is no ambiguity about what is meant by the market value. Entry price (i.e., replacement cost), equal exit prices (i.e., current cost), equal its value in use (i.e., present value of future cash flows).

However, all assets and claims do not enjoy perfect and complete markets. Nevertheless, there are several good reasons for assuming that this condition does hold

(Beaver and Landsman 1981, p. 15), (1) Perfect and complete market may be a reasonable description of the markets for some of the assets covered by the provisions of statement No. 33. (2) Many advocates of inflation adjusted disclosures act as if markets are perfect and complete (as, for example, when they claim inflation adjustments measure real earnings). (3) Finally, perfect and complete markets provide a simple setting for interpreting the disclosures, hence represent a natural starting point.

Therefore, the straight relationships between the various earnings measures and security returns is based on the assumption of perfect and complete market. If this assumption is relaxed, the relationship between replacement cost (or current cost) and security prices is no longer straightforward. Further, entry prices are no longer necessarily equal to value in use, which is reflected in the market value of the common equity. Similarly, there is no obvious relationship between various forms of SFAS 33 or ASR 190 earnings and security returns. This leads to the alternative, an informational approach that is discussed next.

Beaver, and Demski (1979), among others, adopted the informational approach.⁵ Setting the more realistic assumption of imperfect and incomplete market, the firm is still envisioned as specifying a production plan

consisting of state-contingent input and outputs. The only difference is that some of the inputs and outputs cannot be traded in organized markets. At one level, the firm may not have markets for certain assets and liabilities. At another level the non-existence of futures and insurance markets (except in a limited number of cases) provide 'prima facie' evidence of the lack of such completeness. Therefore, some shareholders may prefer one plan to another based on nonmarketable commodities.

In the world of uncertainty and imperfect and incomplete market, if the firm offers a complex set of state-contingent production plans, the firm possesses information that is potentially useful to individuals external to its direct operations. Such information may be useful in the sense of altering beliefs regarding future cash flows. In other words, uncertainty is central to an informational approach. Beaver and Landsman (1983) stated that in this setting, stock prices reflect investors' beliefs about the amounts, timing, and uncertainty of future cash flows. Financial reporting, as one source of information, has the potential to alter those beliefs about future cash flows and hence to affect stock prices. In this setting, the relationship between stock prices and financial data depends upon how the data affect beliefs.

Applying this framework to replacement cost/current cost information, it can be stated that the relationship between specific price change data and stock prices rest upon how these data alter investors beliefs toward future cash flow of a security. Beaver, Griffin and Landsman (1982, p. 18) set the framework of information approach on pre-holding gain income as follows:

We interpret claims made for the relevance of pre-holding gain income as implying that pre-holding gains income provides information about 'permanent earnings' (and hence, indirectly about future dividend paying ability) that is not provided by earnings computed under historical cost. . . Pre-holding gains net income is said to avoid the profit 'illusion' and better reflects the permanent earnings and future dividend paying ability of the firm. The historical cost earnings do not reflect the effects of unanticipated inflation on the depreciable assets. Pre-holding gains net income does reflect this 'information'. As a result, a reasonable interpretation of the empirical implications of such arguments is that changes in security prices will be more highly correlated with changes in pre-holding gain net income than with changes in historical cost earnings.

Another issue concerns the relationship between unexpected holding gains and stock price is the direction of such relationship. Assuming this relationship exists, the question arises about the direction whether it is positive or negative.

Edwards and Bell (1961) asserted that current operating profit is essentially the long-run profit associated with the existing process of production carried on under existing conditions. To the extent that

securities are purchased on the basis of long-run conditions, the reporting of profit on a current operating profit basis would appear to be preferable. In other words, the changes in security prices will be positively and highly associated with current operating profit than with changes in historical cost profit.

Revsine (1970) argued for a positive relationship between stock prices and replacement cost income. He stated that (p. 516):

One rationalization for the dissemination of replacement cost reports relies on the validity of the indirect measurement hypothesis. Investors are not primarily interested in the historical financial data provided to them in published financial statement. No rational investor purchases stock in a company because its past profit performance; rather, it is the prospect of future profitability which induces investment. Given this investor emphasis on the potentialities confronting the firm, indirect measurement hypothesis proponents have advocated the relevance of a replacement cost report to investors. They contend that since replacement cost income is supposedly an indirect measure of economic income, and since economic income incorporates the very potentialities of concern to investors, it follows that replacement cost reports should be provided an indirect means of communicating potentialities to present and prospective investors.

Beaver (1979) argued that future cash flow will depend upon the future quantities of output and their future selling prices, and the future quantities of inputs and their prices. Further, he stated that each of these elements can be viewed as random variable about which replacement cost data may potentially provide information (that is, alter investor's belief). The new information

could also provide a value on those uncertain future cash flows. Depending upon what is assumed about the nature of the information content of replacement cost disclosures with respect to the factors mentioned above, the disclosure could be good news, bad news, or no news at all. Hence, it is difficult to predict what the net effect of such disclosures would be on the security prices of the reporting firms (Beaver, 1979, p. 40). However, Beaver cautions that the disclosure may have had a nonsystematic effect (that is, increase the price of some securities but decrease the price of others).

Lustgarten (1982) argued for a negative relationship between stock prices and unanticipated replacement cost of plant and equipment already depreciated but not yet replaced. He stated that:

This disclosure of replacement cost is likely to have a substantial effect on investors' anticipating of future prices and expenditure for capital inputs and little effect on anticipation of future prices of output. This is because the price of output is reflected in sales and is already recorded in financial statement in current prices, while the cost of capital inputs as reflected in depreciation charges is recorded in historical cost. . . . Given that investors' forecasts of future output prices will be relatively unaffected by ASR 190, the disclosure of high than anticipated replacement cost of plant and equipment already depreciated but not yet replaced, should reduce investors' expectations of future cash flows and therefore lower the value of the firm (Lustgarten, 1982, pp. 130-131).

Therefore, it appears that there is no explicit theory to be based on for predicting the direction of the

impact of specific price change data on stock prices. However, based on the previous arguments, it could be stated that unexpected pre-holding gains income would be positively associated with unexpected stock returns. This leads to a negative relation between unexpected realized holding gain and unexpected stock return.⁶ The association of unexpected unrealized holding gains and unexpected stock returns could be positive or negative depending on how the investors perceived this information

CHAPTER II

FOOTNOTES

1. Real rates of return will be fully maintained if the firm is in a neutral debtor-creditor position and actually raised by unanticipated inflation if the firm is a net debtor. These results depend in part on the fact that inflation is reducing the real value of cash and accounts receivable, but also on the fact that any offsetting capital gains on outstanding debt from unanticipated inflation do not reduce the number of new dollars required from outside sources. Indeed, the same amount of increased external financing is required if the firm has no debt outstanding or if it is a large net debt (Lintner, 1975, ft. p. 500).
2. In the theory of finance, the process generating capital investments with expected rates of return in excess of cost of capital, equivalently, investment projects where markets values exceed costs of acquisition, is central in the determination of stock return (Fama, 1981, p. 551).
3. The market structure is complete in the sense that all consumption goods as well as all factors of production are traded in organized markets. And each such market is perfect in the sense that prices are known by all agents, no transaction costs of any form are present, all agents behave as strict price takers, and the transaction technology is convex in the sense that fractional quantities of all factors and commodities are available. Also, the economy is at an equilibrium in which supply and demand offers equal at the prevailing price (Beaver and Demski, 1979, p. 39).
4. Some of these special cases are discussed in Beaver (1979) such that (1) current costs are based upon the price of the used assets, (2) used asset price is equal to the present value of the remaining cash flows, (3) the special price increases for this type of asset is equal to the general price level increases.

5. Garman and Ohlson (1980), among others, discuss the link between security returns and changes in earnings from an information perspective. They derived accounting valuation models, which map accounting variable (or other forms of information) to equilibrium prices. Beaver, Lambert and Morse (1980) combined the link between past and future earnings with the link between prices and future earnings to provide an interpretation of the contemporaneous relationship between price changes and earnings.
6. The pre-holding gain is equal historical cost income minus realized holding gains. Therefore, increasing realized holding gains leads to decreasing pre-holding gains income and vice versa. Also, increasing unexpected realized holding gains represent unexpected increase in cash outflow (expenses).

CHAPTER III

LITERATURE REVIEW OF MARKET STUDIES OF INFORMATION CONTENT OF SPECIFIC PRICE CHANGES

The findings of empirical studies investigating the information content of replacement cost of ASR 190 and current cost of SFAS 33 are controversial. The difference in results may be due to some methodological issues in these studies rather than the usefulness of these data and its impact on investment decisions. The purpose of this chapter is to examine the methodology and the mode of analysis used in these studies published in the last four years.

Beaver, Christie and Griffin (1980) examined the differences in security return behavior among the reporting firms under ASR 190 during four time intervals, three non-overlapping intervals and one overall interval. The intervals are from fifteen days prior to August 21, 1975; March 23, 1976; March 31, 1977; through fifteen trading days after, and from June 2, 1975 through April 22, 1977.

The structure of the research design was to partition a group of firms reporting replacement cost data according to certain variables which incorporate the SEC required replacement cost data. They hypothesized that the expected stock return conditional upon the partitioning variable is

the same for all portfolios of firms so grouped. To test the hypothesis, the study examined the difference in returns among the reporting firms in conjunction with Hotelling's T^2 introduced in Gonedes (1975).

The sample of 334 reporting firms was partitioned into eight groups. To form the eight groups, the value of each of three informational variables (depreciation, cost of goods sold, and net monetary position) was treated as high (or low) if the value was above (or below) the median value for all the sample firms. This dichotomous treatment of three variables leads to eight groups per partitioning scheme. Four partitioning schemes were examined. Three were income statement oriented which represent three different methods of deflating the difference between the replacement cost of an income statement item and its historical cost. The three methods of deflating were net income, total assets, and the value of the item under historical cost. In the fourth partitioning, the first partitioning variable related to the difference in net productive capacity under replacement cost and under historical cost, the second partitioning variable was the difference in inventory, and the net monetary position was the third partitioning variable. The eight portfolios were paired into four pairs so as to take the differences in return between the most 'extreme' portfolios with the replacement cost data.

The findings are consistent with the hypothesis that ASR 190 replacement cost disclosures provided no information to the market during the fifteen days before and after the date that the requirement was first proposed, the date that the requirement became effective, and the date that the data were first filed with the SEC. However, this study is subject to some methodological shortcomings which are discussed below.

As pointed by the authors, the research design does assume that firms can be grouped in such a manner that security returns of firms within a group are affected in a similar way by the replacement cost disclosure and are affected in a way potentially different from the returns of firms that are not members of that group. To the extent the grouping procedure falls short of this property, differential effects on returns within a group will tend to offset one another. This in turn will tend to reduce the power of the test to detect an information effect. To avoid this problem, the industry membership is one possible factor to group firms. This factor is important in studying the information content during an inflationary period since the relative price change is not constant, but differs from one industry to another. Grouping firms and ignoring this factor, will tend to reduce the power of the test to detect an information effect, since the effect will be washed out.

Another potential source of shortcomings in this study is the use of a dichotomous partitioning variable rather than a continuous variable. The study partitioned firms based on whether they ranked above or below the median value of the partitioning variable. Lustgarten (1982) stated that the authors were ignoring potentially important information contained in the partitioning variable by using this type of classification. It is quite possible, for example, that there was some threshold of unanticipated replacement cost below which the market did not react. If this threshold were far from the median value, then partitioning the sample at the median could lead to insignificant statistical test while partitioning the sample at the threshold would produce significant results (Lustgarten, 1982, p. 134).

The study used a period of 31 days centered on the day of the filing, as well as a much longer period of 480 days. The 31 days might be too short to capture the full information impact of the disclosures. The 480 day period may be too long. The test by Ro (1980) used 26 week period and the results showed decline in share prices among companies with the highest unanticipated replacement cost and the t-value was significant at the probability level of ten percent. However, Ro dismissed this significance because he did not control for the information content of historical costs. Therefore he was

not sure whether the decline in stock prices were attributable to the information content of replacement cost disclosure or to the information content of historical or to cost disclosure. Lustgarten (1982) has controlled for the information of historical cost disclosure and used time periods which were much closer to the time periods used in Ro's study and the results show an evidence of information content of replacement cost disclosure. However, Beaver, Griffin and Landsman's (1982) study controlled for the information content of historical cost by using two-stage regression and they show evidence of no incremental information for replacement cost disclosure. This study has some problems in the variables used that will be discussed later in this chapter.

Gheyara and Boatsman (1980) have investigated market reaction to the replacement cost disclosure of ASR 190. They adopted four different methodologies. The first test was a graphic portrayal of price changes during the 50 days report period for treatment (reporting) and control (non reporting) firms. The results indicate that the public release of the Form 10-K data did not introduce information for either the treatment or control samples. They concluded that the graphic evidence provides little support for the contention that the replacement cost disclosures of early 1977 possessed information content.

In the second test, they analyzed differences in

return for the five trading days around the Form 10-K release date by matching treatment and control firms based on their systematic risks. Hotelling's T^2 test was adopted for testing the average return differences between the two portfolios. The results indicate that there is no significant differences in returns of the two groups around the 10-K filing. However, they stated that these results should be interpreted with caution. The test merely indicates an absence of any wholesale upward (or downward) price response to the replacement cost disclosures. It is possible that considerable price changes took place, but that positive and negative responses canceled one another in the averaging process. Further, if the disclosures were all either greater than anticipated or all less than anticipated, any price responses would be of the same sign and such cancellation would not occur.

The third test was similar to the second except that the 83 paired time series for periods of 50, 40 and 30 days around the release of Form 10-K were examined. Using K^2 and Benferroni tests, the results indicate that there is no significant difference in return in their paired samples. However, they pointed out some methodological problems: (1) there is ambiguity regarding the proper method of calculating the standard deviation of the treatment/control differences in return, (2) ASR 190

exempted the smaller firms, hence there is considerable size differential between the treatment and control samples. Even there is no explicit theory which related firm size to return behavior, there is some empirical evidence that firm size may play some role (e.g., Miller and Modigliani, 1966; Beaver, Kettler and Scholes, 1970; Banz, 1981).

The fourth test was structured to control completely for any cross sectional correlation and only using the reporting firms to avoid any difficulties arising from the differential size of the reporting and exempted firms. They partitioned the sample into high and low holding groups based on each firm's ratio of holding gains to historical cost income. Then the volatility of abnormal performance of portfolio around the 10-K release date was computed from the regression residuals of security. Using t-test, the results indicate that there is no significant differences from zero abnormal performance.

Ro (1980) investigated the effect of compliance costs and information content on the stock market for firms affected by replacement cost disclosure required by ASR 190. The potential cost effect was investigated using a matched pair design between treatment (reporting) and control (exempted) firms based on systematic risk, the sign of earning per share between 1975 and 1976, the week of 10-K release and industry membership if possible. The

study used weekly stock return via the market model. The hypotheses for the cost effect around eight events surrounding ASR 190 deliberations were tested using the standard paired t-test. The results indicate that the t-value for all of ASR 190 events, other than ASR 190, SAB No. 7 and SAB No. 13, are insignificant at five percent probability level. The finding of a statistically significant t-value for ASR 190 and SAB No. 7 is consistent with the hypothesis that the mandate to disclose replacement cost data yielded benefits that exceeded the costs to the disclosing firms. However, the author argued that random events may be producing this result.

To test for the information content of replacement cost disclosure, Ro classified his paired firms (used in cost effect) into two subgroups according to the sign of the difference between the actual difference between historical cost and replacement cost net income based on the 10-K reports and the expected difference of the corresponding estimates from the 'Value Line'. He assumed that Value Line replacement cost forecasts represent the market's expectation for replacement cost disclosures. Then treatment firms (along with the paired control firms) were grouped into two (good-news and bad-news) subgroups according to the sign of earnings per share of replacement cost basis. The average return difference between good

news and bad news pairs was computed for 26, 10 and 52-week period surrounding the 190 events to see how sensitive the results of the test are to a change in a test period. Using t-test, the results indicate that the average weekly return difference for the 26-week period was statistically significant at ten percent level. However, the author argues that the significant results may be due to unexpected historical cost income between 1975 and 1976 rather than replacement cost disclosure.

Beaver, Griffin and Landsman (1982) examined whether the inclusion of inflation adjusted earnings, based on disclosure of replacement cost, adds to the explanatory power of cross sectional difference in annual security returns over and above what is provided by historical cost earnings. The study extended the multiple signal studies (Beaver and Duke, 1972; Foster, 1975; Gonedes, 1978; and Griffin, 1976, among others) by incorporating the magnitudes as well as the sign of the earnings variable and by the use of a two-step regression model to deal with the colinearity issue. The sample consists of 313 firms for the years 1976-1978.

The analysis focused upon security return and its relationship to four earnings variables: (1) percentage change in historical cost earnings, (2) percentage changes in pre-holding gains net income, (3) percentage changes in cash flow, and (4) post-holding gains net income deflated

by stockholders equity as measured by replacement cost data. The study used stock return rather than some form of residual return based on the results of Beaver, Lambert, and Morse's (1980) study which provides evidence that the correlation between security returns and changes in earnings are essentially the same under either form of the security return metric.

The basic research design consists of conducting cross-sectional regressions. The security returns represent the dependent variable and with one or more of the earnings variables as independent variables. The results show that the degree of correlation with security returns is similar in both years; 1977 and 1978. Historical cost earnings has the highest correlation with stock return, cash flow is next, pre-holding gain net income is third, and post-holding gain net income is last.

The study conducted two-stage regression analysis to determine whether replacement cost data provide 'information' (e.g., in this context additional explanatory power) over and above that provided by historical cost data. In this first stage, pre-holding gain net income was regressed on historical cost earnings to obtain a residual (Z), which by construction is uncorrelated with historical cost earnings. In the second stage, security return was regressed on historical cost earnings and Z. Based on their results, they tentatively

concluded that knowledge of pre-holding gain net income provides no additional explanatory power once historical earnings are known (i.e., conditional upon knowledge of historical cost earnings). They also turned the table on historical cost and conducted two-stage regression to determine the incremental information of historical cost earnings. They concluded that the evidence is consistent with the contention that knowledge of historical cost earnings does provide additional explanatory power even once pre-holding gain net income is known (i.e., conditional upon the knowledge of pre-holding gain net income).

The study extended its initial research design by: (1) altering the holding period over which the stock return was computed, (2) using residual returns, (3) using a single regression pooled across 1977 and 1978, (4) applying the two stage regression approach to the other earnings variables. The results supported the authors' contention that there is no incremental information for replacement cost disclosure. A fifth extension included the application of the initial research design to the data used by Easman et al.'s, (1979) study. Beaver et al. applied the two-regression stage analysis. The results indicate that the explanatory power of historical cost net income is significant at conventional levels, regardless of whether pre-holding gain net income

is also included in the analysis. Moreover, the explanatory power of pre-holding gain net income is not significant at conventional levels, regardless of whether historical cost net income is incorporated into the explanatory model.

In an attempt to provide some evidence on the source of the difference between Easman et al.'s (1979) study and their study, Beaver et al., run a time series regression using their (Beaver et al.) variable definitions. As in the Easman et al. study, the correlation coefficient for each time series regression was computed and averaged across the firms. The average correlations are 0.07 (HC), 0.43 (PRE), -0.03 (CF), and -0.30 (POST). The average correlation ranks the variables in an identical manner to Easman et al. In fact, Beaver et al. variables definitions and inclusion criteria sharpen Easman et al. findings. However, there are some methodological issues in this study that can be discussed below.

The study adopted cross-sectional approach and the evidence shows that there is no incremental information for replacement cost earnings. However, when the study applied time series keeping all other constraints, the replication of Easman et al. study shows the pre-holding earnings provide explanatory power more than what is provided by historical cost earnings. The study provides condition under which the difference in results due to the

model of analysis used. The study discussed the two approaches, time series and cross-section, and identified the source of the difference. They stated that the time series approach is reflecting the time series covariation in earnings change and security return, including the comovement due to economy-wide factors (e.g., inflation), and the PRE variable may be reflecting a proxy effect. However, the pre-holding gains net income under certain conditions, provide a measure of earnings in real terms. In a time series regression, the relationship between nominal security returns and changes in real earnings can be disrupted because the inflation varies over time.

Another methodological problem is coming from using post holding gain net income deflated by stockholders' equity. Haw and Lustgarten (1984) pointed out that using such model is subject to misspecification error since it assumes that investors expect post holding gain net income to equal zero while Beaver et al. used the percentage change in historical cost net income which implies that investors expect equality between this year's and last year's historical cost net income.

Furthermore, Beaver et al. did not consider the industry membership which is important in cross-sectional study since the inflation impact differs from one industry to another. On the other hand, the authors stated that;

the potential presence of cross-sectional dependence limits our ability to draw inferences regarding rejecting the null hypothesis. We make no claims here that the residuals (U) are in fact independent. If a greater number of years were available, it would be possible to construct a significant test in the spirit of Beaver, Clarke, and Wright (1979) and Beaver, Lambert and Morse (1980). The test exploits information on the time series behavior of the estimated parameter of interest in a manner that implicitly incorporate any cross-sectional dependence that may be present in the data (Beaver, Griffin and Landsman 1982, p. 30).

However, this approach can be followed after some years when there are enough data for time series analysis.

Beaver and Landsman (1983) extended the methodology of Beaver, Griffin and Landsman (1982) to explore the incremental explanatory power of current cost earnings variables (derived from SFAS 33 data) with respect to explaining cross sectional difference in security returns. The sample consists of 731 nonfinancial firms appearing on the FAS 33 data bank. The study used stock returns as a dependent variable and one or more of the followings as independent variables: (1) historical cost earnings (HC), (2) income from continuing operations under current cost basis (PRE), (3) income from continuing operation under constant dollar (CD), (4) cash flow (CF), (5) adjustments for purchasing power gain or loss on monetary items (PREP & CDP), (6) adjustment for holding gains (POST & POSTP).

The study conducted two-stage regressions. In the first stage, the t-values were all significant at conventional levels, assuming normality and independence.

In the second stage, the t-value of the regression coefficient for HC was positive and is 5.1 or higher in all three years. Also, the regression coefficient for POSTP was positive and significant in 1979 and 1980 but reversed sign in 1981. Based on the analysis, they concluded that the results are consistent with the contention that the FAS 33 variables are a garbling of historical cost net income at least from the perspective of explaining cross-sectional differences in security returns. They excluded utilities but the results support their contention.

As an extension for their analysis, they investigated the two basic forms of the cross sectional relationship: market value-to-book value ratio or earnings-price ratio as a dependent variable and the earnings, risk and growth as independent variables.

They concluded that none of the FAS 33 earnings variables possess incremental information content with respect to explaining cross-sectional differences in market value of common equity.

The methodological issues in this study are the same as those discussed in evaluating Beaver, Griffin and Landsman's (1982) study.

Lustgarten (1982) examined the information content of ASR 190 disclosures. The test was based on a

comparison of the unconditional mean abnormal security return with a mean abnormal return that is conditional on alternative values for the disclosed replacement cost items. The statistical test used was a multiple regression to estimate a relation between the abnormal security return and the difference between replacement costs as disclosed and investor's anticipation of replacement cost prior to disclosure, controlling for changes in the firm's earnings. The use of least square regression was a departure from previous statistical techniques which computed mean values of abnormal return for groups of firms partitioned on the value of replacement cost variable. The advantage of the regression function is that it treats the signals of historical cost and replacement cost as continuous rather than discrete variables and that it allows for the impact of both historical cost and replacement cost variables on the abnormal returns.

The unexpected earnings used as a signal of information content from historical cost. The difference between anticipated and disclosed replacement cost used as a signal of information content from replacement cost. The matching historical costs were used as estimates of anticipated replacement cost. Tests were carried on the replacement cost items: current depreciation, net property plant and equipment and accumulated depreciation. Because

the results using the first two were for the most part insignificant, Lustgarten emphasized only on the results of using unexpected accumulated depreciation as an information signal.

In estimating the regression function, the independent variables were deflated alternatively by earnings, total assets, shares outstanding, market value, and earnings and assets deflators. The most important result was that the replacement cost variable was significant beyond the 0.01 level using the assets and the shares deflators, but not significant using the earnings or market value deflator. In using historical cost unexpected earnings as a benchmark for assessing the significance of replacement cost variable, three tests were used: (1) t-statistics, (2) elasticity of the regression coefficient, and (3) standardized regression coefficient. But, as noted the R^2 statistics are always less than 0.10. This gives an indication that many important determinants of security returns have obviously been omitted.

The author conducted a test of heteroscedasticity, and the evidence shows that it exists using all deflators. Therefore, he used weighted least square (WLS) regression which gives more efficient estimates in this case. The results supported the findings using OLS. An important result was that the coefficient of the replacement cost

variable using the earnings deflator, which was not significant using the OLS estimates, was significant using WLS.

As in the previous studies examining this issue, he partitioned the sample on the basis of replacement cost variables using shares outstanding and total assets deflators. The sample was partitioned into four portfolios. Using per share values, there is evidence that a dichotomous partition would not lead to a very significant difference between groups.

One puzzling aspect of the results is that nearly all of the responses is observed in months one through eight. If companies filed the 10-K reports three months after the end of the fiscal year, the end of month eight was thirty days before the reports were filed. Furthermore, the results indicate significant effects as early as months one and two, which would be five or six months before the end of the company's fiscal year. The study gives some possible explanations of these results. (1) Leakage by insiders, (2) spill over effect concerning the information in the ASR 190 filing of one company might have affected the stock price of the other companies known to have a similar historical cost/replacement cost relationship. This was investigated by excluding companies whose ASR 190 disclosure was for a fiscal year ending after December 1976. The results of this test did

not confirm the spill over effect. (3) A third explanation was that announcement of ASR 190 stimulated private production of information which was to a large extent the same as that contained in the actual ASR 190 filing. The study did not test for this possibility. Another possible explanation is an omitted variable.

The Lustgarten study contains several methodological shortcomings. The results indicate significant effect as early as five or six months before the end of the company fiscal year. The study pointed out the possibility of private production of replacement cost information (e.g., Value Line), but it was not empirically investigated. On the other hand,, the explanatory power of the models used as measured by R^2 are always less than 0.10. This indicates that some independent variables which determine the stock return have been omitted.

The study pointed out that investors form an expectation of replacement cost on the basis of the matching historical cost data or on a basis of adjusting by price indexes. The study used historical cost accumulated depreciation as an estimate of replacement cost. In an inflationary period, the price indices are available and investors can adjust historical cost data by these indices. Therefore, the effect of such adjustment should be controlled for.

Furthermore, the study pointed out the importance of

the industry factor. This can be controlled for by introducing dummy variables or by testing each industry separately. The study assumed homogeneity among industries. The homogeneity assumption means that investor's reactions are similar for companies having the same unexpected historical cost earnings and unexpected replacement cost accumulated depreciation even if they are in different industries. The study can be strengthened if we introduce the industry membership.

Noreen and Sepe (1981) examined return on common stocks for possible reaction to the FASB deliberations on inflation accounting, using a 'price reversal' methodology that does not require 'ex ante' specification of the direction or magnitude of the reactions. The abnormal stock returns were aggregated around three events associated with deliberations using monthly return data and Standard & Poor's 500 index. The results suggested that there was indeed a market reaction to these inflation accounting deliberations.

Ro (1981) examined the impact of replacement disclosure under ASR 190 on weekly transaction volumes of common stock. A period of 174 weeks beginning December 23, 1973 and ending April 23, 1977 was selected for investigation. The first 86 weeks were designated as the pre-event period over which both return and volume betas were estimated for pairing and grouping firms. The

remaining 88 weeks were to be the period over which nine critical events occurred in the evaluation of the SEC-mandated replacement cost disclosure. The methodology includes the standard paired t-test for the volume difference between treatment and control firms surrounding the nine events. The matched pair design was used between the two groups based on return beta, volum beta, 10-K release week, sign of earnings per share change and industry membership.

Based on the results, the author concluded that the disclosure of replacement cost accounting data, as required by the SEC, had no effect on the volume of common stock shares traded for the firms affected by the new disclosure requirement. However, Freeman (1981) questioned the matched firm design because of the size differences between treatment (reporting) and control (exempted) firms.

Freeman (1983) investigated the link between price changes in product markets and price changes in financial markets. This study offers an explanation for the lack of an observed market reaction that is still consistent with the intuitive appeal of current cost accounting. This explanation is based on two major assumptions. First, part of the relationship between the behavior of current cost (earnings) number and the behavior GAAP (earnings) number is intraindustry homogeneous, rather than firm

specific. That is, the prices at which an individual firm's transactions have been executed often reflect opportunities common to many firms in the same industry. The second assumption is that industry-wide trends in prices are relatively easy to forecast with nonaccounting data because they are closely monitored. These two assumptions imply that investors should know a great deal about the potential information contained in current cost accounting numbers well before accounting reports of these numbers are released.

To test this assertion, Freeman's study went beyond an investigation to contemporaneous correlations and tested instead for lead/lag relationships among current cost profits, GAAP profits, and security returns. The results indicate that an industry-wide trend in GAAP profits is reflected in security prices earlier than a firm-specific deviation from the industry average. Further evidence suggests that industry-wide trends in current cost profits, adjusted to constant dollars, are anticipated equally early. More specifically, industry trends in the difference between selling prices per unit and the per unit costs of production appear to be reflected in common stock prices well before the publication of financial statements.

Freeman emphasizes the importance of controlling for industry membership in examining the information content

of specific price change disclosures. He stated that it would be fruitful to distinguish between interindustry and intraindustry differences in accounting numbers in future information content studies, especially in investigations of SFAS 33 disclosures.

In this chapter, only market studies investigating the information content of replacement cost/current cost disclosure have been examined. The results of these studies (except Lustgarten; Noreen and Sepe) indicate there is no market reactions associated with ASR 190 or SFAS 33 disclosure. As discussed in Chapter II, there is no well developed theory to be used as a basis for an empirical study to examine the relationship between replacement cost/current cost and stock market return. To avoid this problem, some researchers developed various kinds of expectation models for replacement cost/current cost information while the others ignored that and hence reduced the power of their tests.

Furthermore, most of the studies were based on first year disclosure. Some studies ignored possible interindustry differences while others ignored the differential size effect between reporting and exempted firms in matching pair design.

CHAPTER IV

METHODOLOGY AND RESEARCH DESIGN

In an inflationary period, the historical cost earnings do not reflect the effect of inflation on the depreciable assets. It is argued that income from continuing operations that reflects specific price change avoids the profit illusion and better reflects the permanent earnings and future dividend paying ability of the firm. This chapter presents the methodology and research design of this study. It describes the hypotheses, sample selection, data collection and test period and the regression models and expectation forms used. It also describes the procedures used to compute realized and unrealized holding gains and the deflator used in this study.

A. HYPOTHESES

The merits of replacement cost/current cost data (RC/CC) rest upon the potential value of such data as providing information about the effects of unanticipated inflation upon the prospective cash flows and thereby upon the value of the firm's assets and securities. Since cash flow effects are unobservable, accounting studies look for the association between the stock market return and the disclosure.

1. Aggregation and Segregation of Holding Gains

On a priori basis, Edwards and Bell (1961) assert that specific price change data can be used as vehicles for dichotomizing the convention accounting into current operating profit and holding gains. Current operating profit is essentially the long-run profit associated with the existing process of production carried on under existing conditions and indicates the amount that the firm can expect to make in each period over the long run. They conclude that the dichotomy would improve the predictive ability of a firm's future cash flow.

This study contemporaneously examines the association of unexpected stock return with unexpected historical cost income, unexpected realized and unrealized holding gains to determine the incremental information content of disclosed specific price change data in altering the investors' beliefs towards future cash flows.

Furthermore, this study disaggregates realized holding gains which coming from depreciation, cost of goods sold and unrealized holding gains which coming from property, plant and equipment, and inventory. The logic of considering such segregation is to determine whether segregated elements have different incremental information from the aggregated figure of holding gains. In this respect, the segregation provides an answer to the FASB's question in its invitation to comment on "what elements in

the disclosures (current cost) account for the superior explanatory power?". Also previous studies ignored the cost of goods sold in examining the effect of realized holding gains because a large number of firms included depreciation in cost of goods sold. Great efforts are required to determine cost of goods sold net of depreciation. For instance, Beaver, Griffin and Landsman (1982) considered depreciation as the only source for realized holding gains. Since some efforts had been devoted to segregate depreciation and cost of goods sold, my study considers the segregation issue which has not been addressed in the previous studies. Therefore, the following two hypotheses are set forth to test the incremental information content of unexpected specific price income data.

Ho₁: The disclosure of unexpected specific price income is not associated with unexpected market returns.

Ho₂: The market reaction to the disclosure of segregated elements of holding gains does not significantly differ from that due to the aggregated income figure.

2. Industry Analysis

This study is a cross-sectional analysis. Following that approach, firms are grouped according to industry membership. They are presumed to be homogenous with respect to substantive attributes of their decisions. Gonedes and Dopuch (1979) assert that, from the

perspective of economic theory, grouping firms according to industry membership corresponds to grouping them in terms of decisions that will tend to have highly similar attributes. Also, each industry has a significantly different degree of capital intensiveness and hence a different effect in an inflationary period. Beaver, Christie, and Griffin (1980) and Watts and Zimmerman (1980), among others, emphasize the importance of industry membership in empirical studies of inflation.

Freeman (1983) offers one explanation for the lack of an observed market reaction that is still consistent with the intuitive appeal of current cost accounting. He stated that the price at which an individual firm's transactions have been executed often reflect opportunities common to many firms in the same industry. The acceptability of index-based estimators for current costs suggests that ASR 190 and SFAS 33 disclosures may be intra-industry homogeneous. Thus the information content of current cost accounting numbers, over and above the information content of historical cost accounting numbers, will be industry specific.

Moreover, significant inter-industry differences could exist in the rates of return. Cohen and Pogue (1967) examined the relationship between securities after the market component has been removed and found many non-zero correlations. Then they employed a multi-index

model and found that an industry index is relatively important in reducing the interrelationship among the ordinary least squares associated with the market model. King (1966) and Meyers (1973) used factor analysis in examining the impact of industry effect on security returns. Both concluded that industry factors are an important source of inter-dependence among security returns.

Rosenberg (1974) utilized a multiple-factor model in examining the "extra-market components of covariance in security return." He asserts that there are highly significant extra-market components which could be at least partially explained by particular firm's characteristics, industry factor, and historical return behavior of security. Livingston (1977) analyzed the covariance among securities after the influence was removed. He concluded that there exist considerable "residual industry comovements" and suggested that analysis of industry groups should be important in portfolio construction.

The following hypothesis is set forth to test whether there is a significant difference in association between unexpected stock return and unexpected specific price income across industry portfolios.

H_{03} : The association between the disclosure of unexpected specific price income and unexpected stock returns does not systematically differ

across industry portfolios.

3. Regulation vs. Nonregulation

Further, this study investigates the possible differential effect of current cost between regulated and nonregulated industries. The regulated industry has its own characteristics that may lead to different market reactions. (1) A 'fair rate of return' is widely used as an indirect measure for price in utility regulation. Utility companies are allowed to cover the cost of operation, including taxes and depreciation, plus a return on investment. The return on investment is determined by multiplying the rate base by an allowed rate of return. The rate base is often a close surrogate to the book value of the company's assets. A consequence of regulation is that the real rate of return on capital falls during periods of inflation. To the extent that equity investments become, in effect, fixed income securities, it is expected that capital markets value them accordingly.¹ (2) Many utilities exercise the option of recoverable amount in disclosing current cost data. (3) The holding gains in regulated industries appear to result mainly from depreciation and productive assets rather than cost of goods sold and inventory. Based upon these characteristics, this study attempts to test for the possible differential market responses to current cost

disclosures between regulated and nonregulated industries. Hence the following hypothesis is set forth.

Ho₄: The association between the disclosure of unexpected current cost income and unexpected stock returns does not systematically differ between regulated and nonregulated industries.

B. SAMPLE SELECTION

Most previous studies which investigated the incremental information of specific price change data concentrated on samples with a December 31 fiscal year end. The returns in these restricted samples are therefore subject to the event time clustering issue. Brown and Warner (1980) asserted that if performance measures such as deviation from historical mean returns or market model residuals are positively correlated across securities in calendar year, then such clustering will increase the variance of the performance measures (e.g., the average residual) and hence lower the power of the tests. To reduce this problem, the sample includes all firms regardless of their fiscal year end as suggested by Watts and Zimmerman (1980).

The sample was selected to meet ASR 190 and SFAS 33 size requirements. The sample includes all companies on Compustat Replacement Cost tape and FAS 33 data bank.² The sample size was reduced to firms which meet the following criteria. (1) The historical cost data are available on Compustat Industrial tape. (2) The

replacement cost and/or current cost data are available on Compustat Replacement Cost tape and FAS 33 data bank respectively. (3) The company is a member of American of New York Stock Exchange. (4) The company has complete data on daily return CRSP tape for one hundred thirty-eight weeks before and sixteen weeks after the end of fiscal year for 1976 through 1981. The final sample was reduced to 593 firms out of 1069 firms on Compustat Replacement cost tape for 1976-1978 and 850 non financial firms on FAS 33 data bank. However, the cross-sectional analysis for 1976-1981 used different sample sizes because of missing data in certain periods in each regression function. All the sample firms were used to test the first and second hypotheses.

The operational definition of an "industry" is not well defined. As a result, any grouping into industries is largely arbitrary since many large firms are multi-industry firms. However, SIC code has been used in previous research as one way of grouping firms. To test the third hypothesis, the Compustat SIC two-digit code was used to assign firms into 22 portfolios as shown in Table 1. Moreover, the total sample firms have been classified into regulated and unregulated industries to test the fourth hypothesis.

Table 1
Classification of the Total Sample Firms Into 22 Portfolios

SIC Code	No. of Companies	Industry Name
1-2	17	Agriculture-Production, Agriculture Produce-Livestock
10-16	47	Mining, Crude Petroleum, Natural Gas, Building Contractors, Construction
20-21	38	Food, Kinder Products, Meat, Dairy, Canned, Sugar, Cigarettes
22-23	21	Textile Mill, Knitting Mills, Apparel & Other Products.
24-26	31	Lumber & Wood Products, Paper and Allied Products
27	15	Printing, Publishing, Newspaper, Books Commercial
28	52	Chemical, Plastic, Drugs, Soap, Cosmetics
29	24	Petroleum Refining
30	12	Rubber, Misc. Plastic Products
32	20	Flat Glass, Glass Container, Concrete Gypsum
33	32	Blast Furnaces, Steel
34	22	Metal Cans, Shipping Container, Heating Equipment
35	56	Machinery-Engines, Farm Machinery, Construction Mach.
36	34	Electric & Electronic
37	31	Motor Vehicles & Car Bodies, Trucks, Parts, Aircraft
38	15	Engr. Lab & Research Equip. Photographic Equip.
40-47	36	Railroad Lines, Trucking, Water Trans. Air Trans.
48-49 except 4830	142	Telephone Communication, Electric Service, Natural Gas Service, Water sup.
50-51	20	Wholesale
52-59	61	Retail
70-89	25	Service, Restaurants, Motion Picture, Amusement, Nursing
3, 4, 5, 6, 7, 8, 31, 39	51	Others

C. TEST PERIOD AND DATA COLLECTION

ASR 190 called for disclosure of replacement cost data for the fiscal year ending on or after December 25, 1976, and SFAS 33 called for supplementary information of current cost and constant dollars for the fiscal year ending on or after December 25, 1979. Because of data availability, the test period covers six years spanning 1976 through 1981.

An examination of the Compustat Replacement Cost tape revealed that a large number of firms included depreciation as a part of cost of goods sold and then reported total depreciation.³ Due to the enormous data screening efforts required to separate cost of goods sold and depreciation, previous studies ignored cost of goods sold and concentrated only on depreciation (e.g., Beaver, Griffin and Landsman, 1982). This could have biased their empirical results because cost of goods sold may have been an important source of realized holding gains for 1976-1978. To investigate this issue, the depreciation and cost of goods sold on the Compustat Replacement Cost tape were compared with information disclosed on 10K forms to correct the double counted depreciation in cost of goods sold. Also both Compustat Replacement Cost and FAS 33 tapes have been screened for inconsistencies between years which discovered some errors in reported data.⁴

D. TESTING THE INFORMATION CONTENT (Models and Expectation Forms)

Recall that an efficient capital market is one in which (1) market prices "fully reflect" available information and, by implication, (2) market prices react instantaneously and unbiasedly to new information. Gonedes and Dopuch (1974) state that capital market efficiency, taken by itself, provides sufficient justification for using process of (or rates of return on) firm's ownership shares in assessing the effects of alternative accounting procedures or regulations. This implies that if the accounting data induce investors to alter their assessments of the distribution of possible rates of return on a firm's stock, it could be assumed that the data have information content.

Furthermore, Gonedes (1975) asserts that for a signal from an information system to possess 'information content', the unconditional distribution of the rate of return should differ from the distribution conditional on the signals for at least one signal. Hence, the study is based on a comparison of the unconditional mean abnormal stock return with a mean abnormal return that is conditional on alternative values for the disclosed current cost items. In other words, the hypothesis of no information content for specific price disclosure can be stated as:

$$H_0: E(e_{jt}/X_{1jt}, X_{2jt}, X_{3jt}, \dots) = E(e_{jt}/X_{1jt})$$

for all signals where X_1 represents historical cost and X_2, X_3, \dots represent specific price signals provided by the ASR 190 and FAS 33 disclosures.

In order to perform the test, a degree of homogeneity among companies within industry is assumed. The homogeneity assumption means that investors' reactions are similar for companies having the same X_t . The test is a cross sectional analysis for the years 1976-1981.⁵ A multiple regression is employed to estimate and association between the abnormal stock returns and unexpected specific price income.

As discussed earlier, the arguments for the information content of specific price change data rely on the assumption that such information alters investors' beliefs toward a firm's future cash flows. At the present time, there is no well-developed theory to explain how the market agents build their expectations about the new information disclosed in specific price change data.

The identification of investors' expectations about specific price change data is a critical factor in determining the information content of such data. In other words, the investors may consider holding gains in their expectations. They may base their evaluation of new information on change in realized and unrealized holding gains from one year to the next. However, on a priori

basis, it is possible to derive several alternative forms of market expectations about the disclosed specific price change data supplementary to historical cost information. First, the market could make its expectation about current year specific price change data on the basis of historical or replacement cost of the previous year adjusted by the expected Consumer Price Index. Second, the market could expect the current year's specific price income to equal the specific price income of the previous year. Third, the market could expect the current year's specific price income to equal the specific price income of the previous year adjusted by the expected Consumer Price Index.

In doing so, the study covers three possible bases for the market expectations and the differences between such expectation and disclosed specific price data represent the variables which quantify the incremental information of disclosure.

1. Testing the First and Second Hypotheses

In this study, three linear regression models are using the formulation of current operating profit as developed by Edwards and Bell (1961), among others.⁶ The first model examines the incremental information content of realized holding gain. The second model examines the incremental information content of unrealized holding gains. The third model examines the incremental

information content of total holding gains. Unexpected historical cost income and firm size were included in each regression function to control for information of historical cost income and firm size, respectively.

$$\text{Model I: } \text{CAR}_{it} = \alpha_0 + \beta_1(\text{HCIN}_{it} - \text{HCIN}_{it-1}) + \beta_2(\text{SIZE})_{it} + \beta_3(\text{RHG}_{it} - \text{RHG}_{it-1}) + e_t$$

$$\text{Model II: } \text{CAR}_{it} = \alpha_1 + \beta_4(\text{HCIN}_{it} - \text{HCIN}_{it-1}) + \beta_5(\text{SIZE})_{it} + \beta_6(\text{UHG}_{it} - \text{UHG}_{it-1}) + e_t$$

$$\text{Model III: } \text{CAR}_{it} = \alpha_2 + \beta_7(\text{HCIN}_{it} - \text{HCIN}_{it-1}) + \beta_8(\text{SIZE})_{it} + \beta_9(\text{RHG}_{it} - \text{RHG}_{it-1}) + \beta_{10}(\text{THG}_{it} - \text{THG}_{it-1}) + e_t$$

Where

CAR_{it} = Cumulative weekly abnormal mean return of security i at time t

HCIN = historical cost income

RHG = realized holding gains

UHG = unrealized holding gains

THG = total holding gains

$\alpha_0, \alpha_1, \alpha_2$ = intercepts

$\beta_1, \beta_2, \dots, \beta_{10}$ = slope coefficients

These three models are used to test the first, third, and fourth hypotheses. The null hypothesis can be stated in general form as follows:

$$H_0: \beta_3 = \beta_6 = \beta_9 = \beta_{10} = 0$$

To test the second hypothesis, two additional models were added to test whether the segregation had some advantages in testing the information content. The following two models used the first and second models as benchmarks.

$$\begin{aligned} \text{Model IV } \text{CAR}_{it} = & \beta_0 + \beta_1(\text{HCIN}_{it} - \text{HCIN}_{it-1}) + \beta_2(\text{SIZE})_{it} + \\ & \beta_3(\text{RHGD}_{it} - \text{RHGD}_{it-1}) + \\ & \beta_4(\text{RHGG}_{it} - \text{RHGG}_{it-1}) + e_t \end{aligned}$$

$$\begin{aligned} \text{Model V } \text{CAR}_{it} = & \beta_0 + \beta_5(\text{HCIN}_{it} - \text{HCIN}_{it-1}) + \beta_6(\text{SIZE})_{it} + \\ & \beta_7(\text{UHGP}_{it} - \text{UHGP}_{it-1}) + \\ & \beta_8(\text{UHGV}_{it} - \text{UHGV}_{it-1}) + e_t \end{aligned}$$

Where

CAR, HCIN, and SIZE as before

RHGD, RHGG = realized holding gains resulted from depreciation and cost of goods sold, respectively.

UHGP, UHGV = unrealized holding gains resulted from plants and equipment, and inventory, respectively.

2. Testing the Third and Fourth Hypotheses

To test the possible differential market responses to RC/CC data among industry portfolios, intercept and slope dummy variables have been introduced. Also, this technique has been adopted to test the possible

differential market responses to current cost data between regulated and nonregulated industries. This technique uses the value 1 for the presence of the qualitative attribute that is assumed to have an impact on the dependent variable and 0 for the absence of the given attributes. If a qualitative variable has m categories, the general rule is to introduce $m-1$ dummy variables. If this rule is not followed, we fall into what might be called the dummy variable trap, that is the situation of perfect multicollinearity (Gujarati, 1978, p. 291). In other words, a factor with r categories requires only $r-1$ dummies, because one category is left as the reference category.

Further, dummy variables can be introduced to test for the differential effect in both the intercept and slope. It is called a multiplicative dummy variable in testing the slope shift. Desai (1976) points out three steps to test for the presence of intercept shift and slope shift: (1) adding the appropriate number of dummy variables, (2) estimating the equation by OLS, and (3) checking the statistical significance of the coefficients of the dummy variables (Desai 1976, p. 164).

To interpret the results, Mirer (1983) states that when the dummy variable is included as a regressor in a multiple regression, its coefficient represents the difference in the intercept (or the slope) between the

second and the first group. It also measures the impact on the expected value of the regression of an observation being in the second group rather than the first, holding all the other regressors constant.

E. DEPENDENT VARIABLE

The dependent variable is the cumulative abnormal returns (CAR) which is estimated from the market model. Beaver (1981, p. 168), among others, has justified the potential properties of using residuals rather than returns as follows: (1) It (residual) can result in a transformation of \tilde{R}_{it} , such that a common expected value of the security metric ($\tilde{\epsilon}_{it}$) exists over time and across firms. (2) It can have a smaller variance than \tilde{R}_{it} , leading to more powerful statistical tests and more efficient estimates of the security return effects of \tilde{Y}_{it} (the signal from information system). (3) It can result in a smaller correlation among observations than \tilde{R}_{it} would, and in this sense $\tilde{\epsilon}_{it}$ would more closely conform to conventional significance tests than \tilde{R}_{it} would.

The rationale underlying the use of the residual rather than the return is that it estimates the effect of firm-specific information such as specific price change information on a stock return during the period. The disclosures of ASR 190 and SFAS 33 require annual supplementary data for specific price change information

and hence the study is dealing with annual rather than quarterly information. Therefore the time of possible effect is not clear and it is more likely that some information gradually leads out to the market even before the disclosure at the end of the fiscal year.

To calculate the abnormal return, weekly returns were aggregated from daily returns on the CRSP tape. The market model was used for 102 weeks prior to the test period to estimate the parameters for each firm.

$$R_{jt} = \alpha_j + \beta_j R_{mt} + e_{jt}$$

Where:

R_{jt} = rate of return on security j for week t
for each company.

R_{mt} = equal weighted rate of return on the
market portfolio for week t .⁸

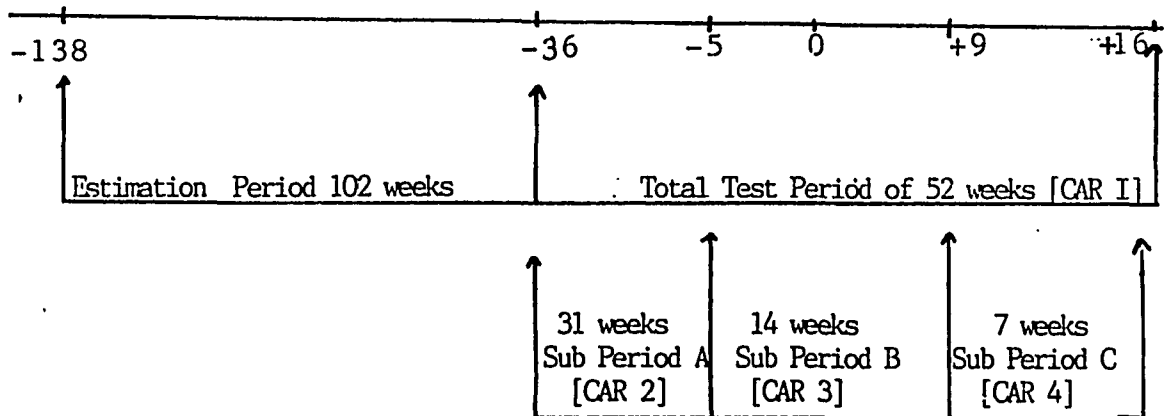
α_j, β_j = intercept and slope coefficient.

e_{jt} = residual term.

The estimated parameters (α and β) were then used to compute the weekly residual returns for 52 weeks; thirty-six weeks before and sixteen weeks after the end of fiscal year for each company for 1976 through 1981. The residuals were aggregated for 52 weeks and the mean represents the dependent variable in the regression equations. In addition, the total test period of 52 weeks was divided into three sub-periods to determine the time of the effect. The first sub-period (sub-period A), was

31 weeks starting 36 weeks and ending 5 weeks before the end of fiscal year (FY). This sub-period was used to test whether the effect occurred early as that period.¹⁰ The second sub-period (sub-period B) was 14 weeks around the end of fiscal year to test the effect around FY end. The third period covered 7 weeks around the disclosure date to determine the disclosure effect. The estimation and test period are illustrated in Figure 1.

Figure 1
ESTIMATION AND TEST PERIOD



F. INDEPENDENT VARIABLES

1. Historical Cost Income

Previous research indicates that historical cost earnings convey new information to investors (e.g., Ball and Brown, 1968; Gonedes, 1978; Beaver, Clark and Wright, 1979). These studies used unexpected historical cost

earnings as an information signal and the results indicate that unexpected historical cost earnings are positively associated with unexpected stock returns. Since the objective of this study is to test for the incremental information content of specific price change income, it is more appropriate to include unexpected historical cost income in all regression equations to control for its effect. The historical cost income is defined as earnings available for common stockholders prior to extraordinary items to allow for comparability with previous studies.¹¹ This variable is calculated by the change in reported historical cost earnings between two years deflated by stockholders' equity.

2. Realized and Unrealized Holding Gains

SFAS 33 defines the total holding gains as follow:

$$\begin{aligned} \text{Total holding gains} = & [(NPPR_t + DR_t + dL_t) - (NPPR_{t-1} + AQ)] \\ & + [(VR - CGSR) - (VR_{t-1} + PN_t)] \end{aligned}$$

Where:

$NPPR_{t-1}$, $NPPR_t$ = Beginning and ending net property, plant and equipment at current cost, respectively.

DR_t = depreciation of current year at current cost

DL_t = disposition at selling prices

AQ_t = acquisition at historical cost
 VR_{t-1} , VR_t = beginning and ending inventory at
 current cost, respectively
 $CGSR_t$ = cost of goods sold at current cost
 PN_t = production or acquisition of goods
 at purchase prices.

It is possible to follow the SFAS 33 formula to compute holding gains for the period 1976-1978 since ASR 190 did not require disclosure of holding gains. The disposal and acquisition of assets are available on Industrial Compustat tape items 107 and 129 respectively. The other data are available on Compustat Replacement Cost tape except for production on historical cost basis, which can be calculated as follows:

Production (HC) = Ending inventory at historical cost
 + cost of goods sold at historical
 cost - Beginning inventory at
 historical cost.

The problem of generating total holding gain for the years 1977-1978 is that the data for acquisition and disposal are not available on Compustat for a great number of companies. Also, a comparison between reported holding gains on FAS 33 tape and calculated holding gains based on FAS 33 formula reveals that every company uses its own method in calculating holding gains. In addition, SFAS 33 identified some methods to calculate current cost data.¹²

To overcome this problem, the realized holding gains and unrealized holding gains for 1976-1978 were calculated following Beaver, Griffin and Landsman's (1982) approach. For 1979-1981, the reported holding gains were used to calculate realized and unrealized holding gains.¹³ The computations take the following formulas:

Realized Holding Gains (RHG):

$$\text{For 1977-1978} = DR_t - DH_t + (GR_t - GH_t)$$

$$\text{For 1979-1981} = HCIN_t - RIN_t$$

Unrealized Holding Gains (UHG):

$$\begin{aligned} \text{For 1977-1978} = & [(PR_t - PH_t) - (PR_{t-1} - PH_{t-1})] + \\ & [(VR_t - VH_t) - (VR_{t-1} - VH_{t-1})] \end{aligned}$$

$$\text{For 1979-1981} = HG_t - RHG_t$$

Where:

DH, DR = Depreciation at historical and replacement cost

GH, GR = Cost of goods sold at historical and replacement cost respectively

HCIN, RIN = Net income at historical and current cost, respectively

PH_t, PR_t = net plant and equipment at historical and replacement cost respectively

VH_t, VR_t = inventory at historical and replacement cost respectively

t-1 = stand for previous year data

3. Firm Size

Previous studies indicate that the variability of growth rates in sales and earnings is negatively related to firm size (e.g., Scherer, 1973, p. 129). In other words, the large firms seem to enjoy more stable growth than small firms. Whittington (1971) investigated the relationship between inter-temporal variability of earnings and firm size for public British companies and found a clear tendency for smaller companies to have greater variability of profitability through time than the large companies. The relative stable growth pattern of large firms probably results from, among other things, diversification into largely independent operations which is typical of many large firms (Lev, 1983, p. 36). Watts and Zimmerman (1978, p. 131) provide an additional explanation and state that "large firms are more susceptible than small ones to political pressure and government intervention. Large firms can, therefore be expected to engage in less risky production and investment activities in order not to draw the attention of public policy makers to large variations in earnings."

Banz (1978) reported a nonlinear relationship between the aggregate market value of a firm's common stock and the stock's mean return. In particular, he found that firms with very small market value (relative to the rest of the market) had large and positive residual

returns. Banz's recent work (1981) indicates that on average, small NYSE firms have had significantly larger risk adjusted returns than large NYSE firms over a forty year period, and the effect is not very stable over time. Also, Reinganum (1981) found that a portfolio of fifty small firms experiences average 'abnormal' returns of nearly fifteen percent per year for at least two years.

To give more explanation to these empirical findings, Banz (1981, p. 17) states that:

It is likely that the amount of information generated is related to the size of the firm. Therefore, many investors would not desire to hold the common stock of very small firms. I have been shown elsewhere (Banz, 1978, Ch.2) that securities sought by only a subset of investors have higher risk-adjusted return than those considered by all investors. Thus, lack of information about small firms leads to limited diversification and therefore to higher returns for the 'undesirable' stock of small firms.

Based on these empirical findings, the firm size is controlled in this study. However, the choice of an appropriate measure is obviously important in an application for the successful control of the size effect. Lev and Sunder (1979) point out the importance of the identification of the relevant set of reference, or 'market' to measure the size variable. Stigler (1968) discusses the theoretical problem of identifying the reference market and argues that two firms are equal in a market if they sell or buy equal quantities in that market and hence, the firm size should be measured by total

assets in a capital market.

However, Lev and Sunder (1979) conclude that while the 'market' criterion narrows down the choice of size variable, it is generally insufficient for the choice of a unique measure of size. For example, total assets can be measured by historical cost, replacement cost, or the total market value (of stocks and bonds) of the firm. In this study the logarithm of net sales was used as a measure to the size variable to avoid the ambiguity of total assets. Alternatively, total assets on historical cost basis were also used.

The direction of the association between unexpected stock return and firm size in this study is not clear cut, since companies subject to Replacement Cost/Current Cost disclosure are large firms. This is consistent with efficient capital market. Lustgarten (1981, p. 132) states that "in an efficient security market one would not expect the relationship between abnormal return and firm size to be consistently in one direction. One would instead expect that in some periods the relationship would be in one direction while in other periods it would be in an opposite direction and most often there would be no significant relation at all."

G. DEFLATOR

Given the availability of several alternative

deflators for independent variables, an appropriate deflator is obviously important. Most of empirical studies investigating the information content of specific price change data have been criticized because their choice of a specific deflator was made in ad hoc manner, and often led to ambiguities in the interpretation and generalization. For example, Beaver, Christie and Griffin (1980) used net income, total assets, and the value of the item under historical cost of each variable as alternative deflators to test information content of replacement cost disclosure. Lustgarten (1982) used earnings, total assets, shares, and market value to deflate his replacement cost variable. The results indicate that replacement cost disclosure was statistically significant when total assets and shares were used as a deflator but not significant based on the earnings or market value deflators.

As discussed in Chapter I, Fama (1981) derived two variables as the most important determinants of stock returns; capital expenditure ratio and rate of return on capital on replacement cost basis. The use of an equity or total assets deflator appears to be justified in this context because it represents the rate of return of unexpected specific price income, which is used in this study.¹⁴

CHAPTER IV

FOOTNOTES

1. Keran (1976) stated that the attempt by regulatory authorities to maintain a constant nominal rate of return to utilities on the historical cost of capital will, in a period of accelerating inflation, lead to a decline in the real rate of return. Efficient market theory implies that investors would recognize this and in a period of inflation treat utility stocks as fixed coupon securities. They would systematically bid down the price of utility stocks relative to nonregulated industrial stocks in much the same way investors have bid down the price of bonds relative to stocks. The evidence presented indicates that such systematic repricing has occurred since inflation accelerated in the mid-1060's.
2. Compustat Replacement Cost Tape covers the replacement cost data required by the SEC for three years, 1976-78. The FASB Statement 33 Data Bank is distributed and marketed on the behalf of the FASB by the Value Line Investment Survey. The data bank covers current cost data and constant dollar data required by SFAS 33.
3. Beaver, Griffin and Landsman (1982) state that approximately 80 percent of firms include depreciation in cost of goods sold.
4. Appendix B list these errors.
5. Beaver, Griffin and Landsman (1982, p. 23-24) discussed the advantages of this approach in investigating information content of specific price change data.
6. These three models were derived from the concepts of pre-holding gain income and post-holding gain income as follows:
Pre-holding gain income = RC Income=
HC Income-RHG
(first Model)
Post-holding gain income = HCIN+UHG
(Second Model)
= RC income+THG
= HC income-RHG+THG
(Third Model)

7. Specifications of the models under each of the three expectation forms are discussed in the next chapter of the empirical results.
8. It is calculated in multiple form: weekly return=
$$\left[\prod_{i=1}^5 (1+r_i) - 1 \right].$$
9. The equally-weighted rather than value-weighted market return is used because the sample in this study includes only reporting firms which are large. Also, most studies dealing with this field prefer using the equally-weighted market return (e.g., Beaver, Christie and Griffin, 1980).
10. Ro (1980) found some information content as early as 26 weeks before the disclosure date. Also, Lustgarten (1982) found information content as early as five or six months before the end of fiscal year.
11. For instance, Beaver, Griffin and landsman (1982) and Beaver and Landsman (1983) used this definition.
12. A comparison between calculated and reported holding gains for 1980-1981 is duscussed in Appendix C.
13. Alternatively, the calculated holding gains for 1979-1981 were used and results indicated that investors used reported holding gain rather than computed holding gains for this period.
14. Using equity deflator gave better results.

CHAPTER V

EMPIRICAL RESULTS AND DATA ANALYSIS

Five regression models were used to test the incremental information content of specific price change data. Unexpected historical cost income and logarithm of sales were included in each model to control for the information content of historical cost income and firm size respectively. The first model examines the incremental information content of realized holding gains while the second model examines the incremental information content of unrealized holding gains. The third model examines the incremental information content of total holding gains. These three models were used to test the first, third and fourth hypotheses. The fourth and fifth regression models were used to test the second hypothesis to determine whether the segregation of elements of realized and unrealized holding gains have different incremental information content from those of the aggregate value of realized and unrealized holding gains in the first and second model. These fourth and fifth models are important in this study because of data collection efforts to segregate depreciation included in cost of goods sold in most of companies.¹

The five models were carried out under three expectation forms for specific price change data of the

current year. (1) On the first expectation form, the market agents consider only the incremental value of the elements of holding gains between two years—depreciation, cost of goods sold, property, plant and equipment, and inventory. (2) On the second expectation form, the market agents consider realized and unrealized holding gains in their expectation and expect the current year value of holding gains to be equal to the value of previous year. (3) On the third expectation form, the market agents adjust previous year holding gains by the expected inflation rate in their expectation about current year holding gains. The consumer price index of the previous two years were used to compute the anticipated inflation rate.

To test for the information content of specific price change data, this chapter is organized as follow:

- A. Analysis of the information content of unexpected historical cost income.
- B. Analysis of association between firm size and unexpected stock return.
- C. Analysis of association between unexpected holding gains and unexpected stock return (test of the three expectation forms).
- D. Analysis of association between unexpected holding gains and unexpected stock return across and within industry portfolios.

E. Analysis of association between unexpected holding gains and unexpected stock return in regulated and unregulated industries.

A. ANALYSIS OF INFORMATION CONTENT OF UNEXPECTED HISTORICAL COST INCOME

The historical cost income is defined as net income before extraordinary items on Industrial Compustat tape. The independent variable is measured by the change in historical cost income between two years deflated by stockholders' equity. The dependent variable is the cumulative abnormal return for 52 weeks and for three sub-periods as discussed in Chapter IV. The first subperiod was 31 weeks starting 36 weeks and ending 5 weeks before the end of fiscal year (sub-period A). The second sub period was 14 weeks around the end of fiscal year (sub-period B). The third sub period was 7 weeks around the disclosure date.

The results in Table 2 indicate that unexpected historical cost income is positively associated with unexpected stock return beyond the one percent significance level for all years, 1976-1981. These results are consistent with previous research (e.g., Beaver, Clarke, and Wright, 1979). To determine the time of the effect of unexpected historical cost income on the stock market, the abnormal stock return of sub-period A,

TABLE 2

Regression Results Relating Cumulative Abnormal Stock Return
to Unexpected Historical Cost Income
t-value shown in parentheses

YEAR	1976				1977				1978			
	52 wks.	31 wks.	14 wks.	7 wks.	52 wks.	31 wks.	14 wks.	7 wks.	52 wks.	31 wks.	14 wks.	7 wks.
Model	$CAR_t = \beta_0 + \beta_1 [\text{unexpected HCIN}] + e_t$											
β_0 : Intercept	0.0003 (0.806)	0.0019 (3.891) ^a	-0.0031 (7.419) ^a	0.0001 (0.220)	-0.0020 (9.426) ^a	-0.0018 (7.285) ^a	-0.0031 (9.115) ^a	-0.0008 (1.658) ^d	-0.0006 (2.366) ^c	-0.0004 (1.649) ^d	-0.0004 (0.986)	-0.0014 (2.468) ^f
β_1 : HCIN	0.0162 (3.393) ^a	0.0253 (3.941) ^a	0.0043 (0.763)	-0.0007 (0.111)	0.0160 (4.614) ^a	0.0256 (6.340) ^a	0.0024 (0.444)	0.0011 (0.132)	0.0214 (6.016) ^a	0.0338 (8.221) ^a	-0.0005 (0.085)	0.0104 (1.218)
Adjusted R-SQ	0.0161	0.0222	0.0007	0.0015	0.0256	0.0483	0.001	0.0013	0.0430	0.0784	0.0013	0.0006
No. of Observations	641	641	641	641	773	773	773	773	783	783	783	783

a = significant at 0.001

b = significant at 0.01

c = significant at 0.05

d = significant at 0.10

TABLE 2 (continued)

YEAR	1979				1980				1981			
	52 wks.	31 wks.	14 wks.	7 wks.	52 wks.	31 wks.	14 wks.	7 wks.	52 wks.	31 wks.	14 wks.	7 wks.
β_0 Intercept	0.0002 (0.741)	0.0000 (0.056)	-0.0017 (3.948) ^a	0.0046 (7.165) ^a	-0.0001 (0.565)	-0.0002 (0.883)	0.0002 (0.398)	-0.0003 (0.523)	0.0008 (3.710) ^a	0.0007 (2.515) ^c	0.0009 (2.169) ^c	0.0016 (3.044) ^b
β_1 HCIN	0.0169 (8.690) ^a	0.0267 (11.539) ^a	0.0125 (3.258) ^a	-0.0175 (3.100) ^b	0.01176 (5.192) ^a	0.02312 (9.394) ^a	-0.0051 (1.166)	-0.0049 (0.773)	0.0143 (5.733) ^a	0.0179 (6.077) ^a	0.0052 (1.173)	0.0172 (3.044) ^b
Adjusted R-SQ	0.0866	0.1439	0.0121	0.0108	0.0315	0.0987	0.0005	0.0005	0.0386	0.0433	0.0005	0.0103
No. of Observations	786	786	786	786	797	797	797	797	793	793	793	793

a = significant at 0.001

b = significant at 0.01

c = significant at 0.05

d = significant at 0.10

B, and C were used in regression. The results of sub-period A show that unexpected historical cost income was positively significant at the one percent level in all years, 1976-1981. These results indicate that the market adjusts for unexpected historical cost income as early as 5 month before the end of the fiscal year. The results of sub-period B indicate that there was no stock price responses around the end of fiscal year except for 1979 at a one percent level. If one finds the abnormal return in sub-period C this indicates that the disclosure of historical cost income has impact on stock prices. These results show that there is some impact only for 1979 and 1981 at a one percent level.

In summary, as provided by previous research, the historical cost income has information content, but the impact on the market is earlier by as much as eight months before the disclosure.

The adjusted R squares are higher in sub period A than in all other periods. This indicates that this period represents the period in which most adjustments to stock prices for unexpected historical cost income take place. However, the R-square ranges from 0.02 in 1976 to 0.14 in 1979.

B. ANALYSIS OF ASSOCIATION BETWEEN FIRM SIZE AND UNEXPECTED STOCK RETURN

Two measures of firm size were used, net sales and total assets on a historical cost basis. These measures have been used in previous research.³ The results in Table 3 indicate that there is no consistent significance or direction in the association between unexpected stock return and firm size. The firm sizes were negatively associated with unexpected stock return in 1976 and 1977 at less than the one percent level. This is consistent with the Lustgarten (1982) results which show a negative relationship between abnormal stock return and firm size as measured by sales for 1977. In contrast, the results indicate that unexpected stock returns were positively associated with firm size at less than a one percent level in 1978 and 1979. However, the associations were not significant in 1980 and 1981. These results are consistent with the efficient security market as discussed in the previous chapter.

Alternatively, when the total assets of historical cost basis were used as a proxy for the firm size, the results were almost similar to those of net sales measure.

C. ANALYSIS OF ASSOCIATION BETWEEN HOLDING GAINS AND STOCK RETURNS: TEST OF THE THREE EXPECTATION FORMS

The objective of this section is to test the

TABLE 3

Regression Results Relating Cumulative Abnormal Stock Return for
52 Weeks to Firm Size as Measured by Log. of Sales
(t-value shown in parentheses)

	1976	1977	1978	1979	1980	1981
Model $CAR_t = \beta_0 + \beta_1 [\text{Log}(\text{sales})] + e_t$						
β_0 : Intercept	0.0067 (3.966) ^a	0.0034 (3.084) ^b	-0.0046 (3.803) ^a	-0.0047 (3.605) ^a	0.0019 (1.326)	0.0027 (1.868) ^d
β_1 : SIZE	-0.0092 (3.572) ^a	0.0008 (4.641) ^a	0.0007 (3.935) ^a	0.0008 (4.279) ^a	-0.0003 (1.359)	-0.0002 (1.157)
\bar{R} -Square	0.0180	0.0259	0.0181	0.0215	0.0011	0.0017
DF	641	773	784	787	798	793

a = significant at 0.001

b = significant at 0.01

c = significant at 0.05

d = significant at 0.10

incremental information content of RC/CC data over and above that which was provided by historical cost income. In other words, to test the association between unexpected holding gains and unexpected stock returns after controlling for historical cost information. As discussed in Chapter IV, three expectation forms were assumed to represent the investors' expectations about specific price change data since there is no explicit theory to explain how investors build their expectations. The differences between the disclosed and expected figures quantify the variables in the five regression models. The first three models examines the incremental information content of realized holding gains, unrealized holding gains, and total holding gains, respectively. The fourth model examines whether the disclosures of depreciation and cost of goods sold (the elements of realized holding gains) have different information from those provided by aggregated realized holding gains tested in the first model. The fifth model examines whether the disclosure of property, plant and equipment, and inventory (the elements of unrealized holding gains) have different information from those provided by aggregated unrealized holding gains tested in the second model. The mean and variance of all independent variables in these five models are presented in Appendix A.

This section is organized as follows: (1) Analysis

of association between unexpected holding gains and unexpected stock return assuming the current year value of depreciation, cost of goods sold, net property, plant and equipment, and inventory equals the value of the previous year adjusted by the expected Consumer Price Index. (2) Analysis of the association assuming that expected holding gains of the current year equal the actual holding gains of the previous year. (3) Analysis of the association assuming that the expected holding gains equal the actual holding gains of the previous year adjusted by the expected consumer price index. (4) Reconciliation of the three expectation forms.

1. ANALYSIS OF ASSOCIATION BETWEEN UNEXPECTED HOLDING GAINS AND UNEXPECTED STOCK RETURN - THE FIRST EXPECTATION FORMS

The first expectation form assumes that investors expect current year depreciation, cost of goods sold, plant and equipment, and inventory to be equal to the value of previous year on an RC/CC basis adjusted by the expected inflation rate. It is assumed that the expected inflation rate at time t equals the actual inflation rate at time $t-1$.

The five regression models used in this expectation are slightly different from those discussed in Chapter IV. The independent variables, except size, were deflated by

the book value of stockholders' equity at the beginning of the year. Alternatively, the total assets and percentage change between the two years were used. However, the results of alternate deflators show less significant results. The five regression models developed in the previous chapter are restated here. Since the definition of variables are slightly different under the first expectation form. On the first expectation form, the market agents consider only the incremental value of the elements of holding gains on RC/CC basis regardless of the corresponding historical cost. On the second and third expectation form, they expect the current year value of holding gains to be equal to that of the previous year.

$$\text{Model I: } CAR_t = \alpha_0 + \beta_1(HCIN_t - HCIN_{t-1}) + \beta_2(SIZE)_t \\ + \beta_3(DGR_t - DGR_{t-1}) + e_t$$

$$\text{Model II: } CAR_t = \alpha_1 + \beta_4(HCIN_t - HCIN_{t-1}) + \beta_5(SIZE)_t \\ + \beta_6(PVR_t - PVR_{t-1}) + e_t$$

$$\text{Model III: } CAR_t = \alpha_3 + \beta_7(HCIN_t - HCIN_{t-1}) + \beta_8(SIZE)_t \\ + \beta_9(DGR_t - DGR_{t-1}) + \beta_{10}(DGPVR_t - DGPVR_{t-1}) + e_t$$

$$\text{Model IV: } CAR_t = \beta_0 + \beta_1(HCIN_t - HCIN_{t-1}) + \beta_2(SIZE)_t \\ + \beta_3(DR_t - DR_{t-1}) + \beta_4(GR_t - GR_{t-1}) + e_t$$

$$\text{Model V: } CAR_t = \beta_0 + \beta_5(HCIN_t - HCIN_{t-1}) + \beta_6(SIZE) \\ + \beta_7(PR_t - PR_{t-1}) + \beta_8(VR_t - VR_{t-1}) + e_t$$

where

CAR_t = cumulative abnormal return

$HCIN$ = historical cost income

DR = depreciation at RC/CC

GR = cost of goods sold at RC/CC

PR = net plant and equipment at RC/CC

VR = inventory at RC/CC

DGR = DR+GR

PVR = PR+VR

DGPVR = DGR+PVR

Table 4 presents the regression results of the first three models for 1977-1981 using the cumulative abnormal mean return of the 52 week period. The reason of presenting these results rather than sub-periods is that the 52 week period represents the whole test period. However, complete regression results for the three sub-periods are included in Appendix F.

The results of Model I indicate that the total of unexpected incremental value of depreciation and cost of goods sold were negatively significant in 1978, 1980 and 1981 at a one percent level or less and at the percent level in 1977. The direction of the impact was as expected.⁴

The results of Model II indicate that the total of unexpected incremental values of plant and equipment and inventory were negatively significant in 1977, 1978, 1980 and at a five percent level or less in 1981, and positively significant at a ten percent level in 1979. The direction of the impact is not conclusive. This may

TABLE 4
 Regression Results Relating Cumulative Abnormal Mean Return for 52 Week Period
 To Unexpected Values of Elements of Realized and Unrealized Holding Gains -
 Aggregations (First Expectation Form)

	1977				1976			
	Coef	t-value	P	period	Coef.	t-value	P	period
<u>Model I</u>								
α_0 : Intercept	0.0008	2.1661	0.0310	b^1	-0.0021	1.3338	0.1829	a^0
β_1 : HCIN	0.0205	3.9669	0.0001	$a^0 c^{10}$	0.0250	5.9858	0.0001	$a^0 b^{10} c^0$
β_2 : SIZE	-0.0008	3.2566	0.0012	$a^1 b^0$	0.0004	1.8514	0.0647	a^0
β_3 : DGR	-0.0027	1.8677	0.0627	b^0	-0.0023	4.5049	0.0001	$a^0 c^5$
Adj R-SQ			0.0845				0.0840	
IF			327				482	
<u>Model II</u>								
α_1 : Intercept	0.0043	2.7221	0.0068	b^0	-0.0018	1.1664	0.2440	$a^1 b^5$
β_4 : HCIN	0.0209	4.2385	0.0001	a^0	0.0229	5.3831	0.0001	a^0
β_5 : SIZE	-0.0008	3.9564	0.0001	$a^1 b^0$	0.0003	1.5809	0.1145	$a^0 b^{10}$
β_6 : PVR	-0.0029	3.4275	0.0007	$a^1 b^1$	-0.0001	2.3766	0.0178	b^5
Adj R-SQ			0.1100				0.0517	
IF			377				512	
<u>Model III</u>								
α_2 : Intercept	0.0041	2.3510	0.0193	b^0	-0.0018	1.1136	0.2660	a^0
β_7 : HCIN	0.0201	3.4577	0.0001	$a^0 c^{10}$	0.0252	5.8083	0.0001	$a^0 c^5$
β_8 : SIZE	-0.0008	3.3809	0.0008	$a^1 b^0$	0.0004	1.6295	0.1039	a^0
β_9 : DGR	0.0024	1.1035	0.2707	a^5	-0.0018	1.9396	0.0530	a^1
β_{10} : DGPVR	-0.0036	2.9495	0.0034	$a^5 b^5$	0.0003	0.5189	0.6041	
Adj-R-SQ			0.1121				0.0803	
IF			317				471	

TABLE 4 (continued)

	1979				1980				1981			
	Coef.	t-value	P	period	Coef.	t-value	P	period	Coef.	t-value	P	period
<u>Model I</u>												
β_0 : Intercept	-0.0040	2.0676	0.0393	c^5	-0.0016	0.7155	0.4747	a^1	-0.0041	1.9406	0.0533	b^1
β_1 : IICIN	0.0196	5.5974	0.0001	$a^0 b^5$	0.0210	7.4595	0.0001	$a^0 b^1 c^1$	0.0133	3.6951	0.0003	$a^0 c^1$
β_2 : SIZE	0.0006	2.1611	0.0313		0.0003	0.9068	0.3651	a^1	0.0005	1.7159	0.0873	b^1
β_3 : DCR	-0.0012	0.3541	0.7234	c^5	-0.0012	2.6808	0.0077	$b^{10} c^1$	-0.0020	3.8037	0.0002	$a^5 b^0$
All R-SQ			0.0763				0.1376				0.0795	
N			386				375				379	
<u>Model II</u>												
β_1 : Intercept	-0.0058	3.3367	0.0009	$a^5 b^5 c^5$	0.0023	1.1815	0.2381	$a^5 b^5 c^0$	-0.0027	1.4356	0.1520	
β_4 : IICIN	0.0135	6.0272	0.0001	$a^0 c^1$	0.0167	6.0589	0.0001	$a^0 c^{10}$	0.0156	4.2056	0.0001	$a^0 c^0$
β_5 : SIZE	0.0009	3.6691	0.0003	$a^5 b^5 c^5$	-0.0003	0.9737	0.3308	$a^0 b^5 c^0$	0.0003	1.1625	0.2459	
β_6 : PVR	0.0009	1.7386	0.0828	a^5	-0.0023	2.9790	0.0031	$b^0 c^1$	-0.0022	4.2655	0.0001	$a^0 b^1$
Adj R-SQ			0.1042				0.0870				0.0865	
N			164				426				333	
<u>Model III</u>												
β_2 : Intercept	-0.0042	2.0794	0.0383	c^5	-0.0023	1.0191	0.3089	$a^1 b^1$	-0.0042	1.9184	0.0563	b^5
β_7 : IICIN	0.0201	5.6723	0.0001	$a^0 b^5$	0.0202	6.9853	0.0001	$a^0 c^1$	0.0139	3.5519	0.0005	$a^1 c^0$
β_8 : SIZE	0.0006	2.1559	0.0381	c^5	0.0004	1.2037	0.2296	a^1	0.0004	1.5763	0.1163	b^5
β_9 : DCR	-0.0018	1.7463	0.1113		0.0020	1.6219	0.1058	b^5	0.0032	2.8680	0.0045	a^1
β_{10} : DCPVR	0.0013	1.6610	0.0976		-0.0025	2.5024	0.0100	b^1	-0.0034	4.4617	0.0001	$a^0 b^5$
Adj R-SQ			0.0711				0.1420				0.1216	
N			260				320				238	

a^0, a^1, a^5, a^{10} = significant in sub-period A at 0.001, 0.01, 0.05 and 0.10 levels, respectively
 b^0, b^1, b^5, b^{10} = significant in sub-period B at 0.001, 0.01, 0.05 and 0.10 levels respectively
 c^0, c^1, c^5, c^{10} = significant in sub-period C at 0.001, 0.01, 0.05 and 0.10 levels respectively.

be due to misspecification in this expectation form. The underlying assumption is that there is no change in historical cost of property, plant and equipment, and inventory between two years. This assumption may not be correct. The results of Model III indicate that total of unexpected incremental values of depreciation, cost of goods sold, plant and equipment and inventory were negatively significant in 1977, 1980 and 1981 at a one percent level or less, and positively significant in 1979 at a ten percent level. This may due to the underlying assumption of the expectation form as the second model.

To confirm the significance of association and locate the period in which the impact on stock prices occurred, the previous three regression models have been replicated by using cumulative abnormal return of the three sub-periods. (1) Sub-period A covered 31 weeks ending 7 weeks before the fiscal year end, (2) sub-period B covered 14 weeks around the fiscal year end, (3) sub-period C covers 7 weeks around the disclosure date.

The results of sub-period A indicate that incremental value of depreciation and cost of goods sold were negatively significant in 1978, and 1981. The incremental value of plant and equipment and inventory were significant in 1977, 1979, and 1980. The incremental value of all elements were significant in 1977 and 1981.

The results of sub-period B show that incremental

value of depreciation and cost of goods sold were significant in 1977, 1980 and 1981. The incremental value of plant and equipment and inventory were significant in 1977, 1978, 1980 and 1981. The incremental value of all elements were significant in 1977, 1980 and 1981.

The results of sub-period C show that incremental value of depreciation and cost of good sold were significant in 1978, 1979 and 1980. The incremental value of plant and equipment and inventory were significant in 1980 only.

The historical cost income continues to be positively significant at 0.001 in all models for the 52 week-period but less significant in other periods. The size variable was significant in some periods in some years but the direction was not conclusive as discussed earlier.

Comparing these three models with the regression model using historical cost alone (Table 2 in this Chapter) reveals that each one of these three models explains a large portion of the variation in stock returns.

These results suggest that the specific price change data have incremental information over and above what is provided by historical cost income. This leads to reject the first hypothesis which state that there is no association between unexpected specific price income and

unexpected stock returns.

The fourth and fifth models test whether the segregated elements of realized holding gains (depreciation and cost of goods sold) and segregated elements of unrealized holding gains (property, plant and equipment, and inventory) have incremental information content different from those of the aggregated realized and unrealized holding gains in the first and second models. The results in Table 5 show that the incremental values of cost of goods sold were significant in 1977 and 1978 at 0.10, and 0.001 levels respectively. Both depreciation and cost of goods sold were significant in 1980 and 1981 at different levels.

The regression results of the fifth model show that the incremental values of plant and equipment were significant in 1977 at a 0.001 level while the incremental values of inventory were significant in 1978 and 1979 at a one percent level. Both net plant and equipment and inventory were significant in 1980 and 1981 at different significant levels.

A summary of comparison between Table 4 (aggregation) and Table 5 (segregation) is presented in Table 6, which shows whether the significance of aggregated elements of each of realized and unrealized holding gains resulting from one element or from both elements. The comparison shows that segregation of

TABLE 5

Regression Results Relating Cumulative Abnormal Mean Return for 52 Week Period
To Unexpected Values of Elements of Realized and Unrealized Holding Gains -
Segregation (First Expectation Form) ..

Model IV	1977				1978			
	Coef.	t-value	p	sub period	Coef.	t-value	P	sub period
β_0 : Intercept	0.0039	2.1865	0.0295	a ¹⁰ b ¹	-0.0021	1.3004	0.1941	a ⁰
β_1 : HCIN	0.0202	3.8349	0.0002	a ⁰	0.0257	6.0437	0.0001	a ⁰ c ⁵
β_2 : SIZE	-0.0008	3.2660	0.0012	a ¹ b ⁰	0.0004	1.8382	0.0666	a ⁰
β_3 : Dep	-0.0061	0.5967	0.5511		-0.0092	1.1610	0.2462	
β_4 : CGS	-0.0027	1.7228	0.0859	b ⁰	-0.0022	3.9413	0.0001	a ⁰ b ¹
Adj R-SQ			0.0820				0.0835	
DF			327				481	
<u>Model V</u>								
β_0 : Intercept	0.0045	2.8601	0.0045	a ¹⁰ b ⁰	-0.0015	1.0071	0.3144	a ¹
β_5 : HCIN	0.0182	3.6122	0.0003	a ⁰ c ¹⁰	0.0243	5.6936	0.0001	a ⁰
β_6 : SIZE	-0.0009	4.1429	0.0001	a ¹ b ⁰	0.0003	1.4529	0.1469	a ⁰ b ¹⁰
β_7 : NPP	-0.0043	4.2194	0.0001	a ⁰ b ¹	0.0001	0.1904	0.8491	
β_8 : INV	0.0034	1.2456	0.2137	a ¹ c ¹⁰	-0.0061	3.0811	0.0022	a ¹
Adj R-SQ			0.1215				0.0614	
DF			376				511	

TABLE 5 (continued)

	1979				1980				1981			
	Coef.	t-value	P	sub periods	Coef.	t-value	P	sub periods	Coef.	t-value	P	sub periods
<u>Model IV</u>												
β_0 : Intercept	-0.0043	2.1839	0.0292		-0.0017	0.7719	0.4406	a ¹ c ⁵	-0.0046	2.1674	0.0311	b ⁰
β_1 : HCIN	0.0201	5.7064	0.0001	a ⁰ b ⁵	0.0206	7.2525	0.0001	a ⁰ b ¹	0.0138	3.8366	0.0002	a ⁰ c ⁵
β_2 : SIZE	0.0006	2.2447	0.0254	c ⁵	0.0003	0.9731	0.3278	a ¹	0.0005	1.9349	0.0540	b ¹
β_3 : DEP	0.0099	1.3484	0.1783		-0.0042	1.6761	0.0946	c ⁰	-0.0146	1.8896	0.0599	b ¹
β_4 : OLS	-0.0004	0.6336	0.4033		-0.0010	2.1195	0.0347	b ¹⁰	-0.0018	3.3189	0.0010	a ¹⁰ b ¹
Adj R-SQ			0.0784				0.1337				0.1049	
DF			385				374				278	
<u>Model V</u>												
β_0 : Intercept	-0.0049	2.7278	0.0066		0.0021	1.0586	0.2904	a ⁵ b ⁵ c ⁰	-0.0029	1.5105	0.1319	
β_5 : HCIN	0.0143	6.3329	0.0001	a ⁰ c ⁵	0.0170	6.1469	0.0001	a ⁰ b ¹⁰ c ¹⁰	0.0165	4.4031	0.0001	a ⁰ c ⁵
β_6 : SIZE	0.0009	3.7093	0.0002	a ⁵ b ⁵ c ¹	-0.0002	0.9287	0.3536	a ¹ b ⁵ c ⁰	0.0003	1.1868	0.2362	
β_7 : NPP	0.0008	1.5813	0.1145	a ¹⁰ c ⁵	-0.0017	1.7948	0.0734	b ¹	-0.0017	2.9318	0.0036	a ⁵ b ¹
β_8 : INV	0.0163	2.5302	0.0117	a ¹	-0.0047	2.0064	0.0454	b ⁵ c ⁵	-0.0053	2.8170	0.0051	a ⁵ c ¹
Adj R-SQ			0.1134				0.0873				0.0917	
DF			463				425				332	

a⁰, a¹, a⁵, a¹⁰ = significant in sub-period A at 0.001, 0.01, 0.05, and 0.10 levels respectively.

b⁰, b¹, b⁵, b¹⁰ = significant in sub-period B at 0.001, 0.01, 0.05, and 0.10 levels respectively.

c⁰, c¹, c⁵, c¹⁰ = significant in sub period C at 0.001, 0.01, 0.05, and 0.10 levels respectively.

Table 6*

A Comparison Between the Significance of Aggregations in the First and the Second Models with the Significance of Segregations in the Fourth and fifth Models

MODEL	1977		1978		1979		1980		1981	
	I	IV	I	IV	I	IV	I	IV	I	IV
First Model vs. Fourth Model	DG	G	DG	G			DG	D G	DG	D
Second Model vs. Fifth Model	PV	P	PV	V	PV	V	PV	V	PV	P V

D = Depreciation, G = Cost of Goods sold, P = property, plant and equipment,

V = Inventory, DG = Depreciation + Cost of Goods Sold, PV = plant and equipment + inventory.

* This table compares the significance of aggregation in the first model of depreciation and cost of goods sold (DG) with the fourth model of segregating depreciation (D) from cost of goods sold (G). Also, to compare the significance of aggregation in the second model of net plant and equipment (P) and inventory (V) with the fifth model of segregating of net plant and equipment (P) from inventory (V).

elements of realized (unrealized) holding gains have different incremental information from those of aggregations.

2. ANALYSIS OF ASSOCIATION BETWEEN UNEXPECTED HOLDING GAINS AND UNEXPECTED STOCK RETURNS- THE SECOND EXPECTATION FORM

The second expectation form assumes that investors build their expectation about realized and unrealized holding gains using the reported holdings from the previous year. In other words, the expected current year holding gains equal that of the previous year (naive model) and the changes between disclosed and expected holding gains quantify the information signals in investigating the incremental information content of specific price change data.

Correlation matrix coefficients are presented in Appendix B. Correlation statistics suggest potential multicollinearity in the regression. Bublitz, Frecka and McKeown (1984) state that multicollinearity is a weak excuse for advocates of current cost accounting, for if, at the limit, the current cost variable are perfectly correlated with historical cost variables, there are no compelling reasons for the current cost disclosures. However, even with less than perfect multicollinearity, if the results indicate lack of significance for the RC/CC

variables, it signifies that RC/CC has no effect (on security returns) that is independent of historical cost. This means that the RC/CC data have no incremental information content. If the t statistics on the RC/CC variables are significant, then multicollinearity is not a critical issue.

As before, five regression models were tested (as shown in pp. 82-83). these models will be used in the rest of this chapter. The first three models test the incremental information content of unexpected realized holding gains, unexpected unrealized holding gains, and unexpected total holding gains, respectively. The realized and unrealized holding gains were calculated for the year 1976-1978 since ASR 190 did not require disclosure of holding gains. For 1979 through 1981, the holding gains reported in complying with FAS 33 were used. Alternatively, the calculated holding gains for 1979-1981 were used applying the same formula which was used in 1976-1978 and which was discussed in Chapter IV. The results show that using reported holding gains for 1979-1981 gives better results, which are reported in this section.

Table 7 presents the regression results of the first three models under the second expectation form using calculated holding gains for 1976-1978 and reported holding gains for 1979-1981. The complete presentation

TABLE 7

Regression Results Relating Cumulative Abnormal Return to Unexpected
Realized, Unrealized, and Total Holding Gains (Second Expectation Form)

YEAR VARIABLES	1977				1978				1979			
	Coef	t-value	P	sub periods	Cref	t-value	P	sub periods	Coef	t-value	P	sub periods
<u>Model I</u>												
α_0 : Intercept	0.0033	1.9214	0.0555	b ¹	-0.0018	1.0973	0.2731	a ⁰ b ¹⁰	-0.0026	1.3232	0.1886	c ⁵
β_1 :HCIN	0.0217	4.2491	0.0001	a ⁰ c ¹⁰	0.0255	5.8923	0.0001	a ⁰ c ¹⁰	0.0120	5.0974	0.0001	a ⁰ c ¹
β_2 :SIZE	-0.0008	3.2638	0.0012	a ¹ b ¹	0.0003	1.4396	0.1506	a ⁰	0.0004	1.5912	0.1124	c ¹
β_3 :RIG	-0.0002	0.0219	0.9825	c ¹⁰	-0.0122	2.4348	0.0153	a ¹	-0.0026	0.8077	0.4198	c ¹
Adj R-SQ			0.0683				0.0700				0.0693	
DF			360				481				377	
<u>Model II</u>												
α_1 : Intercept					-0.0016	0.9402	0.3477	a ¹	-0.0043	2.0444	0.0418	b ⁵
β_4 :HCIN					0.0206	3.8730	0.0001	a ⁰	0.0183	5.0326	0.0001	a ⁰
β_5 :SIZE					0.0003	1.2672	0.2059	a ⁰	0.0007	2.4141	0.0164	b ⁵ c ¹⁰
β_6 :RIG					0.0009	1.0724	0.2842	a ¹⁰	0.0019	1.5620	0.1194	a ⁰
Adj R-SQ							0.0395				0.0951	
DF							381				287	
<u>Model III</u>												
α_2 : Intercept					-0.0012	0.6863	0.4930	a ⁰ c ⁵	-0.0031	1.3539	0.1769	
β_7 :HCIN					0.0201	3.6494	0.0003	a ⁰	0.0178	4.6922	0.0001	a ⁰
β_8 :SIZE					0.0002	0.9819	0.3268	a ⁰ c ⁵	0.0052	1.6382	0.1026	c ¹⁰
β_9 :RIG					-0.0041	0.5985	0.5499	a ¹⁰	-0.0036	0.9310	0.3527	
β_{10} :TIG					0.0013	1.4389	0.1511	a ⁵	0.0011	0.8219	0.4118	a ⁵
Adj R-SQ							0.0371				0.0727	
DF							352				265	

Table 7 (continued)

YEAR VARIABLES	1980				1981			
	Coef.	t-value	P	sub periods	Coef.	t-value	P	sub periods
<u>Model I</u>								
α_0 :Intercept	0.0015	0.8925	0.3725	a ¹⁰ b ¹⁰ c ¹	0.0014	0.8061	0.4206	a ¹⁰ c ¹⁰
β_1 :HCIN	0.0154	5.9010	0.0001	a ⁰	0.0140	3.8356	0.0001	a ⁰
β_2 :SIZE	-0.0002	0.7387	0.4604	c ¹	-0.0001	0.3318	0.7402	
β_7 :RHG	-0.0172	4.2192	0.0001	b ⁰ c ¹	0.0019	0.3980	0.6908	
Adj R-SQ			0.0745				0.0287	
DF			547				483	
<u>Model II</u>								
α_1 :Intercept	0.0011	0.5625	0.5741	a ⁵ b ¹⁰ c ⁵	0.0005	0.2877	0.7737	
β_1 :HCIN	0.0143	2.8624	0.0044	a ⁰	0.0105	2.7639	0.0060	a ⁰ b ¹⁰
β_2 :SIZE	-0.0001	0.4704	0.6383	a ⁵ c ⁵	0.0001	0.2309	0.8175	
β_8 :UHG	0.0031	1.6761	0.0945	a ¹⁰	-0.0006	0.2902	0.7718	
Adj R-SQ			0.0209				0.0112	
DF			387				416	
<u>Model III</u>								
α_2 :Intercept	0.0012	0.6580	0.5109	a ⁵ b ¹⁰ c ⁵	0.0006	0.3201	0.7491	
β_1 :HCIN	0.0218	4.2450	0.0001	a ⁰	0.0111	2.8250	0.0050	a ⁰
β_2 :SIZE	-0.0013	0.5180	0.6048	a ⁵ c ⁵	0.0001	0.2116	0.8325	
β_7 :RHG	-0.0235	4.8605	0.0001	a ¹ b ⁰	0.0029	0.4693	0.6391	c ¹⁰
β_9 :THG	0.0011	0.5945	0.5526		-0.0007	0.3440	0.7310	
Adj R-SQ			0.0682				0.0097	
DF			386				415	

a⁰, a¹, a⁵, a¹⁰ = significant in sub-period A at 0.001, 0.01, 0.05 and 0.10 levels respectively

b⁰, b¹, b⁵, b¹⁰ = significant in sub-period B at 0.001, 0.01, 0.05 and 0.10 levels respectively

c⁰, c¹, c⁵, c¹⁰ = significant in sub-period C at 0.001, 0.01, 0.05 and 0.10 levels respectively

for the results of the three models are shown only for 1978-1981 because the calculation of unrealized holding gains requires two years of RC data. All independent variables, except size, were deflated by the book value of stockholders' equity. Alternatively, total assets were used as a deflator, but the results were less significant.

The regression results of Model I presented in Table 7 indicate that (1) Unexpected RHG of 1978 were negatively significant at a five percent level in the 52 week period and at a one percent level in sub-period A. (2) Unexpected RHG of 1979 were negatively significant at one percent level around the disclosure date. (3) Unexpected RHG of 1980 were negatively significant at 0.001, 0.001 and 0.01 levels in the 52 week-period, around the fiscal year end and around the disclosure date, respectively. In sum, unexpected RHG were significant in 1978-1980 at different significant levels in different periods.

The results of Model II presented in Table 7 indicate that (1) unexpected unrealized holding gains (UHG) of 1978 were positively significant at a ten percent level in sub-period A. (2) Unexpected UHG of 1979 were positively significant at a 0.001 level in sub-period A. (3) Unexpected UHG of 1980 were positively significant at a ten percent level in the 52-week period and sub-period A.

The regression results of Model III presented in Table 7 indicate that: (1) unexpected RHG of 1978 were negatively significant at a ten percent level in sub-period A. (2) unexpected RHG of 1980 were negatively significant in the 52-week period, sub-period A, and around the FY end at different significant levels. (3) Unexpected RHG of 1981 were negatively significant at a ten percent level around the disclosure date. (4) Unexpected total holding gains were positively significant at five percent levels in sub-period A in 1978 and 1979.

A comparison between the adjusted R-Square of the 52-week period and all sub-periods reveals that the highest adjusted R-Square were in sub-period A, the 52-week period are second, around the disclosure date are third, and around fiscal year end are lowest. Table 8 presents a comparison between the adjusted R-square of the three regression models in the 52-week and sub-period A. From this comparison and also from Table 7, it can be concluded that the sub-period A represents the period in which most of the effect of unexpected holding gains on stock prices takes place. This is consistent with Lustgarten (1982) and Ro (1980). Lustgarten (1982) indicated that significant effects were as early as five or six months before the end of the company's fiscal year.

TABLE 8

Comparison Between Adjusted R-Square for the Three Models in
52-Week Period and 31-Week Period (Second Expectation Form)

	1977		1978		1979		1980		1981	
	52 wks.	31 wks.	52 wks.	31 wks.	52 wks.	31 wks.	52 wks.	31 wks.	52 wks.	31 wks.
Model I	0.0683	0.1076	0.0700	0.1307	0.0693	0.1541	0.0745	0.1097	0.0287	0.0535
Model II			0.0395	0.1084	0.0951	0.1331	0.0209	0.0965	0.0112	0.0475
Model III			0.0371	0.1171	0.0727	0.1120	0.0682	0.1120	0.0097	0.0453
HCIN Model	0.0256	0.0483	0.0430	0.0784	0.0866	0.1439	0.0315	0.0987	0.0386	0.0433

Ro (1980) found some significant effect as early as 26 weeks prior to the ASR 190 filing.

A Comparison Between a Model Using Only Unexpected Historical Cost Income and the First Three Regression Models.

The results presented in Table 8 indicate that the adjusted R-squares of the first model of RHG are higher in all years 1977-1981. The other two models have adjusted R-square higher than the historical cost income model except for 1979. Therefore it can be concluded that the models including holding gains perform better to explain unexpected stock return than a model including only historical cost income.

These results of the three models suggest that Replacement Cost/Current Cost data have incremental information content over and above the information provided by historical cost income. These results lead to reject the first hypotheses of no incremental information content.⁵ These results are consistent with Lustgarten (1982) and Haw and Lustgarten (1984). However, these results are contrary to the results of Beaver, Griffin and Landsman (1982) and Beaver and Landsman (1983) which indicate that there is no incremental information content. This may due to several reasons. (1) The monthly stock return they used may not be appropriate to capture the

information content of specific price change data.

(2) Ignoring cost of goods sold in computing RHG in 1976-1978 which affect both realized and total holding gains. (3) The model they used for post-holding gains is subject to misspecification error.⁶

To test whether the segregated elements of realized and unrealized holding gains have incremental information content different from each of aggregated realized and unrealized holding gains, the fourth and fifth models were undertaken. The regression results presented in Table 9⁷ were based on calculated holding gains for 1977-1981. A comparison between the results of the first and second models, with those of the fourth and fifth models based on calculated holding gains is presented in Table 10.

The results in Table 9 show that unexpected realized holding gains resulting from depreciation were negatively associated with unexpected stock return in 1981. Unexpected realized holding gains resulting from cost of goods sold were significant in 1978. Both unexpected realized holding gains resulting from depreciation and cost of goods sold were significant in 1980. These results question Beaver, Griffin and Landsman (1982) claim that depreciation is the only source for realized holding gains, thus ignoring cost of goods sold. Their results are subject to miscalculation of realized holding gains.

The results in Table 10 show that unexpected

TABLE 9

Regression Results Relating Cumulative Abnormal Return for 52-week Period to Segregation of Realized and Unrealized Holding Gain Elements (Second Expectation Form)

	1977				1978				1979			
	Coef	t-value	P	sub periods	Coef	t-value	P	sub periods	Coef	t-value	P	sub periods
Model IV												
β_0 : Intercept	0.0036	2.0936	0.0370	b ¹	-0.0020	1.2257	0.2209	a ⁰	-0.0046	2.2328	0.0204	b ¹⁰ c ⁵
β_1 :HCIN	0.0208	4.0449	0.0001	a ⁰	0.0246	5.6362	0.0001	a ⁰ c ⁵	0.0119	4.6296	0.0001	a ⁰ c ⁵
β_2 :SIZE	-0.0008	3.3825	0.0008	a ¹ b ⁰	0.0003	1.5133	0.1309	a ⁰	0.0007	2.4021	0.0168	c ¹
β_3 :RIG(D)	-0.0153	1.1330	0.2580		0.0033	0.2600	0.7950		0.0112	1.4125	0.1586	
β_4 :RHG(G)	0.0066	0.7382	0.4609	c ¹	-0.0174	2.7277	0.0066	a ⁰	0.0006	1.0583	0.2906	
Adj R-SQ			0.0703				0.0714				0.0602	
DF			359				480				386	
Model V												
β_0 : Intercept					-0.0016	0.9225	0.3517	a ¹	0.0065	3.0091	0.0010	a ⁵ b ¹ c ⁵
β_5 :HCIN					0.0207	2.8641	0.0001	a ⁰	0.0133	5.6000	0.0001	a ⁰ c ¹
β_6 :SIZE					0.0003	1.2605	0.2083	a ⁰	0.0010	4.0077	0.0001	a ¹ b ¹ c ⁵
β_7 :UIG(P)					0.0009	1.0674	0.2865	a ¹⁰	0.0007	1.4701	0.1422	a ⁰ c ¹⁰
β_8 :UIG(V)					0.0006	0.1016	0.9191		0.0009	0.7710	0.4405	
Adj R-SQ							0.0370				0.1058	
DF							380				441	

TABLE 9 (continued)

	1980				1981			
	Coef	t-value	P	sub period	Coef	t-value	P	sub period
<u>Model IV</u>								
β_0 :Intercept	-0.0009	0.3807	0.7037	a ¹	-0.0037	1.6626	0.0977	b ⁵
β_1 :HCIN	0.0330	7.3606	0.0001	a ⁰ b ¹	0.0126	2.9761	0.0032	a ¹ c ¹⁰
β_2 :SIZE	0.0002	0.6013	0.5481	a ⁵	0.0005	1.5687	0.1181	b ⁵
β_3 :RHG(D)	-0.0029	1.1580	0.2477	c ⁰	-0.0447	3.1017	0.0022	b ⁰
β_4 :RHG(G)	0.0015	2.0638	0.0398		-0.0003	0.3779	0.7059	
Adj R-SQ			0.1480				0.0617	
DF			332				237	
<u>Model V</u>								
β_0 :Intercept	0.0035	1.7027	0.0885	a ⁵ b ¹ c ⁰	-0.0024	1.1691	0.2434	
β_5 :HCIN	0.0214	5.0821	0.0001	a ⁰	0.0108	2.4973	0.0131	a ¹ c ⁵
β_6 :SIZE	-0.0005	1.6354	0.1027	a ⁵ b ¹ c ⁰	0.0003	0.9437	0.3461	
β_7 :UHG(P)	-0.0004	0.8385	0.4022	b ₅	0.0001	0.0774	0.9383	c ¹⁰
β_8 :UHG(V)	0.0003	0.3206	0.7487		0.0007	0.4460	0.6559	
Adj R-SQ			0.0569				0.0243	
DF			411				278	

a⁰, a¹, a⁵, a¹⁰ = significant in sub-period A at 0.001, 0.01, 0.05 and 0.10 levels, respectively

b⁰, b¹, b⁵, b¹⁰ = significant in sub-period B at 0.001, 0.01, 0.05, and 0.10 levels, respectively

c⁰, c¹, c⁵, c¹⁰ = significant in sub-period C at 0.001, 0.01, 0.05, and 0.10 levels, respectively

TABLE 10

Comparison of Significance of Aggregation in First and Second Models with Segregation in Fourth and Fifth Models

	period	1977		1978		1979		1980		1981	
		I	IV	I	IV	I	IV	I	IV	I	IV
First Model vs. Fourth Model	52 wks. sub- period A			RHIG	RHGG			RHIG	RHGG		RHGD
	sub- period B			RHIG	RHGG						RHGD
	sub period C	RHIG	RHGG						RHGD		
Second Model vs. Fifth Model	52 wks.	II	V	II	V	II	V	II	V	II	V
	sub- period A			UHG	UHGP	UHG	UHGP				
	sub period B							UHIG	UHGP		
	sub period C						UHGP				UHGP

RHG = Realized holding gains. RHGD, RHGG = Realized holding gains resulted from depreciation and cost of goods sold, respectively.

UHG = Unrealized holding gains. UHGP, UHGV = Unrealized holding gains resulted from plant and inventory, respectively.

unrealized holding gains resulting from property, plant and equipment were significant in 1978, 1979, 1980 and 1981 in different periods. It is interesting to see in Table 10 where the aggregated figure was not significant, and one of the segregated elements of holding gains was significant. (1) Unexpected realized holding gains resulting from depreciation were significant in 1980 (around the disclosure date) and 1981 while the aggregated figures were not significant. (2) The unexpected unrealized holding gains resulting from plant and equipment were significant in 1979 and 1981 around the disclosure date while the aggregated figures were not significant. Also, Table 9 shows the direction of the impact of the two elements of realized and unrealized holding gains. The results were in opposite directions which cancel each other in the aggregated figure.

These results suggest that segregation of disclosure of depreciation, cost of goods sold, plant and equipment, and inventory on RC/CC basis has different incremental information content from the aggregated figure of realized and unrealized holding gains. These results suggest a rejection of the second hypothesis.

3. ANALYSIS OF ASSOCIATION BETWEEN UNEXPECTED HOLDING GAINS AND UNEXPECTED STOCK RETURNS - THE THIRD EXPECTATION FORM

Table 11 presents the regression results of the first three models under the third expectation form - the current year holding gains equal that of the previous year adjusted by the expected inflation rate. The results of Table 11 are most similar to those presented in Table 7.

4. THE THREE EXPECTATION FORMS - RECONCILIATION

Table 12 summarizes the significance level and direction for the three models of RHG, UHG and THG under the three expectation forms. The regression results are most similar under the second and third expectation forms. This is due to the slight difference between these two forms. The second form assumes that the expected holding gains at time t equal the actual holding gains at time $t-1$. The third form assumes that the expected holding gains at time t equal the actual holding gains at time $t-1$, adjusted by the expected inflation rate.

The results of the three models under the first expectation form are not consistent with those results under the second and third expectation forms. This may be due to the calculation of RHG and UHG under these expectation forms rather than the different market response to RC/CC data. To determine the differences in

TABLE 11
Regression Results Relating Cumulative Abnormal Returns to Realized,
Unrealized, and Total Holding Gains (Third Expectation Form)

	1977				1978				1979			
	Coef	t-value	P	sub periods	Coef	t-value	P	sub period	Coef	t-value	p	sub period
<u>Model I</u>												
α_0 : Intercept	0.0033	1.9248	0.0550	b^1	-0.0018	1.1500	0.2507	$a^0 b^{10}$	0.0045	-2.2687	0.0233	c^5
β_1 :HCIN	0.0217	4.2490	0.0001	$a^1 c^{10}$	0.0255	5.9007	0.0001	$a^0 c^{10}$	0.0117	4.5598	0.0001	c^5
β_2 :SIZE	-0.0006	3.2641	0.0012	$a^1 b^0$	0.0003	1.4620	0.1444	a^0	0.0007	2.4057	0.0166	c^1
β_3 :RHG	-0.0006	0.0339	0.9292	c^{10}	-0.0132	2.6410	0.0085	a^1	0.0008	1.6477	0.1002	b^{10}
Adj R-SQ			0.0683				0.0720				0.0846	
DF			360				481				387	
<u>Model II</u>												
α_1 :Intercept					-0.0016	0.9447	0.3454	a^1	-0.0065	3.6774	0.0003	$a^5 b^1 c^5$
β_4 :HCIN					0.0207	3.8818	0.0001	a^0	0.0133	5.6184	0.0001	$a^0 c^1$
β_5 :SIZE					0.0003	1.2753	0.2030	a^0	0.0010	4.0296	0.0001	$a^5 b^1 c^1$
β_6 :UHG					0.0008	1.0088	0.3137	a^{10}	0.0007	1.6741	0.0948	a^0
Adj R-SQ							0.0392				0.1075	
DF							381				442	
<u>Model III</u>												
α_2 :Intercept					-0.0013	0.7058	0.4808	$a^0 c^5$	-0.0049	2.3805	0.0178	c^5
β_7 :HCIN					0.0203	3.6673	0.0003	a^0	0.0116	4.1559	0.0001	$a^0 c^1$
β_8 :SIZE					0.0002	1.0073	0.3145	$a^0 c^5$	0.0007	2.5218	0.0121	c^5
β_9 :UHG					-0.0059	0.8811	0.3789	a^{10}	0.0003	0.3525	0.7247	
β_{10} :THG					0.0013	1.4329	0.1528	a^5	0.0005	0.9176	0.3594	
AdjR-SQ							0.0376				0.0833	
DF							352				356	

TABLE 11 (continued)

	1980				1981			
	Coef	t-value	P	sub period	Coef	t-value	P	sub period
Model I								
α_0 : Intercept	0.0013	0.8011	0.4234	$a^{10} b^{10} c^{10}$	0.0011	0.0767	0.4301	
β_1 : HCN	0.0151	5.2039	0.0001	a^0	0.0143	3.9014	0.0001	$a^0 c^{10}$
β_2 : SIZE	-0.0002	0.7481	0.4574	c^1	-0.0000	0.2032	0.8352	
β_3 : RIG	-0.0152	3.8897	0.0001	$b^0 c^5$	0.0007	0.1695	0.8655	
Adj R-SQ			0.0700				0.0286	
DF			547				485	
Model II								
α_1 : Intercept	0.0011	0.6131	0.5401	$a^{10} b^{10} c^5$	0.0039	0.2553	0.7906	
β_4 : HCN	0.0147	2.9003	0.0031	a^0	0.0105	0.2769	0.0059	$a^0 b^{10}$
β_5 : SIZE	-0.0001	0.4765	0.6340	$a^{10} c^5$	0.0001	0.2746	0.7838	
β_6 : URG	0.0020	1.0620	0.2839		-0.0021	1.1616	0.2460	
Adj R-SQ			0.0180				0.0144	
DF			336				419	
Model III								
α_2 : Intercept	0.0009	0.4828	0.6295	$a^5 b^{10} c^{10}$	0.0002	0.1567	0.8756	
β_7 : HCN	0.0214	4.1621	0.0001	a^0	0.0115	2.9328	0.0035	$a^0 b^{10}$
β_8 : SIZE	-0.0001	0.4231	0.6688	$a^{10} c^5$	0.0001	0.3511	0.7257	
β_9 : RIG	-0.0183	4.0283	0.0001	$a^1 b^0$	-0.0033	0.5796	0.5625	
β_{10} : RIG	0.0001	0.0340	0.9331		-0.0023	1.2519	0.2113	
Adj R-SQ			0.0534				0.0144	
DF			385				418	

a^0, a^1, a^5, a^{10} indicate significance in sub-period A at 0.001, 0.01, 0.05 and 0.10 levels, respectively.

b^0, b^1, b^5, b^{10} indicate significance in sub-period B at 0.001, 0.01, 0.05 and 0.10 levels, respectively.

c^0, c^1, c^5, c^{10} indicate significance in sub-period C at 0.001, 0.01, 0.05 and 0.10 levels, respectively.

Table 12

Summary of Significance Levels for the Three Models of RIIG, UIIG, and TIIG Under the Three Expectation Forms

Variable	1977		1978		1979		1980		1981		
	52 wks.	31 wks.	52 wks.	31 wks.	52 wks.	31 wks.	52 wks.	31 wks.	52 wks.	31 wks.	
First Exp.	D+CGS	- 0.10 (CGS)	-	- 0.01 (CGS)	0.01 (CGS)	-	-	- 0.01 (D+CGS)	-	- 0.01 (D+CGS)	- 0.05 (D)
	NP+V	- 0.01 (NP)	- 0.01 (NP&V)	- 0.05 (NP)	- (NP)	+ 0.10 (V)	+ 0.05 (V)	- 0.01 (NPRV)	-	- 0.01 (NP&V)	- 0.01 (NP&V)
	D+CGS	-	- 0.05	- 0.05	- 0.01	-	-	-	-	-	-
	D+CGS+NPV	- 0.01	- 0.05	-	-	-	-	- 0.01	-	- 0.01	- 0.01
Second Exp.	RIIG	-	-	- 0.05 (CGS)	- 0.01 (CGS)	-	-	- 0.01	-	-	-
	UIIG	-	-	-	+ 0.10 (P)	-	+ 0.10 (P)	+ 0.10	+ 0.10	-	-
	RIIG	-	-	-	- 0.10	-	-	- 0.01	- 0.01	-	-
	TIIG	-	-	-	+ 0.05	-	+ 0.05	-	-	-	-
Third Exp.	RIIG	-	-	- 0.01	- 0.01	-	-	- 0.01	-	-	-
	UIIG	-	-	-	+ 0.10	+ 0.10	+ 0.01	-	-	-	-
	RIIG	-	-	- 0.10	-	-	-	- 0.01	- 0.01	-	-
	TIIG	-	-	+ 0.05	-	-	-	-	-	-	-

calculations, the reconciliation between first and second expectation forms is discussed below:

(1) Unexpected realized holding gains resulting from depreciation (URHGD) (the same reconciliation holds for cost of goods sold).

(a) First Expectation Form:

$$\text{URHGD} = \text{DR}_t - [\text{DR}_{t-1} * \text{E}(\text{CPI}_t)]$$

(b) Second Expectation Form

$$\begin{aligned} \text{URHGD} &= [(\text{DR}_t - \text{DH}_t) - (\text{DR}_{t-1} - \text{DH}_{t-1})] \\ &= (\text{DR}_t - \text{DR}_{t-1}) - (\text{DH}_t - \text{DH}_{t-1}) \end{aligned}$$

where

DR, DH = Depreciation at RC/CC and historical cost, respectively.

CPI = Consumer Price Index.

Therefore, if $(\text{DH}_t - \text{DH}_{t-1})$ is not equal to $[(\text{DR}_{t-1}) * \text{E}(\text{CPI}_t)] - \text{DR}_{t-1}$, the calculated figures for unexpected RHG resulting from depreciation are different. The following example shows the difference.

	HC	RC
Depreciation at time t	5000	9000
Depreciation at time t-1	4000	6000
Expected Consumer Price Index at time t = 110%		

URHGD: First Expectation Form = 2400

Second Expectation Form = 2000

(2) Unexpected unrealized holding gains resulting from plant and equipment (UHGP). The same reconciliation holds for inventory).

(a) First Expectation Form

$$\text{UHGP} = \text{NPR}_t - [\text{NPR}_{t-1} * \text{E}(\text{CPI}_t)]$$

(b) Second Expectation Form

$$\begin{aligned} \text{UHGP} &= [(\text{NPR}_t - \text{NPH}_t) - (\text{NPR}_{t-1} - \text{NPH}_{t-1})] \\ &\quad - [(\text{NPR}_{t-1} - \text{NPH}_{t-1}) - (\text{NPR}_{t-2} - \text{NPH}_{t-2})] \\ &= [\text{NPR}_t - \text{NPR}_{t-1}] - [\text{NPH}_t - \text{NPH}_{t-1}] \\ &\quad - [(\text{NPR}_{t-1} - \text{NPH}_{t-1}) - (\text{NPR}_{t-2} - \text{NPH}_{t-2})] \end{aligned}$$

where

NPR, NPH = net property, plant and equipment at RC/CC and historical cost, respectively.

The following example shows the difference in unexpected unrealized holding gains calculated under these two expectation forms.

	<u>Time</u>	<u>HC</u>	<u>RC</u>
Net property plant, and equipment	t	600	1000
(in million)	t-1	500	800
	t-2	300	500

Expected Consumer price Index = 110%

Unexpected unrealized holding gains resulting from plant and equipment:

(a) First Expectation Form = 120M

(b) Second Expectation Form = 0

Therefore, the unexpected realized and unrealized holding gains calculated under these two expectation forms are different. The underlying assumption of the first expectation form is the equality of historical cost of all elements between two years. In other words, the company is in steady state. Given that this assumption may be unrealistic, the figures calculated under the first expectation form are not accurate. In the following two sections, the first expectation form will be ignored in examining the information content across industry and regulated and nonregulated portfolios. The third expectation form is also ignored because of consistent results with the second expectation form.

D. ANALYSIS OF ASSOCIATION BETWEEN HOLDING GAINS AND STOCK RETURNS WITHIN AND ACROSS INDUSTRY PORTFOLIOS

The results presented in the last section indicate that holding gains have incremental information over and above what is provided by historical cost income. This section presents regression results within and across industries to test whether the association between unexpected holding gains and unexpected stock returns were significantly different within and across industry portfolios. The second expectation form, where investors expect holding gains of the current year to be equal that

of the previous year, was used in computing the unexpected holding gains variables in the regression equations.

Firms were grouped into 22 portfolios based on SIC two-digits classification.⁸ However, in conducting the test some industries were eliminated because only a small number of firms had a complete set of data to run the test.

First, cross-sectional regressions were run for each industry using cumulative abnormal returns for the 52 week and the three sub-periods as the dependent variables. The first three models of realized holding gains, unrealized holding gains, and total holding gains were used in regression. Tables 13-15 present the significance level of the independent variables used as information signals in the three regression models. Table 13 presents the significance level of realized holding gains (RHG) in the first model within industries for the 52-week and the three sub-periods. Table 14 presents the significance level of unrealized holding gains (UHG) in the second model within industries while Table 15 shows the significance level of realized and total holding gains (THG) in the third model.

The results presented in Table 13-15 indicate that:

- (1) In agriculture and the agriculture products industry, UHG were significant in 1979.
- (2) In mining, crude petroleum and the construction

TABLE 13

Cross-Sectional Results Within Industry
 First Model of RIIG and Level of Significance

$$\text{Model I: } \text{CAR}_{i,t} = \beta_0 + \beta_1 \text{ICIN} + \beta_2 \text{SIZE} + \beta_7 \text{RIIG} + e_t$$

SIC	INDUSTRY	1978				1979				1980				1981			
		52 wk.	A	B	C	52 wk.	A	B	C	52 wk.	A	B	C	52 wk.	A	B	C
1-2	Agriculture, Agr. Products																
10-16	Mining, Const.								0.05								
20-21	Food			0.01													0.05
22-23	Textile	0.10	0.01											0.05			
24-26	Lumber, Paper									0.10				0.10			
28	Chemical												0.01	0.10			
29	Petroleum					0.05	0.05										0.10
32	Glass									0.10				0.10			
33	Steel				0.10												
34	Metal Cons						0.10										
35	Machinery								0.10								
36	Elec. & Electr.		0.01														
37	Car, Aircraft									0.10	0.05	0.05					
38	Eng. & Res. Equip.	0.05		0.05													
40-47	Transportation																
48-49	Utilities									0.001	0.001		0.001	0.05	0.001		
50-51	Wholesale				0.10								0.10				
52-59	Retail	0.05	0.05			0.05	0.01	0.10	0.05	0.10			0.05	0.05	0.05		
70-89	Service													0.05			
	Others													0.05			0.01

TABLE 14

Cross-Sectional Results Within Industry-Second Model of UHG at Level of Significance

$$\text{Model II CAR} = \beta_0 + \beta_1 \text{HCI} + \beta_2 \text{SIZE} + \beta_3 \text{UHG} + e_t$$

SIC		1978			1979			1980			1981					
		52 wk.	A	B	C	52 wk.	A	B	C	52 wk.	A	B	C			
1-2	Agriculture, Pgr. Products									0.05						0.05
10-16	Mining Const.	0.10		0.01			0.10									0.05
20-21	Food				0.05											
22-23	Textile												0.10	0.05		0.10
24-26	Lumber, Paper					0.10		0.05								
28	Chemical															
29	Petroleum															
32	Glass		0.10		0.10				0.05	0.10						
33	Steel															
34	Metal Cans								0.05	0.01						
35	Machinery							0.05								
36	Elec. and Electr.	0.05			0.01				0.10		0.10					
37	Car-Aircraft															
38	Eng. & Reg Equip.	0.05						0.05								
40-47	Transportation															
48-49	Utilities											0.10	0.10	0.10		
50-51	Wholesale									0.05						
52-59	Retail												0.001	0.001	0.10	
70-99	Service												0.01		0.05	
	Others															

TABLE 15
 Cross-Sectional Results Within Industry
 Third Model: RIG & TIG and Level of Significance
 Model III $CAR = \beta_0 + \beta_1 RIG + \beta_2 TIG + \beta_3 SIZE + \beta_4 RIG + \beta_5 TIG + e$

SIC	1973								1979							
	RIG				TIG				RIG				TIG			
	52 wk.	A	B	C	52 wk.	A	B	C	52 wk.	A	B	C	52 wk.	A	B	C
1-2 Agriculture, Agr. Prod																
10-16 Mining, Constr.				0.01			0.01					0.01				
20-21 Food			0.01					0.05								
22-23 Textile																
24-26 Lumber, paper									0.01	0.10			0.05		0.10	
28 Chemical	0.05															
29 Petroleum															0.05	
32 Glass																
33 Steel						0.10										
34 Metal Cons			0.10					0.05								
35 Machinery									0.10	0.05		0.05		0.10		
36 Elec & Electr.	0.05			0.01				0.01		0.05						
37 Car, Aircraft			0.05													
38 Eng & Res. Equip.	0.10					0.10										
40-47 Transportation			0.05				0.10									
48-49 Utilities																
50-51 Wholesale																
52-59 Retail							0.05	0.05					0.05	0.01		0.10
70-89 Service																
Others										0.05				0.05		

TABLE 15 (continued)

SIC	1980						1981						
	RHG			THG			RHG			THG			
	52 wk.	A	B	C	52 wk.	A	B	C	52 wk.	A	B	C	
1-2 Agriculture, Agr. Prod													
10-16 Mining, Const.											0.05	0.05	
20-21 Food												0.05	
22-23 Textile								0.10				0.01	
24-26 Lumber, Paper									0.10				
28 Chemical											0.05		
29 Petroleum											0.05	0.10	
32 Glass			0.01	0.10		0.01							
33 Steel					0.10								
34 Metal Cans				0.10	0.05								
35 Machinery							0.05						
36 Elec. & Electr.				0.10		0.10			0.05				
37 Car, Aircraft			0.05			0.05				0.10		0.10	
38 Eng. & Res. Equip.													
40-47 Transportation													
48-49 Utilities	0.001		0.001				0.10	0.01	0.05	0.05	0.10	0.10	
50-51 Wholesale		0.10			0.05								
52-59 Retail				0.01			0.05				0.001	0.01	0.05
70-99 Service	0.10	0.10						0.10			0.10		
Others											0.01		

industries, RHG were significant in 1979 and 1981, and UHG and THG were significant in 1978, 1979, and 1981.

- (3) In the food and cigarette industries RHG and THG were significant in 1978 and 1981, and UHG were significant in 1978.
- (4) In the textile industry, RHG were significant in 1978 and 1981 and both UHG and THG were significant in 1981.
- (5) In the lumber and paper product industries, RHG were significant in 1979 and 1981, and UHG and THG were significant in 1979.
- (6) In the chemical industry, RHG were significant in 1979 and 1981, and THG were significant in 1981.
- (7) In the glass industry, RHG were significant in 1980 and 1981, and UHG were significant in 1978 and 1980.
- (8) In the steel industry, RHG and THG were significant in 1978 and 1979 respectively.
- (9) In the metal cans industry, RHG were significant in 1978 and 1979, UHG were significant in 1980, and THG were significant in 1978 and 1980.
- (10) In the machinery industry, RHG and UHG were significant in 1979, and THG were significant in 1979 and 1980.
- (11) In the electric and electronic industry, RHG were significant in 1978 and 1979, and UHG and THG were

significant in 1978 and 1980.

- (12) In the motor vehicle, truck and aircraft industries, RHG were significant in 1978 and 1980.
- (13) In engineering and the research equipment industry, RHG and THG were significant in 1978, and UHG were significant in 1978 and 1979.
- (14) In transportation, RHG and THG were significant in 1978.
- (15) In utilities, RHG, UHG and THG were significant in 1980 and 1981. However, because the data for utilities were not available on ASR 190 tape the test covered only 1980 and 1981.
- (16) In wholesale, RHG were significant in 1979 and 1980, and UHG and THG were significant in 1980.
- (17) In retail, RHG and THG were significant in 1978-1981 and UHG were significant in 1981.
- (18) In the service industry, RHG and UHG were significant in 1981.

In summary, these results indicate that the association between unexpected holding gains and unexpected stock returns differs from one industry to another. As shown, they were significant in almost all industries but in some periods at different degrees. The results show that realized holding gains were more significant in some industries while unrealized holding gains were more significant in others. The direction of

realized holding gains was always negative as expected while the direction on unrealized holding gains was not conclusive. For instance, UHG were negatively significant in agriculture in 1980, electronic in 1978, mining in 1978, textile in 1981, lumber in 1979, metal cans in 1980,, engineering and research equipment in 1978, retail in 1981 and service in 1981. These results support the argument that the direction of the impact of RC/CC data depend upon how investors perceive such data as discussed in Chapter IV.

However, these results suggest that the association between unexpected holding gains and unexpected stock return differs from one industry to another. This leads to a rejection of the third hypothesis.

Secondly, cross-sectional regressions, which include 22 industry portfolios, were run for each year 1978-1981 to test the effect of RC/CC disclosure on stock prices. The first three models of RHG, UHG and RHG and THG were used in that test and slope dummy variables have been added to each model. For instance, the first model takes the following format:

$$\begin{aligned} \text{Model I } CAR_t = & \beta_0 + \beta_1 HCIN + \beta_2 SIZE + \beta_3 RHG \\ & + \beta_4 (RHG * ind2) + \beta_5 (RHG * ind3) \\ & + \beta_6 (RHG * ind4) + \beta_7 (RHG * ind5) \\ & + \beta_8 (RHG * ind6) + \beta_9 (RHG + ind7) \\ & + \beta_{10} (RHG * ind8) + \beta_{11} (RHG + ind9) \end{aligned}$$

$$\begin{aligned}
& +\beta_{12}(\text{RHG*ind10})+\beta_{13}(\text{RHG*ind11}) \\
& +\beta_{14}(\text{RHG*ind12})+\beta_{15}(\text{RHG*ind13}) \\
& +\beta_{16}(\text{RHG*ind14})+\beta_{17}(\text{RHG*ind15}) \\
& +\beta_{18}(\text{RHG*ind16})+\beta_{19}(\text{RHG*ind17}) \\
& +\beta_{20}(\text{RHG*ind18})+\beta_{21}(\text{RHG*ind19}) \\
& +\beta_{22}(\text{RHG*ind10})+\beta_{23}(\text{RHG*ind21}) \\
& +\beta_{24}(\text{RHG*ind22})+e_t
\end{aligned}$$

Tables 16-18 present a summary of significance of the variables used to test the incremental value of RC/CC date (i.e., RHG, UHG, RHG and THG in three models respectively). The results indicate that the effect of historical cost income continues to be significant at 0.01 or less as was found in most previous research. The results of Table 16-18 show that the effect of RC/CC data were significantly different across industries. Realized holding gains were significant in some industries, unrealized holding gains were significant in some industries and both realized and unrealized holding gains were significant in others. Also, the significance of RHG, UHG or both in an industry was not found in all years. These results can be summarized as follow:

- (1) In the food industry, RHG were significant in 1980, and UHG and THG were significant in 1978.
- (2) In the textile industry, RHG were significant in 1978 and 1981, UHG were significant in 1981, and THG were significant in 1978.

TABLE 16
 Cross-Sectional Results Across Industries
 First Model of RIG and Level of Significance

SIC	Industry	1978			1979			1980			1981		
		52 wk.	A	B	C	52 wk.	A	B	C	52 wk.	A	B	C
10-16	Mining, Const.												
20-21	Food								0.10				
22-27	Textile	0.05	0.001		0.10							0.05	0.01
24-28	Lumber	0.01	0.01	0.001						0.05			
27	Printing												
28	Chemical							0.10		0.10	0.10	0.10	
29	Petroleum				0.10	0.04							
30	Rubber		0.05		0.01	0.01							
32	Flat Glass												
33	Steel	0.05	0.10		0.10			0.05		0.05	0.05	0.10	0.05
34	Metal												
35	Machinery												
36	Elec. & Electr.												
37	Car, Aircraft											0.05	
38	Eng. & Res. Equip	0.01	0.05	0.05	0.05	0.05							
40-47	Transportation												
50-51	Wholesale							0.05	0.10	0.10			
52-59	Retail	0.10	0.01			0.05		0.05		0.01	0.01	0.10	0.01
1-2	Agriculture												
70-89	Service												
	Others												
90-99	Utilities											0.01	0.01

TABLE 17
 Cross-Sectional Results Across Industries
 Second Model of UIC and Level of Significance

SIC	INDUSTRY	1978			1979			1980			1981		
		52 wk. A	B	C	52 wk. A	B	C	52 wk. A	B	C	52 wk. A	B	C
10-16	Mining, Const.												
20-21	Food		0.05										
22-23	Textile										0.10		
24-26	Lumber		0.05										
27	Printing												
28	Chemical	0.01	0.01			0.10							
29	Petroleum		0.10							0.05	0.01	0.001	
30	Rubber				0.10	0.10		0.01	0.05	0.001	0.05		
32	Flat Glass	0.05	0.10		0.05	0.05							
33	Steel	0.05	0.001			0.01		0.05	0.05		0.05	0.01	
34	Metal	0.05	0.05					0.05	0.05				
35	Machinery					0.10							
36	Elect. & Equip.			0.05	0.05								
37	Car, Aircraft				0.10	0.05							
38	Eng. & Res. Equip			0.10		0.001							
40-47	Transportation												0.01
50-51	Wholesale		0.05										0.10
52-59	Retail				0.001	0.001					0.10	0.01	
1-2	Agriculture												
70-89	Service				0.10	0.10	0.05						
	Others												

TABLE 18
 Cross-Sectional Results Across Industries
 Third Model of RIG & TIG and Level of Significance

SIC	INDUSTRY	1978								1979							
		RIG				TIG				RIG				TIG			
		52 wk.	A	B	C	52 wk.	A	B	C	52 wk.	A	B	C	52 wk.	A	B	C
10-16	Mining, Const.																
20-21	Food							0.05									
22-23	Textile				0.05				0.10								
24-26	Lumber	0.001	0.01	0.05	0.10			0.10									
27	Printing								0.10								
28	Chemical					0.01				0.05	0.05						
29	Petroleum							0.01									
30	Rubber	0.10															
32	Flat Glass							0.10		0.10							
33	Steel				0.05			0.001		0.05							
34	Metal				0.05	0.05	0.10			0.05							
35	Machinery											0.01		0.05			
36	Elec. & Electr				0.001				0.01	0.05	0.05			0.05			
37	Car, Aircraft				0.10										0.05		
38	Eng. and Res Equip.								0.10	0.10	0.10					0.01	
40-47	Transportation				0.10			0.05	0.10								
50-51	Wholesale							0.05									
52-59	Retail									0.05	0.05			0.01	0.001		
1-2	Agriculture											0.10					
70-89	Service																
	Others																
48-49	Utilities																

TABLE 18 (continued)

SIC	INDUSTRY	1960								1961							
		FIC				TIC				FIC				TIC			
		52 wk.	A	B	C	52 wk.	A	B	C	52 wk.	A	B	C	52 wk.	A	B	C
10-16	Mining, Constr.																
20-21	Food																
22-23	Textile									0.01	0.01						
24-26	Lumber			0.10													
27	Printing																
28	Chemical	0.10		0.10													
29	Petroleum							0.05				0.05			0.01	0.01	
30	Rubber																
32	Flat Glass							0.10									
33	Steel	0.05					0.10	0.10		0.05		0.10				0.05	
34	Metal					0.10	0.10										
35	Machinery							0.10									
36	Elec. & Electr.																
37	Car, Aircraft									0.001	0.01	0.05				0.10	
38	Eng. and Res. Equip.																
40-47	Transportation								0.01								0.05
50-51	Wholesale											0.05					
52-59	Retail							0.01									
1-2	Agriculture			0.10													
70-79	Service																
	Others																
	Utilities									0.01					0.05		

- (3) In the lumber and paper industry, RHG were significant in 1978 and 1980, UHG and THG were significant in 1978.
- (4) In the printing industry, THG were significant in 1978.
- (5) In the chemical industry, RHG were significant in 1980 and 1981, and UHG and THG were significant in 1978 and 1979.
- (6) In the petroleum industry, RHG were significant in 1979, 1980, and 1981, and UHG and THG were significant in 1978, 1980, and 1981.
- (7) In the rubber industry, RHG were significant in 1978 and 1979, and UHG were significant in 1979, 1980 and 1981.
- (8) In the glass industry, RHG were significant in 1979, UHG were significant in 1978 and 1979, and THG were significant in 1978 and 1980.
- (9) In the steel industry, RHG were significant in 1978, 1980 and 1981, and UHG and THG were significant in 1978-1981.
- (10) In the metal cans industry, RHG were significant in 1978, 1979, and UHG and THG were significant in 1978 and 1980.
- (11) In the machinery industry, UHG were significant in 1979, and THG were significant in 1979 and 1980.
- (12) In the electric and electronic industry, RHG, UHG,

and THG were significant in 1978 and 1979.

- (13) In car and aircraft industries, RHG were significant in 1978 and 1981, UHG were significant in 1979, and THG were significant in 1979 and 1981.
- (14) In engineering and the research equipment industry, RHG, UHG and THG were significant in 1978 and 1979.
- (15) In transportation, RHG were significant in 1978, UHG were significant in 1981, and THG were significant in 1978, 1980, and 1981.
- (16) In utilities, RHG were significant in 1981.
Utilities were not included in regression for 1978-1979 because there was not enough data on ASR 190 tape.
- (17) In wholesale, RHG were significant in 1979 and 1980, UHG were significant in 1978 and 1981, and THG were significant in 1978.
- (18) In retail, RHG were significant in 1978-1981, and THG were significant in 1979 and 1980.
- (19) In agriculture, RHG were significant in 1979 and 1980.
- (20) In the service industry, UHG were significant in 1979.

In summary, the effect of RC/CC data differs from one industry to another and from one period to another. However, there is some inconsistency between the results presented here and the results within industry. For

example, in agriculture industry, the UHG were significant in 1979 in testing within industry while RHG were significant in 1979 and 1980 in testing across industries. This may be caused by the different sample size or possible existence of interaction between independent variable across industries in cross-sectional regression model.

Table 19 summarizes the regression results of regression across industry portfolios. The results show that : (1) steel and rubber industries were significant in four years, (2) chemical and metal cans industries were significant in 3 years, (3) flat glass, textile, car and aircraft, and retail industries were significant in two years. The inconsistency of differential market response among all industries may be due to the expectation form used. Expectation models in different industry have different systematic effects. On the other hand, the inconsistency from one year to another for an industry may be caused by the source and timing of information. The accounting reports may not be the only source of information, but the industry-wide trends in prices are relatively easy to forecast with nonaccounting data in some years. Freeman (1983) found that industry-wide performance appears to have been anticipated earlier than firm-specific performance. Since security prices seem to anticipate industry trends earlier than the firm-specific

Table 19
 Regression Results Across Industries
 Industries Which Were Significantly Different

Year	UHG Second Model	RHG Third Model	THG Third Model
1978	Chemical Flat Glass Steel Metal Cans	Lumber Rubber Textile	Chemical Metal Can
1979	Rubber Flat Glass Car, Aircraft Retail Service Elec. & Electro.	Chemical Flat Glass Steel Metal Cans Elec. & Electro. Eng. & Res. Equip. Retail	Machinery Elec & Electro Car, Aircraft Retail
1980	Rubber Steel Metal Cans	Chemical Steel	Steel Metal Cans
1981	Textile Petroleum Rubber Steel Retail	Textile Steel Car & Aircraft Utilities	Petroleum Utilities

trends, the capital market may be less dependent on annual financial statement in assessing the average impact of factors that influence the economic health of an industry.

However, these results suggest the importance of including industry factors in testing for information content of RC/CC data.

E. ANALYSIS OF ASSOCIATION BETWEEN UNEXPECTED HOLDING GAINS AND UNEXPECTED STOCK RETURN IN REGULATED AND UNREGULATED INDUSTRIES

The objective of this section is to examine whether the association between unexpected holding gains and unexpected stock returns differs in regulated and unregulated industries.⁸ As discussed in Chapter IV, regulated industry has its own characteristics and the effect of specific price change disclosure on stock prices may differ from that on unregulated industry. The test period covers 1980-1981 because replacement cost data for utilities were not available on Compustat Replacement Cost tape except for a few number of companies which were not sufficient to run cross-sectional test.

Three regression models, as before, were used to examine the effect of realized holding gains (RHG), unrealized holding (UHG), and realized holding gains and total holding gains, respectively.⁹ Cross-sectional regressions within and across regulated and unregulated

industries were used in the examination. Historical cost income and size variables were added to each model to control for the effect of historical cost income and firm size respectively.

First, cross sectional regressions were run for each of the regulated and unregulated industry during 1980-1981 using CAR of the 52-week period and other three sub-periods as dependent variables in separate regression runs.¹⁰ Table 20 presents the regression results of the 52-week period and the level of significance in sub-periods¹¹ (31 weeks ending 5 weeks before FY end, 14 weeks around FY end, and 7 weeks around the disclosure date).

In regulated industry, regression results presented in Table 20 indicate that (1) RHG were negatively significant in 1980 at 0.0001 and 0.01 levels in the 52-week period and around FY end, respectively. (2) RHG were negatively significant in 1981 at 0.01, 0.05, and 0.01 in the 52-week period, the 31-week period and around FY end respectively. (3) UHG were negatively significant in 1980 at a ten percent level around disclosure date. (4) UHG were positively significant in 1981 at a ten percent level in both the 52 and 31-week periods. (5) RHG in Model III were negatively significant in 1980 at 0.001 and 0.01 levels in the 52-weeks period and around disclosure date respectively. (6) RHG in Model III were

TABLE 20
Cross-Sectional Regression Within Regulated and Unregulated Industries

Model	Regulated Industry								Unregulated Industry							
	1981				1981				1980				1981			
	Coeff	t-value	P	Sub	Coeff	t-value	P	Sub	Coeff	t-value	P	Sub	Coeff	t-value	P	Sub
<u>Model I</u>																
β_0 : Intercept	0.0014	0.7196	0.4736		0.0110	4.1566	0.0001	a ¹ b ⁰ c ¹	0.0018	0.9055	0.3657	a ⁰ c ¹	-0.0067	2.5073	0.0126	a ¹
β_1 :FIN	0.0186	1.8069	0.0751	a ⁰ c ⁵	-0.0341	2.3243	0.0222	b ¹	0.0153	5.4322	0.0001		0.0112	3.1290	0.0019	a ⁰
β_2 :SIZE	-0.0002	0.6256	0.5331		-0.0075	1.1663	0.2463	b ¹⁰ c ¹⁰	-0.0002	0.7468	0.4556	c ¹	0.0016	2.2896	0.0226	b ¹
β_3 :RIG	-0.0358	4.4292	0.0001	b ⁰	-0.0281	3.1844	0.0019	a ⁵ b ⁰	-0.0159	3.4893	0.0005	b ⁰ c ⁵	0.0006	0.1264	0.8995	
Adj R-SQ			0.1623				0.1306				0.0717				0.0338	
N of OBS			75				103				456				84	
<u>Model II</u>																
β_0 : Intercept	0.0023	0.9045	0.3696	b ⁵	0.0013	2.9386	0.0042	b ¹ c ⁵	0.0014	0.0083	0.5634	c ⁵	-0.0076	2.0731	0.0374	a ¹⁰ b ¹⁰
β_1 :FIN	0.0005	0.0456	0.9638	a ⁰ b ¹	-0.0075	2.3773	0.0196	b ¹	0.0162	2.8933	0.0041	a ⁰	0.0072	1.9437	0.0528	a ⁰ b ¹⁰
β_2 :SIZE	-0.0004	0.9493	0.3455		-0.0001	0.2431	0.8085		-0.0001	0.4470	0.6552	c ⁵	0.0007	2.4416	0.0152	
β_3 :RIG	0.0006	0.2001	0.7796	c ¹⁰	0.0035	1.7343	0.0864	a ¹⁰	0.0078	2.0616	0.0401	a ⁵	-0.0036	1.3266	0.1856	b ⁵
Adj R-SQ			-0.0776				-0.0639				0.0291				0.0266	
N of OBS			78				103				313				328	
<u>Model III</u>																
β_0 : Intercept	0.0015	0.6361	0.5267		0.0081	2.9547	0.0040	b ¹ c ⁵	0.0015	0.6694	0.5095	c ⁵	-0.0053	2.0419	0.0386	a ¹⁰ b ¹⁰
β_1 :FIN	0.0182	1.6568	0.1023	a ⁰	-0.0350	2.3719	0.0199	b ¹	0.0223	3.8633	0.0001	a ⁰	0.0086	2.2555	0.0248	a ⁰ b ¹⁰
β_2 :SIZE	-0.0002	0.5296	0.5980		0.0010	0.0064	0.9989		-0.0002	0.4973	0.6193	c ¹	0.0007	2.4057	0.0168	
β_3 :RIG	-0.0361	4.2560	0.0001	b ⁰	-0.0254	0.5924	0.0112	a ⁵ b ⁵	-0.0222	4.0468	0.0001	a ¹ b ¹	-0.0055	0.8611	0.3888	
β_4 :RIG	0.0001	0.0793	0.9370	c ¹⁰	0.0035	1.7966	0.0759	a ¹⁰	0.0022	0.9292	0.3535		-0.0078	1.5153	0.1307	a ⁵
Adj R-SQ			0.1680				0.1049				0.0629				0.0302	
N of OBS			78				92				313				328	

a⁰, a¹, a⁵, a¹⁰ indicate significant in sub period A at 0.001, 0.01, 0.05 and 0.10 levels respectively

b⁰, b¹, b⁵, b¹⁰ indicate significant in sub period B at 0.001, 0.01, 0.05 and 0.10 levels respectively

c⁰, c¹, c⁵, c¹⁰ indicate significant in sub period C at 0.001, 0.01, 0.05 and 0.10 levels respectively

negatively significant in 1981 at 0.01, 0.05, and 0.05 levels, in the 52-week period, the 31-week period and around FY end respectively. (7) Total holding gains were negatively significant in 1980 at a ten percent level around disclosure date and positively significant in 1981 at ten percent levels in the 52-week period, and 31-week periods, respectively.

In unregulated industries, the results in Table 20 show that (1) RHG were negatively significant in 1980 at 0.01, 0.01, and 0.05 levels in the 52 week period, the 31-week period and around the disclosure date, but it was not significant in 1981. (2) UHG were positively significant in 1980 at a five percent level in both the 52 and 31-week periods. (3) UHG were negatively significant at a five percent level around the FY end in 1981. (4) RHG in Model III were negatively significant in 1980 at 0.001, 0.01, and 0.01 levels in the 52 week period, the 31-week period and around FY end respectively, and at a five percent level around the disclosure date in 1981. (5) Total holding gains were negatively significant in 1981 at a five percent level around the FY end.

Historical cost income continues to be positively significant at a one percent level or less in 1980-1981 in the unregulated industries and at a less significant level in regulated industry. However, the direction was not conclusive in regulated industry.

To examine whether the three regression models used in this study perform better in explaining the variation in stock returns, Table 21 presents a comparison between adjusted R-squares. These results indicate that (1) in general, adjusted R-square of the three models including RHG, UHG, and RHG and THG were greater than those of a model including only historical cost income. (2) Adjusted R-squares of the model of historical cost income were greater in unregulated when compared with regulated industry.¹² (3) Adjusted R-square of the other three models were greater in regulated than unregulated industries. To summarize Table 21, it can be stated that historical cost income performed better in unregulated than regulated industry and the other three models performed better in regulated than unregulated industry in explaining variations in stock returns.

Secondly, cross-sectional regressions were run across regulated and unregulated industries in 1980-1981 to examine whether the effect of current cost disclosure differs across these two industries. Table 22 presents regression results of the three models in the 52-week periods and the level of significance in the other periods. Intercept and slope dummy variables were added to each regression model.¹³

$$\text{Model I } CAR_t = \beta_0 + \beta_1 HCIN_t + \beta_2 SIZE + \beta_3 RHG_t \\ + \beta_4 D_2 + \beta_5 (RHG_t * D_2) + e_t$$

TABLE 21

Comparison Between HCIN Model and the Three Models including
 RIIG, UIIG, and RHG & TIIG in Terms of Adjusted R-Square in
 Regulated and Unregulated Industries

MODEL	Regulated Industry						Unregulated Industry					
	1980			1981			1980			1981		
	No. OBS	52 wks.	31 wks.	No. OBS	52 wks.	31 wks.	No. OBS	52 wks.	31 wks.	No. OBS	52 wks.	31 wks.
HCIN Model	135	0.0000	0.1560	135	-0.0202	-0.0055	638	0.0296	0.0902	633	0.0350	0.0403
Model I (include RIIG)	95	0.1623	0.1651	103	0.1306	0.0334	456	0.0778	0.1087	384	0.0348	0.0447
Model II (Include UIIG)	78	-0.0276	0.1708	92	0.0689	0.0166	313	0.0297	0.0955	328	0.0264	0.0473
Model III (include RHG & TIIG)	78	0.1680	0.1611	92	0.1049	0.0377	313	0.0629	0.1108	328	0.0302	0.0489

$$\begin{aligned} \text{Model II } CAR_t &= \alpha_0 + \alpha_1 HCIN_t + \alpha_2 SIZE_t + \alpha_3 UHG_t \\ \text{Model III } CAR_t &= \alpha_0 + \alpha_1 HCIN_t + \alpha_2 SIZE_t + \alpha_3 RHG_t \\ &\quad + \alpha_4 THG_t + \alpha_5 D_2 + \alpha_6 (RHG_t * D_2) \\ &\quad + \alpha_7 (THG_t * D_2) + e_t \end{aligned}$$

where:

CAR, HCIN, SIZE, RHG, UHG and THG are same as before.

D_2 intercept dummy variable represents unregulated industry.

$(RHG * D_2)$, $(UHG * D_2)$, and $(THG * D_2)$ represent slope dummy variables.

Table 22 presents the results of these three models. The coefficients of the original variables (RHG, UHG, RHG and THG in the three models respectively) show whether these variables are significant in regulated industry. The coefficients of the intercept dummy variables (d_2) indicate whether the level of unexpected stock return differs between regulated and unregulated industries. The coefficients of slope dummy variables indicate whether the coefficients of these variables are different in unregulated industry from those of regulated industry.

The results of Model I presented in Table 22 indicate that the coefficients of realized holding gains were significantly different in 1980 around the FY end at a one percent level, while there were significant differences in 52 week period and around FY end at five percent levels in 1981.

Table 22

Cross-Sectional Regression Across Regulated
and Unregulated Industries

	1980				1981			
	Coef.	t-value	P	SUB	Coef.	t-value	P	SUB
<u>Model I</u>								
Intercept	0.0015	0.911	0.3626	a ¹⁰ b ⁵ c ⁵	0.0048	3.440	0.0006	a ⁰
HCIN	0.0154	5.923	0.0001	a ⁰	0.0100	2.987	0.0030	a ⁰
SIZE	-0.0002	0.850	0.3955	c ¹	0.0002	1.486	0.1380	
RHG	-0.0348	2.111	0.0352	b ⁰	-0.0293	2.441	0.0150	a ¹⁰ b ⁵
D ₂	0.0002	0.287	0.7745		-0.0073	9.664	0.0001	a ⁰ b ⁰ c ⁵
RHG*D ₂	0.0188	1.113	0.2663	b ¹	0.0299	2.326	0.0204	b ⁵
Adj. R-SQ			0.0742				0.1905	
No of Obs.			550				488	

Table 22 (continued)

	1980				1981			
	Coef.	t-value	P	SUB	Coef.	t-value	P	SUB
<u>Model II</u>				5				
Intercept	0.0007	0.0398	0.6909	$a^5 b^{10} c^5$	0.0039	2.712	0.0070	a^1
HCIN	0.0153	3.076	0.0023	a^0	0.0069	1.719	0.0864	$a^0 b^5$
SIZE	-0.0001	0.640	0.5226	c^5	0.0003	1.874	0.0616	
UHG	-0.0002	0.081	0.9354		0.0038	1.387	0.1662	
D_2	0.0009	1.080	0.2810	a^{10}	-0.0071	9.995	0.0001	$a^0 b^0 c^5$
$UHG * D_2$	0.0051	1.202	0.2300		-0.0072	1.987	0.0476	b^5
Adj. R-SQ			0.0240				0.1996	
No of Obs.			390				421	

Table 22 (continued)

	1980				1981			
	Coef.	t-value	P	SUB	Coef.	t-value	P	SUB
<u>Model III</u>								
Intercept	0.0012	0.656	0.5124	a ⁵ b ⁵ c ⁵	0.0042	2.875	0.0042	a ¹
HCIN	0.0221	4.287	0.0001	a ⁰	0.0073	2.088	0.0374	a ⁰ b ⁵
SIZE	-0.0001	0.596	0.5514	c ⁵	0.0004	2.084	0.0378	a ¹⁰
RHG	-0.0371	2.242	0.0255	b ⁰	-0.0179	2.047	0.0413	b ¹⁰
THG	-0.0000	0.012	0.9910		0.0038	1.396	0.1636	
D ₂	0.0003	0.348	0.7277	a ⁵	-0.0077	9.704	0.0001	a ⁰ b ⁰ b ⁵
RHG*D ₂	0.0149	0.870	0.3849	b ¹	0.0221	1.487	0.1378	b ¹⁰
THG*D ₂	0.0023	0.548	0.5840		-0.0077	2.120	0.0346	b ⁵
Adj. R-SQ			0.0662				0.2072	
No of Obs.			390				421	

a⁰, a¹, a⁵, a¹⁰ indicate significance in sub period A at 0.001, 0.01, 0.05 and 0.10 levels respectively.

b⁰, b¹, b⁵, b¹⁰ indicate significance in sub period B at 0.001, 0.01, 0.05 and 0.10 levels respectively.

c⁰, c¹, c⁵, c¹⁰ indicate significance in sub period C at 0.001, 0.01, 0.05 and 0.10 levels respectively.

The results of Model II indicate that the coefficients of unrealized holding gains were significantly different in 1981 in the 52 week period and around the fiscal year end at a five percent levels.

The results of Model III indicate that the coefficients of realized holding gains were significantly different around the FY end at one and ten percent levels in 1980 and 1981 respectively. Further, the coefficients of total holding gains were significantly different in 1981 at five percent levels in the 52 week period and around the FY end.

In summary, the regression results indicate that the association between current cost data and stock return were significantly different in regulated and unregulated industry in 1980 and 1981. This suggests rejection of the fourth hypothesis of no difference between these two industry portfolios.

Moreover, Table 23 presents a comparison between Table 7 (all sample firms) and Table 20 (within regulated and nonregulated). The results presented in Table 7 indicate that holding gain variables are not significant in 1981 and only RHG were significant in 1981. These results are identical to the results of nonregulated industries in Table 20. The comparison also indicates that the holding gains variables in regulated industry are significant in 1981 while none are significant in

Table 23

Comparison Between the Regression Results of All Sample Firms and
Grouping Firms to Regulated and Nonregulated Portfolios
52 Week Car Period

Variable	Table 7		Table 20			
	1980	1981	<u>Regulated</u>		<u>Non Regulated</u>	
			1980	1981	1980	1981
RHG	S	NS	S	S	S	NS
UHG	S	NS	NS	S	S	NS
THG	NS	NS	NS	S	NS	NS

S = Significant beyond .10 level

NS = Not significant

nonregulated industry. These results suggest the importance of controlling for regulation/nonregulation in examining the information content of RC/CC disclosures.

CHAPTER V

FOOTNOTES

1. As discussed in Chapter IV, Beaver, Griffin and Landsman (1982) ignored the cost of goods sold in computing realized holding gains for 1976-1978 because of great efforts were needed to segregate depreciation from cost of goods sold.
2. Ball and Brown (1968) indicate that positive earnings forecast errors are associated with positive unsystematic returns and conversely for negative earnings forecast errors. Magee (1975) examined the significance of regression coefficient from a regression of unsystematic return on forecast errors and found the coefficient was significant. Beaver, Clarke and Wright (1979) examined the association between unsystematic security returns and the magnitude of earnings forecast errors on individual security and portfolio level. Their results show a positive correlation at both levels.
3. Sales as a measure for firm size have been used in positive research (e.g., Zmijewski and Hagerman (1981), Lilien and Pastena (1982)). Also, it is used in Lustgarten (1982). Total assets were used in examining the association between systematic risk and accounting measures of risk (e.g., Beaver, Kettler and Scholes, 1970).
4. Increasing depreciation and cost of goods sold, holding others constant, lead to increase realized holding gains. This leads to decrease pre-holding gains income. As discussed before it is expected that pre-holding gains income be positively associated with stock return. Hence, increasing value of depreciation and cost of goods sold is expected to be negatively associated with stock return.
5. The lack of significance or inconsistency for sub period B and C should be interpreted with a major limitation. In estimating the models for each of the different sub periods, the expectation component in each independent regression variable should be the expectation held by investors at the beginning of that subperiod. However, RC/CC data are only available for annual periods and so the expectations at the beginning of each subperiod cannot be properly specified. It is assumed that investors'

expectations were unchanged throughout the year. This may not be true because of the availability of much information about commodity price change during the year.

6. In their models, they used the percentage change between two years, but they did not follow this in post-holding gain. They deflate the post-holding gains of current year by stockholders' equity. (See Haw and Lustgarten, 1984.)
7. This table is based on the calculated realized and unrealized holding gains for all years 1977-1981. The reason is that segregation using FAS 33 data is not appropriate because reported holding gains under FAS 33 are different from calculated holding gain. A comparison between reported and calculated holding gains is presented in Appendix C.
8. Regulated industry includes electric, natural gas, water supply and telephone communication. These industries were identified as 48-49 SIC code on Compustat Tape except 4830-Ratio and TV broadcasting. Unregulated industry include all other industries.
9. The second expectation form was used in computing unexpected holding gains - current year holding gains were assumed equal that of previous year.
10. Stockholders' equity at $t-1$ were used to deflate all independent variables except firm size. Alternatively, total assets were used but without better results.
11. It was realized that few companies had extreme unexpected UHG. To control for that, a limit of unexpected UHG deflated by stockholders' equity between -1.0 and $.5$ were set. This results in deleting one regulated and eight unregulated companies in 1980 and two regulated and seven unregulated in 1981.
12. In regulated industry, the signs were negative in 1981.
13. Two dummy variables were created for regulated and unregulated industries; D_1 and D_2 respectively. D_1 was deleted from regression equation because of dummy trap.

CHAPTER VI
SUMMARY AND CONCLUSION

Inflation has been the most dominant phenomenon in the 20th century. Accounting literature has long recognized that price changes cause difficulties in measuring and comparing financial statement elements. Recently, there has been some effective movement to disclose the effect of inflation in the financial reports. The SEC issued ASR 190 in March 1976 asking companies to disclose replacement cost data and FASB promulgated the SFAS 33 in September 1979 to disclose current cost and constant dollar data. The promulgations of replacement and current cost were based on the assumption that these disclosures meet an urgent need for information to investors and creditors to understand the current cost of operating the business and to help them to assess future cash flows.

Disclosure of replacement cost and current cost data required by ASR 190 and SFAS 33 have been criticized from both academicians and practitioners because of subjectivity and unrealistic assumptions for estimating these figures. A number of empirical studies have been undertaken to evaluate the usefulness of disclosure.

Most studies have investigated the information

content of such disclosures using a stock market approach and most of the test results have cast doubt on the usefulness of replacement cost and current cost data. However, many of these studies are subject to several methodological limitations such as lack of control for size and industry effects, adoption of forecasted replacement cost data as a proxy to measure the effect, the absence of long time series of replacement/current cost numbers, and a lack of theory in developing a proxy for market expectations about such disclosures.

This research attempted to reexamine the information content of replacement cost/current cost disclosures using a different methodology from those used in the previous researches. The research attempted to control for size effect, using three different market expectations forms about disclosures, using segregated elements of realized and unrealized holding gains, investigating differential effect among industries, using multiple-year data for 1976-1981, and using three models to investigate the information content of realized, unrealized and realized and total holding gains respectively.

This research found consistent evidence that the disclosure of replacement cost/current cost data have information content over and above that provided by historical cost information. Further, the results indicated that the market reactions to segregated elements

of holding gains differ. In investigating the industry effect, the results indicate that the effects of disclosures differ from one industry to another and differ between regulated and unregulated industries.

The significance of these results suggests that the replacement cost/current cost information is useful in investors' decision making as asserted by Edwards and Bell (1961) as well as Revsine (1972). Hence, it can be concluded that the disclosed replacement cost/current cost data are important to investors in assessing the effect of inflation and for their portfolio holding decisions.

This conclusion is consistent with the SEC and FASB's assertion that replacement cost/current cost information is useful to investors in assessing future cash flows and therefore in their decision making. Also, the results answer the FASB questions that elements of realized and unrealized holding gains should be disclosed since the market reactions to these elements differ. Further, the conclusion from this study is consistent with results by Noreen and Sepe (1981), Lustgarten (1982), Haw and Lustgarten (1984) and Freeman (1983), but inconsistent with Gheyara and Boatsman (1980), Ro (1980, 1981), Beaver, Christie and Griffin (1980), Beaver, Griffin and Landsman (1982), and Beaver and Landsman (1983). However, these studies are subject to several methodological limitations as discussed in Chapter III.

The conclusion of this study has some implications to FASB in evaluating SFAS 33. The findings of this research suggest that the FASB should not make a final decision this year which would be based upon the previous research results which indicate no existence of a significant effect of replacement cost/current cost disclosure. The FASB should encourage more research in this area, especially the reporting companies have increased experience and hence improved measurement of current cost data.

There are a few limitations imposed by the methodologies used in this study. The samples were selected to meet ASR 190 and SFAS 33 size requirements and hence the inference drawn from the results is limited to these populations. On the other hand, cross sectional correlation may exist in the market residuals across firms. This introduces bias in the estimated slope coefficients of the independent variables. Moreover, the study includes unexpected historical cost income, firm size, and unexpected holding gains in regression models. Therefore, this study may be subject to omitting some important variables and other measurement errors.

In future studies, the same methodologies used in this research can be expanded to investigate the differential effect of specific price disclosures in regulated and unregulated industries in the years

1976-1979. Further, the research should be expanded to the years 1982 and 1983. The criteria of classifying companies to industry portfolios could be improved.

APPENDIX A

Mean and Standard Deviations of Regression Variables
 Under First and Second Expectation Forms
 (All variables except CAR and Size were
 deflated by the book value of
 stockholders' equity at
 time $t-1$)

A. Variables unchanged with change in Expectation

Variable	1978		1979		1980		1981	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CAR	0.00086	0.0057	0.00092	0.0065	0.00003	0.0068	0.00098	0.0068
Min	-0.02770		-0.03277		-0.04168		-0.02379	
Max	0.03128		0.02342		0.02910		0.02737	
OBS.	613		615		773		771	
HCCIN	0.03076	0.0596	0.03983	0.1210	0.01138	0.1041	0.0103	0.1115
Min	-0.46191		-0.74534		-0.60710		-1.64887	
Max	0.55682		1.85465		1,80154		1.3989	
OBS.	630		631		796		794	
SIZE	6.8723	1.1623	7.03910	1.1670	6.94360	1.1991	7.03677	1.2062
Log (sales)								
Min	3.0353		3.15303		3.2514		3.3742	
Max	11.0543		11.2785		11.5438		11.5908	
OBS.	631		632		796		794	

B. Under First Expectation Form

	1977		1978		1979		1980		1981	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Depreciation	0.0131	0.0610	0.0137	0.0411	0.0215	0.1007	0.0117	0.1276	-0.0019	0.0494
Min	-0.2432		-0.1904		-1.5576		-0.3317		-0.5354	
Max	0.2231		0.5071		0.9104		2.5156		0.3147	
OBS.	466		620		513		464		339	
CGS	0.1113	0.1988	0.1964	0.4849	0.3186	0.5882	-0.0052	0.6986	-0.2019	0.6813
Min	-1.2159		-2.6385		-2.9344		-3.5496		-4.0210	
Max	0.4625		5.3225		2.9335		8.0192		3.4299	
OBS.	345		501		405		397		301	
NPP	0.1128	0.2767	0.1250	0.4118	0.2346	0.5589	0.0969	0.3779	-0.0544	0.5361
Min	-0.4724		-2.3349		-3.1588		-1.5804		-6.3506	
Max	2.2581		5.5277		2.6075		1.8553		2.2244	
OBS.	457		620		538		500		385	
INV	0.0398	0.1099	0.0510	0.1496	-0.0666	0.0467	-0.0360	0.1422	-0.0410	0.1674
Min	-0.6374		-0.4259		-0.3554		-0.8066		0.9560	
Max	0.8039		1.5456		-0.0024		0.6881		1.0401	
OBS.	406		536		493		450		343	
DEP + CGS	0.1227	0.2060	0.2124	0.4941	0.3326	0.6078	0.0026	0.7367	-0.2164	0.6886
Min	-1.2652		-2.7862		-2.8739		-3.5686		-3.9426	
Max	0.5290		5.3736		2.9650		8.1864		3.5078	
OBS.	340		495		396		387		290	
NPP + INV	0.1461	0.3021	0.1506	0.4544	0.1463	0.5565	0.0503	0.4063	-0.1067	0.5866
Min	-0.5491		-2.5236		-3.2021		-1.3390		-6.3755	
Max	2.3361		7.0733		2.5494		2.3058		2.2936	
OBS.	393		530		436		342		342	
DEP + CGS NP + INV	0.2489	0.3585	0.3596	0.7982	0.4533	0.8686	0.0081	0.9433	-0.3012	0.8965
Min	-1.4410		-5.3118		-3.2021		-3.8335		-4.0532	
Max	1.3093		7.7737		2.5494		8.6654		3.1897	
OBS.	330		485		371		331		248	

C. Under Second Expectation Form

Variable	1978		1979		1980		1981	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
RHG	0.0141	0.0496	0.0086	0.0994	0.0119	0.0681	0.0095	0.0654
Min	-0.2292		-0.57457		-0.4741		-0.4741	
Max	0.6173		0.7360		0.4304		0.4304	
OBS.	494		389		566		499	
UHG	0.0398	0.3233	0.0997	0.2762	-0.0037	0.1742	-0.0453	0.1551
Min	-1.5398		-2.9681		-0.9285		-0.8889	
Max	4.7055		1.6834		0.4991		0.4985	
OBS.	396		298		404		431	
THG	0.0584	0.3397	0.1038	0.2755	0.0048	0.1729	-0.0355	0.1589
Min	-1.6072		-2.8188		-0.8733		-0.9167	
Max	4.8006		1.5335		0.6763		0.5183	
OBS.	363		276		404		431	

Appendix B

Correlation Matrix Coefficients - CAR (for 52-week period),
HCIN, RHG, UHG and THG for 1978

Variable	CAR	HCIN	SIZE	RHG	UHG	THG
(1) CAR	1.00000	0.22301	0.05177	-0.08893	0.10420	0.11740
(2) HCIN	0.22301	1.00000	-0.06204	0.05291	0.13708	0.13683
(3) SIZE	0.05177	-0.06204	1.00000	0.03721	0.07236	0.09181
(4) RHG	-0.08893	0.05291	0.03721	1.00000	0.22653	0.34510
(5) UHG	0.10420	0.13708	0.07236	0.22653	1.00000	0.99234
(6) THG	0.11740	0.13683	0.09181	0.34510	0.99234	1.00000

Variables 1, 2, 3 and 4 were used in the first model.

Variables 1, 2, 3, and 5 were used in the second model.

Variables 1, 2, 3, 4, and 6 were used in the third model.

APPENDIX C

Comparison Between Calculated Holding Gains
As Beaver, Griffin and Landsman (1982) and
Reported Holding Gains on FAS 33 Data Bank

1) Beaver, Griffin and Landsman (1982).

$$\begin{aligned} \text{THG} &= \text{RHG} + \text{UHG} \\ &= [(\text{GR}_t - \text{GH}_t) + (\text{DR}_t - \text{DH}_t)] \\ &\quad + [(\text{VR}_t - \text{VH}_t) - (\text{VR}_{t-1} - \text{VH}_{t-1})] \\ &\quad + [(\text{PR}_t - \text{PR}_{t-1}) - (\text{PR}_{t-1} - \text{PH}_{t-1})] \end{aligned}$$

2) FAS 33

$$\begin{aligned} \text{THG} &= [(\text{GR}_t + \text{VR}_t) - (\text{VR}_{t-1} + \text{Production } H_t)] \\ &\quad + [(\text{DR}_t + \text{PR}_t) - (\text{PR}_{t-1} + \text{Addition } H_t)] \\ &= [\text{GR}_t + \text{VR}_t - \text{VR}_{t-1} - \text{Production } H_t] \\ &= \text{A} + \text{B} [\text{DR}_t + \text{PR}_t - \text{PR}_{t-1} - \text{Addition } H_t] \end{aligned}$$

Let

$$\text{Production } H_t = \text{VH}_t + \text{GH}_t - \text{VH}_{t-1}$$

$$\text{Addition } H_t = \text{PH}_t + \text{DH}_t - \text{PH}_{t-1}$$

$$\begin{aligned} \text{A} &= \text{GR}_t + \text{VR}_t - \text{VR}_{t-1} - (\text{VH}_t + \text{GH}_t - \text{VH}_{t-1}) \\ &= \text{GR}_t + \text{VR}_t - \text{VR}_{t-1} - \text{VH}_t - \text{GH}_t + \text{VH}_{t-1} \\ &= (\text{GR}_t - \text{GH}_t) + [(\text{VR}_t - \text{VH}_t) - \text{VR}_{t-1} - \text{VH}_{t-1}] \\ &= \text{RHGG} + \text{UHGV} \end{aligned}$$

$$\begin{aligned}
B &= DR_t + PR_t - PR_{t-1} - (PH_t + DH_t - PH_{t-1}) \\
&= DR_t + PR_t - PR_{t-1} - PH_t - DH_t + PH_{t-1} \\
&= (DR_t - DH_t) + [(PR_t - PH_t) - (PR_{t-1} - PH_{t-1})] \\
&= RHGD + UHGP
\end{aligned}$$

$$\begin{aligned}
THG - THG &= A + B = [(GR_t - GH_t) + (DR_t - DH_t)] \\
&\quad + [(VR_t - VH_t) - (VR_{t-1} - VH_{t-1})] \\
&\quad + (PR_t - PH_t) - (PR_{t-1} - PH_{t-1})
\end{aligned}$$

Therefore, the two ways of calculating total holding gains are equivalent to each other. However, a comparison between the reported holding gains under FAS 33 and calculated holding gains revealed some differences. The differences may be due to matching historical cost of inventory and plant and equipment with their current cost. The historical cost of these two items were not required in the supplementary information. Moreover, the companies may use their own procedure in estimating the formula of total holding gain. The following is a comparison between reported total holding gain under FAS 33 and calculated holding gains for the 1980 and 1981 in millions.

	Calculated THG		Reported THG	
	1980	1981	1980	1981
Mean	280.86	9.60	219.40	202.44
SD	1410.42	1157.04	683.38	552.71
Min	-9136.58	-21448.03	-1700.90	-1782.00
Max	19014.53	5863.53	13793.19	9844.30
No. of Obs.	319	483	783	751

APPENDIX D

Errors in Reported Data on FAS 33 Data Bank

A. FAS 33 Data Bank (in million)

<u>ICUSP</u>	<u>Company Name</u>	<u>Item</u>	<u>Year</u>	<u>Reported</u>	<u>Corrected</u>
42170	ARMCO CO INC	NPP	81	304.610	3,046.100
72612	Bay States Gas Co.	NPP	81	191.480	554.996
171870	Cincinnati Bell Inc.	NPP	79	0.990	994.174
228255	Crown Cork & Seal	CGS	80	123.400	1,234.000
266228	Duquesne Light Co.	NPP	81	2,334.310	4,983.362
624029	Mountain Fuel Supply	INV	81	47.280	10.913
655844	Norfolk Southern Corp.	CGS	81	109.900	1,298.482

APPENDIX E

Regression Results of the First three Models Using
Calculated RHG, UIG and THG for CAR 52 Week Period
and the Level of Significance for other CAR Periods

(Second Expectation Form)

Model I	1979			1980			1981		
	Coef.	t-value	other Car periods	Coef.	t-value	other Car periods	Coef.	t-value	other Car Periods
α_0 : Intercept	-0.0045	2.2710**	c^5	-0.0006	0.2669	a^5	-0.0033	1.4681	b^5
β_1 : HCIN	0.0117	4.5596***	$a^1 c^5$	0.0340	7.6719***	$a^1 b^1 c^5$	0.0116	2.6962***	$a^1 c^{10}$
β_2 : SIZE	0.0006	2.4056**	c^{11}	0.0001	0.4568	a^5	0.0004	1.3286	b^5
β_3 : RHG	0.0008	1.6435	b^{10}	0.0011	1.6729*		-0.0001	0.1578	
R^2	0.0916			0.1513			0.0398		
d.f.	387			333			238		
Model II									
α_1 : Intercept	-0.0065	3.6764***	$a^5 b^5 c^5$	0.0035	1.7451*	$a^5 b^1 c^1$	-0.0025	1.2059	
β_4 : HCIN	0.0133	5.6144***	$a^1 c^1$	0.0213	5.0720***	a^1	0.0106	2.4777**	$a^1 c^5$
β_5 : SIZE	0.0010	4.0240***	$a^5 b^5 c^5$	-0.0004	1.6910*	$a^5 b^1 c^1$	0.0003	0.9914	
β_6 : UIG	0.0007	1.6910*	a^1	-0.0002	0.5852	b^5	0.0002	0.3670	
R^2	0.1137			0.0651			0.0493		
d.f.	442			412			279		
Model III									
α_2 : Intercept	-0.0049	2.3826**	c^5	-0.0011	0.4479	a^5	-0.0009	1.5693	
β_7 : HCIN	0.0116	4.1616***	$a^1 c^5$	0.0307	6.4954***	$a^1 b^{10} c^5$	0.0090	1.9728*	$a^{10} c^{10}$
β_8 : SIZE	0.0007	2.5183**	c^5	0.0002	0.5358	a^5	0.0004	1.3817	
β_9 : RHG	0.0002	0.3199		0.0015	1.7349*	b^5	-0.0004	0.3590	
β_{10} : THG	0.0005	0.9382		-0.0004	1.0477	b^5	0.0002	0.3927	
R^2	0.0936			0.1307			0.0736		
d.f.	356			295			192		

***, **, * = Significant at 0.01, 0.05 and 0.10 levels, respectively.

APPENDIX F

Regression Results For the Three CAR
Subperiods Under First and Second
Expectation Forms

Table 1
 Regression Results for Subperiod A (31 weeks ending
 5 weeks before the fiscal year end) Under The
 First Expectation Model

	1977		1978		1979		1980		1981	
	Coef.	t-value	Coef.	t-value	Coef.	t-value	Coef.	t-value	Coef.	t-value
<u>Model I</u>										
α_0 : Intercept	0.0030	1.5012	-0.0069	3.6734***	-0.0014	0.6309	-0.0066	2.8829***	-0.0009	0.3799
β_1 : HCIN	0.0351	5.9153***	0.0391	7.9653***	0.0264	6.6385***	0.0232	7.8772***	0.0153	3.7162***
β_2 : SIZE	-0.0008	2.8738	0.0010	4.1276***	0.0002	0.8075	0.0008	2.7724***	0.0000	0.0537
β_3 : DGR	0.0008	0.5092	-0.0028	4.7137***	-0.0001	0.2245	0.0005	1.1391	-0.0021	2.1400**
R ²	0.1216		0.1452		0.1039		0.1567		0.0649	
d.f.	328		482		386		375		279	
<u>Model II</u>										
α_1 : Intercept	0.0028	1.5415	-0.0068	3.1305***	-0.0043	2.1742**	-0.0050	2.3963**	-0.0013	0.6160
β_4 : HCIN	0.0349	6.0377***	0.0319	6.9508***	0.0236	9.1521***	0.0208	6.9742***	0.0154	3.5483***
β_5 : SIZE	-0.0007	2.7836***	0.0009	3.4501***	0.0007	2.4981**	0.0007	2.5316**	0.0001	0.2105
β_6 : PVR	-0.0026	2.5835***	-0.0009	1.4524	0.0012	2.0868**	0.0002	0.2491	-0.0019	3.3312***
R ²	0.1269		0.973		0.1765		0.1190		0.0610	
d.f.	377		512		464		426		333	
<u>Model III</u>										
α_2 : Intercept	0.0031	1.5405	-0.0063	3.3602***	-0.0017	0.7687	-0.0073	2.9586***	-0.0013	0.5396
β_7 : HCIN	0.0347	5.8623***	0.0386	7.5471***	0.0270	6.4788***	0.0221	7.1068***	0.0120	2.6526***
β_8 : SIZE	-0.0008	2.8454***	0.0010	3.7910***	0.0003	0.9364	0.0009	2.9232***	0.0000	0.1226
β_9 : DGR	0.0055	2.1753**	-0.0032	2.8478***	-0.0015	1.1942	0.0004	0.3261	0.0035	2.7272***
β_{10} : DGPVR	-0.0032	2.2887**	0.0003	0.4657	0.0012	1.3319	-0.0008	0.7681	-0.0033	3.7320***
R ²	0.1418		0.1403		0.1075		0.1531		0.0818	
d.f.	317		471		360		320		238	

***, **, * = Significant at 0.01, 0.05 and 0.10 levels, respectively.

Table 2
 Regression Results for Subperiod B (14 weeks around fiscal year end
 Under The First Expectation Model

	1977		1978		1979		1980		1981	
	Coef.	t-value	Coef.	t-value	Coef.	t-value	Coef.	t-value	Coef.	t-value
<u>Model I</u>										
α_0 : Intercept	0.0087	3.186***	0.0069	1.6312	-0.0059	1.5210	0.0046	1.0474	-0.0126	2.7885***
β_1 : HCIN	-0.0126	1.4947	-0.0033	0.4348	0.0157	2.2568**	0.1637	2.8517***	0.0032	0.4141
β_2 : SIZE	-0.0015	3.7533***	-0.0004	1.1223	0.0006	1.2761	-0.0003	0.6083	0.0016	2.6941***
β_1 : DGR	-0.0108	4.4276***	-0.0029	3.1549***	-0.0002	0.2630	-0.0017	1.8522*	-0.0039	3.4390***
R^2	0.1116		0.0267		0.0165		0.0325		0.0677	
d.f.	328		482		386		375		279	
<u>Model II</u>										
α_1 : Intercept	0.0087	3.2834***	0.0054	1.9822**	-0.0071	2.0172**	0.0093	2.3489**	-0.0043	1.0731
β_4 : HCIN	-0.0090	1.0870	-0.0020	0.2671	0.0064	1.4074	0.0091	1.6379	0.0050	0.6309
β_5 : SIZE	-0.0016	4.4697***	-0.0006	1.6408	0.0009	1.9730**	-0.0011	2.1195**	0.0005	1.0079
β_6 : PVR	-0.0038	2.6762***	-0.0020	2.1047**	0.0008	0.7728	-0.0063	3.9840***	-0.0032	2.8591***
R^2	0.0708		0.158		0.0150		0.0543		0.0263	
d.f.	377		512		464		426		333	
<u>Model III</u>										
α_2 : Intercept	0.0094	3.2616***	0.0047	1.6139	-0.0058	1.4454	0.0039	0.8430	-0.0112	2.3222**
β_7 : HCIN	-0.0127	1.5110	-0.0028	0.3607	0.0173	3.3678**	0.0144	2.4503**	0.0081	0.9296
β_8 : SIZE	-0.0016	3.9276***	-0.0004	1.0720	0.0006	1.1764	-0.0003	0.4795	0.0015	2.1778**
β_9 : D+CS	-0.0040	1.1164	-0.0015	0.8941	-0.0026	1.1816	0.0056	2.1916**	0.0024	0.9505
β_{10} : DGPVR	-0.0047	2.3515**	-0.0010	0.9906	0.0019	1.1862	-0.0055	2.7704***	-0.0035	2.1065**
R^2	0.1264		0.0998		0.0193		0.0429		0.0514	
d.f.	317		471		360		320		238	

***, **, * = Significant at 0.01, 0.05, and 0.10 levels, respectively.

Table 3
 Regression Results for Subperiod C (7 weeks around the disclosure date)
 Under The First Expectation Model

	1977		1978		1979		1980		1981	
	Coef.	t-value	Coef.	t-value	Coef.	t-value	Coef.	t-value	Coef.	t-value
<u>Model I</u>										
α_0 : Intercept	-0.0025	0.5986	0.0053	1.3299	-0.0119	1.1578**	0.0093	0.1799	-0.0009	0.1739
β_1 : HCIN	0.0218	1.7609*	0.0191	1.8391*	-0.0030	-0.3105	0.0202	0.1147	0.0246	2.5327**
β_2 : SIZE	0.0007	1.1380	-0.0008	1.4723	0.0018	2.4323**	-0.0010	0.1967	0.0002	0.3226
β_3 : DGR	-0.0029	0.8188	0.0012	0.9888	-0.0002	0.1593	-0.0032	0.0292	-0.0013	0.9724
R^2	0.0138		0.0159		0.0156		0.0404		0.0276	
d.f.	328		402		386		375		279	
<u>Model II</u>										
α_1 : Intercept	0.0017	0.4560	0.0016	0.4201	-0.0096	2.0217**	0.0210	3.7745***	-0.0054	1.1153
β_4 : HCIN	0.0187	1.5500	0.0154	1.4573	-0.0170	2.7874**	0.0129	1.6628*	0.0378	3.9759***
β_5 : SIZE	0.0000	0.0781	-0.0001	0.3638	0.0015	2.3872**	-0.0028	3.7892***	0.0008	1.2515
β_6 : PVR	-0.0025	1.2102	-0.0012	0.9324	-0.0004	0.3158	-0.0055	2.4947**	-0.0014	1.0604
R^2	0.0109		0.0056		0.0264		0.0561		0.0526	
d.f.	377		512		464		426		333	
<u>Model III</u>										
α_2 : Intercept	-0.0023	0.5334	0.0055	1.3715	-0.0118	2.0638**	0.0070	1.0648	-0.0025	0.4311
β_7 : HCIN	0.0211	1.6965*	0.0219	2.0169**	0.0000	0.0093	0.0233	2.8055***	0.0340	3.1710***
β_8 : SIZE	0.0006	1.0605	-0.0008	1.5228	0.0018	2.3457***	-0.0009	1.0459	0.0004	0.5161
β_9 : D+CSS	0.0014	0.2759	0.0035	1.4782	-0.0012	0.4006	0.0019	0.5364	0.0035	1.1435
β_{10} : DGPVR	-0.0027	0.9255	-0.0015	1.0679	0.0007	0.3183	-0.0041	1.4893	-0.0033	1.6216
R^2	0.0180		0.0198		0.0153		0.0491		0.0516	
d.f.	317		471		360		320		238	

***, **, * = Significant at 0.01, 0.05, 0.10 levels, respectively

Table 4
 Regression Results for Subperiod A (31 weeks ending 5 weeks before the fiscal year end)
 Under The Second Expectation Model

	1978		1979		1980		1981	
	Coef.	t-value	Coef.	t-value	Coef.	t-value	Coef.	t-value
<u>Model I</u>								
α_0 : Intercept	-0.0064	3.4030***	-0.0097	0.4277	-0.0028	1.6669*	0.0033	1.6825*
β_1 : HCIN	0.0398	7.8631***	0.0023	8.1804***	0.0229	8.2752***	0.0223	5.2308***
β_2 : SIZE	0.0009	3.7040***	0.0002	0.7066	0.0004	1.6280	-0.0003	1.3526
β_3 : RHG	-0.0171	2.9052***	-0.0040	1.0602	-0.0033	0.7641	-0.0020	0.3760
R ²	0.1361		0.1608		0.1146		0.0594	
d.f.	481		377		547		483	
<u>Model II</u>								
α_1 : Intercept	-0.0061	3.1959***	-0.0018	0.7375	-0.0041	2.0159**	0.0012	0.5815
β_4 : HCIN	0.0347	5.6775***	0.0249	5.9434***	0.0313	5.9847***	0.0213	4.8803***
β_5 : SIZE	0.0009	3.6073***	0.0003	1.0081	0.0005	1.9319**	-0.0001	0.1636
β_6 : UIIG	0.0016	1.6837*	0.0045	3.2180***	0.0033	1.7523*	-0.0004	0.1721
R ²	0.1154		0.1421		0.1035		0.0543	
d.f.	381		287		387		416	
<u>Model III</u>								
α_2 : Intercept	-0.0064	3.2503***	-0.0006	0.2573	-0.0040	1.9832**	0.0012	0.5948
β_7 : HCIN	0.0351	5.6546***	0.0245	5.6223***	0.0362	6.6101***	0.0216	4.7986***
β_8 : SIZE	0.0010	3.6541***	0.0001	0.4276	0.0005	1.9266*	-0.0001	0.1719
β_9 : RHG	-0.0127	1.6600*	-0.0053	1.2136	-0.0166	3.2354***	-0.0013	0.1953
β_{10} : THG	0.0019	1.9896**	0.0037	2.4260**	0.0021	1.0605	-0.0004	0.1959
R ²	0.1271		0.1252		0.1211		0.0544	
d.f.	352		265		386		415	

*** significant at 0.01 level

** significant at 0.05 level

* significant at 0.10 level

Table 5
 Regression Results for Subperiod B (14 weeks around fiscal year end)
 Under The Second Expectation Model

	1978		1979		1980		1981	
	Coef.	t-value	Coef.	t-value	Coef.	t-value	Coef.	t-value
<u>Model I</u>								
α_0 : Intercept	0.0049	1.7103*	-0.0023	0.6031	0.0059	1.8566*	-0.0024	0.7453
β_1 : HCIN	-0.0034	0.4385	0.0035	0.7818	0.0058	1.1259	0.0050	0.7122
β_2 : SIZE	-0.0005	1.3931	0.0002	0.4491	-0.0006	1.4610	0.0004	0.9922
β_3 : RHG	-0.0071	0.7851	0.0097	1.5750	-0.0414	5.1293***	0.0067	0.7379
R^2	0.0058		0.0080		0.0527		0.0036	
d.f.	481		377		547		483	
<u>Model II</u>								
α_1 : Intercept	0.0041	1.2913	-0.0077	1.9536*	0.0070	1.7910*	-0.0004	0.1213
β_4 : HCIN	-0.0032	0.3117	0.0086	1.2605	-0.0061	0.6043	-0.0124	1.6792*
β_5 : SIZE	-0.0005	1.2356	0.0011	2.0663**	-0.0007	1.4171	0.0001	0.3109
β_6 : UHG	-0.0013	0.8469	-0.0007	0.3340	0.0053	1.4206	-0.0042	1.0654
R^2	0.0067		0.0206		0.0128		0.0098	
d.f.	381		287		387		416	
<u>Model III</u>								
α_2 : Intercept	0.0044	1.3210	-0.0055	1.2946	0.0073	1.8876*	-0.0004	0.1216
β_7 : HCIN	-0.0084	0.7917	0.0069	0.9989	0.0066	0.6261	-0.0124	1.6317
β_8 : SIZE	-0.0005	1.2063	0.0007	1.3236	-0.0008	1.4701	0.0001	0.3108
β_9 : RHG	0.0106	0.8085	0.0066	0.9361	-0.0397	4.0105***	0.0043	0.1621
β_{10} : THG	-0.0008	0.5019	-0.0018	0.7704	0.0019	0.5188	-0.0041	1.0586
R^2	0.0078		0.0158		0.0474		0.0098	
d.f.	352		265		386		415	

*** significant at 0.01 level

** significant at 0.05 level

* significant at 0.10 level

Table 6
 Regression Results for Subperiod C (7 weeks around the disclosure date)
 Under The Second Expectation Form

	1978		1979		1980		1981	
	Coef.	t-value	Coef.	t-value	Coef.	t-value	Coef.	t-value
<u>Model I</u>								
α_0 : Intercept	0.0053	1.3243	-0.0105	1.9693**	0.0116	2.5355**	0.0002	0.0714
β_1 : HCIN	0.0197	1.8416	-0.0169	2.6604***	0.0010	0.1478	0.0151	1.8808*
β_2 : SIZE	-0.0007	1.3929	0.0017	2.3851**	-0.0016	2.6208***	0.0001	0.3174
β_3 : RHC	-0.0008	0.0668	-0.0213	2.4455**	-0.0304	2.6474***	0.0096	0.9292
R^2	0.0120		0.0436		0.0277		0.0124	
d.f.	481		377		547		483	
<u>Model II</u>								
α_1 : Intercept	0.0071	1.6030	-0.0085	1.4578	0.0121	2.2632**	-0.0006	0.1567
β_4 : HCIN	0.0058	0.4140	0.0079	0.7051	-0.0103	1.4748	0.0084	0.9848
β_5 : SIZE	-0.0009	1.5576	0.0014	1.7945*	-0.0018	2.4249**	0.0003	0.5950
β_6 : UHC	0.0022	1.0056	-0.0044	1.3070	-0.0026	0.5311	0.0058	1.2756
R^2	0.0094		0.0200		0.0225		0.0069	
d.f.	381		287		387		416	
<u>Model III</u>								
α_2 : Intercept	0.0106	2.2745**	-0.0092	1.4526	0.0123	2.3040**	-0.0003	0.0796
β_7 : HCIN	0.0111	0.7632	0.0099	0.9517	-0.0115	0.7930	0.0113	1.2890
β_8 : SIZE	-0.0015	2.3713**	0.0016	1.8686*	-0.0018	2.4476**	0.0003	0.5512
β_9 : RHC	0.0049	0.2721	-0.0161	1.5335	-0.0211	1.5510	-0.0239	1.7384*
β_{10} : THC	0.0023	1.0208	-0.0044	1.2345	-0.0050	0.9627	-0.0052	1.1429
R^2	0.0214		0.0351		0.0313		0.0115	
d.f.	352		265		386		415	

*** significant at 0.01 level

** significant at 0.05 level

* significant at 0.10 level

BIBLIOGRAPHY

- Abdel-Khalik, A.R., and J. McKeown, "Disclosure of Estimates of Holding Gains and the Assessment of Systematic Risk," Journal of Accounting Research (Supp. 1978), 46-77.
- Ball, R. and P. Brown, "An Empirical Evaluation of Accounting Income Numbers," Journal of Accounting Research (Autumn 1968), 159-177.
- Banz, Rolf, "The Relationship Between Return and Market Value of Common Stocks," Journal of Financial Economics, 9 (1981), 3-18.
- _____, "Limited Diversification and Market Equilibrium: An Empirical Analysis," Doctoral Dissertation, University of Chicago (1978).
- Barton, A. "Expectations and Achievements in Income Theory," The Accounting Review (October 1974), 664-681.
- Basu, S., "Market Reactions to Accounting Policy Deliberations: The Inflation Accounting Case Revisited," The Accounting Review (October 1981), 942-54.
- Beaver, W. "Economic Properties of Alternative Security Methods," Journal of Accounting Research (Spring 1981), 163-84.
- Beaver, William, Financial Reporting: An Accounting Revolution. (Prentice Hall, 1981).
- _____, "Accounting for Inflation in an Efficient Market," The Impact of Inflation on Accounting, A Global View, International Journal of Accounting (1979), 21-42.
- _____, "What Should be the FASB's Objectives," Journal of Accountancy (August 1973), 55.

- _____, A. Christie, and P. Griffin, "The Information Content of SEC Accounting Series Release No. 190," Journal of Accounting and Economics (August 1980), 127-157.
- _____, R. Clark and W. Wright, "The Association Between Unsystematic Security Returns and the Magnitude of the Earnings Forecast Error," Journal of Accounting Research (Autumn 1979), 316-40.
- _____ and J. Demski, "The Nature of Income Measurement," The Accounting Review (January 1979), 38-46.
- _____ and R. Dukes, "Interperiod Tax Allocation, Earnings Expectations and the Behavior of Security Prices," The Accounting Review April (1972), 320-332.
- _____, P. Griffin, and W. Landsman, "The Incremental Information Content of Replacement Cost Earnings," Journal of Accounting and Economics (July 1982), 15-40.
- _____, J. Kennelly and W. Voss, "Predictive Ability As a Criterion for the Evaluation of Accounting Data," The Accounting Review (October 1968), 675-683.
- _____, R. Lambert and D. Mores, "The Information Content of Security Prices," Journal of Accounting and Economics (June 1980), 3-28.
- _____, and Wayne Landsman, "The Incremental Information Content of FAS 33 Disclosures," Financial Accounting Standard Board, Connecticut, (1983).
- Benston, George, "Review", The American Economic Review (March 1967), 297-299.
- Black, Fischer, Michael Jensen, and Myron Scholes, "The Capital Asset Pricing Model: Some Empirical Tests," in Michael Jensen, ed., Studies in the Theory of Capital Markets (Praeger Publishing, 1972), 79-121.
- Bowers, Russell, "Objection to Index Number Accounting," The Accounting Review (April 1950), 149-155.

- Brown, S. and J. Warner, "Measuring Security Price Performance," Journal of Financial Economics (September 1980), 205-258.
- Chambers, Raymond, Accounting, Evaluation and Economic Behavior. (Prentice-Hall, 1966).
- Cohen, K.J., and J.A. Pogue, "An Empirical Evaluation of Alternative Portfolio Selection Models," Journal of Business Vol. 40 (1967), 166-93.
- Drake, David and Nichola Dopuch, "On the Case for Dichotomizing Income," Journal of Accounting Research (Autumn 1965), 192-205.
- Dutta, M., Econometric Methods (South-Western Publishing Co., 1975).
- Edwards, E. and P. Bell, The Theory and Measurement of Business Income, (University of California Press, 1961).
- Easman, W., A. Falkenstein and R. Weil, "The Correlation Between Sustainable Income and Stock Returns," Financial Analysts Journal (Sept./Oct. 1979), 44-48.
- Fama, Eugene, "Stock Returns, Real Activity, Inflation, and Money," The American Economic Review (September 1981), 545-65.
- _____, "Short-Term Interest Rates as Predictors of Inflation," American Economic Review (June 1975), 269-82,
- _____ and J. MacBeth, "Risk, Return and Equilibrium: Empirical Tests," Journal of Political Economy (May 1973), 607-36.
- _____, and W. Schwert, "Asset Returns and Inflation," Journal of Financial Economics (November 1977), 115-46.
- Feldstein, Martin, "Inflation and Stock Market," The American Economic Review (December 1980), 839-847.
- Fisher, Irving, The Theory of Interest (New York: Macmillan, 1930).

- Fogler, H. Russell and Sundaram Ganapathy, Financial Econometrics For Researchers in Finance and Accounting (Prentice-Hall, Inc., 1982).
- Foster, G., "Security Price Valuation Implications of Sub-Earnings Disclosure," Journal of Accounting Research (Autumn 1975), 283-292.
- Foster III, Taylor and Don Vickrey, "The Incremental Information Content of the 10-K," The Accounting Review (October 1978), 921-34.
- Freeman, Robert, "The Disclosure of Replacement Cost Accounting Data and Its Effect on Transaction Volumes: A Comment," The Accounting Review (January 1981), 177-180.
- _____, "Alternative Measures of Profit Margin: An Empirical Study of the Potential Information Content of Current Cost Accounting," Journal of Accounting Research (Spring 1983), 42-64.
- Friend, Irwin and Joel Hasbrouck, "Effect of Inflation on the Profitability and Valuation of U.S. Corporations," Working paper No. 4-82, Rodney L. White Center for Financial Research, University of Pennsylvania, 1982.
- Gheyara, K. and J. Boatsman, "Market Reaction to the 1976 Replacement Cost Disclosures," Journal of Accounting and Economics (August 1980), 107-125.
- Gonedes, N., "Corporate Signalling, External Accounting, and Capital Market Equilibrium: Evidence on Dividends, Income, and Extraordinary Items," Journal of Accounting Research (Spring 1978), 26-79.
- _____, "Risk, Information, and the Effects of Special Accounting Items on Capital Market Equilibrium," Journal of Accounting Research (Autumn 1975), 220-56.
- _____ and N. Dopuch, "Economic Analyses and Accounting Techniques: Perspectives and Proposals," Journal of Accounting Research (Autumn 1979), 384-410.

- _____ and _____, Capital Market Equilibrium Information Production and Selecting Accounting Techniques: Theoretical Framework and Review of Empirical work," Journal of Accounting Research (Supplement 1974), 48-169.
- Goodman, H., A. Phillips, J. Burton, and M. Vasarhelyi, "Illustrations and Analysis of Disclosures of Inflation Accounting Information," (New York: AICPA Financial Report Survey 23) (October 1981).
- Griffith, Donald, "Weakness of Index-Number Accounting," The Accounting Review (June 1937), 123-132.
- Griffin, P., "Competitive Information in the Stock Market: An Empirical Study of Earnings, Dividends, and Analysts' Forecasts," Journal of Finance (May 1976), 631-50.
- Gujarati, Damodar, Basic Econometrics (New York: McGraw-Hill Book Company, 1978).
- Hasbrouck, Joel, "Three Essays on Inflation and Capital Market," Ph.D. Dissertation, University of Pennsylvania, 1981.
- Haw, In-Mu, "The Incremental Information Content of Specific price Change Information: Significance of Industry Effects," Working Paper, Baruch College (1983).
- _____ and Steven Lustgarten, "The Information Content of Current Operating Income and Holding Gains," Working Paper, Baruch College (May 1984).
- Jaffe, J., and G. Mandelker, "The 'Fisher Effect' for Risky Assets: An Empirical Investigation," Journal of Finance (May 1976), 447-58.
- Johnston, J., Econometric Methods (New York: McGraw-Hill Book Company, 1972).
- King, Benjamin F., "Market and Industry Factor in Stock Price Behavior," The Journal of Business (January 1966), 139-69.
- Kravis, Irving and Robert Lipsey, "Prices and Terms of Trade for Developed Country Exports of Manufactured Goods," Working Paper No. 774, National Bureau of Economic Research (1982).

Lev, Baruch, "Some Economic Determinants of Time Series Properties of Earnings," Journal of Accounting and Economics (April 1983), 31-48.

_____ and Serguis Kunitzky, "On the Association Between Smoothing Measures and the Risk of Common Stocks," The Accounting Review (April 1974), 259-70.

_____ and S. Sunder, "Methodological Issues in the Use of Financial Ratios," Journal of Accounting and Economics (December 1979), 187-210.

Lintner, J., "Inflation and Security Returns," Journal of Finance (May 1975), 259-80.

Livingston, M., "Industry Movements of Common Stocks," Journal of Finance, Vol. 32 (1977), 861-74.

Lustgarten, Steven, "The Impact of Replacement Cost Disclosure on Security Prices: New Evidence," Journal of Accounting and Economics (October 1982), 121-41.

Ma, Ronald, "On Chambers' Second Thoughts," Abacus (December 1974), 124-128.

McKeown, J., "Additivity of Net Realizable Values," The Accounting Review (July 1972), 527-532.

Meyers, Stephen L., "A Re-Examination of Market and Industry Factors in Stock Price Behavior," Journal of Finance (June 1973), 695-705.

Modigliani, F., and R. Cohn, "Inflation, Rational Valuation and the Market," Financial Analysts Journal (March/April 1979), 24-44.

Nelson, C.R., "Inflation and Rates of Return on Common Stocks," Journal of Finance (May 1976), 471-83.

Nicholas, Donald, "A Note on Inflation and Common Stock Values," Journal of Finance (September 1968), 655-657.

Noreen, E., and J. Sepe, "Market Reactions to Accounting Policy Deliberations: The Inflation Accounting Case," The Accounting Review (April 1981), 253-69.

Parakash, Perm and Shyam Sunder, "The Case Against Separation of Current Operating Profit and Holding Gain," The Accounting Review (January 1979), 1-22.

Paton, William, Accounting Theory (Houston, Texas: 1922, Reprinted by Scholars Book Co., 1973).

_____ and William paton, jr., Asset Accounting (New York: Macmillan Company, 1952).

Reingamum, Marc, "Misspecification of Capital Asset Pricing: Empirical Anomalies Based on Earnings' Yields and Market Value," Journal of Financial Economics, 9 81981), 19-46/.

Revsine, Lawrence, "The theory and Measurement of business Income: A Review Article," The Accounting Review (April 1981), 342-348.

_____, "Replacement Cost Accounting: A Theoretical Foundation," in Objectives of Financial Statements, Vol. 2, edited by Joe Cramer, Jr. and George Sorter, (AICPA, 1974).

_____, Replacement Cost Accounting (Prentice-Hall, Inc., 1973).

_____, "On the Correspondence Between Replacement Cost Income and Economic Income." The Accounting Review (July 1970), 513-253.

Ro, Byung T., "The Disclosure of Replacement Cost Accounting Data and its Effects on Transaction Volumes," The Accounting Review (January 1981), 70-84.

_____, "The Adjustment of Security Returns to the Disclosure of Replacement Cost Accounting Information," Journal of Accounting and Economics (August 1980), 159-89.

Rosenberg, B., "Extra-Market Components of Covariance in Security Analysis," Journal of Financial and Quantitative Analysis, Vol. 9 (1974), 275-84.

Scherer, F., Industrial Market Structure and Economic Performance (Rand McNally, Chicago, Il.).

Stigler, G., The Organization of Industry (Irwin 1968).

- Sweeny, Henry, Stabilized Accounting (New York: Harper and Brothers, 1936 Reprinted by Holt, Rinehart and Winston, New York, 1964).
- Thies, J. and L. Revsine, "Capital Expenditures Data for Inflation Accounting Studies," The Accounting Review (Jan. 1977), 216-21.
- Vasarhelyi, M. and C. McNair, "Corporate Valuation and Changing Price Data," Working Paper, Columbia University, (Feb, 1983).
- Watts, Ross and Jerold Zimmerman, "Towards a Positive Theory of the Determination of Accounting Standards," The Accounting Review (January 1978), 112-34.
- _____, _____, "On the Irrelevance of Replacement Cost Disclosures for Security Prices," Journal of Accounting and Economics (August 1980) 95-106.
- Whittington, G., The Prediction of Profitability (Cambridge University Press, Cambridge).
- Wonnacott, Ronald J. and Thomas H. Wonnacott, Econometrics (New York: John Wiley & Sons, 1979).