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An Assessment of the Impact of the Quality of Accounting Earnings on the Cross-Sectional Variability in P/E Ratios

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SYNOPSIS: A topic of interest to both accounting and finance academics and investment professionals is an explanation for the cross-sectional variation in firms' price to earnings (P/E) ratios. This interest is particularly warranted given the use made of the price to earnings ratio in investment contexts and the reported security pricing effects generally referred to as the P/E anomaly. Assuming that inadequacies in the accounting earnings number are manifested in what is termed "earnings quality" in the literature, the quality of earnings may explain a significant portion of the cross-sectional variation in observed P/E ratios. This is the issue addressed in this study. In addition, this study responds to Lev's [1989] call for more studies identifying the determinants of earnings quality.

The intent of this study is to provide evidence regarding the incorporation of earnings quality in the security valuation process by examining the ability of two proxies of earnings quality to explain the observed cross-sectional variation in E/P ratios. We measure earnings quality using two proxies based on two components of bottom-line accounting earnings. The two proxies for earnings quality are: (1) the difference between current cash flows from operations and the accrual accounting bottom-line measure of earnings, and (2) the difference between earnings before extra-ordinary items and discontinued operations and bottom-line accounting earnings.

Supporting the results of previous results, we find significant relations between E/P ratios and growth, dividend payout, and size. We do not find a significant relationship between E/P and systematic risk or between E/P and inventory method. The hypothesized links between our proxies for earnings quality and E/P ratios is supported at relatively high levels of statistical significance. Our results are robust to the choice of earnings quality surrogate and the deletion of outliers.

Key Words: Price to earnings ratio, P/E ratio, earnings quality

Data Availability: A list of sample firms is available from the authors upon request.

An Assessment of the Impact of the Quality of Accounting Earnings on the Cross-sectional Variability in P/E Ratios

I. Introduction

A topic of interest to both accounting and finance academics and investment professionals is an explanation for the cross-sectional variation in firms' price to earnings (P/E) ratios. This interest is particularly warranted given the use made of the price to earnings ratio in investment contexts and the reported security pricing effects generally referred to as the P/E anomaly.

One explanation for the observed cross-sectional variability in P/E's is provided by Black (1980). Black argued that P/E ratios should be relatively constant across firms and, if one assumes market efficiency regarding security prices, then the observed variation must be driven by the earnings measure. Black suggested that the variability in P/E's is due to inadequacies in the accounting earnings number. Assuming that inadequacies in the accounting earnings number are manifested in what is termed "earnings quality" in the literature, the quality of earnings may explain a significant portion of the cross-sectional variation in observed P/E ratios.[1] This is the issue addressed in this study.

In addition, this study responds to Lev's [1989] call for more studies identifying the determinants of earnings quality. The intent of this study is to provide evidence regarding the incorporation of earnings quality in the security valuation process by examining the ability of two proxies of earnings quality to explain the observed cross-sectional variation in E/P ratios.

Lev [1989] defined earnings quality as the predictive-ability of earnings to predict future cash flows. However, Lev did not indicate which of the many different accounting earnings

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[1] Although the empirical analyses conducted in this study are based on the E/P ratio, our discussion follows the more traditional line which uses the P/E ratio. The use of the E/P ratio in our empirical analysis mitigates the problems associated with earnings approaching zero and is based on the Litzenberger and Rao [1970] model which posits linearity in E/P.

numbers which are available from a firm's financial statements are to be used. Therefore, two components of bottom-line accounting earnings are considered in this study: (1) funds from operations, and (2) earnings before extra-ordinary and discontinued operations. We measure earnings quality using two proxies based on these two components of earnings. The two proxies are: (1) the difference between current cash flows from operations and the accrual accounting bottom-line measure of earnings, and (2) the difference between earnings before extra-ordinary items and discontinued operations and bottom-line accounting earnings. The first measure portrays the extent to which bottom-line accounting earnings are supported by underlying cash flows from operations. As such, a high quality measure of earnings will have underlying cash flows equal to or greater than the bottom-line accounting income figure. The second measure is the proportion of bottom-line earnings attributable to fundamental (sustainable) income activities.

Cross-sectionally, we expect P/E's (E/P's) of firms in which current cash flows from operations exceed bottom-line accounting earnings to be greater (less) than firms in which the bottom-line accounting earnings exceed the current cash flows from operations. Our expectation is based on the intuition that in instances in which cash flows from operations exceed bottom-line accounting earnings, the bottom-line accounting earnings conservatively measures the underlying income producing phenomena. It is this underlying income producing activity that is used by the market in pricing the security. Accordingly, the quality of earnings is high when the underlying cash flows from operations exceed bottom-line accounting earnings and the market prices the security congruent with these underlying operating cash flows. In instances in which bottom-line accounting earnings exceed operating cash flows, the bottom-line accounting earnings overstate the fundamental earnings of the firm which is used by the market and manifested in the security price. We define the first case, operating cash flows greater than bottom-line accounting earnings, as an instance of high quality earnings since it is the fundamental operations of the firm which completely support the bottom-line earnings number.

In the second case, the earnings quality is low since it is activities other than the underlying fundamental operating activities which are supporting the bottom-line accounting earnings number. In essence, this proxy for earnings quality measures the percentage of bottom-line accounting earnings which is supported by the underlying cash flows due to the fundamental operating activities of the firm. Our hypothesized relationship between earnings quality and P/E's is consistent with Lev's notion of earnings quality, from an ex ante perspective, if the expectations of both future earnings and future cash flows are reasonably approximated by a martingale process.[2]

In addition, we expect to observe higher (lower) P/E's (E/P's) for firms in which earnings before extra-ordinary items and discontinued operations underlie all or more of the bottom-line accounting earnings. The notion of high or low quality earnings is similar to that described above. In instances in which a large proportion of bottom-line accounting earnings is due to extra-ordinary items and discontinued operations, the quality of the bottom-line accounting earnings number is low since it is made up of a significant component which is not sustainable. This is consistent with the notion that the market perceives total (bottom-line) accounting earnings to be noisier than earnings before extra-ordinary items and discontinued operations and focuses on the less noisy earnings signal in its pricing.[3]

Accounting earnings have long been used as a predictor of future cash flows. However, there is some evidence that both the current period cash flows (funds from operation) and accounting earnings are used by the market as an indicator of future cash flows (e.g., Wilson [1986], and Rayburn [1986]). This study does not intend to compare the information content of

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[2] Extensive literature exists which indicates that reasonable forecasts of earnings may be made employing a random walk model. In addition, many empirical studies focusing on the information content of earnings, earnings response coefficients, and post-earnings announcement drift have employed a random walk model to approximate for the market's expectation of earnings.

[3] This idea is also consistent with the extra-ordinary items and discontinued operations representing transitory shocks to the earnings stream.

the bottom-line accounting earnings figure with that of the funds from operation figure. Instead, we hypothesize that, given the same earnings number, earnings quality is higher (lower) and the future cash flow will be larger (smaller) when the funds from operation is larger (smaller) than bottom-line accounting earnings. We also hypothesize that earnings before extra-ordinary and discontinued operations is less noisy than bottom-line earnings and may better represent the potential for sustainable earnings since it does not include the temporary shocks due to extraordinary and/or discontinued operating components.

P/E ratios play an important role in investment analysis and much attention has been given to exploring their determinants. Under certain conditions, the Gordon-Shapiro valuation equation states that the P/E ratio is a function of the dividend payout ratio, the growth in earnings per share, and the risk-free interest rate.[4] Empirically, the relations between the P/E ratios and (1) firm size, (2) systematic risk (beta), (3) dividend payout, (4) growth potential, and (5) accounting methods have been previously investigated.[5] However, an empirical assessment of the association between earnings quality and P/E ratios is unique to this study.

Supporting the results of previous results, we find significant relations between E/P ratios and growth, dividend payout, and size. We do not find a significant relationship between E/P and systematic risk or between E/P and inventory method. The hypothesized links between our proxies for earnings quality and E/P ratios is supported at relatively high levels of statistical significance. These results are robust to the choice of quality measure and the deletion of outliers.

The remainder of this paper is organized as follows. Section two contains a brief review of the pertinent literature. Section three describes the research design, the variables, and the hypotheses which are tested. The results are presented in section four. A sensitive analysis is

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4 See Beaver and Morse [1978] for additional detail. The current interest rate, a macro-economic factor in explaining P/E ratios, is not considered in this study since a cross-sectional regression across firms at a single point in time is employed.

5 See Beaver and Morse [1978] or Craig et al. [1987] for additional detail.

provided in section five. The sixth section provides a brief summary and discusses the implications of our results.

II. Previous Studies

This section reviews previous research in three areas related to this study: (a) studies regarding earnings quality, (b) studies of the determinants of P/E ratios, and (c) the P/E anomaly studies.

Earnings Quality

Lev [1989] calls for more studies on the determinants of earnings quality. Earnings quality should be linked to both the ability of earnings to predict future cash flows and the persistence of accounting earnings (Kormendi and Lipe [1987]). Previous research investigating the usefulness of cash versus accrual information and the usefulness of historical cost versus current cost information can be generally classified into this topical area. However, neither of these two areas of research provide definitive inferences regarding the quality of various types of accounting earnings information.

Rayburn [1986] and Wilson [1986] both demonstrate that given accounting earnings, cash flow data is incrementally associated with security returns. This evidence suggests that cash flow data provides some additional information to the market regarding a firm's future cash flow which is not captured in accrual earnings. Alternatively, this evidence may demonstrate that cash flow data is associated with earnings quality. Bernard and Ruland [1987] provide evidence that current cost data provides additional information to the market and therefore it indicates higher quality. Bublitz, et al., [1985] conclude that the current cost data would be very difficult to use since it is very noisy. This suggests that the current cost information is of lower quality than historical cost information.

The Determinants of P/E Ratios

Litzenberger and Rao [1970] (hereafter, LR) posit a linear relation between E/P ratios and both systematic risk (beta) and growth. They find empirical evidence consistent with their hypotheses. Beaver and Morse [1978] test the LR model and note that the relation between P/E and growth is positive. However, the sign of the correlation between beta and P/E is expected to vary across economic climates. When the overall market's outlook is good (bad) the firms with higher betas are expected to perform better (worse). Consequently, no particular relation between beta and P/E is expected unless the economic climate is considered. The results reported by Beaver and Morse [1978] are generally consistent with their expectations. Beaver and Morse also conjecture that differential accounting methods may assist in explaining cross-sectional differences in P/E ratios.

Craig, et al., [1987] test the Beaver and Morse [1978] conjecture that differential accounting methods may explain some of the cross-sectional variability in P/E ratios. The Beaver and Morse conjecture is based on the notion that it is the difference in accounting methods which affects the earnings number (the denominator of the P/E ratio) rather than a price effect. Craig, et al., hypothesize that firms with more conservative (income-decreasing) accounting methods would be associated with higher P/E ratios. However, one potential difficulty in utilizing accounting methods as an explanatory variable is that some accounting methods are not just cosmetic and have real cash flow effects (through taxes) while other accounting methods do not. This may introduce a confounding variable since one can not ascertain whether it is the accounting method which is driving the result by affecting the earnings figure (the denominator of the P/E ratio) or the cash flow effect which is driving the result by being priced in the security price (the numerator of the P/E ratio). Consequently, an empirical relation between accounting methods and P/E ratios may not be readily observed, and if observed very difficult to assess.

The empirical observation by Craig, et al., that the LIFO inventory method and the deferred investment tax credit method are associated with higher P/E ratios but depreciation methods are not associated with P/E ratios is consistent with the notion that the market is picking up the cash flow effects of the accounting methods. Craig, et al., also find firm size and dividend payout to be significant in explaining the cross-sectional variability of P/E ratios.

The P/E Anomaly

The use of P/E ratios as an investment strategy has interested finance researchers and the evidence that one can earn abnormal returns using a P/E ratio based investment strategy has been used as an indication of market inefficiency. One possible explanation for this phenomenon is that stock prices reflect more information about future earnings than do current earnings (e.g., Ou and Penman [1989]). Beaver and Morse [1978] document the mean-reversion behavior of P/E ratios; high (low) P/E ratios tends to be followed by low (high) P/E ratios in later years.

Basu [1983] provides evidence that low P/E ratio stocks earn statistically significant positive risk-adjusted returns. This phenomenon is contradictory to most notions of market efficiency and has been labeled the "P/E effect" or the "P/E anomaly". Basu also found that firm size and P/E ratios are correlated. Consequently, the well-known small firm effect or anomaly (e.g., Schwert [1983]) may be partly related to the P/E effect.

Ou and Penman [1989] provide insights into the usefulness of P/E ratios in predicting future earnings. However, the relations among prices, earnings, and P/E ratios are not clear. Ou and Penman demonstrate that price changes (as opposed to P/E comparisons) are relatively poor predictors of earnings in cases where accounting information indicates a high transitory component to earnings.

III. Research Design, Variables and Hypotheses

The cross-sectional regression models employed in this study are similar to those used in previous studies of P/E ratios. Based on the results of these previous studies, we hypothesize that the cross-sectional variability in P/E ratios can be explained by (1) a firm's beta, (2) a firm's growth potential, (3) firm size, (4) a firm's dividend payout ratio, (5) a firm's inventory valuation method, and (6) a firm's earnings quality. We do not include depreciation methods in our analysis since previous empirical evidence has not supported a linkage. In addition, due to data availability we do not incorporate the effect of alternative investment tax credit methods in our analysis. The two new variables added in this analysis to proxy for earnings quality are: (1) the quality of earnings associated with funds from operations, and (2) the quality of earnings associated with extra-ordinary items and discontinued operations. Since the Litzenberger and Rao [1970] model posits linearity in E/P (not in P/E), this study employs E/P as the dependent variable. In addition, E/P ratios are used to mitigate the problems which occur in P/E ratios when earnings approach zero.

Each of the variables used in the study are defined and discussed below.

(1) E/P (E/P) - The E/P ratios in this study are computed using the primary earnings per share divided by year-end closing price. Earnings before extra-ordinary items and discontinued operations to price ratios (EB/P) is employed in the second state of our analysis as the dependent variable in order to concentrate on the relation between E/P ratios and earnings quality associated with funds from operation.

(2) Systematic Risk (BETA) - The beta used in this study is the Standard and Poor's Corporation beta estimated using 60 monthly observations. The expected sign of the relation between beta and the E/P ratio can not be specified a priori since Beaver and Morse [1978] demonstrate that the sign is dependent upon the general economic conditions.

(3) Growth Potential (GR) - Our measure of growth potential is the proxy employed by Titman and Wessels [1988]; annual R&D expense deflated by annual sales. A negative (positive) association between growth and the E/P (P/E) ratio is predicted.

(4) Firm Size (SIZE) - Firm size is measured by the logarithm of the firm's total assets. Based on the small firm effect documented in the literature, a positive (negative) association between size and the E/P (P/E) ratio is predicted.

(5) Dividend Payout Ratio (DIV) - The dividend payout ratio is the annual dividend per share divided by the annual primary earnings per share. A negative (positive) relation between the dividend payout ratio and the E/P (P/E) ratio is expected. This phenomenon has been termed the "dividend puzzle" and is widely discussed in the finance literature (e.g., Bhattacharya [1979]).

(6) Earnings Quality Based on Funds from Operations (QCF, QCE, QCA) - Three different measures of this variable are employed in this study. The first measure, QCF, assumes that the underlying benchmark for evaluation of earnings quality is the funds (cash flows) from operations. The numerator for QCF is bottom-line accounting earnings minus the funds from operations. The denominator is funds from operations as the denominator. A large QCF indicates that reported bottom-line earnings are greater than the underlying funds from operations. This indicates a lower quality earnings number. The second measure, QCE, uses funds from operations minus bottom-line accounting earnings as the numerator with bottom-line accounting earnings as the denominator. A positive QCE indicates that the bottom-line earnings figure is completely supported by underlying cash flows from operations and is of higher quality. In essence, bottom-line earnings conservatively measure cash flows from operations. The third measure of earnings quality, QCA, uses the same numerator as QCE but uses total assets as the denominator.

The use of these three measures of earnings quality allows us to assess the sensitivity of the results to the different denominators employed in the proxy. A positive association between

QCF and the E/P ratio is expected. However, the relation between E/P and QCE (also, QCA) is expected to be negative. One potential problem with QCF and QCE is that, although we believe QCF and QCE are capturing "earnings quality" as explained above, QCF and QCE may be capturing "capital intensity" when the major difference between bottom-line accounting earnings and cash flows from operations is due to depreciation. QCA utilizes total assets as the denominator and should be free of this problem.[6]

(7) Earnings Quality Based on Extra-Ordinary items and Discontinued Operations (QEB, QXE, QXA) - Based on the same analogy as in the above discussion, three measures are used. The first measure, QEB, uses bottom-line accounting earnings minus earnings before extra-ordinary items and discontinued operations as the numerator and earnings before extra-ordinary items and discontinued operations as the denominator. The other two measures, QXE and QXA, both use earnings before extra-ordinary items and discontinued operations minus bottom-line accounting earnings as the numerator and employ accounting earnings for QXE and total assets for QXA as the denominators. A positive relation between the QEB and E/P, a negative relation between E/P and QCE, and a negative relation between E/P and QCA are hypothesized.

(8) Inventory Valuation Method (INV) - INV is a dummy variable for the choice of inventory method. INV is coded 1 when FIFO is primarily used (as identified by COMPUSTAT) by the sample firm and INV is coded 0 for any other inventory method. The association between inventory method, as coded, and the E/P (P/E) ratio is expected to be positive (negative) given the hypothesis of Beaver and Morse [1978] that conservative (income-decreasing) accounting methods are associated with higher P/E ratios.

Three similar regression models are used in the empirical tests. The first model (M1) is:

$$E/P = \gamma_0 + \gamma_1\,BETA + \gamma_2\,GR + \gamma_3\,DIV + \gamma_4\,SIZE + \gamma_5\,QCF + \gamma_6\,QEB + \gamma_7\,INV + e.$$

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6 Other pros and cons for these three measures of earnings quality will be discussed later.

where:

E/P = primary earnings per share divided by year-end closing price;

BETA = Standard and Poor's monthly beta from Compustat CD Plus;

GR = research and development expense divided by sales;

DIV = dividend payout ratio;

SIZE = logarithm of the firm's total assets;

QCF = (bottom-line accounting earnings minus funds from operations) divided by funds from operations;

QEB = (bottom-line accounting earnings minus earnings before extra-ordinary items and discontinued operations) divided by earnings before extra-ordinary items and discontinued operations;

INV = 1 if FIFO is used and 0 if another inventory valuation method is used.

The γ's are regression coefficients and ϵ is an error term.

The second model (M2) uses QCE and QXE to measure earnings quality and is:

$$E/P = \gamma_0 + \gamma_1 \, BETA + \gamma_2 \, GR + \gamma_3 \, DIV + \gamma_4 \, SIZE + \gamma_5 \, QCE + \gamma_6 \, QXE + \gamma_7 \, INV + \epsilon;$$

where:

QCE = (funds from operations minus bottom-line accounting earnings) divided by bottom-line accounting earnings;

QXE = (earnings before extra-ordinary items and discontinued operations minus bottom-line accounting earnings) divided by bottom-line accounting earnings;

All other variables are as defined above.

The third regression model (M3) uses QCA and QXA to measure the quality of accounting earnings. This model is:

$$E/P = \gamma_0 + \gamma_1\,BETA + \gamma_2\,GR + \gamma_3\,DIV + \gamma_4\,SIZE + \gamma_5\,QCA + \gamma_6\,QXA + \gamma_7\,INV + e.$$

where:

QCA = (funds from operations minus bottom-line accounting earnings) divided by total assets;

QXA = (earnings before extra-ordinary items and discontinued operations minus bottom-line accounting earnings) divided by total assets;

The other variables are as defined previously.

The reason for using the three different models identified above is to assess the sensitivity of the results to different deflators used in the earnings quality proxies. This is appropriate since using earnings as the deflator has two prominent problems. First, since E/P and earnings are likely to be correlated, the observed results could be driven by spurious correlation. Second, there could be outliers in the distribution of the earnings quality variable due to small earnings. However, since previous studies have documented a positive relation between E/P and firm size, the spurious correlation problem may not be avoided by using total assets as the deflator. In addition, since firm size is also used as explanatory variable in our model, there is the potential for multicollinearity between firm size and our measure of earnings quality which deflates by size (total assets). The sensitivity of our results to outliers will be examined.

The sample firms are collected using the Compustat CD Plus annual file from 1984 to 1987. The following selection criteria are employed.

(1) The firms must be listed on either the New York Stock Exchange or the American Stock Exchange.

(2) The firms must be in the manufacturing or mining industries (1000 < SIC <4000).

(3) Annual data must be available to compute all of the variables.

(4) The firms must have positive E/P ratios.

These sample selection criteria yield a sample of 1,543 observations; 383 firms in 1984, 394 firms in 1985, 417 firms in 1986, and 349 firms in 1987.

The three regression models previously described (M1, M2, and M3) are estimated using a system of equations approach by way of a seemingly unrelated regression (SUR) across the four sample years. Zellner [1962] points out that the SUR method, which estimates coefficients through a joint generalized least squares technique, will achieve gains in estimation efficiency when correlations between cross-model residuals are not zero. The SUR method requires the same sample of firms across all the years analyzed and decreases the number of sample firms. Only 199 firms meet the sample selection criteria for all four years.

In order to test the following seven hypotheses (presented in null form), each of the regression coefficients are tested to determine if it is significantly different than zero:

H_{01}: There is no association between the firm's E/P ratio and systematic risk (beta).

H_{02}: There is no association between the firm's E/P ratio and its growth potential.

H_{03}: There is no association between the firm's E/P ratio and its dividend payout ratio.

H_{04}: There is no association between the firm's E/P ratio and its size.

H_{05}: There is no association between the firm's E/P ratio and its earnings quality proxied by the difference between funds from operations and bottom-line accounting earnings.

H_{06}: There is no association between the firm's E/P ratio and its earnings quality proxied by the difference between earnings before extra-ordinary and discontinued operations and bottom-line accounting earnings.

H_{07}: There is no association between the firm's E/P ratio and its inventory valuation method.

The tests of hypotheses 5 and 6 are the major contribution of this research study although tests of the other hypotheses may support the findings of previous P/E studies. The rejection of hypotheses 5 and 6 will indicate that earnings quality (as proxied by our variables) is considered by the marketplace and is manifested in the stock price.[7] Consequently, these tests will enhance our knowledge of the cross-sectional determinants of P/E ratios.

IV. Results

Tables 1-4 provide the descriptive statistics and the correlations among the variables employed for each of the four sample years.

INSERT TABLES 1-4

In general, the signs of all of the correlations between the E/P ratios and the exogenous variables except for QCA and inventory method (INV) are consistent with our expectations. In three of the four years, the correlation between QCA and E/P has the opposite sign. The correlation for inventory method is not statistically significant in any year and has the opposite sign. When earnings or earnings before extra-ordinary items and discontinued operations is used as the deflator the variables have extreme observations. In order to assess the sensitivity of our results to these outliers, we delete firms with price-earnings ratios greater than 100 and rerun the analyses. Deletion of the extreme observations trims the sample size to 186 firms.

M1 Results

The results for model M1 are presented in Table 5. These results indicate that the regression coefficients for growth, dividend payout, size, and quality of earnings based on operating cash flows (QCF), and quality of earnings based on earnings before extra-ordinary items and discontinued operations (QEB) are statistically significant with the expected sign in all four sample years. The coefficient estimates for growth, dividend payout, size, and quality of

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[7] This inference is based on the assumption that our two proxies for earnings, (1) the difference between funds from operations and bottom-line accounting earnings, and (2) the difference between income before extra-ordinary and discontinued operations and accounting earnings, are adequate.

earnings based on operating cash flows (QCF) are reasonably similar in magnitude for the four years. The magnitudes of the coefficient estimates for quality of earnings based on earnings before extra-ordinary items and discontinued operations (QEB) are consistent for three of the four years. However, Table 4 reveals that there is at least one extreme observation for QEB in 1987. Inventory method is not significant in three of the four years and has the opposite sign in all four years. The variable BETA is insignificant and switches sign across the four years. The system R^2 for this model is very high; approximately 48% of the cross-sectional variability in the E/P ratios is being explained.

INSERT TABLE 5

In order to assess the sensitivity of these results to outliers the analysis is rerun on the trimmed sample. These results are provided in Table 6. The regression coefficient estimates and significance levels for the variables with the exception of QEB in 1987 are similar to those reported in Table 5. The magnitudes of the coefficient estimates for variable QEB become more consistent across the four years but the significance level drops for 1987. These results suggest that outliers are not driving the results reported in Table 5. The system R^2 increases to approximately 50% for the trimmed sample of 186 firms. Consistent with the results reported in Table 5, the results in Table 6 indicate a strong relation between earnings quality and the E/P ratios. In addition, the results for the other variables, with the exception of inventory method in model M1, are consistent with previous studies for both samples.

INSERT TABLE 6

The results for models M2 and M3 are presented in following sections. The results for variables GR, DIV, and SIZE are similar to those of M1; statistically significant with the expected sign. The inventory method variable continues to be insignificant with the opposite sign for three of the years. Systematic risk, beta, is not statistically significant and also switches signs. These results are similar to those for model M1 reported in Tables 5 and 6. Given these similarities, the following discussion focuses only on the two earnings quality measures.

M2 Results

Table 7 provides the regression results using model M2 in which accounting earnings are used as the deflator in the two measures of earnings quality. The coefficient estimates for the two earnings quality measures in model M2, QCE and QXE, have the expected sign for all four years but are not consistently significant. The magnitudes of the coefficient estimates differ widely across the four years. The coefficient estimate for QCE is significant in only one of the four years (1985). The coefficient estimate for QXE is significant in three of the four years (1984, 1985, and 1986). The system R^2 for M2 is 31.5%; lower than that of M1.

INSERT TABLE 7

Since using earnings as the deflator for the earnings quality surrogate is likely to produce outliers, the regression results based on the trimmed sample are presented in Table 8. The results for QCE and QXE, reported in Table 8, are more consistent across the four years than the results reported in Table 7. QCE is significant in three of the four years (1985, 1986, and 1987) and QXE is significant in all the four years. The system R^2 increases to 36.5%, but is still below the system R^2 for M1.

INSERT TABLE 8

M3 Results

The regression results for M3, which uses total assets as the deflator in the earnings quality measures, are reported in Table 9. The quality of accounting earnings based on earnings before extra-ordinary items and discontinued operations (QXA) is highly significant with the expected sign for all four years. In addition, the magnitudes of the coefficient estimates are similar across the four years. The earnings quality measure based on funds flow, QCA, is significant in two of the four years (1986, 1987) and has the expected sign for all four years. However, the magnitudes of the coefficient estimates for QCA vary significantly across the years (especially 1987, the year of the market crash). The system R^2 is 53%.

INSERT TABLE 9

The results from the trimmed sample are presented in Table 10. Since outliers are less likely when total assets is used as the deflator in the earnings quality measures, the results in Tables 9 and 10 are very similar. The system R^2 is 50%.

INSERT TABLE 10

V. Sensitivity Analysis

So far, our results provide evidence that the two earnings quality measures employed in this study are significantly associated with the E/P ratios. This section focuses only on the earnings quality measure based on funds from operations, QCF. In order to control for the effect of extra-ordinary items and discontinued operations on E/P ratios, an EB/P ratio is computed based on earnings before extra-ordinary items and discontinued operations divided by stock price. This eliminates the possible multicollinearity between the two earnings quality measures. The model is as follows:

$$EB/P = \gamma_0 + \gamma_1\, BETA + \gamma_2\, GR + \gamma_3\, DIV + \gamma_4\, SIZE + \gamma_5\, QCF + \gamma_6\, INV + e;$$

where:

EB/P: earnings before extra-ordinary items and discontinued operations per share divided by year-end stock price;

the rest of the variables are as previously defined.

The results for the this regression are presented in Table 11.

INSERT TABLE 11

The coefficient estimates for all the variables with the exception of INV have consistent signs and similar magnitudes across all four years. The coefficient for QCF, the earnings quality measure based on cash flows, is significant and has the expected sign across all four years. All the estimates and significance levels for the other variables are similar to the results reported in Table 5. However, the system R^2 is somewhat lower, 34.5%.

VI. Summary and Implications

This study enhances our knowledge of the cross-sectional determinants of P/E ratios by focusing on two different proxies of earnings quality. The difference between funds from operations and bottom-line accounting earnings and the difference between earnings before extra-ordinary and discontinued operations and bottom-line accounting earnings are the proxies employed to represent earnings quality. Other variables, which have been found to be significant in explaining cross-sectional variability in P/E ratios in previous studies, are also included in our analysis.

In summary, our results are consistent with the results from previous studies since we observe that growth potential, firm size, and dividend payout are useful in explaining the cross-sectional differences in P/E ratios. More importantly, the earnings quality measures we employ, which are based on (1) funds from operations, and (2) earnings before extra-ordinary items and discontinued operations, are statistically important in explaining the cross-sectional variability in E/P ratios. These results suggest that the proportion of bottom-line earnings supported by operating cash flows and the proportion of bottom-line earnings due to fundamental operations are manifested in the observed cross-sectional variability of E/P ratios. It should be noted that the regression coefficients for the earnings quality proxies which are based on the difference between earnings before extra-ordinary and discontinued operations an bottom-line accounting earnings generally have a higher level of significance and this may be attributed to the ease of observation for market participants.

Our results are inconclusive regarding the role of systematic risk (beta) in explaining cross-sectional differences in P/E's. This result is consistent with the Beaver and Morse [1978] conjecture. However, the inventory valuation method is not consistently significant with the expected sign. This result is contradictory to that of Craig, et al., [1987]. Possible reasons for our result include (1) the effect of inventory valuation methods on E/P ratios is dominated by other variables, and (2) the security price may have reflected the real cash flow effect of the different inventory valuation methods.

These results demonstrate the usefulness of our proxies for earnings quality in explaining cross-sectional differences in P/E ratios. Future studies regarding the longitudinal and cross-sectional determinants of P/E ratios should incorporate these variables in the analysis,

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TABLE 1

Descriptive Sstatistics- Full Sample 1984

	N	Mean	Std Dev	Minimum	Maximum
E/P	199	0.101239	0.054466	0.009663	0.59008
EB/P	199	0.098313	0.044133	0.009663	0.37092
BETA	199	1.059729	0.362889	0.125000	1.93400
GR	199	0.032372	0.029396	0.000000	0.16282
DIV	199	0.360077	0.395722	0.000000	4.50943
SIZE	199	6.459580	1.967152	1.401700	11.0553
QCF	199	-.403180	0.185617	-.965420	0.90861
QEB	199	0.041842	0.288018	-.831900	2.98090
QCA	199	0.055942	0.029781	-.097969	0.23490
QXA	199	-.001799	0.016030	-.148200	0.07829
QCE	199	1.014023	2.143297	-.476060	27.9184
QXE	199	0.007832	0.369491	-.748800	4.94880
INV	199	0.311558	0.464298	0.000000	1.00000

Product Moment Correlations

	E/P	EB/P	BETA	GR	DIV	SIZE	QCF	QEB	QCA	QXA	QCE	QXE	INV
E/P	1.00	0.88	0.00	-.26	-.26	0.18	0.14	0.30	0.09	-.51	-.19	-.18	-.09
EB/P		1.00	-.04	-.31	-.21	0.28	0.08	-.09	0.08	-.08	-.16	0.07	-.09
BETA			1.00	0.16	-.25	-.10	-.02	0.03	-.10	-.04	-.05	-.06	0.10
GR				1.00	-.04	0.03	0.03	-.02	-.05	0.03	0.01	0.00	0.15
DIV					1.00	0.24	-.40	-.16	0.22	0.17	0.82	0.24	-.06
SIZE						1.00	-.30	-.18	0.34	0.13	0.14	0.10	-.14
QCF							1.00	0.05	-.69	-.13	-.51	-.20	-.03
QEB								1.00	0.18	-.90	-.06	-.47	0.00
QCA									1.00	-.15	0.31	0.16	-.09
QXA										1.00	0.11	0.57	0.04
QCE											1.00	0.24	-.00
QXE												1.00	-.03
INV													1.00

Table 1 - Continued

Definitions of Variables

E/P = Primary Earnings Per Share Divided by Year-end Closing Price

EB/P = Earnings Before Extra-ordinary Items and Discontinued Operations Per Share Divided By Year-end Closing Price

BETA = S&P Monthly Beta from COMPUSTAT CD PLUS

GR = Research and Development Expense Divided by Sales

DIV = Dividend Payout Ratio

SIZE = Logarithm of the Firm's Total Assets

QCF = (Accounting Earnings minus Funds from Operations) Divided by Funds from Operations

QBE = (Accounting Earnings minus Earnings Before Extra-ordinary Items and Discontinued Operations (EB)) Divided by EB

QCA = (Funds from Operations minus Accounting Earnings) Divided by Total Assets

QXA = (Earnings before Extra-ordinary Items and Discontinued Operations minus Earnings) Divided by Total Assets

QCE = (Funds from Operations minus Accounting Earnings) Divided by Accounting Earnings

QXE = (Earnings before Extra-ordinary Items and Discontinued Operations minus Earnings) Divided by Accounting EARNINGS

INV = 1 if FIFO is used and 0 if another inventory method is used

TABLE 2
Descriptive Statistics - Full Sample 1985

	N	Mean	Std Dev	Minimum	Maximum
E/P	199	0.075744	0.035966	0.005076	0.30179
EB/P	199	0.074179	0.034344	0.005076	0.30100
BETA	199	1.079251	0.361094	0.231000	2.05400
GR	199	0.034335	0.030943	0.000000	0.15643
DIV	199	0.407037	0.491465	0.000000	5.80640
SIZE	199	6.585601	1.963099	1.329500	11.1442
QCF	199	-.447397	0.203420	-.926950	1.00730
QEB	199	0.038889	0.256875	-.581100	1.97690
QCA	199	0.059703	0.032685	-.099132	0.20499
QXA	199	-.000636	0.007878	-.061700	0.03352
QCE	199	1.212917	1.585116	-.501830	12.6897
QXE	199	-.004042	0.175029	-.664100	1.38740
INV	199	0.316583	0.466316	0.000000	1.00000

Product Moment Correlations

	E/P	EB/P	BETA	GR	DIV	SIZE	QCF	QEB	QCA	QXA	QCE	QXE	INV
E/P	1.00	0.90	-.09	-.32	-.27	0.26	0.17	0.20	0.05	-.27	-.27	-.20	-.08
EB/P		1.00	-.12	-.31	-.21	0.35	0.14	-.15	0.08	0.10	-.21	0.17	-.10
BETA			1.00	0.28	-.08	-.05	-.04	0.11	-.03	-.09	0.06	-.06	0.11
GR				1.00	-.03	0.04	0.02	0.05	-.02	0.01	-.01	-.05	0.14
DIV					1.00	0.26	-.35	-.15	0.12	0.16	0.61	0.18	-.12
SIZE						1.00	-.26	-.15	0.31	0.16	0.19	0.20	-.16
QCF							1.00	-.01	-.70	-.05	-.69	-.09	0.07
QEB								1.00	0.06	-.85	-.03	-.77	0.09
QCA									1.00	-.01	0.35	0.08	-.17
QXA										1.00	0.08	0.86	-.07
QCE											1.00	0.17	-.04
QXE												1.00	-.01
INV													1.00

Table 2 - Continued

Definitions of Variables

E/P = Primary Earnings Per Share Divided by Year-end Closing Price

EB/P = Earnings Before Extra-ordinary Items and Discontinued Operations Per Share Divided By Year-end Closing Price

BETA = S&P Monthly Beta from COMPUSTAT CD PLUS

GR = Research and Development Expense Divided by Sales

DIV = Dividend Payout Ratio

SIZE = Logarithm of the Firm's Total Assets

QCF = (Accounting Earnings minus Funds from Operations) Divided by Funds from Operations

QBE = (Accounting Earnings minus Earnings Before Extra-ordinary Items and Discontinued Operations (EB)) Divided by EB

QCA = (Funds from Operations minus Accounting Earnings) Divided by Total Assets

QXA = (Earnings before Extra-ordinary Items and Discontinued Operations minus Earnings) Divided by Total Assets

QCE = (Funds from Operations minus Accounting Earnings) Divided by Accounting Earnings

QXE = (Earnings before Extra-ordinary Items and Discontinued Operations minus Earnings) Divided by Accounting EARNINGS

INV = 1 if FIFO is used and 0 if another inventory method is used

TABLE 3
Descriptive Statistics - Full Sample 1985

	N	Mean	Std Dev	Minimum	Maximum
E/P	199	0.066384	0.032394	0.002277	0.29813
EB/P	199	0.065321	0.028001	0.002277	0.25500
BETA	199	1.047673	0.324866	0.212000	2.06500
GR	199	0.035064	0.030623	0.000000	0.13708
DIV	199	0.529256	1.023206	0.000000	9.62500
SIZE	199	6.721212	1.945158	1.356900	11.1926
QCF	199	-.454020	0.214790	-.987760	0.46730
QEB	199	0.061182	0.536066	-.887800	5.14550
QCA	199	0.057850	0.029770	-.014766	0.17270
QXA	199	-.000671	0.013419	-.112500	0.05870
QCE	199	1.760601	5.995240	-.319000	80.6929
QXE	199	0.067725	0.680554	-.837000	7.91410
INV	199	0.336683	0.473767	0.000000	1.00000

Product Moment Correlations

	E/P	EB/P	BETA	GR	DIV	SIZE	QCF	QEB	QCA	QXA	QCE	QXE	INV
E/P	1.00	0.69	0.03	-.21	-.33	0.13	0.29	0.49	-.14	-.45	-.25	-.25	-.11
EB/P		1.00	0.02	-.26	-.30	0.10	0.08	-.19	-.04	0.22	-.22	0.12	-.11
BETA			1.00	0.25	-.06	0.04	0.11	0.03	-.13	-.03	-.02	-.06	-.00
GR				1.00	-.08	0.05	0.03	-.03	0.00	-.00	-.03	-.07	0.17
DIV					1.00	0.14	-.40	-.08	0.28	0.19	0.81	0.39	-.08
SIZE						1.00	-.15	0.00	0.22	-.03	0.08	-.10	-.17
QCF							1.00	0.23	-.71	-.28	-.39	-.29	0.07
QEB								1.00	-.06	-.93	-.05	-.36	-.01
QCA									1.00	0.06	0.33	0.13	-.16
QXA										1.00	0.09	0.59	0.00
QCE											1.00	0.15	-.06
QXE												1.00	-.02
INV													1.00

Table 3 - Continued

Definitions of Variables

E/P = Primary Earnings Per Share Divided by Year-end Closing Price

EB/P = Earnings Before Extra-ordinary Items and Discontinued Operations Per Share Divided By Year-end Closing Price

BETA = S&P Monthly Beta from COMPUSTAT CD PLUS

GR = Research and Development Expense Divided by Sales

DIV = Dividend Payout Ratio

SIZE = Logarithm of the Firm's Total Assets

QCF = (Accounting Earnings minus Funds from Operations) Divided by Funds from Operations

QBE = (Accounting Earnings minus Earnings Before Extra-ordinary Items and Discontinued Operations (EB)) Divided by EB

QCA = (Funds from Operations minus Accounting Earnings) Divided by Total Assets

QXA = (Earnings before Extra-ordinary Items and Discontinued Operations minus Earnings) Divided by Total Assets

QCE = (Funds from Operations minus Accounting Earnings) Divided by Accounting Earnings

QXE = (Earnings before Extra-ordinary Items and Discontinued Operations minus Earnings) Divided by Accounting EARNINGS

INV = 1 if FIFO is used and 0 if another inventory method is used

TABLE 4

Descriptive Statistics - Full Sample 1985

	N	Mean	Std Dev	Minimum	Maximum
E/P	199	0.084084	0.046695	0.003200	0.44360
EB/P	199	0.080366	0.037631	0.000326	0.31362
BETA	199	1.116131	0.287122	0.295000	2.22400
GR	199	0.034288	0.031144	0.000000	0.15129
DIV	199	0.426156	0.853125	0.000000	10.0000
SIZE	199	6.829988	1.951119	1.323600	11.3785
QCF	199	-.384396	0.500161	-.971290	5.12970
QEB	199	0.454022	4.609322	-.880690	59.9729
QCA	199	0.056353	0.062520	-.173400	0.77888
QXA	199	-.003000	0.029783	-.412450	0.02300
QCE	199	1.341970	3.110238	-.836860	33.8286
QXE	199	0.010259	0.539553	-.983600	7.38122
INV	199	0.331658	0.471996	0.000000	1.00000

Product Moment COrrelations

	E/P	EB/P	BETA	GR	DIV	SIZE	QCF	QEB	QCA	QXA	QCE	QXE	INV
E/P	1.00	0.74	0.05	-.22	-.18	0.09	0.29	0.12	0.32	-.57	-.27	-.18	-.17
EB/P		1.00	0.07	-.24	-.19	0.10	0.31	-.18	-.23	0.11	-.32	-.03	-.19
BETA			1.00	0.25	-.12	-.05	-.02	-.04	0.01	0.00	0.04	0.05	-.06
GR				1.00	-.15	0.07	-.09	-.04	0.03	0.04	0.09	0.02	0.14
DIV					1.00	0.06	-.09	0.08	0.02	0.03	0.66	0.11	-.04
SIZE						1.00	-.11	0.04	0.13	-.01	0.04	-.10	-.15
QCF							1.00	-.06	-.44	-.08	-.28	-.09	0.06
QEB								1.00	0.34	-.41	0.08	-.18	0.07
QCA									1.00	-.77	0.12	-.07	-.12
QXA										1.00	0.02	0.20	0.02
QCE											1.00	0.38	-.00
QXE												1.00	-.07
INV													1.00

Table 4 - Continued

Definitions of Variables

E/P = Primary Earnings Per Share Divided by Year-end Closing Price

EB/P = Earnings Before Extra-ordinary Items and Discontinued Operations Per Share Divided By Year-end Closing Price

BETA = S&P Monthly Beta from COMPUSTAT CD PLUS

GR = Research and Development Expense Divided by Sales

DIV = Dividend Payout Ratio

SIZE = Logarithm of the Firm's Total Assets

QCF = (Accounting Earnings minus Funds from Operations) Divided by Funds from Operations

QBE = (Accounting Earnings minus Earnings Before Extra-ordinary Items and Discontinued Operations (EB)) Divided by EB

QCA = (Funds from Operations minus Accounting Earnings) Divided by Total Assets

QXA = (Earnings before Extra-ordinary Items and Discontinued Operations minus Earnings) Divided by Total Assets

QCE = (Funds from Operations minus Accounting Earnings) Divided by Accounting Earnings

QXE = (Earnings before Extra-ordinary Items and Discontinued Operations minus Earnings) Divided by Accounting EARNINGS

INV = 1 if FIFO is used and 0 if another inventory method is used

Table 5

Regression results for Model M1
(Full Sample)

$$E/P = \gamma_0 + \gamma_1 BETA + \gamma_2 GR + \gamma_3 DIV + \gamma_4 SIZE + \gamma_5 QCF + \gamma_6 QEB + \gamma_7 INV + e$$

Coefficient with t-statistics in parentheses

Variable	1984	1985	1986	1987
Intercept (+/-)	0.087 (6.140)*	0.064 (7.063)*	0.067 (7.891)*	0.081 (5.237)*
BETA (+/-)	-0.000 (-0.006)	0.001 (0.130)	0.004 (0.982)	0.011 (1.160)
GR (-)	-0.493 (-4.764)*	-0.405 (-6.405)*	-0.231 (-4.089)*	-0.262 (-2.740)**
DIV (-)	-0.036 (-6.015)*	-0.017 (-5.654)*	-0.008 (-6.288)*	-0.009 (-3.230)*
SIZE (+)	0.010 (5.825)*	0.008 (8.090)*	0.003 (3.604)*	0.003 (2.012)**
QCF (+)	0.055 (4.072)*	0.055 (6.891)*	0.033 (4.780)*	0.033 (6.688)*
QEB (+)	0.047 (6.420)*	0.043 (8.001)*	0.027 (11.395)*	0.002 (3.222)*
INV (+)	-0.000 (-0.063)	-0.003 (-0.675)	-0.005 (-1.418)	-0.015 (-2.535)**
	System R^2	.481		

see Tables 1-4 for definitions of the variables

* : significant at .001 level, two tailed test
**: significant at .05 level, two tailed test

Table 6

Regression results for Model M1
(Outliers Deleted)

$$E/P = \gamma_0 + \gamma_1 \, BETA + \gamma_2 \, GR + \gamma_3 \, DIV + \gamma_4 \, SIZE + \gamma_5 \, QCF + \gamma_6 \, QEB + \gamma_7 \, INV + e$$

Coefficient with t-statistics in parentheses

Variable	1984	1985	1986	1987
Intercept (+/-)	0.086 (5.848)*	0.070 (8.047)*	0.065 (7.736)*	0.074 (5.940)*
BETA (+/-)	-0.004 (-0.550)	-0.006 (-1.447)	0.002 (0.360)	0.012 (1.720)
GR (-)	-0.470 (-4.483)*	-0.398 (-6.554)*	-0.265 (-4.697)*	-0.259 (-3.346)*
DIV (-)	-0.054 (-5.369)*	-0.040 (-8.280)*	-0.028 (-7.294)*	-0.008 (-2.232)**
SIZE (+)	0.010 (5.809)*	0.009 (8.205)*	0.005 (4.795)*	0.003 (2.588)**
QCF (+)	0.035 (2.542)**	0.035 (4.569)*	0.022 (3.406)*	0.032 (8.060)*
QEB (+)	0.046 (6.218)*	0.043 (8.761)*	0.028 (12.216)*	0.038 (1.720)
INV (+)	-0.000 (-0.077)	-0.002 (-0.635)	-0.003 (-0.810)	-0.011 (-2.383)**

System R^2 .504

see Tables 1-4 for definitions of the variables

* : significant at .001 level, two tailed test
**: significant at .05 level, two tailed test

Table 7

Regression results for Model M2
(Full Sample)

$$E/P = \gamma_0 + \gamma_1 BETA + \gamma_2 GR + \gamma_3 DIV + \gamma_4 SIZE + \gamma_5 QCE + \gamma_6 QXE + \gamma_7 INV + e$$

Coefficient with t-statistics in parentheses

Variable	1984	1985	1986	1987
Intercept (+/-)	0.087 (5.670)*	0.047 (5.148)*	0.056 (5.864)*	0.072 (4.292)*
BETA (+/-)	-0.002 (-0.246)	0.004 (0.783)	0.009 (1.601)	0.015 (1.447)
GR (-)	-0.483 (-4.331)*	-0.416 (-6.377)*	-0.273 (-4.028)*	-0.308 (-2.962)**
DIV (-)	-0.041 (-3.451)*	-0.012 (-3.005)**	-0.011 (-3.306)*	-0.005 (-0.995)
SIZE (+)	0.008 (4.299)*	0.008 (7.240)*	0.003 (2.417)**	0.002 (1.411)
QCE (-)	-0.001 (-0.240)	-0.006 (-4.852)*	0.000 (0.401)	-0.002 (-1.502)
QXE (-)	-0.020 (-3.222)*	-0.044 (-5.165)*	-0.008 (-2.645)**	-0.009 (-1.533)
INV (+)	-0.005 (-0.845)	0.000 (0.018)	-0.006 (-1.366)	-0.013 (-2.020)**
		System R^2	.315	

see Tables 1-4 for definitions of the variables

* : significant at .001 level, two tailed test
**: significant at .05 level, two tailed test

Table 8

Regression results for Model M2
(Full Sample)

$$E/P = \gamma_0 + \gamma_1\, BETA + \gamma_2\, GR + \gamma_3\, DIV + \gamma_4\, SIZE + \gamma_5\, QCE + \gamma_6\, QXE + \gamma_7\, INV + e$$

Coefficient with t-statistics in parentheses

Variable	1984	1985	1986	1987
Intercept (+/-)	0.094 (6.009)*	0.062 (6.878)*	0.061 (6.624)*	0.072 (5.530)*
BETA (+/-)	-0.009 (-1.091)	-0.005 (-1.118)	0.005 (1.018)	0.014 (1.934)
GR (-)	-0.408 (-3.617)*	-0.380 (-6.085)*	-0.295 (-4.541)*	-0.220 (-2.728)**
DIV (-)	-0.058 (-4.621)*	-0.038 (-6.608)	0.025 (-4.502)*	-0.007 (-1.807)
SIZE (+)	0.008 (4.374)*	0.008 (7.531)*	0.004 (3.799)*	0.003 (2.073)**
QCE (-)	-0.001 (-0.190)	-0.004 (-2.358)**	-0.004 (-2.240)**	-0.011 (-5.750)*
QXE (-)	-0.017 (-2.265)**	-0.049 (-5.426)*	-0.025 (-4.094)*	-0.119 (-3.937)*
INV (+)	-0.006 (-0.975)	-0.001 (-0.297)	-0.005 (-1.176)	-0.010 (-2.169)**
	System R^2		.365	

see Tables 1-4 for definitions of the variables

* : significant at .001 level, two tailed test
**: significant at .05 level, two tailed test

Table 9

Regression results for Model M3
(Full Sample)

$$E/P = \gamma_0 + \gamma_1 \text{ BETA} + \gamma_2 \text{ GR} + \gamma_3 \text{ DIV} + \gamma_4 \text{ SIZE} + \gamma_5 \text{ QCA} + \gamma_6 \text{ QXA} + \gamma_7 \text{ INV} + e$$

Coefficient with t-statistics in parentheses

Variable	1984	1985	1986	1987
Intercept (+/-)	0.073	0.052	0.063	0.078
	(5.707)*	(5.768)*	(7.143)*	(6.291)*
BETA (+/-)	0.001	-0.001	0.006	0.013
	(0.171)	(-0.158)	(1.257)	(1.859)
GR (-)	-0.506	-0.401	-0.266	-0.300
	(-5.428)*	(-6.281)*	(-4.445)*	(-3.872)*
DIV (-)	-0.029	-0.023	0.008	-0.009
	(-5.092)*	(-7.501)	(-5.899)*	(-3.908)*
SIZE (+)	0.009	0.008	0.003	0.003
	(5.688)*	(7.262)*	(3.188)*	(2.754)**
QCA (-)	-0.085	-0.063	-0.151	-0.322
	(-1.112)	(-1.301)	(-2.927)**	(-6.590)*
QXA (-)	-1.347	-1.426	-1.105	-1.420
	(-10.374)*	(-7.581)*	(-10.593)*	(-13.963)*
INV (+)	-0.002	-0.003	-0.006	-0.014
	(-0.287)	(-0.688)	(-1.675)	(-2.987)**

System R^2 .534

see Tables 1-4 for definitions of the variables

* : significant at .001 level, two tailed test
**: significant at .05 level, two tailed test

Table 10

Regression results for Model M3
(Outliers Deleted)

$$E/P = \gamma_0 + \gamma_1 \text{BETA} + \gamma_2 \text{GR} + \gamma_3 \text{DIV} + \gamma_4 \text{SIZE} + \gamma_5 \text{QCA} + \gamma_6 \text{QXA} + \gamma_7 \text{INV} + e$$

Coefficient with t-statistics in parentheses

Variable	1984	1985	1986	1987
Intercept (+/-)	0.078	0.064	0.064	0.079
	(5.886)*	(7.365)*	(7.325)*	(6.084)*
BETA (+/-)	-0.003	-0.007	0.004	0.013
	(-0.524)	(-1.551)	(0.841)	(1.762)
GR (-)	-0.461	-0.385	-0.285	-0.256
	(-4.881)*	(-6.339)*	(-4.812)*	(-3.227)*
DIV (-)	-0.054	-0.047	-0.029	-0.008
	(-5.983)*	(-10.406)*	(-6.882)*	(-2.130)**
SIZE (+)	0.009	0.008	0.005	0.003
	(5.834)*	(7.550)*	(4.521)*	(2.625)**
QCA (-)	-0.016	-0.022	-0.151	-0.336
	(-0.218)	(-0.502)	(-3.124)**	(-5.715)*
QXA (-)	-1.230	-1.434	-1.128	-1.375
	(-9.599)*	(-8.329)*	(-11.074)*	(-4.006)*
INV (+)	-0.002	-0.003	-0.004	-0.013
	(-0.292)	(-0.708)	(-1.117)	(-2.767)**
		System R^2	.496	

see Tables 1-4 for definitions of the variables

* : significant at .001 level, two tailed test
**: significant at .05 level, two tailed test

Table 11

Regression results for Model M1
(Full Sample, Funds Flow Only)

$$EB/P = \gamma_0 + \gamma_1 \text{ BETA} + \gamma_2 \text{ GR} + \gamma_3 \text{ DIV} + \gamma_4 \text{ SIZE} + \gamma_5 \text{ QCF} + \gamma_6 \text{ INV} + e$$

Coefficient with t-statistics in parentheses

Variable	1984	1985	1986	1987
Intercept (+/-)	0.076 (6.540)*	0.053 (6.112)*	0.062 (7.394)*	0.071 (5.985)*
BETA (+/-)	0.002 (0.282)	0.002 (0.522)	0.007 (1.708)	0.015 (2.213)**
GR (-)	-0.508 (-5.988)*	-0.394 (-6.468)*	-0.284 (-5.051)*	-0.303 (-4.086)*
DIV (-)	-0.021 (-4.179)*	-0.016 (-5.645)*	-0.009 (-6.898)*	-0.009 (-4.524)*
SIZE (+)	0.009 (6.258)*	0.009 (8.483)*	0.003 (2.797)**	0.003 (2.634)**
QCF (+)	0.029 (2.574)**	0.040 (5.328)*	0.013 (2.074)**	0.029 (8.263)*
INV (+)	0.001 (0.173)	-0.001 (-0.374)	-0.003 (-1.015)	-0.010 (-2.310)**
	System R^2		.345	

see Tables 1-4 for definitions of the variables

* : significant at .001 level, two tailed test
**: significant at .05 level, two tailed test