THE DETERMINATION OF MARGINAL STOCKHOLDER TAX RATES AND ITS USE IN TESTING THE CLIENTELE EFFECT

By

BRIAN D. MARTIN

Bachelor of Business Administration

Stephen F. Austin State University

Nacogdoches, Texas

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Name: Brian D. Martin Date of Degree: July, 1975

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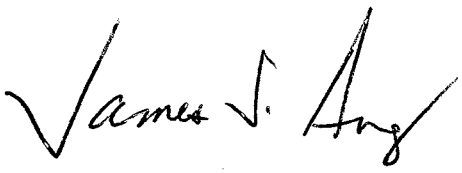
Purpose of Study: Marginal Stockholder Tax Rates play an important role in many facets of modern financial theory. This paper was intended to extend an earlier study by Edwin J. Elton and Martin J. Gruber by redefining their test statistic in accordance with modern capital market theory. By observing the ex-dividend behavior of common stocks, it is theoretically possible to infer marginal stockholder tax rates. Identification of such rates would allow an examination of the relationships between those rates and a firm's dividend policy as measured by its dividend yield and payout ratio. A significant relationship between these variables would lend support to Miller and Modigliani's Clientele Effect (each firm is assumed to have a body of stockholders who find its dividend policy optimum).

Findings and Conclusions: The study found that marginal stockholder tax rates could be inferred using the newly defined test statistic. Although results concerning a firm's dividend yield and marginal stockholder tax rates were less than definitive, a plausible explanation for the outcome is offered. A significant relationship was found between payout ratios and implied tax rates, however, using the redefined statistic. On the basis of the tests conducted in this study, it appears the adjusted (redefined) statistic is a better measure for determining marginal stockholder tax rates than the statistic used by Elton and Gruber.

ADVISER'S APPROVAL 

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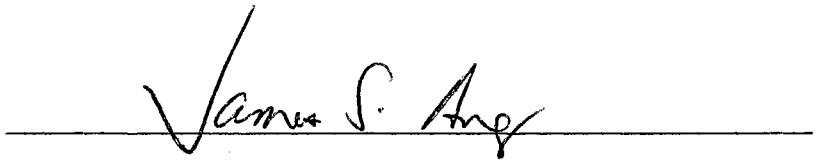

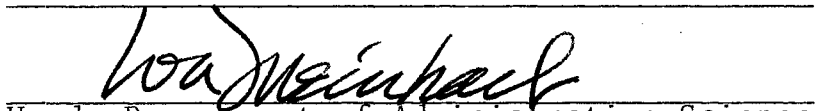

Head, Department of Administrative Science

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This report also serves as the culmination of a rewarding collegiate educational experience. Without the encouragement, support and faith offered by my parents, Mr. and Mrs. B. D. Martin, accomplishment of this milestone would have been extremely difficult. Neither can proper thanks be expressed to my "second" mother and father, Dr. and Mrs. Ardis H. White, for their support and wisdom in reaching this end and beginning. Finally, but foremost, I wish to express my gratitude to my wife, Lanita, for her constant encouragement and endless typing in providing me the opportunity to complete my graduate education.

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CHAPTER I

INTRODUCTION

The isolation, definition and final clarification of basic decision variables is essential to the establishment of primary theoretical relationships. This threefold problem is common to all areas of scientific and sociological research.

The present study is concerned with the definition and final clarification stages of the aforementioned problem relative to the financial variable, Marginal Stockholder Tax Brackets. In financial literature, this variable is often defined via "the assuming away" technique (i.e., problem characteristics are forgotten and a particular value is assumed), consequently leaving its value open to question. This could have the effect of strongly biasing test results wherever this variable is used.

The definition and clarification of this variable is a significant problem in light of its wide use in financial and economic theory. Marginal stockholder tax brackets play an important role in descriptive allocation models, stock valuation models, and in normative investment and dividend policy models. Perhaps of greatest importance is its use in establishing a firm's cost of capital.

Purpose and Scope

The purpose of this study is to refine and test the method proposed by Edwin J. Elton and Martin J. Gruber for determining marginal stockholder tax brackets taking into account individual firm volatility relative to general market movements.[1] Identification of such tax rates would then make it possible to examine the relationships between those rates and a firm's dividend policy as measured by its dividend yield and payout ratio. Any significant relationship in these variables would tend to support the hypothesis advanced by Miller and Modigliani concerning a "clientele effect."[2]

Chapter II will be devoted to a discussion of relevant literature on marginal stockholder tax rates pertaining to the basic Elton and Gruber model and the proposed modifications that provide the basis for this study.

The third chapter will examine the development of the Elton and Gruber model, the proposed modifications and the theoretical framework underlying both. Chapter IV examines the basic methodology of the research design including a discussion of hypotheses, variables, data collection and method of analysis.

Chapter V, Analysis of Results, will review the findings of model tests in an effort to determine if realistic marginal stockholder tax rates can be inferred and, if so, whether a clientele effect as such, exists.

Chapter VI, Summary and Conclusions, will examine the implications of the results presented in the previous chapter.

FOOTNOTES

[1]Edwin J. Elton, and Martin J. Gruber, "Marginal Stockholder Tax Rates and the Clientele Effect," Review of Economics and Statistics, February, 1970, pp. 68-74.

[2]M. Miller and F. Modigliani, "Dividend Policy, Growth and the Valuation of Shares," Journal of Business, October, 1961, pp. 411-433.

CHAPTER II

LITERATURE REVIEW

The determination of marginal stockholder tax rates is of importance to many areas of finance. Elton and Gruber, in their article, mention and reference its importance in stock valuation models, normative investment and dividend policy models and in descriptive allocation models. Vincent Jolivet, in his article, "The Weighted Average Marginal Tax Rate on Dividends Received by Individuals in the U. S.," lists its potential use in forecasting macroeconomic effects of changes in total dividend payments and in formulating national income tax laws as two additional reasons for its desirability.

When Jolivet's study was published in 1966, he reported that to his knowledge, only two previous estimates of the weighted average marginal tax rate on dividends received by individuals had been made. These two studies were by D. M. Holland who arrived at an estimate of 55.6 percent for 1952[1] and Gordon Donaldson, who, using 1959 data, estimated a weighted average tax "range" of from 52 percent to 63 percent.[2]

Jolivet adds that since neither of the studies cited focused directly on the calculation of marginal tax rates, failure to take into account differences in tax rates paid

by different types of individual stockholders would lend considerable doubt as to their validity. Consequently, because such considerations were included in his study, he felt his estimate of 36 percent for 1965 was very likely the most accurate estimate to date.

Basically, Jolivet analyzed historic tax returns published by the U.S. Treasury Department, Internal Revenue Service to determine the average marginal stockholder tax rate. J. Fred Weston and Eugene F. Brigham also attempted to define stockholder tax brackets using a method similar to Jolivet. For the year 1965, they estimated a tax rate of 46 percent.

Elton and Gruber pointed out in their study on marginal tax rates, however, that neither Jolivet's nor Weston and Brigham's estimate was fully comparable to marginal stockholder tax rates as calculated by their method. This is due to the fact that earlier studies looked at <u>average</u> <u>weighted</u> figures based on historic tax data. Elton and Gruber, on the other hand, proposed and tested a method of inferring marginal stockholder tax rates by observing the ex-dividend behavior of a corporation's common stock. It is this method with some modification that provides the basis for the present study.

Table I is included in this chapter to present summarily the results of a number of studies on the subject of marginal stockholder tax rates. This is a reproduction of

TABLE I

PRICE DECLINE ON EX-DIVIDEND DATES AND IMPLIED TAX BRACKETS

Dates	Number of Observations	Price Measured From Close to:	Average Decline As Percentage of Dividend	Implied Tax Bracket
1951 - 1955[a]	2500	Opening	81%	32%
1966 - 1967[b]	4148	Close	79	35
1949 - 1950[c]	199	Opening	92	13
1953[c]	200	Opening	85	30
1948 - 1949[d]	43	Close	96	7

[a]Source: After Readett.
[b]Source: After Elton and Gruber.
[c]Source: After Cambell and Beranek.
[d]Source: After Durand and May.

a table given in Richard A. Brealey's 1971 book, Security Prices in a Competitive Market.

The study by P. B. Readett, Jr. was a thesis completed in 1956 at the Massachusetts Institute of Technology on the topic "The Price Behavior of Stocks on their Ex-Dividend Dates." The author was able to find no other information on this study than what is contained in Table I.

The study done by James A. Cambell and William Beranek examined the percentages of price drop-offs on a common stock's ex-dividend day. The 1953 test was based on 200 dividends ranging from $.375 to $2.00. From the average percentage drop-off, a marginal tax rate was then inferred.

A similar study performed by David Durand and Alan M. May examined the price drop-off of American Telephone and Telegraph stock for 45 consecutive dividend periods from 1948 to 1959. The results of their tests indicated the price fell by less than the amount of the dividend though not by very much less. J. C. Francis, in his book, Investments: Analysis and Management, uses the Durand and May stucy to support his statement that the value of a stock is the present value of its future income. He says that the small difference between the drop-off and the amount of the dividend may be attributed to tax effects.

The above cited studies cover nearly all research done to date on the subject of marginal stockholder tax rates.

FOOTNOTES

[1]D. M. Holland, Dividends Under the Income Tax, Princeton, 1962.

[2]Gordon Donaldson, "In Defense of Preferred Stocks," Harvard Business Review, July/August, 1962, pp. 127-129.

CHAPTER III

THE THEORETICAL FRAMEWORK

The Basic Elton and Gruber Model

The theory supporting both the original and the present study concerns the relation of the ex-dividend behavior of a corporation's common stock to the marginal tax rates of its stockholders. Simply, common stock sold before it goes ex-dividend carries with it dividend rights; stock sold on or shortly after the ex-dividend date sells at a reduced price due to the dividend retention.

Assuming a rational market, the reduction in price on the ex-dividend day should reflect the value of dividends vis-a-vis capital gains to the marginal stockholders. From this, it can be inferred that since dividends and capital gains are taxable at different rates, the difference in tax rates on these two types of income can and will affect the buy-sell decision. Based on the premise that this formulation of the ex-dividend behavior of common stock prices is correct, it is theoretically possible to infer marginal stockholder tax brackets through observation of common stock ex-dividend behavior.

Definition of Variables and Derivation of the Basic Model

Assuming that stockholders are attempting the maximization of their after-tax wealth, an expression identifying the structural relationship between the ex-dividend behavior of common stock prices and the marginal tax rates of marginal stockholders can be derived.

Let: P_B = the closing price on the day before the stock goes ex-dividend,

P_A = the closing price of the stock on the ex-dividend date,

P_C = the price at which the stock was purchased,

t_o = the tax rate on ordinary income,

t_c = the tax rate on capital gains, and

D = the amount of the dividend.

The per share wealth received by a stockholder selling his common stock immediately prior to the ex-dividend day would be equal to the price he receives for the stock (P_B) less the capital gains tax incurred by owning the stock. Quantitatively, this can be expressed as $[t_c(P_B - P_C)]$.

If, on the other hand, he were to sell the stock on the day it goes ex-dividend, his wealth per share would be equal to the dividend (D) times one minus his marginal tax rate on ordinary income $(1 - t_o)$ plus the after-tax return on the sale of the stock which quantitatively is equal to $[P_A - t_c (P_A - P_C)]$.

In order to determine the marginal tax bracket of a stockholder (or group of stockholders), it is necessary to identify that point where he is indifferent to the timing of his sale because the wealth he receives from either course of action is the same, structurally:

$$P_B - t_c (P_B - P_C) = P_A - t_c (P_A - P_C) + D(1 - t_o) \quad (1)$$

Through algebraic manipulation and rearrangement of equation (1), we get:

$$\frac{P_B - P_A}{D} = \frac{1 - t_o}{1 - t_c}. \quad (2)$$

The left-hand side of the above expression, $(P_B - P_A)/D$ represents that ex-dividend behavior causing a stockholder with a particular set of tax rates t_o and t_c to be indifferent concerning the timing of purchases and sales of common stock.

From this one can reason that in order for the market to be in equilibrium, price movement on the ex-dividend day must occur such that marginal buyers and sellers of the stock are indifferent as to whether they buy before or after the ex-dividend date. Consequently, an ex-dividend price too high or too low would force marginal buyers and/or sellers to alter the timing of their market transactions until such time as prices were in equilibrium.

As a result, the statistic $(P_B - P_A)/D$ should accurately reflect the marginal tax rates of the marginal

stockholders and one should be able to infer these tax rates by observing $(P_B - P_A/D)$. From equation (2), the isolation of t_o is as follows:[1]

$$\text{Let } X = (P_B - P_A)/D$$

$$t_c = t_o/2$$

$$X = \frac{1 - t_o}{1 - t_o/2}$$

$$(1 - t_o/2)X = 1 - t_o$$

$$(X - \frac{t_o X}{2}) = 1 - t_o$$

$$t_o + X - \frac{t_o X}{2} = 1$$

$$t_o - \frac{t_o X}{2} = 1 - X$$

$$t_o(1 - X/2) = 1 - X$$

$$t_o = \frac{1 - X}{1 - X/2} \qquad (3)$$

This isolation of t_o holds true as long as the implied tax bracket is less than .50. Elton and Gruber discovered that for values of $(P_B - P_A)/D \leq .6667$, $t_o \geq .50$. Since the capital gains tax (t_c) must be the lesser of one-half t_o or .25, the numerator of equation (2), $(1 - t_c)$, is equal to .75. Therefore,

$$X = \frac{1 - t_o}{.75}$$

$$.75X = 1 - t_o$$

$$t_o + .75X = 1$$

$$t_o = 1 - .75X \qquad (4)$$

Results of the Elton and Gruber Study

In order to test their hypothesis that through observation of $(P_B - P_A)/D$, marginal tax rates of marginal stockholders could be inferred, Elton and Gruber examined the ex-dividend behavior of all stocks listed on the New York Stock Exchange that payed a dividend during the period April 1, 1966, to March 31, 1967, and were traded on both the ex-dividend day and the day before. Foreign corporations and closed-end mutual funds were eliminated from their study sample. P_B and P_A were defined as mentioned earlier, with closing prices used instead of opening prices. The use of closing rather than opening prices stems from the fact that on the ex-dividend day all orders on the specialists' books are adjusted by the amount of the dividend. Elton and Gruber felt, correctly it seems, that the first trade of the day would most likely be a biased estimate of the equilibrium market price. As there was no theoretical method for handling such a bias, opening prices were rejected.

The results of the Elton and Gruber study found the implied marginal stockholder tax bracket for the entire 4148 observation study to be 36.4 percent with the probability that the price fell by the amount of the dividend (or more) less than 1½ percent. In comparison, they noted

that the Jolivet study mentioned in Chapter II, arrived at a marginal tax rate of 36 percent for the year 1965 through analysis of historic tax returns.

Concerning the possible bias resulting from the use of closing prices on the ex-dividend day, the authors performed two adjustments to minimize such effects. First, New York Stock Exchange movement for the period under study was calculated. In short, the index increased during six months and decreased during six months. Its ending level of 49.52 turned out to be very close to its beginning mark of 48.76. The authors state that it was for these two reasons, that this time period was selected.

The first check used by Elton and Gruber stems from the possibility that stocks went ex-dividend primarily on days the market was increasing. To account for this, the number of stocks going ex-dividend on a particular day were counted and multiplied by the change in the New York Stock index. They found a net change of two-tenths of a cent per stock; so small that results would have been affected minimally.

Adjustment of test data by the market index provided the second check. To do this, the price on the ex-dividend day was multiplied by the ratio of the index on the day before the stock went ex-dividend to the index on the ex-dividend day. Recomputation of results lowered the tax bracket to 35.1 percent.

At this point, the authors were careful to footnote that for firms paying very small dividends $(P_B - P_A)/D$ is

occasionally very large. They state that elimination of various groups of low dividend paying stocks only reduced the variance. No clarification of what was considered a low dividend paying stock was made. In other less stable time periods, elimination of such groups may result in more than a simple reduction in variance of the test statistic.

Having reached this point, the authors hypothesized that the dividend policy of a firm affects the tax rate of its marginal stockholders. Since a method for determining marginal stockholder tax brackets appears to have been discovered, any significant correlation found to exist between variables comprising a firm's dividend policy and the marginal tax bracket would tend to support the clientele effect hypothesized by Miller and Modigliani. The two variables which basically reveal a firm's dividend policy are its dividend yield (dividend/price of stock) and payout ratio (dividend/earnings).

Elton and Gruber hypothesized and consequently found according to their tests that investors holding stocks which have high dividend yields are in low tax brackets relative to stockholders who hold stocks with low dividend yields and that firms with high payout ratios attract stockholders in relatively lower tax brackets than firms with low payout ratios. Spearman's Rank Correlation Coefficient was then used to judge the extent of the relationship between both the test statistic and dividend yield and payout ratio. Respectively, the coefficients were .9152 and .7939, both significant at the 1 percent level.

The Adjusted Model

Definition of Variables and Derivation Of the Adjusted Model

Reconstruction of Elton and Gruber's method using a different time period and sample resulted in negative tax rates and tax rates in excess of 100 percent.[1] Based on the preceding presentation of theoretical relationships, the occurrence of a negative tax rate could be attributed to a rise in the price of a given common stock on its ex-dividend day while a tax rate in excess of 100 percent stems from a fall in the price of a given common stock greater than the amount of the dividend.

On any given day, the movement in the price of a stock is a function of both a firm effect and a market effect in addition to the loss of the dividend right. The author felt that Elton and Gruber's method contained an inherent bias in its implicit assumption that all firms react the same to changes in the general market index.

Individual firm volatility relative to a general market index is a factor that cannot be ignored when studying stock price movements.[2] The present study as mentioned at the outset, is concerned with the determination of marginal stockholder tax brackets while considering such a measure of volatility.

In order to account for this measure, the numerator of the test statistic as defined by Elton and Gruber was redefined. Leaving P_B, P_A, t_o, t_c, and D as originally

defined, the following new variables can be introduced:

SPA = the Standard and Poor's 500 Composite Stock Index on the ex-dividend day of a particular common stock,

SPB = the Standard and Poor's 500 Composite Stock Index on the day prior to the ex-dividend day of a particular common stock,

TBR = the risk-free rate of return; in this case, the rate on new issues of three-month Treasury Bills,

R_m = the market rate of return; in this case, the actual return on the Standard and Poor's 500 Composite Stock Index over a given period of time,

β = Beta; the volatility measure for a given common stock determined by a 52-week regression analysis,

A = Alpha, the amount of return produced by the stock, on <u>average</u>, independent of the return on the market; it is a measure of the specific component of a stock's return, determined with the beta value,

RORA = a firm's actual rate of return over a given period of time,

RORE = a firm's estimated rate of return over a given period of time, and

RORF = the rate of return of a firm arising from the firm effect.[3]

Quantitatively, the derived return variables are as follows:

$$R_m = (SPA - SPB)/SPB,$$

$$RORA = (PA - PB)/PB,$$

$$RORE = TBR/260 + \beta\,[(SPA - SPB)/SPB - TBR/260] + A/5,$$

$$RORF = RORA - RORE.$$

From this, it can be deducted that RORF theoretically represents the hypothesized percentage change of a particular common stock price between the ex-dividend day and the day prior. The adjusted numerator for the test statistic becomes RORF x PB. Due to the manner in which the numerator was redefined, it is necessary to negate the left-hand side of the expression in order to complete the relationship similarity between the unadjusted and adjusted test statistic. Therefore, the relationship between the test statistic and the tax rates, t_o and t_c is:

$$-\frac{RORF \times PB}{D} = \frac{1 - t_o}{1 - t_c}.$$

The remainder of the structural relationships are the same with one very important exception. When the test statistic, both unadjusted and adjusted, is greater than one, (at which point the implied tax rate equals zero), the theoretical relationship no longer holds. As long as the test statistic incurs a value between zero and one, a marginal tax rate can be inferred to account for the fact, hypothetically, that the stock price decreased by an amount smaller than the amount

of the dividend. However, when the test statistic exceeds 1, this indicates the price fell by an amount greater than the dividend and tax rates cannot then be inferred.[4]

Since a portion of the drop in the price of a given stock on a particular day can be attributed to the market and that stock's volatility relative to the market, it is correct according to capital market theory to assume that this could partially account for a test statistic value greater than one. However, the adjusted test statistic was redefined in accordance with such theory and values exceeding one cannot be accounted for.

Chapter IV presents the research design used in testing the validity of the adjusted statistic relative to the unadjusted statistic. Chapter V then presents the results of the testing procedure.

FOOTNOTES

[1]Studies conducted by members of an investments class at Oklahoma State University revealed indeterminant tax rates when using Elton and Gruber's test statistic.

[2]John W. Aber, Beta Coefficients and Models of Security Returns, New York: Lexington Books, 1973.

[3]The firm effect is a part of capital market theory denoting that portion of a common stock's price movement directly and solely attributable to the unique market position of the firm.

[4]For purposes of maintaining a consistent relationship between tax rates and test statistic values, whenever the value of the test statistic exceeded one, the resulting tax rate was computed according to the formula 1-X. Failure to make this adjustment would have biased calculations of means and standard deviations due to an anomoly in the original equation relating the test statistic with implied tax rates. This phenomenon peaked when the test statistic assumed a value of two.

CHAPTER IV

RESEARCH DESIGN

Sample Selection

The sample selected for this study is comprised of 200 common stocks listed on the New York Stock Exchange which paid a dividend each quarter during the period January 1, 1973 to December, 29, 1974. The time period was divided into two one-year periods for purposes of calculating Alpha and Beta values and determining quarterly earnings.

In order to select a properly diversified group of firms, the Value Line Intercollegiate Contest in Stock Market Judgement list of firms was used. In this brochure, 1500 firms are classified into 25 groups according to their beta values as determined by the Value Line method. With each group containing approximately 60 firms, a random number list was established and the first eight firms of each group (following the list), meeting the criteria of listing on the New York Stock Exchange and quarterly dividend payments for the two-year period under study were chosen. A list of the firms included in the study is contained in Appendix A. Appendix B contains the Value Line Source List of Firms.

Data Collection

All data used in the study was collected or derived from other data collected by hand from sources available at the Oklahoma State University Library. The sources used in collecting all such data are listed below.

For each firm, values for the following variables were collected:

(1) The actual rate of return for each week of the two-year period,

(2) The actual rate of return between the ex-dividend date and the day prior,

(3) Standard and Poor's 500 Composite Stock Index actual rate of return for each week of the two-year period,

(4) Standard and Poor's 500 Index actual rate of return for the ex-dividend date and the day prior,

(5) The amount of the dividend payment for each quarter of the two-year period,

(6) The yearly earnings for each of the two years,

(7) The rate on new issues of three-month Treasury Bills, and

(8) and (9) The Alpha and Beta Values for each year of the two-year period.

The stock and index prices needed to calculate variables (1), (2), (3), (4), and (8) were obtained from Standard and Poor's ISL Daily Stock Market Transaction

Records. The quarterly dividend payments were also obtained from that source. The yearly earnings (6) figures were taken from Moody's Common Stock Handbook, Fourth Quarter, 1974. Since quarterly earnings frequently fluctuate widely from quarter to quarter and dividends fluctuate much less frequently, a yearly earnings figure was taken and divided by four in order to smooth out the earnings figures used. Variable (7) was taken from the appropriate 1973, 1974, and 1975 issues of the Federal Reserve Bulletin.

Hypotheses

The hypotheses for the present study consists of a basic hypothesis with several sub-hypotheses.

I. Marginal Stockholder Tax Brackets can be inferred by observing behavior of the test statistic at the .10 level of significance
   (a) Using PB - PA/D.
   (b) Using RORF x PB/D.

From support of Hypothesis I, the dividend policy of a firm affects the tax rate of its marginal stockholders.

   (c) Investors who hold stocks which have high dividend yields are in low tax brackets relative to stockholders who hold stocks with low dividend yields.
   (d) Firms with high payout ratios attract stockholders in relatively lower tax brackets than low payout firms.

Test Design

All test computations were performed via the Statistical Analysis System, authored by Anthony Barr and James Goodnight of North Carolina State University, available through the Oklahoma State University Computer Center.

Nine runs were performed; one for each of the eight quarterly periods and one using all 1600 sample observations. A listing of the entire program is given in Appendix C. Appendix C contains the relevant test results from one of the eight periods. Since an analysis of test results is presented in Chapter V, only a sample (one quarter out of eight) is presented in Appendix C. Readers wishing additional information on the remaining seven quarters may see the faculty advisor on this report, Dr. James S. Ang.

Basically, the computer program utilized was structured as follows:

(1) After inputting initial values for the eight variables associated with each firm (Alpha, Beta, Earnings, etc.), values for test-created variables (test statistic, tax rates, D/P, D/E, etc.) were computed and printed. NOTE: For simplicity, the Variables X1 and X2 were used to denote the adjusted and unadjusted test statistics respectively. Likewise, TO1 and TO2 represent the marginal tax rates computed with, respectively, the adjusted and unadjusted test statistics.

(2) For informational purposes, a Spearman Rank Correlation Coefficient was calculated on the newly defined numerator (RORF x PB) and the actual change in price that occurred between PB and PA. (These two values are referred to in the computer run as CP and PC respectively.) In addition to these two

values, correlation coefficients were also computed for X1, X2, TO1, TO2, DP and DE values taken from the 200 observations in the particular quarter being run (or 1600 in the case of the entire sample.)

(3) Next, simple statistics (mean, standard deviation, variance, etc.) on the test variables for the entire 200-firm sample for one quarter were computed.

(4) Based on the mean values of the test statistics (X1 and X2), tax rates TO1 and TO2 were computed for the entire 200-firm sample for the quarter being studied.

(5) At this point, the 200-firm sample is ranked by DP value (dividend yield) from lowest to highest and divided into deciles.

(6) Simple statistics (mean, standard deviation, etc.) for the X1, TO1, X2 and TO2 values associated with each DP decile are calculated and printed out.

(7) For simpler viewing, the table printed in this test gives the mean values for X1, TO1, X2, TO2, DP, and DE for each of the DP deciles without the other simple statistics.

(8) Spearman's Correlation Coefficients by DP value are calculated for the test created variables X1, X2, TO1, TO2, DP, and DE.

(9) Based on the mean values for X1 and X2, tax rates TO1 and TO2 are computed for each of the DP deciles.

(10) - (14) Repeats steps (5) through (9) for DE (pay-out ratio) deciles.

This completes the computation portion of the test analysis. Chapter V examines the findings of the nine computer runs.

CHAPTER V

ANALYSIS OF TEST RESULTS

The difficulty inherent in the interpretation and analysis of test results is a common one. Quite often, this is attributable to the fact that the experimenter can only see the results from his viewpoint. The present study is no exception to this phenomenon. This chapter will present some of the findings of the computer analysis used in this study. The reader may wish to refer to the computer program outline included in Chapter IV as results are presented. Chapter VI focuses on the conclusions that may be drawn from these findings relative to the initial hypotheses.

Spearman's Rank Correlation Coefficient was calculated for the actual change in price between the ex-dividend and the prior day for a particular stock and the hypothesized price change as defined in the numerator of the test statistic (RORF x PB). The actual price change is denoted by PC and the hypothesized by CP. The results of the corrleation analysis are presented in Table II.

While the correlation coefficients are not extremely high (over .900), they are nevertheless high enough to indicate that at least a sizeable portion of the price movement

associated with a particular stock is accounted for by modern capital market theory.

TABLE II

CORRELATION COEFFICIENTS FOR PC AND CP

Period	Correlation Coefficient*
1	.855676
2	.787686
3	.843168
4	.786401
5	.756288
6	.822061
7	.766124
8	.830426
Entire Sample	.805380

*Significant at the .0001 level

Table III presents the simple statistics of test-created variables for the 200-firm sample in each of the eight periods and for the total 1600 observation sample.

From the table, one can see that the range of X1 values (.4456 to 1.2163) was smaller than the range of X2 values (.1891 to 1.8527). At the same time, the associated standard

TABLE III

SIMPLE STATISTICS OF TEST-CREATED VARIABLES FOR 200 FIRM SAMPLE

	X1	X2	TO1	TO2	DP	DE
Period 1 - Mean	1.2163	.9256	-.4801	-.1863	.0088	.4017
Standard Dev.	(7.7569)	(5.7214)	(7.1140)	(5.0620)	(.0050)	(.2608)
Period 2 - Mean	.7117	1.0262	.0410	-.2825	.0103	.4054
Standard Dev.	(5.9183)	(5.6796)	(5.4625)	(5.2625)	(.0053)	(.2590)
Period 3 - Mean	.4456	.1891	.3059	.5284	.0108	.4069
Standard Dev.	(4.8399)	(4.7116)	(4.4410)	(4.1175)	(.0058)	(.2134)
Period 4 - Mean	1.1156	1.8527	-.4291	-1.1259	.0117	.4172
Standard Dev.	(7.2044)	(7.1926)	(6.5219)	(6.6170)	(.0063)	(.2169)
Period 5 - Mean	.4693	.4049	.2911	.3240	.0120	.4765
Standard Dev.	(5.4606)	(5.7755)	(4.5963)	(4.9003)	(.0061)	(.4666)
Period 6 - Mean	1.0889	.6772	-.1790	.1684	.0137	.4825
Standard Dev.	(3.4456)	(4.0560)	(3.2426)	(3.6352)	(.0069)	(.4594)
Period 7 - Mean	.7061	1.1148	.1718	-.2281	.0167	.5075
Standard Dev.	(2.8231)	(3.1753)	(2.4002)	(2.8189)	(.0077)	(.5542)
Period 8 - Mean	.9347	.8996	-.0050	.0232	.0187	.5033
Standard Dev.	(2.4737)	(2.3938)	(2.2238)	(2.1447)	(.0092)	(.4635)
Total - Mean	.8360	.8856	-.0354	-.0974	.0128	.4501
Standard Dev.	(5.3143)	(5.0673)	(4.8074)	(4.5399)	(.0074)	(.3854

deviations were very nearly equal over all eight periods for both the X1 and X2 values and the TO1 and TO2 values. An examination of decile groupings, by payout ratio and by dividend yield for all eight periods reveals that the standard deviations associated with the X1-X2 values and the TO1-TO2 values were also very close to being equal. The implication of this finding is that neither the adjusted nor unadjusted test statistic is superior to the other in distribution qualities.

Additionally, from Table III, it can be seen that although the DP and DE ratios tend to remain stable over time, for the 200 firms taken as a group, the X1-X2 values and consequently the TO1-TO2 values display no such tendencies.

Using the test statistic means calculated for the 200-firm sample for each period, the implied marginal stockholder tax brackets, TO1 and TO2 associated with each period, were computed and are presented in Table IV. The results of this calculation indicate that based on the theoretical relationships used to formulate both the adjusted and unadjusted test statistic, the resulting tax rates show no stability from quarter to quarter nor do they show any discernable pattern of movement.

The calculated tax rates (28 percent adjusted and 20.5 percent unadjusted) for the entire 1600 observation sample over the two-year period studied reveal a slightly lower marginal tax rate for large groups of stocks than was derived by Elton and Gruber (35.1 percent) or Readett (32

TABLE IV

CALCULATION OF TAX BRACKETS TO1 AND TO2
FOR TOTAL 200-FIRM SAMPLE

Period	X1	TO1	X2	TO2
1	1.2163	-.2163	.9256	.1385
2	.7117	.4476	1.0262	-.0262
3	.4456	.6658	.1891	.8582
4	1.1156	-.1156	1.8527	-.8527
5	.4693	.6480	.4049	.6963
6	1.0889	-.0889	.6722	.4938
7	.7061	.4543	1.1148	-.1148
8	.9347	.1226	.8996	.1825
Total	.8360	.2818	.8856	.2053

percent). As mentioned in Chapter II however, Cambell and Beranek derived marginal tax rates of 13 percent and 30 percent on samples of smaller but equal size (200). Further research could indicate whether a sample of only 200 observations per quarter does in fact follow a pattern from period to period. In this study, it did not. It is possible that the tax rates TO1 and TO2 calculated for the entire 1600 observation sample are the most important highlights of Table IV.

Tables V and VI present the calculations of TO1 and TO2 by DP and DE values, respectively, for the total 1600 observation sample. The DP and DE values are ranked from lowest to highest with each decile containing 160 observations.

An examination of Table V will reveal that the adjusted and unadjusted tax rates calculated for deciles ranked by dividend yield (DP) display some semblance of order only when negative values are ignored. When considering the volatility of the time period studied, this orderliness, while weak, could be interpreted as more supportive than refutive of Elton and Gruber's finding of a significant relationship between DP decile rankings and implied tax rates.

From the table listing Spearman Correlation Coefficients Based on DP Deciles Found in Appendix D, the unadjusted test statistic displays a stronger correlation with DP values (.2242) than the unadjusted statistic (.0788). Upon studying the eight periods individually, the author

TABLE V

CALCULATION OF TAX BRACKETS TO1 AND TO2
BY DP DECILE - 1600 OBSERVATIONS

DP Decile	X1	TO1	X2	TO2	DP
1	1.6532	-.6532	.4626	.6531	.0003
2	-.0831	1.0623	.5647	.5765	.0038
3	.6531	.5101	.9833	.0329	.0060
4	1.1971	-.1971	1.4171	-.4171	.0080
5	.7432	.4087	.9224	.1441	.0100
6	.6727	.4931	.7221	.4349	.0122
7	.9025	.1777	1.0181	-.0181	.0143
8	.8947	.1906	.9371	.1184	.0165
9	.8556	.2523	.9162	.1547	.0187
10	.8602	.2453	.9135	.1592	.0222

determined that the unadjusted statistic was consistently more highly correlated with DP values than the adjusted. It is important to note, however, that in only two of the eight periods did the correlation coefficient exceed .50, (Period 3, .6485 and Period 6, .6485). Due to the smallness of the correlation coefficients, little significance can be attached to their supportive value.

Conversely, Table VI ranked by payout ratio, indicates a much stronger pattern existing among adjusted marginal tax rates with no discernable pattern among the unadjusted tax rates. Of interest here, is the fact that Spearman's Correlation Coefficient is higher for the adjusted statistic (.2848) than for the unadjusted statistic (.0788). However, the most importance can be attached to the change in the coefficient when the TO1 value in the first decile is omitted and the coefficient is recalculated. The value of the resulting correlation coefficient is .7670.

Table VI shows the implied tax rate TO1 associated with the first decile as having a value of -.9685. It may be recalled from Chapter III that whenever the test statistic exceeded one, this indicated the drop in the price of the common stock was greater than its dividend. An examination by the author of the observations comprising the first decile revealed that, in many cases, the dividend paid was less than twelve cents per share and, in some cases, as low as two cents per chare. Since reports of stock price movements are only given in eighths of a dollar, any dividend less than twelve

TABLE VI

CALCULATION OF TAX BRACKETS TO1 AND TO2
BY DE DECILE - 1600 OBSERVATIONS

DE Decile	X1	TO1	X2	TO2	DE
1	1.9685	-.9685	.9113	.1629	.1158
2	.4815	.6389	1.0632	-.0632	.1993
3	.3769	.7174	.5107	.6170	.2570
4	.5935	.5548	.9458	.1028	.3055
5	.7049	.4557	.7358	.4179	.3589
6	.9154	.1560	1.1104	-.1104	.4108
7	.6655	.5009	.7098	.4498	.4734
8	.8782	.2171	1.0230	-.0230	.5444
9	.8867	.2036	.8683	.2327	.6652
10	.8797	.2148	.9789	.0413	1.1712

cents associated with the smallest movement in stock price would yield a value greater than one.

In Chapter III, mention was made of Elton and Gruber's comment that when stocks with low dividends were omitted from the sample, the only change experienced was a reduction in variance. This author commented that in other less stable time periods, more than a reduction in variance might result from their omission. Their omission from the present study, through elimination of DE Decile 2=1, yielded a much higher correlation coefficient thereby adding strong support to the hypothesis concerning relationships between DE deciles and implied tax brackets calculated via the adjusted test statistic.

Table VII presents the mean values of the dividend yields and payout ratios by decile when deciles are ranked by DP value and when ranked by DE value. It is easy to see upon examination of Table VII that while dividend yields naturally enjoy a perfect ranking by their decile value, they are also perfectly ranked by DE value. Payout ratios, on the other hand, maintain no such relationship. Although the first five DE values ranked by DP ratio are closely correlated with Decile 2 DE values, values six through ten exhibit very little visible correlation.

An explanation for this phenomenon can be found in the relative stabilities of DP and DE ratios in general. Dividends historically have been the most stable of the three elements comprising the two ratios. This is attributable

TABLE VII

COMPARISON OF DP AND DE VALUES RANKED BY DIVIDEND YIELD (DECILE 1) AND PAYOUT RATIO (DECILE 2)

Decile Number	Decile 1 DP	Decile 2 DP	Decile 1 DE	Decile 2 DE
1	.0003	.0056	.1765	.1158
2	.0038	.0084	.1695	.1993
3	.0060	.0095	.2838	.2570
4	.0080	.0104	.2817	.3055
5	.0100	.0111	.3288	.3589
6	.0122	.0126	.5417	.4108
7	.0143	.0143	.3846	.4734
8	.0165	.0161	.7692	.5444
9	.0187	.0180	.1678	.6652
10	.0222	.0222	.5618	1.1712

to the normative financial policy of maintaining dividends at a certain level until they can be increased. If a firm feels it cannot make dividend payments of a certain level in periods of depressed earnings, it is more likely to avoid setting the dividend level that high in favor of a lower level which it can make in such times. The historical pattern has thus been one of few decreases and intermediate increases with dividend payments remaining stable over the interim period. Prices of common stock and quarterly earnings figures have exhibited much less stability. For this study, the author used yearly earnings figures divided by four to arrive at a quarterly earnings figure. While this may be viewed to an extent as a test bias, it was felt that from year to year, earnings figures normally exhibit definite relationships to previous years. This method was used as a smoothing procedure to aid in test calculations. Because stock prices have the opportunity to adjust on a day-to-day basis, no such smoothing procedures were utilized in their case. Most importantly, since it is the behavior of stock prices on the ex-dividend day that is of value to this study, any such smoothing adjustment would invalidate the testing procedure. Therefore, because prices on the ex-dividend day can vary so much from quarter to quarter while earnings and dividends remain stable, the value of DP ratios for ranking purposes is questionable. Elton and Gruber in their study, made no mention of the prices or earnings used in calculating their DP and DE ratios.

TABLE VIII

SPEARMAN RANK CORRELATION COEFFICIENTS WITH PROBABILITIES
FOR DP, DE, X1, AND X2

Coefficients \ Period	1	2	3	4	5	6	7	8	Total
X1, X2	.8103 (.0001)	.7239 (.0001)	.8067 (.0001)	.7608 (.0001)	.7535 (.0001)	.7443 (.0001)	.7561 (.0001)	.8149 (.0001)	.7723 (.0001)
X1, DP	-.0520 (.5287)	.1080 (.1238)	.2290 (.0015)	.0077 (.9097)	-.0293 (.6833	.0892 (.2062)	.0475 (.5117)	-.1109 (.1140)	.0432 (.0804)
X2, DP	.0004 (.9909)	-.0679 (.6592)	.2482 (.0007)	-.0988 (.1601)	.0660 (.6446)	.2797 (.0002)	-.0499 (.5099)	-.0317 (.6606)	.0410 (.0967)
X1, DE	-.0316 (.6612)	.0489 (.5011)	.1681 (.0165)	.0315 (.6622)	-.0785 (.2686)	-.0390 (.6681)	.0914 (.1949)	-.2095 (.0033)	.0012 (.9622)
X2, DE	-.0031 (.9638)	-.1119 (.1107)	.1961 (.0056)	-.0808 (.2539)	.0073 (.9153)	.1370 (.0500)	.0367 (.6121)	-.1402 (.0449)	.0102 (.6870)
DP, DE	.7605 (.0001)	.7311 (.0001)	.7351 (.0001)	.6698 (.0001)	.6292 (.0001)	.6631 (.0001)	.6580 (.0001)	.6534 (.0001)	.6476 (.0001)

The final table, Table VIII, presents the Spearman Correlation Coefficients (with probabilities in parentheses), for DP, DE, X1 and X2 values for all eight quarters and the 1600 observation total. Only the coefficients between X1 and X2 and between DP and DE are significant. Looking at the TOTAL column it can be seen that across 1600 observations the correlation coefficient between X1 and X2 is .7723 while DP and DE have a coefficient of .6476. Both of these values are significant at the .0001 level. The correlation coefficient between X1 and X2 indicates a relationship strong enough to support the conclusion that superior performance by either the adjusted or unadjusted test statistic is valid relative to comparability standards. The coefficient between DP and DE lends support to the explanation of differences in ranking by DP value and DE value.

Chapter VI will summarize and draw conclusions based on the aforementioned findings.

CHAPTER VI

SUMMARY AND CONCLUSIONS

At the outset of this study, it was hypothesized that marginal stockholder tax brackets could be inferred through observation of the ex-dividend behavior of common stocks. The original study outlining and testing this method of determining such tax rates were performed by Elton and Gruber. In an attempt to further refine the test statistic used in their study, the present study was initiated. The redefinition of the original statistic was made according to capital market theory. In effect, it attempts to account for that portion of a common stock's price movement on its ex-dividend day attributable to the market and, consequently use the residual as the hypothesized movement attributable to the firm itself. In theory, this should make possible a more accurate determination of marginal stockholder tax brackets based on the ex-dividend behavior of common stocks.

The results of the present study presented in Chapter V seem to support hypothesis I(b) outlined in Chapter IV concerning the determination of marginal stockholder tax brackets using the adjusted test statistic. The implied tax rate of 28.18 percent for the adjusted statistic for the 1600-observation sample is offered as partial support of

this conclusion. Previous studies cited in Chapter II have arrived at tax rates of similar magnitude. This tax rate is also closer to the rate of 35.1 percent as determined by Elton and Gruber as opposed to the unadjusted rate of 20.53 percent found in the present study.

Acceptance of the hypothesis that tax rates can be inferred via the unadjusted test statistic, permitted testing of hypotheses I(c) and I(d) concerning the relationship between marginal stockholder tax brackets and dividend yields and tax brackets and payout ratios. Tests performed in the present study found some correlation between dividend yield and marginal tax rates although indeterminant tax rates (less than zero or greater than one) made it difficult to draw any definite conclusions. After elimination of the indeterminant tax rates, there did appear to be a significant correlation between dividend yield and implied tax brackets. The author feels that the instability of DP ratios over time was the primary factor contributing to the poor results concerning dividend yields and implied tax rates.

The results reported in Table VI however, strongly support the hypothesis that firms with high payout ratios attract stockholders in relatively lower tax brackets than low payout firms. After eliminating the single indeterminant decile, the correlation coefficient between payout ratios and tax brackets by DE decile became .7670 for the adjusted statistic. Due to the relative stability of this

ratio and in light of the coefficient value of .7939 determined in the Elton and Gruber study, the author concludes that this hypothesis may be safely accepted when the adjusted test statistic is used. No such relationship was discovered with the unadjusted statistic.

It is the opinion of the author that since as defined, dividend yield can fluctuate widely based on changes in stock price and since, as defined payout ratios are more stable and represent in a more positively absolute form the dividend policy of a firm, the clientele effect hypothesized by Miller and Modigliani can be accepted. The implication of accepting this hypothesis is that a change in dividend policy could cause a costly change in shareholder wealth in turn affecting the economic make-up of the firm's stockholders.

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APPENDIXES

APPENDIX A

LIST OF SAMPLE FIRMS

LIST OF SAMPLE FIRMS

1. ARA Services
2. American Cynamid
3. Arcata National
4. Armco Steel
5. Armstrong Cork
6. Armstrong Rubber
7. Arvin
8. Atlantic Richfield
9. Avery Products
10. Avnet
11. Baker Industries
12. Bankers Trust of New York
13. Baxter Laboratories
14. Beatrice Foods
15. Block, H. & R.
16. Boeing
17. Book-of-the-Month Club
18. Borg Warner
19. Briggs and Stratton
20. Brockway Glass
21. Brooklyn Union Gas
22. Brown and Sharpe

23. Browning Ferris
24. Budd Company
25. Bulova
26. Burndy Corporation
27. CBS
28. CIT Financial
29. Cabot
30. Capitol Holding
31. Carborundum
32. Caterpillar
33. Ceco
34. Celanese
35. Centex
36. Central Hudson Gas and Electric
37. Central Illinois Light
38. Central Illinois Public Service
39. Central Louisiana Electric
40. Central Maine Power
41. Central Telephone and Utilities
42. Cerro
43. Cessna
44. Champion International
45. Charter New York
46. Chemetron
47. Chicago Pneumatic Tool
48. Chromalloy
49. Chrysler

50. Cincinnati Gas and Electric
51. City Investing
52. Clark Oil
53. Clorox
54. Coca-Cola Bottling of New York
55. Coca-Cola
56. Coleco
57. Collins and Aikman
58. Colonial Stores
59. Columbus and S. O. Electric
60. Combustion Engineering
61. Commercial Solvents
62. Conrac
63. Continental Telephone
64. Consolidated Foods
65. Copperweld
66. Cox Broadcasting
67. Crocker National Corporation
68. Crouse-Hinds Company
69. Cummins Engine
70. Cutler-Hammer
71. Cyclops
72. Dan River Inc.
73. Dayco Corporation
74. Dayton Hudson
75. Dayton Power and Light
76. Deere and Company

77. Del Monte
78. Delta
79. Dennison Manufacturing
80. DeSoto Incorporated
81. Diamond International
82. Diversified Marketing Investing
83. Donnelley and Sons
84. Dreyfus
85. Duke Power
86. Duquesne
87. Dymo Industries
88. Eagle-Picher
89. Echlin Manufacturing
90. Emery Air Freight
91. Emery Industries
92. Equimark
93. Equitable Gas Company
94. Exxon
95. Fairmont
96. Federal Paper Board
97. Federal Sign and Signal
98. Ferro
99. First National State Bank
100. First Wisconsin
101. Fisher Scientific
102. Florida Power and Light
103. Florida Steel

104. Foxboro
105. Franklin Mint
106. Gannett Company
107. Gardner Denver
108. Genuine Parts
109. Gerber Products
110. Globe Union
111. Grace
112. Great Lakes Dredge and Dock
113. Green Giant
114. Gulf and Western
115. Gulf States Utilities
116. Hawaiian Electric
117. Heinz
118. Heublin
119. Hilton Hotels
120. Hobart Corporation
121. Honeywell
122. Hoover Ball and Bearing
123. Howmet
124. Hydrometals
125. Illinois Power Company
126. Interco
127. Iowa-Illinois Gas and Electric
128. Iowa Public Service
129. Jonathan Logan
130. Jones and Laughlin

131. Joy Manufacturing
132. Kansas City Power and Light
133. Kaufman and Broad
134. Kawecki and Berylco
135. Keller Industries
136. Kings Department Stores
137. Lilly, Eli and Company
138. Loews
139. Lynch Communications
140. Marley
141. Maytag
142. McDermott
143. Merck
144. Michigan Seamless Tube
145. Mid-Continent Telephone
146. Midland Ross
147. Narco Scientific
148. National Airlines
149. National Fuel Gas
150. Northwest Airlines
151. Oakite
152. Pacific Tin
153. Petrie
154. Petrolane
155. Pfizer
156. Philadelphia Electric
157. Philadelphia Suburban

158. Phillips
159. Product Research and Chemical
160. Puget Sound Power and Light
161. Purolator
162. RCA
163. Ranco
164. Reading and Bates
165. Ridder
166. Rio Grande Industries
167. Rite Aid
168. Riviana Foods
169. Robertshaw Control
170. Safeway
171. St. Joe Mineral
172. St. Louis-San Francisco Railway
173. Sangamo
174. Santa Fe Industries
175. Schlitz
176. Scott and Fetzer
177. Scott Paper
178. Shakespeare Company
179. Shapell
180. Shell
181. Sheller Globe
182. Simmons
183. Southern California Edison
184. Southern Company

185. Southern Pacific Company
186. Southern Railway
187. Southern Union Gas
188. Standard Brands
189. Stanley Works
190. TRW
191. Texasgulf
192. Time
193. Toledo Edison
194. Union Pacific
195. United Inns.
196. Victor Comptometer
197. Wayne Gossard
198. Wheelabrator-Frye
199. White Consolidated Industries
200. Witter Organization

APPENDIX B

LIST OF FIRMS FROM WHICH SAMPLE WAS TAKEN

GROUP 1 — BETA (1.64 & over)

Code #		% Total Return
487	Amer. Medical Int'l	☐ _____
961	Bache & Co.	☐ _____
1040	Bath Industries	☐ _____
1148	Berkey Photo	☐ _____
1410	Brunswick Corp.	☐ _____
1731	Cavanagh Communities	☐ _____
1755	Cenco Inc.	☐ _____
1860	Champion Home B'ld'rs	☐ _____
1940	Chicago Milwaukee	☐ _____
2023	City Investing Co.	☐ _____
2280	Conrac Corp.	☐ _____
2380	Con'l Air Lines	☐ _____
2515	Cordura Corp.	☐ _____
2695	Dean Witter Org.	☐ _____
2757	Denny's Inc.	☐ _____
3120	Elixir Industries	☐ _____
3210	Fairchild Camera	☐ _____
3347	Financial Federation	☐ _____
3444	Flexi-Van Corp.	☐ _____
3467	Flying Tiger Corp.	☐ _____
3710	General Instrument	☐ _____
3881	Gibraltar Financial	☐ _____
3925	Global Marine	☐ _____
4220	Hayden Stone, Inc.	☐ _____
4360	Horizon Corp.	☐ _____
4455	Imperial Corp. of Amer.	☐ _____
4620	International Rectifier	☐ _____
4902	Kaufman & Broad	☐ _____
5132	Lennar Corp.	☐ _____
5260	Loews Corp.	☐ _____
5782	MGIC Investment Corp.	☐ _____
5792	Microdot	☐ _____
5884	Mobile Home Industries	☐ _____
5913	Monogram Industries	☐ _____
6090	National Airlines	☐ _____
6530	Northwest Airlines	☐ _____
6543	Northwest Industries	☐ _____
6785	Peabody-Galion	☐ _____
7267	Rapid American Corp.	☐ _____
7303	Redman Industries	☐ _____
7340	Reliance Group Inc.	☐ _____
7502	Rite Aid	☐ _____
7671	Sanders Associates	☐ _____
7780	Seaboard World Airlines	☐ _____
8156	Sprague Electric	☐ _____
8372	Storer Broadcasting	☐ _____
8476	Systron-Donner	☐ _____
8757	Trans World Airlines	☐ _____
8770	TRE Corp.	☐ _____
8800	Twentieth Cen.-Fox	☐ _____
8803	UAL, Inc.	☐ _____
8842	Union Corp.	☐ _____
9065	U.S. Home Corp.	☐ _____
9315	Wang Laboratories	☐ _____
9430	Western Air Lines	☐ _____
9625	World Airways	☐ _____
9657	Xtra Inc.	☐ _____

GROUP 2 — BETA (1.529 to 1.637)

Code #		% Total Return
265	AMBAC Industries	☐ _____
290	American Airlines	☐ _____
488	American Medicorp	☐ _____
677	AMREP Corp.	☐ _____
778	Arlen Realty & D'v'lpm't	☐ _____
940	AVCO Corp.	☐ _____
945	AVNET Inc.	☐ _____
1495	Bunker-Ramo Corp.	☐ _____
1518	Cadence Ind. Corp.	☐ _____
1760	Centex Corp.	☐ _____
2086	Coleco Industries	☐ _____
2170	Columbia Pictures	☐ _____
2185	Combined Ins. of Amer.	☐ _____
2210	Commercial Solvents	☐ _____
2245	Computer Sciences	☐ _____
2483	Cooper Laboratories	☐ _____
2931	DPF Inc.	☐ _____
3110	EG & G Inc.	☐ _____
3112	Electronic Associates	☐ _____
3334	Fidelity Mtg. Investors	☐ _____
3367	First Charter Financial	☐ _____
3439	Fleetwood Enterprises	☐ _____
3545	Franklin Mint	☐ _____
3610	GCA Corp.	☐ _____
4057	GT Western Financial	☐ _____
4123	Gulton Industries	☐ _____
4227	Hazeltine	☐ _____
4300	Hoffman Electronics	☐ _____
4305	Holiday Inns Inc.	☐ _____
4368	Hospital Corp. of Amer.	☐ _____
4418	Hutton (E.F.) Group	☐ _____
4768	ITEL Corp.	☐ _____
4850	Kaiser Industries	☐ _____
5147	LFE Corp.	☐ _____
5355	LTV Corp.	☐ _____
5485	Maremont Corp.	☐ _____
5493	Maritime Fruit	☐ _____
5850	Mission Equities	☐ _____
5892	Mohawk Data Sciences	☐ _____
6235	National Industries	☐ _____
6278	Natomas Co.	☐ _____
7097	Planning Research	☐ _____
7262	Ramada Inns	☐ _____
7625	Ryder System	☐ _____
7815	Seatrain Lines	☐ _____
7831	Sedco Inc.	☐ _____
7845	Shakespeare Co.	☐ _____
7850	Shapell Industries	☐ _____
7977	Skyline Corp.	☐ _____
8454	Supermarkets General	☐ _____
8510	Teledyne	☐ _____
8759	Trans-World Financial	☐ _____
8802	Tyler Corp.	☐ _____
8965	United Financial	☐ _____
9253	Viacom International	☐ _____
9255	Victor Comptometer	☐ _____
9381	Webb (Del E.) Corp.	☐ _____
9553	Whittaker Corp.	☐ _____
9573	Winnebago	☐ _____
9698	Zimmer Homes	☐ _____

GROUP 3 — BETA (1.448 to 1.527)

Code #		% Total Return
143	Alcon Laboratories	☐ _____
340	Amer. Broadcasting Cos.	☐ _____
748	Arctic Enterprises	☐ _____
912	ATO Inc.	☐ _____
938	Automatic Data Proc.	☐ _____
965	Baker Oil Tools	☐ _____
995	Bangor Punta Corp.	☐ _____
1090	Beech Aircraft	☐ _____
1142	Benguet Consol. "B"	☐ _____
1325	Bourns Inc.	☐ _____
1335	Braniff Int'l Corp.	☐ _____
1519	Caesars World Inc.	☐ _____
1521	Calif. Financial	☐ _____
1840	Cessna Aircraft	☐ _____
2035	Clark Oil & Refining	☐ _____
2750	Delta Air Lines	☐ _____
2754	Deltona Corp.	☐ _____
2805	Digital Equipment	☐ _____
2828	Diversified Mtg. Inv.	☐ _____
3020	Eastern Air Lines	☐ _____
3203	Faberge Inc.	☐ _____
3280	Fedders Corp.	☐ _____
3465	Fluor Corp.	☐ _____
3574	Fuqua Industries Inc.	☐ _____
3680	General Dynamics	☐ _____
4121	Gulf & Western Ind.	☐ _____
4289	High Voltage Engin'rn'g	☐ _____
4385	House of Fabrics	☐ _____
5096	Lear Siegler Inc.	☐ _____
5305	Loral Corp.	☐ _____
5370	Lukens Steel	☐ _____
5743	Merrill Lynch & Co.	☐ _____
5775	Metromedia Inc.	☐ _____
5903	Molycorp Inc.	☐ _____
6560	Ogden Corp.	☐ _____
6718	Paine Webber Inc.	☐ _____
6965	Philips Industries	☐ _____
7129	Potter Instrument	☐ _____
7146	PSA Inc.	☐ _____
7298	Reading & Bates	☐ _____
7528	Rockower Bros.	☐ _____
7715	Saxon Industries	☐ _____
7728	SCM Corp.	☐ _____
8405	Sundstrand Corp.	☐ _____
8496	Tandy Corp.	☐ _____
8505	Tektronix Inc.	☐ _____
8725	Town & Country M.H.	☐ _____
8777	Tropicana Products	☐ _____
9015	United Nuclear Corp.	☐ _____
9206	Universal Oil Prod.	☐ _____
9244	Varian Associates	☐ _____
9266	Vornado Inc.	☐ _____
9375	Watkins-Johnson	☐ _____
9380	Weatherhead	☐ _____
9395	Wesco Financial	☐ _____
9515	Wheelabrator-Frye	☐ _____
9545	White Consol. Ind.	☐ _____
9550	White Motor	☐ _____
9645	Wyly Corp.	☐ _____
9700	Zurn Industries	☐ _____

GROUP 4 — BETA (1.377 to 1.447)

Code #		% Total Return
80	Addressograph	☐ _____
107	Aileen Inc.	☐ _____
345	American Bldg. Maint.	☐ _____
737	Apeco Corp.	☐ _____
1110	Bell & Howell	☐ _____
1242	Block (H&R) Inc.	☐ _____
1260	Boise Cascade Corp.	☐ _____
1380	Brown Co.	☐ _____
1690	Carter-Wallace	☐ _____
1975	Chris-Craft	☐ _____
1980	Chrysler Corp.	☐ _____
2037	CLC of America	☐ _____
2088	Coleman Co., Inc.	☐ _____
2476	Control Data	☐ _____
2490	Copper Range	☐ _____
2685	Daylin Inc.	☐ _____
2755	Dennison Mfg.	☐ _____
2797	Dictaphone Corp.	☐ _____
2810	Disney (Walt) Prod.	☐ _____
2969	Duplan Corporation	☐ _____
3072	Eckerd Drugs Inc. N.C.	☐ _____
3073	Eckerd (Jack) Corp.	☐ _____
3190	Evans Products	☐ _____
3275	Far West Financial	☐ _____
3438	Fisher Scientific	☐ _____
3883	Giddings & Lewis	☐ _____
3902	Gino's Inc.	☐ _____
3938	Golden West Fin'l	☐ _____
4075	Greyhound Computer	☐ _____
4291	Hilton Hotels	☐ _____
4426	ICN Pharmaceuticals	☐ _____
4590	International Minerals	☐ _____
4795	Jim Walter	☐ _____
4918	Keller Industries	☐ _____
4987	Kidde (Walter) & Co.	☐ _____
5138	Levi Strauss & Co.	☐ _____
5398	MacMillan Inc.	☐ _____
5505	Marriott Corp.	☐ _____
5596	McDermott (J. Ray) Co.	☐ _____
5597	McDonald's Corp.	☐ _____
5710	Melville Shoe.	☐ _____
6030	Motorola	☐ _____
6230	National Homes	☐ _____
6630	Outboard Marine	☐ _____
6720	Palm Beach Co.	☐ _____
6740	Pan Amer. World Airlines	☐ _____
7355	Republic Corp.	☐ _____
7445	Reynolds Securities	☐ _____
7542	Rockwood National Co.	☐ _____
7610	Royal Industries	☐ _____
7690	Sangamo Electric	☐ _____
7795	Sealectro Corp.	☐ _____
8374	Storm Drilling & Mar.	☐ _____
8376	STP Corp.	☐ _____
8500	Technicolor	☐ _____
8522	Telex Corp.	☐ _____
8650	Thiokol Corp.	☐ _____
8931	United Brands	☐ _____
9075	U.S. Leasing Int'l	☐ _____
9324	Warner Communications	☐ _____
9520	Wheeling-Pitts. Steel	☐ _____

GROUP 5 — BETA (1.326 to 1.376)

Code #		% Total Return
130	Alaska Interstate	☐ _____
160	Alleghany Corp.	☐ _____
185	Allen Group Inc.	☐ _____
202	Allied Products	☐ _____
663	AMF Inc.	☐ _____
739	APL Corp.	☐ _____
743	Arcata Nat'l Corp.	☐ _____
1086	Beckton Dickenson & Co.	☐ _____
1106	Belco Petroleum Corp.	☐ _____
1250	Boeing	☐ _____
1387	Browning Ferris	☐ _____
1510	Burroughs	☐ _____
1628	Capital Cities Comm.	☐ _____
1862	Champion Int'l Corp.	☐ _____
2430	Cont'l Copper	☐ _____
2535	Cowles Communications	☐ _____
3071	Echlin Mfg. Co.	☐ _____
3152	Engelhard Min. & Chem.	☐ _____
3366	First Boston Corp.	☐ _____
3436	Fischer & Porter Co.	☐ _____
3576	GAC Corp.	☐ _____
3577	GAF Corp.	☐ _____
4237	Helene Curtis	☐ _____
4365	Hospital Affiliates	☐ _____
4397	Howard Johnson	☐ _____
4415	Hunt (Philip A.) Chem.	☐ _____
4424	Hydrometals Inc.	☐ _____
4515	Inmont Corp.	☐ _____
4753	IPCO Hospital Supply	☐ _____
4765	ITEK Corp.	☐ _____
5092	Larwin Mtg. Inv.	☐ _____
5105	Leesona Corp.	☐ _____
5250	Lockheed	☐ _____
5382	Lynch Communications	☐ _____
5430	Magnavox	☐ _____
5550	May Dept. Stores	☐ _____
5806	Milton Bradley	☐ _____
6095	Nat'l Aviation	☐ _____
6554	Oak Industries	☐ _____
6895	Perkin-Elmer Corp.	☐ _____
7110	Polaroid Corp.	☐ _____
7275	Raymond Int'l	☐ _____
7290	Raytheon Co.	☐ _____
7440	Reynolds Metals	☐ _____
7618	Rucker Co.	☐ _____
7693	Santa Fe Int'l Corp.	☐ _____
7700	Savin Business Mach.	☐ _____
7790	Seagrave Corp.	☐ _____
7797	Sealed Power Corp.	☐ _____
7835	Servomation Corp.	☐ _____
7865	Sheller Globe	☐ _____
7975	Skil Corp.	☐ _____
8140	Sperry Rand	☐ _____
8195	Standard Brands Paint	☐ _____
8477	Taft Broadcasting	☐ _____
8498	Tappan	☐ _____
8540	Tesoro Petroleum	☐ _____
8731	Transamerica	☐ _____
9693	Zapata Corp.	☐ _____
9695	Zayre Corp.	☐ _____

GROUP 6 — BETA (1.272 to 1.325)

Code #		% Total Return
145	Alco Standard	☐ _____
220	Allis-Chalmers	☐ _____
405	Amer. Dual Vest	☐ _____
660	Ametek Inc.	☐ _____
670	Ampex Corp.	☐ _____
863	Athlone Inds.	☐ _____
939	Automation Ind. Inc.	☐ _____
1044	Bausch & Lomb	☐ _____
1080	Beckman Instruments	☐ _____
1450	Budd Co.	☐ _____
1977	Chromalloy Amer. Corp.	☐ _____
2018	Citizens & So. Realty	☐ _____
2115	Colonial Penn Group	☐ _____
2650	Cutler-Hammer	☐ _____
2951	Dreyfus Corp.	☐ _____
2998	Dymo Industries	☐ _____
3381	First Mortgage Inv.	☐ _____
3530	Foster Wheeler	☐ _____
3605	Gateway Ind.	☐ _____
3705	Gen'l Host	☐ _____
3955	Gordon Jewelry	☐ _____
4000	Grant (WT)	☐ _____
4117	Gulf Resources	☐ _____
4175	Harnischfeger Corp.	☐ _____
4255	Helmerich & Payne	☐ _____
4287	Hewlett-Packard	☐ _____
4414	Humana Inc.	☐ _____
4707	Interstate United	☐ _____
4901	Katy Industries	☐ _____
5115	Lehigh Valley Inds.	☐ _____
5140	Levitz Furniture	☐ _____
5225	Lionel Corp.	☐ _____
5375	LVO Corp.	☐ _____
5380	Lykes-Youngstown	☐ _____
5384	MacAndrews & Forbes	☐ _____
5420	Magic Chef	☐ _____
5660	McLouth Steel	☐ _____
5917	Monroe Auto Equip.	☐ _____
5995	Morrisson Knudsen	☐ _____
6075	Narco Scientific	☐ _____
6281	NCR Corp.	☐ _____
6698	Pacific Petroleums	☐ _____
6778	Pasco Inc.	☐ _____
6855	Pennzoil Company	☐ _____
7099	Playboy Enterprises	☐ _____
7510	Robertshaw Controls	☐ _____
7731	Scott & Fetzer Co.	☐ _____
7765	Seaboard Coastline	☐ _____
7920	Signal Companies	☐ _____
7927	Simmonds Precision	☐ _____
8383	Suave Shoe Corp.	☐ _____
8475	Syntex	☐ _____
8485	Talley Inds.	☐ _____
8499	Taylor Wine	☐ _____
8600	Texas Instruments	☐ _____
8610	Texas Oil & Gas	☐ _____
8693	Tishman Realty	☐ _____
9007	United Industrial	☐ _____
9225	U.V. Industries	☐ _____
9387	Welbilt Corp.	☐ _____
9697	Zenith Radio	☐ _____

GROUP 7 — BETA (1.232 to 1.268)

Code #		% Total Return
440	Amer. Express	☐ _____
448	Amer. Hoist & Derrick	☐ _____
840	Assoc. Dry Goods	☐ _____
960	Babcock & Wilcox	☐ _____
1215	Blair (John) & Co.	☐ _____
1247	Bobbie Brooks Inc.	☐ _____
1734	CCI Corp.	☐ _____
1833	Certain-teed Products	☐ _____
2145	Colt Industries Inc.	☐ _____
2445	Cont'l Illinois Realty	☐ _____
2656	Damon Corp.	☐ _____
2779	Dial Financial	☐ _____
2906	Doric Corp.	☐ _____
3270	Fansteel Inc.	☐ _____
3341	Filmways Inc.	☐ _____
3447	Florida East Coast	☐ _____
3535	Foxboro Co.	☐ _____
3540	Franklin Life Ins.	☐ _____
3715	Gen'l Medical Corp.	☐ _____
3804	Gen'l Signal Corp.	☐ _____
3940	Goodrich (BF)	☐ _____
3950	Goodyear Tire	☐ _____
3993	Granite Management	☐ _____
4181	Harris Corp.	☐ _____
4240	Heller Int'l	☐ _____
4257	Hemisphere Fund	☐ _____
4355	Honeywell Inc.	☐ _____
4375	Houghton Middlin Co.	☐ _____
4660	Int'l Tel & Tel	☐ _____
4816	Jonathan Logan	☐ _____
4840	Kaiser Aluminum	☐ _____
4865	Kane Miller	☐ _____
5004	Kings Dept. Stores	☐ _____
5040	Kresge (S.S.)	☐ _____
5263	Lomas Nettleton Fin'l	☐ _____
5265	Londontown Corp.	☐ _____
5365	Ludlow Corp.	☐ _____
5483	Marcor	☐ _____
5528	Masco	☐ _____
5555	Mays (JW)	☐ _____
5565	MCA Inc.	☐ _____
5772	Metro-Goldwyn-Mayer	☐ _____
6052	Munford	☐ _____
6061	Murphy Oil Corp.	☐ _____
6432	Norlin Corp.	☐ _____
7265	Ranco Inc.	☐ _____
7295	RCA Corp.	☐ _____
7310	Reed Tool Co.	☐ _____
7320	Reichhold Chemicals	☐ _____
7410	Revere Copper	☐ _____
7495	Ridder Publications	☐ _____
7565	Rollins Inc.	☐ _____
7990	Smith Int'l Inc.	☐ _____
8262	Standard Pressed Steel	☐ _____
8502	Technicon Corp.	☐ _____
9008	United Inns	☐ _____
9020	United Refining	☐ _____
9214	USLIFE Corp.	☐ _____
9320	Ward Food Inc.	☐ _____
9393	Wells, Rich, Greene	☐ _____
9556	Wickes Corp.	☐ _____

GROUP 8 — BETA (1.192 to 1.230)

Code #		% Total Return
210	Allied Stores	☐ _____
444	Amer. Gen'l Insurance	☐ _____
453	Amer. Hospital Supply	☐ _____
661	AMFAC Inc.	☐ _____
735	APCO Oil Corp.	☐ _____
740	Applied Magnetics	☐ _____
800	Armstrong Cork	☐ _____
1130	Bendix Corp.	☐ _____
1245	Blue Bell Inc.	☐ _____
2100	Collins & Aikman	☐ _____
2190	Combustion Eng.	☐ _____
2225	Comm. Satellite Corp.	☐ _____
2520	Corning Glass Works	☐ _____
2537	Cox Broadcasting	☐ _____
2840	Dr. Pepper	☐ _____
3145	Empire Fin'l Corp.	☐ _____
3150	Empire Gas Corp.	☐ _____
3179	Esquire Inc.	☐ _____
3307	Federal Sign & Signal	☐ _____
3750	Gen'l Portland Inc.	☐ _____
3840	Genesco Inc.	☐ _____
3960	Gould Inc.	☐ _____
4085	Grolier Inc.	☐ _____
4422	Huyck Corp.	☐ _____
4469	Income & Capital Shs.	☐ _____
4575	Int'l Flavors & Frag.	☐ _____
4904	Kawecki Berylco Ind.	☐ _____
4910	Kearney & Trecker	☐ _____
5055	Kroehler Mfg.	☐ _____
5094	Latrobe Steel	☐ _____
5136	Leverage Fund	☐ _____
5240	Litton Industries	☐ _____
5360	Lucky Stores	☐ _____
5475	Mapco Inc.	☐ _____
5478	Marathon Mfg. Co.	☐ _____
5980	Moore McCormack Res.	☐ _____
6010	Morton-Norwich	☐ _____
6418	NLT Corp.	☐ _____
6440	No. Amer. Coal Corp.	☐ _____
6451	No. Amer. Philips Corp.	☐ _____
6639	Overseas Shipholding	☐ _____
6730	Pamida, Inc.	☐ _____
6765	Pargas Inc.	☐ _____
6790	Penn Central	☐ _____
6800	Penn-Dixie Ind.	☐ _____
7020	Pitney-Bowes	☐ _____
7142	Prod. Research & Chem.	☐ _____
7235	Purolator Inc.	☐ _____
7408	Revco Drug Stores	☐ _____
7621	Russ Togs Inc.	☐ _____
7623	Rust Craft Greeting	☐ _____
8022	Southdown Inc.	☐ _____
8122	Southwest Forest	☐ _____
8471	Sybron Corp.	☐ _____
8480	Talcott Nat'l	☐ _____
8630	Textron Inc.	☐ _____
8820	UMC Industries Inc.	☐ _____
8885	Uniroyal Inc.	☐ _____
9070	US Industries	☐ _____
9460	Western Pacific Ind.	☐ _____

GROUP 9 — BETA (1.153 to 1.191)

Code #		% Total Return
122	A.J. Industries	
275	Amerada Hess	
285	Amer. Air Filter	
300	Amer. Bakeries	
700	Anaconda	
890	Atlantic Richfield	
1270	Bond Industries	
1507	Burns Int'l Sec. Serv.	
1680	Carrier Corp.	
1890	Chemetron Corp.	
2060	Clorox Co.	
2313	Consol Freightways	
2480	Cooper Industries	
2530	Cousins Mtg. & Equity	
2605	CTS Corp.	
2710	Deere & Co.	
2907	Dorr-Oliver Inc.	
3070	Eaton Corp.	
3132	Emery Air Freight	
3135	Emhart Corp.	
3272	Farah Mfg. Co.	
3578	Gamble-Skogmo Inc.	
3580	Gannett Co.	
4095	Guardian Mtg. Inv.	
4097	Gulf Life Holding	
4161	Handleman Co.	
4715	Iowa Beef Processors	
4760	I-T-E Imperial Corp.	
4827	Jostens Inc.	
4830	Joy Mfg.	
4916	Keene Corp.	
5100	Leeseway Transport	
5392	MacDonald (E.F.) Co.	
5491	Marion Laboratories	
5540	Massey-Ferguson	
5545	Mattel Inc.	
5758	Mesa Petroleum	
5890	Mohasco Corp.	
6637	Overnite Transport'n	
6780	Pay Less Drug Str. Nw.	
6975	Phillips-Van Heusen	
7090	Pittston	
7131	PPG Industries	
7360	Republic Mtg. Inv.	
7980	Smith (A.O.)	
8014	Sony Corp. (ADR)	
8114	Southland Corp.	
8380	Studebaker-Worthington	
8400	Sun Chemical	
8590	Texasgulf, Inc.	
8678	Tidewater Marine	
8765	Travelers Corp.	
8769	Travelodge Int'l	
8840	Union Carbide	
8910	United Aircraft	
9480	Western Union	
9503	Westvaco Corp.	
9558	Williams Cos.	
9610	Woods Corp.	
9650	Xerox Corp.	
9692	Zale	

GROUP 10 — BETA (1.119 to 1.152)

Code #		% Total Return
153	Alexander & Alexander	
190	Allied Chemical	
695	Amtel Inc.	
733	Apache Corp.	
830	Ashland Oil	
1108	Belding Heminway Co.	
1390	Brown & Sharpe	
1420	Brush Wellman	
1645	Carlisle Corp.	
1730	Caterpillar Tractor	
1887	Chelsea Industries	
2072	CNA Fin'l	
2223	Commonwealth Oil	
2458	Con't Mortgage Inv.	
2486	Copeland Corp.	
2640	Curtiss-Wright	
2660	Dan River Inc.	
2955	Drug Fair Inc.	
3220	Fairchild Industries	
3292	Federal Nat'l Mtg.	
3470	FMC Corp.	
3560	Freeport Minerals	
3590	Gardner-Denver	
3800	Gen'l Refractories	
3805	Gen'l Steel Industries	
3935	Globe-Union	
3965	Gov't Employees Ins.	
4127	Halliburton Co.	
4155	Hammond Corp.	
4357	Hoover Ball & Bearing	
4363	Horn & Hardart Co.	
4369	Host International	
4370	Houdaille Industries	
4435	Ideal Toy	
4445	Illinois Central Ind.	
4465	INA Corp.	
4580	Int'l Harvester	
4770	I.U. Int'l Corp.	
4860	Kaiser Steel	
5010	KLM Royal Dutch	
5150	Libbey-Owens-Ford	
5264	Lomas & Nettleton Mtg.	
5395	Macke Co.	
5440	Mallory (P.R.)	
5920	Monsanto	
6340	Newmont Mining	
6393	New York Times	
6913	Petrolane Inc.	
7001	Pinkerton's, Inc.	
7233	Purex Corp. Ltd.	
7423	Rexham Corp.	
7515	Robins (A.H.) Co.	
7590	Royal Crown Cola	
7726	Schlumberger Ltd.	
8290	Stanray Corp.	
8680	Time Inc.	
8723	Total Petroleum	
8772	Triangle Pacific	
8774	Trinity Industries	
9247	Vendo	
9660	Yellow Freight	

GROUP 11 — BETA (1.090 to 1.118)

Code #		% Total Return
75	Adams-Millis Corp.	
134	Alberto-Culver Co.	
154	Alexander's Inc.	
212	Allied Supermarkets	
250	Aluminum Co. of Amer.	
390	Amer. Cyanamid	
520	Amer. Motors	
955	Aztec Oil & Gas	
1032	Barber Oil Corp.	
1047	Baxter Labs	
1200	Black & Decker	
1500	Burlington Industries	
1733	CBS Inc.	
2013	Citicorp	
2470	Cont'l Oil	
2603	Crum & Forster	
2626	Cunningham Drug Str.	
2753	Deltec Int'l Ltd.	
2758	Dentsply Int'l Inc.	
2790	Diamond Shamrock	
2803	Di Giorgio Corp.	
2825	Diversified Industries	
2925	Doyle Dane Bernbach	
2940	Dresser Industries	
3030	Eastern Gas & Fuel	
3118	Elgin Nat'l Industries	
3177	Esmark Inc.	
3185	Ethyl Corp.	
3330	Fibreboard Corp.	
3422	First Penna. Mtg. Tr.	
3445	Flintkote	
3670	Gen'l Development	
3850	Georgia-Pacific	
4283	Heublein Inc.	
5020	Koehring Co.	
5103	Leeds & Northrup Co.	
5134	Lenox Inc.	
5400	Macy (R.H.)	
5500	Marquette Cement	
5520	Maryland Cup Corp.	
5590	McCrory Corp.	
5690	Mead Corp.	
6550	Nucor Corp.	
6633	Outlet Co.	
6776	Parker Pen	
6805	Penney (J.C.)	
6920	Pfizer Inc.	
6970	Phillips Petroleum	
7147	Publicker Industries	
7718	Schaefer (F&M) Corp.	
7723	Schlitz	
7745	Scudder Duo-Vest	
7800	Searle (G.D.)	
8669	Thrifty Drug Stores	
8705	Tonka Corp.	
8860	Union Oil (Cal.)	
8870	Union Pacific	
9246	Veeder Industries	
9251	VF Corp.	
9382	Weil McLain Co.	
9620	Woolworth (F.W.)	

GROUP 12 — BETA (1.060 to 1.089)

Code #		% Total Return
110	Air Products & Chem.	
565	Amer. Ship Building	
725	Angelica Corp.	
730	Anheuser-Busch	
731	Anken Industries Inc.	
742	ARA Service	
780	Armco Steel	
950	Avon Products	
1033	Bard (C.R.) Inc.	
1146	Benrus Corp.	
1290	Borg-Warner	
1503	Burlington-Northern	
1820	Central Soya	
1970	Chic Rock Island	
2563	Crompton & Knowles	
2653	Cyclops Corp.	
3060	Eastman Kodak	
3183	Esterline Corp.	
3320	Ferro Corp.	
3437	Fisher Foods	
3500	Ford Motor	
3612	Gemini Fund	
3630	Gen'l Amer. Trans	
3650	Gen'l Cable	
3810	Gen'l Tel. & Electro.	
3830	Gen'l Tire	
3870	Getty Oil	
3890	Gillette	
4560	Int'l Banknote Co.	
4610	Int'l Paper	
4710	Investor Div. Serv. "A"	
5015	Knight Newspapers	
5110	Lehigh Portland	
5497	Marley Co.	
5580	McCord Corp.	
5620	McGraw Hill Inc.	
5805	Miles Labs	
6005	Morse Shoe Inc.	
6220	Nat'l Gypsum	
6244	Nat'l Standard Co.	
6415	NL Industries Inc.	
6445	North Amer. Mtg. Inv.	
6520	Northrop Corp.	
6553	NVF Company	
6558	Occidental Petroleum	
6600	Olin Corp.	
6910	Petrie Stores Corp.	
6953	Philip Morris	
7124	Potlatch Corp.	
7237	Putnam Duofund	
7500	Rio Grande Industries	
7507	Roadway Express	
7694	Sargent-Welch	
7840	Seven-Up	
8340	Stevens (J.P.)	
8360	Stokely-Van Camp	
9210	Upjohn Co.	
9473	Western Publishing	
9500	Westinghouse Electric	
9605	Witco Chemical	

GROUP 13 — BETA (1.032 to 1.059)

Code #		% Total Return
40	ACF Industries	☐ ____
570	Amer. Smelting	☐ ____
595	Amer. Sterlizer Co.	☐ ____
669	Ampco-Pittsburgh Corp.	☐ ____
675	AMP Inc.	☐ ____
750	Arden-Mayfair	☐ ____
820	Arvin Industries	☐ ____
1180	Bethlehem Steel	☐ ____
1440	Bucyrus-Erie	☐ ____
1480	Bulova Watch Co.	☐ ____
1522	Callahan Mining Corp.	☐ ____
1670	Carpenter Technology	☐ ____
1960	Chic. Pneu. Tool	☐ ____
2010	CIT Financial	☐ ____
2435	Cont'l Corp.	☐ ____
2566	Crouse-Hinds Co.	☐ ____
2875	Donaldson, Lufkin	☐ ____
2910	Dorsey Corp.	☐ ____
3134	Emery Industries	☐ ____
3360	Firestone Tire	☐ ____
3520	Foremost-McKesson	☐ ____
3570	Fruehauf Corp.	☐ ____
3575	Gable Industries	☐ ____
3875	GF Business Equip.	☐ ____
3995	Graniteville Co.	☐ ____
4015	G't Amer. Mtg. Inv.	☐ ____
4060	G't Western United	☐ ____
4250	Helme Products	☐ ____
4380	Household Finance	☐ ____
4570	Int'l Business Mach.	☐ ____
4800	Johns-Manville	☐ ____
4940	Kennecott Copper	☐ ____
5320	Louisiana Land	☐ ____
5415	Madison Sq. Garden	☐ ____
5450	Manhattan Inds.	☐ ____
5480	Marathon Oil	☐ ____
5515	Martin Marietta	☐ ____
6325	Newhall Land & Farm	☐ ____
6435	Norris Industries	☐ ____
6760	Papercraft Corp.	☐ ____
7243	Quaker State Oil	☐ ____
7246	Questor Corp.	☐ ____
7330	Reliance Electric	☐ ____
7420	Revlon Inc.	☐ ____
7513	Robertson (H.H.)	☐ ____
7550	Rohm & Haas	☐ ____
7692	Santa Fe Industries	☐ ____
7720	Schering-Plough	☐ ____
7733	Scott Foresman & Co.	☐ ____
7740	Scovill Mfg.	☐ ____
7915	Siegel (Henry I.) Co.	☐ ____
7930	Simmons Co.	☐ ____
8010	Sola Basic Inds.	☐ ____
8220	Standard Oil (Cal.)	☐ ____
8330	Sterling Drug	☐ ____
8453	Superior Oil Co.	☐ ____
8775	Tri-South Mtg. Inv.	☐ ____
9136	U.S. Shoe	☐ ____
9350	Warner & Swasey	☐ ____
9379	Wean United	☐ ____
9608	Wometco Enterprises	☐ ____

GROUP 14 — BETA (1.008 to 1.031)

Code #		% Total Return
100	Aetna Life & Casualty	☐ ____
108	Airco Inc.	☐ ____
360	Amer. Century Mtg.	☐ ____
550	Amer. Re-Insurance	☐ ____
1039	Bates Mfg. Co.	☐ ____
1060	Beatrice Foods	☐ ____
1185	Big Three Ind.	☐ ____
1455	Budget Industries	☐ ____
1710	Castle & Cooke	☐ ____
1745	Celanese Corp.	☐ ____
1863	Champion Spark Plug	☐ ____
1973	Chock Full O' Nuts	☐ ____
1983	C.I. Mortgage Group	☐ ____
2026	City Stores	☐ ____
2030	Clark Equipment	☐ ____
2082	Coco-Cola Btlg. N.Y.	☐ ____
2484	Cooper Tire & Rubber	☐ ____
2590	Crown Zellerbach	☐ ____
2687	Dayton Hudson Corp.	☐ ____
2799	Diebold Inc.	☐ ____
2920	Dow Chemical	☐ ____
3310	Federated Dept. Stores	☐ ____
3462	Florida Steel Corp.	☐ ____
3490	Foote Mineral	☐ ____
3690	Gen'l Electric	☐ ____
3920	Gleason Works	☐ ____
3970	Grace (W.R.)	☐ ____
4150	Hammermill Paper	☐ ____
4600	Int'l Nickel	☐ ____
4785	Jefferson-Pilot Corp.	☐ ____
4905	Kayser-Roth Corp.	☐ ____
4980	Kerr-McGee Corp.	☐ ____
5162	Liberty Corp.	☐ ____
5800	Midland-Ross	☐ ____
5990	Morgan (J.P.) & Co.	☐ ____
6070	Nalco Chemical	☐ ____
6145	Nat'l Chemsearch	☐ ____
6160	Nat'l City Lines	☐ ____
6640	Owens-Corning	☐ ____
6990	Phoenix Steel	☐ ____
6995	Pickwick Int'l	☐ ____
7220	Pullman	☐ ____
7390	Republic Nat'l Life	☐ ____
7400	Republic Steel	☐ ____
7570	Ronson	☐ ____
7615	Rubbermaid, Inc.	☐ ____
7650	St. Louis-San. Fran. RR	☐ ____
8013	Sonesta Int'l	☐ ____
8130	Sperry & Hutchinson	☐ ____
8305	State Mutual Inv.	☐ ____
8710	Tottsie Roll Inds.	☐ ____
8733	Transcon Lines	☐ ____
8756	Transway Int'l Corp.	☐ ____
8771	Triangle Industries	☐ ____
8773	Tri-Continental	☐ ____
9275	Wachovia Realty Inv.	☐ ____
9306	Wal-Mart Stores	☐ ____
9340	Warner-Lambert	☐ ____
9510	Weyerhaeuser	☐ ____
9530	Whirlpool Corp.	☐ ____

GROUP 15 — BETA (.974 to 1.006)

Code #		% Total Return
105	Aguirre Co.	☐ ____
402	Amer. Dist. Telegraph	☐ ____
720	Anderson Clayton	☐ ____
864	Atico Mtg. Investors	☐ ____
1125	Bemis Co.	☐ ____
1505	Burndy Corp.	☐ ____
1520	Caldor Inc.	☐ ____
1920	Chesebrough-Ponds	☐ ____
2090	Colgate-Palmolive	☐ ____
2310	Consol. Foods	☐ ____
2474	Cont'l Telephone	☐ ____
2482	Cooper-Jarrett, Inc.	☐ ____
2580	Crown Cork	☐ ____
2622	Cummins Engine Co.	☐ ____
2673	Dart Industries	☐ ____
3116	Electronic Memories	☐ ____
3343	Filtrol Corp.	☐ ____
3730	Gen'l Motors	☐ ____
3847	Genuine Parts Co.	☐ ____
4090	Grumman	☐ ____
4226	Hayes-Albion Corp.	☐ ____
4298	Hoerner-Waldorf	☐ ____
4430	Ideal Basic	☐ ____
4678	Interpublic Group	☐ ____
4680	Interstate Brands	☐ ____
4783	Japan Fund	☐ ____
4990	Kimberly-Clark	☐ ____
5008	Kirsch Co.	☐ ____
5270	Lone Star Industries	☐ ____
5358	Lubrizol Corp.	☐ ____
5510	Marshall Field	☐ ____
5530	Masonite	☐ ____
5600	McDonnell Douglas	☐ ____
5730	Merck & Co.	☐ ____
5820	Minnesota Mining	☐ ____
5895	Mohawk Rubber	☐ ____
5905	Monarch Capital	☐ ____
6050	MSL Industries	☐ ____
6130	Nat'l Can	☐ ____
6283	Neptune Meter	☐ ____
6601	Omark Industries	☐ ____
6603	Oneida Ltd.	☐ ____
6750	Panhandle Eastern	☐ ____
6930	Phelps Dodge	☐ ____
7698	Sav-A-Stop	☐ ____
7730	Scot Lad Foods	☐ ____
7737	Scott Paper	☐ ____
7945	Simplicity Pattern	☐ ____
7960	Singer Co.	☐ ____
8015	Soo Line Railroad	☐ ____
8090	Southern Pacific Co.	☐ ____
8310	Stauffer Chemical	☐ ____
8494	Tampax	☐ ____
8668	Thompson (J. Walter)	☐ ____
8675	T.I. Corp.	☐ ____
8755	Trans Union Corp.	☐ ____
8838	Union Camp Corp.	☐ ____
9217	Utah Int'l Inc.	☐ ____
9302	Wallace-Murray Corp.	☐ ____
9392	Wells Fargo Mtg. Inv.	☐ ____
9690	Youngstown Steel Door	☐ ____

GROUP 16 — BETA (.944 to .973)

Code #		% Total Return
170	Allegheny Ludlum	☐ ____
223	Allright Auto Parks	☐ ____
450	Amer. Home Products	☐ ____
560	Amer. Seating	☐ ____
590	Amer. Standard	☐ ____
910	Atlas Corp.	☐ ____
943	Avery Products	☐ ____
1140	Beneficial Corp.	☐ ____
1457	Buffalo Forge Co.	☐ ____
1629	Capital Holding	☐ ____
1630	Carborundum	☐ ____
1881	Chase Manhattan Mtg.	☐ ____
2000	Cincinnati Milacron	☐ ____
2017	Citizens & So. Ga.	☐ ____
2084	Coldwell Banker & Co.	☐ ____
2270	Conn. Gen'l Ins. Corp.	☐ ____
2479	Cook United Inc.	☐ ____
2545	Credithrift Financial	☐ ____
2767	De Soto Inc.	☐ ____
2777	Dexter Corp.	☐ ____
3285	Federal Co.	☐ ____
3433	Fischbach & Moore	☐ ____
3625	Gen'l Amer. Oil Co.	☐ ____
3700	Gen'l Foods	☐ ____
3884	Gifford-Hill & Co.	☐ ____
4008	Gray Drug Stores	☐ ____
4400	Howmet Corp.	☐ ____
4598	Int'l Multifoods	☐ ____
4810	Johnson & Johnson	☐ ____
5160	Libby McNeil & Libby	☐ ____
5303	Longs Drug Stores	☐ ____
5350	Lowenstein (M.) & Sons	☐ ____
4560	Manpower Inc.	☐ ____
5560	Maytag	☐ ____
5885	Mobil Oil Corp.	☐ ____
6078	Nashua Corp.	☐ ____
6545	Norton Co.	☐ ____
6650	Owens-Ill. Inc.	☐ ____
6680	Pacific Gas & Elec.	☐ ____
6845	Pennwalt Corp.	☐ ____
6890	PepsiCo Inc.	☐ ____
6904	Peter Paul	☐ ____
7140	Procter & Gamble	☐ ____
7193	Pueblo Int'l	☐ ____
7436	Reynolds Industries	☐ ____
7480	Richardson-Merrell	☐ ____
7660	St. Paul Cos.	☐ ____
7729	SCOA Industries	☐ ____
7978	Slater Walker of Amer.	☐ ____
8000	Smithkline Corp.	☐ ____
8017	SOS Consolidated	☐ ____
8050	Southern Cal. Edison	☐ ____
8395	Sunbeam	☐ ____
8530	Tenneco Inc.	☐ ____
8560	Texas Eastern Trans.	☐ ____
8685	Times Mirror Co.	☐ ____
8783	TRW Inc.	☐ ____
9060	U.S. Gypsum	☐ ____
9150	U.S. Steel	☐ ____
9267	VSI Corp.	☐ ____
9501	West Point Pepperell	☐ ____
9607	Wolverine World Wide	☐ ____

GROUP 17 — BETA (.917 to .943)

Code #		% Total Return
10	Abbott Labs.	☐ ____
230	Alpha Portland	☐ ____
350	Amer. Can	☐ ____
470	Amer. Investment Co.	☐ ____
760	Arizona Public Ser.	☐ ____
810	Armstrong Rubber	☐ ____
812	ARO Corp.	☐ ____
1295	Borman's Inc.	☐ ____
1650	Carnation Co.	☐ ____
1688	Carter Hawley Hale Str.	☐ ____
2075	Coastal States Gas	☐ ____
2410	Cont'l Can	☐ ____
2500	Copperweld Corp.	☐ ____
2540	Crane Co.	☐ ____
2997	DWG Corp.	☐ ____
3128	Eltra Corp.	☐ ____
3300	Federal Paper Board	☐ ____
3420	First Penn. Corp. (Phil)	☐ ____
3525	Fort Howard Paper	☐ ____
3620	Gen'l Amer. Inv.	☐ ____
3660	Gen'l Cigar	☐ ____
3880	Giant Portland Cem.	☐ ____
4063	Green Giant Co.	☐ ____
4110	Gulf Oil	☐ ____
4165	Hanes Corp.	☐ ____
4228	HCA-Martin	☐ ____
4545	Interco Inc.	☐ ____
4779	Jantzen Inc.	☐ ____
4790	Jewel Companies	☐ ____
4820	Jones & Laughlin	☐ ____
4845	Kaiser Cement	☐ ____
4937	Kennametal Inc.	☐ ____
5030	Koppers	☐ ____
5180	Lilly, Eli	☐ ____
5707	MEI Corp.	☐ ____
6180	Nat'l Distillers	☐ ____
6243	Nat'l Service Ind.	☐ ____
6655	Oxford Industries	☐ ____
7134	Prentice Hall Inc.	☐ ____
7240	Quaker Oats	☐ ____
7260	Ralston Purina	☐ ____
7270	Raybestos-Manhattan	☐ ____
7475	Richardson Co.	☐ ____
7490	Richmond Corp.	☐ ____
7536	Rockwell Int'l	☐ ____
7575	Rorer-Amchem	☐ ____
7630	Safeway Stores	☐ ____
7705	Sav-On-Drugs	☐ ____
7810	Sears Roebuck	☐ ____
7910	Sherwin-Williams	☐ ____
7925	Signode Corp.	☐ ____
8070	Southern Nat. Res.	☐ ____
8250	Standard Oil (Ohio)	☐ ____
8378	Stride Rite Corp.	☐ ____
8550	Texaco Inc.	☐ ____
8625	Texfi Ind.	☐ ____
8660	Thomas & Betts Corp.	☐ ____
9018	United Park City	☐ ____
9260	Va. Electric & Pwr.	☐ ____
9268	Vulcan Materials	☐ ____
9290	Walgreen Co.	☐ ____
9323	Warnaco Inc.	☐ ____

GROUP 18 — BETA (.883 to .916)

123	Akzona Inc.	☐ ____
490	Amer. Metal Climax	☐ ____
655	Ameron Inc.	☐ ____
690	Amsted Industries	☐ ____
755	Aristar, Inc.	☐ ____
770	Arkansas La. Gas	☐ ____
963	Baker Industries	☐ ____
1037	Basic Inc.	☐ ____
1350	Bristol-Myers	☐ ____
1830	Cerro Corp.	☐ ____
1871	Charter N.Y. Corp.	☐ ____
1880	Chase Manhattan Corp.	☐ ____
2070	Cluett, Peabody	☐ ____
2080	Coca-Cola	☐ ____
2250	Cone Mills	☐ ____
2560	Crocker Nat'l Corp.	☐ ____
2621	Culligan Int'l	☐ ____
2659	Dana Corp.	☐ ____
2905	Donnelley (R.R.) & Sons	☐ ____
2970	DuPont	☐ ____
3078	Edwards (A.G.) & Co.	☐ ____
3153	Ennis Business Forms	☐ ____
3195	Ex-Cell-O	☐ ____
3448	Florida Gas Co.	☐ ____
3480	Food Fair	☐ ____
3487	Foote, Cone & Belding	☐ ____
3720	Gen'l Mills	☐ ____
3980	Grand Union	☐ ____
4040	G't Northern Nekoosa	☐ ____
4070	Greyhound Corp.	☐ ____
4200	Hart Schaffner & Marx	☐ ____
4232	Heileman (G.) Brewing	☐ ____
4260	Hercules Inc.	☐ ____
4295	Hobart Corp.	☐ ____
4500	Ingersoll-Rand	☐ ____
4517	Insilco Corp.	☐ ____
4675	Interpace Corp.	☐ ____
5085	Lamson & Sessions	☐ ____
5610	McGraw-Edison	☐ ____
5645	McKee (Arthur G.) Co.	☐ ____
5652	McLean Trucking	☐ ____
6008	Mtg. Trust of Amer.	☐ ____
6055	Munsingwear	☐ ____
6547	Norton-Simon	☐ ____
6565	Ohio Casulaty Corp.	☐ ____
6670	Pabst Brewing	☐ ____
6915	Petroleum Corp. Amer.	☐ ____
7005	Pioneer Nat. Gas	☐ ____
7560	Rohr Ind. Corp.	☐ ____
7573	Roper Corp.	☐ ____
7640	St. Joe Minerals	☐ ____
7665	St. Regis Paper	☐ ____
7830	Security Pac. Corp.	☐ ____
8300	Starrett (L.S.) Co.	☐ ____
8370	Stone & Webster	☐ ____
8385	Suburban Propane Gas	☐ ____
8455	Super Valu Stores	☐ ____
8490	Tampa Electric	☐ ____
8570	Texas Gas Trans.	☐ ____
9216	USM Corp.	☐ ____
9385	Weis Markets	☐ ____
9390	Wells Fargo & Co.	☐ ____

GROUP 19 — BETA (.857 to .882)

45	Acme Cleveland	☐ ____
140	Alcan Aluminum	☐ ____
195	Allied Maintenance	☐ ____
268	Amcord, Inc.	☐ ____
370	Amer. Chain & Cable	☐ ____
445	Amer. Greetings	☐ ____
600	Amer. Stores Co.	☐ ____
710	Anchor Hocking	☐ ____
745	Archer Daniels	☐ ____
1003	Bankers Trust N.Y.	☐ ____
1035	Barwick (E.T.) Inds.	☐ ____
1240	Bliss & Laughlin	☐ ____
1367	Brockway Glass Co.	☐ ____
1517	Cabot Corp.	☐ ____
1540	Campbell Soup	☐ ____
1737	Ceco Corp.	☐ ____
2015	Cities Service	☐ ____
2040	Cleveland-Cliffs	☐ ____
2180	Columbus & S.O. Elec.	☐ ____
2655	Cyprus Mines Corp.	☐ ____
2807	Dillingham Corp.	☐ ____
2915	Dover Corp.	☐ ____
3005	Eagle Clothes Inc.	☐ ____
3124	El Paso Natural Gas	☐ ____
3131	Emerson Electric	☐ ____
3138	EMI Ltd.	☐ ____
3201	Exxon Corp.	☐ ____
3460	Florida Power & Lt.	☐ ____
3803	Gen'l Reinsurance Co.	☐ ____
3860	Gerber Products	☐ ____
4173	Harcourt, Brace	☐ ____
4510	Inland Steel	☐ ____
5060	Kroger	☐ ____
5090	Lane Bryant	☐ ____
5130	Lehman Corp.	☐ ____
5200	Lincoln Nat'l Corp.	☐ ____
5410	Madison Fund Inc.	☐ ____
5442	Malone & Hyde	☐ ____
5495	Marlennan Corp.	☐ ____
5740	Meredith Corp.	☐ ____
5798	Middle South Util.	☐ ____
5870	Mississippi River	☐ ____
6062	Murray Ohio Mfg.	☐ ____
6279	NCNB	☐ ____
6286	Nevada Power	☐ ____
6542	Northwestern Steel	☐ ____
7315	Reeves Brothers	☐ ____
7402	Republic Tex. Corp.	☐ ____
7425	Rexnord Inc.	☐ ____
7497	Riegel Textile	☐ ____
7820	Seattle First Nat'l Bk.	☐ ____
7870	Shell Oil	☐ ____
8666	Thomas Industries	☐ ____
8690	Timken Co.	☐ ____
8730	Trane Co.	☐ ____
8805	Uarco Inc.	☐ ____
8827	Union Bancorp Inc.	☐ ____
9010	United Merchants	☐ ____
9160	U.S. Tobacco	☐ ____
9180	United Telecomm.	☐ ____
9282	Wackenhut	☐ ____
9643	Wurlitzer Co.	☐ ____

GROUP 20 — BETA (.808 to .856)

269	Amerace Corp.	☐ ____
332	Amer. Brands	☐ ____
410	Amer. Elec. Power	☐ ____
779	Armada Corp.	☐ ____
1280	Borden Inc.	☐ ____
1340	Briggs & Stratton	☐ ____
1610	Canadian Pacific	☐ ____
1620	Cannon Mills "A"	☐ ____
1655	Carolina Freight	☐ ____
1795	Cen. Louisiana Elec.	☐ ____
1825	Cen. Tel & Util.	☐ ____
1900	Chemical New York	☐ ____
1905	Chesapeake Corp. Va.	☐ ____
1925	Chic. & Eastern Ill.	☐ ____
2538	CPC Int'l Inc.	☐ ____
2785	Diamond Int'l	☐ ____
2935	Dravo Corp.	☐ ____
2965	Dun & Bradstreet	☐ ____
3010	Eagle-Picher Inds.	☐ ____
3375	First Hartford Corp.	☐ ____
4163	Handy & Harman	☐ ____
4190	Harsco Corp.	☐ ____
4330	Holly Sugar	☐ ____
4413	Hughes & Hatcher	☐ ____
4460	Imperial Oil Ltd. "A"	☐ ____
4520	Inspiration Consol. Cop'r	☐ ____
4550	Interlake Inc.	☐ ____
4777	Jaeger Machine Co.	☐ ____
4813	Johnson Services	☐ ____
4825	Jorgensen (Earle M.)	☐ ____
4880	Kansas City South'n	☐ ____
5165	Liberty Loan	☐ ____
5544	Matsushita Elec. ADR	☐ ____
5786	Mich. Seamless Tube	☐ ____
6060	Murphy (G.C.)	☐ ____
6066	Myers (L.E.) Co.	☐ ____
6170	Nat'l Detroit Corp.	☐ ____
6250	Nat'l Steel	☐ ____
6620	Otis Elevator	☐ ____
6773	Parker-Hannifin	☐ ____
6810	Penn. Fruit	☐ ____
6943	Phila. Nat'l Corp.	☐ ____
7000	Pillsbury Co.	☐ ____
7101	Plessey Co. Ltd.	☐ ____
7132	Premier Industrial	☐ ____
8020	So. Carolina E.&G.	☐ ____
8100	Southern Railway	☐ ____
8124	Sparton Corp.	☐ ____
8175	Squibb Corp.	☐ ____
8278	Standex Int'l Corp.	☐ ____
8280	Stanley Works	☐ ____
8350	Stewart-Warner	☐ ____
8365	Stone Container	☐ ____
8371	Stop & Shop Inc.	☐ ____
8457	Sutro Mtg. Inv. Trust	☐ ____
8822	Unarco Industries Inc.	☐ ____
9050	U.S. & Foreign Sec.	☐ ____
9190	Univar Corp.	☐ ____
9230	Valley Nat'l Bk. Ariz.	☐ ____
9440	Western Bancorp.	☐ ____
9505	Weyenberg Shoe Mfg.	☐ ____

GROUP 21 — BETA (.769 to .807)

Code #		% Total Return
70	Adams Express	
128	Alan Wood Steel	
1000	BankAmerica Corp.	
1385	Brown Group Inc.	
1660	Carolina Pwr. & Lt.	
1810	Cen. & South West	
1922	Chessie System	
2274	Conn. Gen'l Mortgage	
2360	Consumers Power	
2442	Cont'l Illinois Corp.	
2680	Dayco Corp.	
2855	Dominick Fund Inc.	
3156	Entex, Inc.	
3230	Fairmont Foods	
3290	Federal-Mogul	
3305	Federal Resources	
3338	Fieldcrest Mills	
3350	Financial Gen'l	
3364	Frist Bank System	
3391	First Nat'l (Boston)	
3910	Girard Company	
4020	G't Atlantic & Pacific	
4120	Gulf States Util.	
4270	Hershey Foods	
4390	Houston Lt. & Pwr.	
4393	Houston Natural Gas	
4450	Illinois Power	
5300	Long Island Lighting	
5470	Manufact'rs Hanover	
5625	McGregor-Doniger	
5630	McIntyre Mines	
5670	McNeil Corp.	
5770	Mesta Machine	
5796	Mid-Cont'l Telephone	
5910	Monarch Mach. Tool Co.	
5950	Mony Mtg. Investors	
6040	Mountain Fuel Supply	
6245	Nat'l Starch	
6282	Neisner Bros.	
6430	Norfolk & Western	
6580	Oklahoma Gas & Elec.	
6605	Opelika Mfg. Co.	
6700	Pacific Power & Lt.	
6870	Peoples Gas Co.	
7150	Public Ser. (Colo.)	
7170	Public Ser. (Indiana)	
7196	Puerto Rican Cement	
7503	Riviana Foods	
7580	Rosario Res. Corp.	
7613	RTE Corp.	
8060	Southern Co.	
8125	Spector Industries	
8230	Standard Oil (Ind.)	
8595	Texas Industries	
9301	Wallace Business Forms	
9371	Washington Steel	
9377	Wayne-Gossard	
9557	Wieboldt Stores	
9570	Winn-Dixie Stores	

GROUP 22 — BETA (.718 to .768)

Code #		% Total Return
135	Albertson's Inc.	
180	Allegheny Power Sys.	
400	Amer. Distilling	
610	Amer. Tel & Tel	
991	Bancal Tri-State	
1015	Bank of Va.	
1275	Book-Of-The-Month	
1300	Boston Edison	
1685	Carriers & General	
1790	Cen. Illinois Pub. Ser.	
2960	Duke Power	
3250	Falstaff Brewing	
3440	Fleming Co. Inc.	
3450	Florida Power	
3846	Genstar Ltd.	
4115	Gulf Oil Canada Ltd.	
4130	Hall (W.F.) Printing	
4167	Hanna Mining Co.	
4210	Hawaiian Electric	
4293	HMW Industries Inc.	
4410	Hudson Bay Mining	
4490	Industrial Nat'l Corp.	
4740	Iowa Power & Light	
4751	Iowa So. Utilities	
5035	Kraftco Corp.	
5490	Marine Midland Bank	
5705	Medusa Corp.	
5783	Mich. Gas Utilities	
5840	Minnesota Pwr. & Lt.	
5881	Missouri Portland	
5970	Moore Corp.	
6405	Niagara Share	
6515	Northgate Explor.	
6556	Oakite Products	
6625	Otter Tail Power	
6860	Peoples Drug Stores	
6910	Pet Inc.	
7120	Portec Inc.	
7180	Public Ser. (N.H.)	
7325	Reliable Stores	
7524	Rochester Telephone	
7600	Royal Dutch Petr.	
7668	Salant Corp.	
7672	San Diego Gas & Elec.	
7970	Skelly Oil	
8065	So. Indiana Gas & Elec.	
8110	Southern Union Gas	
8120	Southwestern Pub. Serv.	
8170	Square D	
8180	Staley Mfg.	
8190	Standard Brands	
8295	Sta-Rite Industries	
8325	Sterchi Bros. Stores	
8410	Sun Oil	
8445	Sunshine Mining	
8458	Swank Inc.	
8615	Texas Pac. Land	
8620	Texas Utilities	
8720	Toro Co.	
8732	Transco Cos. Inc.	
9030	U.S. Fidelity & Gty.	
9326	Warner Company	

GROUP 23 — BETA (.678 to .717)

Code #		% Total Return
530	Amer. Natural Gas	
640	Amer. Water Works	
681	Amstar Corp.	
870	Atlantic City Elec.	
1011	Bank of New York	
1360	British Petroleum	
1383	Brown-Forman Dist. "B"	
1550	Campbell Taggart	
1615	Canal-Randolph Corp.	
1770	Cen. Hudson G.&E.	
1780	Cen. Illinois Light	
2050	Cleveland Electric	
2055	Cleveland Trust Co.	
2120	Colonial Stores	
2220	Commonwealth Edison	
2300	Consol. Edison	
2330	Consol. Natural Gas	
2550	Creole Petroleum	
2741	Del Monte Corp.	
2770	Detroit Edison	
2820	Distillers Corp.-S'M	
3332	Fidelcor Inc.	
3368	First Chicago Corp.	
3431	First Va. Bankshares	
3595	Garlock Inc.	
3780	Gen'l Public Util.	
4025	Gtr. Washington Invest'rs	
4178	Harris Bankcorp	
4229	Hecla Mining	
4234	Heinz (H.J.)	
4428	Idaho Power	
4480	Indianapolis Pwr. & Lt.	
4505	Inland Container	
4870	Kansas City Pwr. & Lt.	
4920	Kellogg	
4985	Keystone Consol. Ind.	
5170	Liggett & Myers	
5267	Lone Star Gas	
5525	Maryland Nat'l Corp.	
5709	Mellon Nat'l Corp. (Pitt)	
5720	Mercantile Stores	
5745	Mesabi Trust	
5930	Montana-Dakota Util.	
6461	Northeast Utilities	
6470	Northern Ill. Gas	
6610	Orange & Rockland Util.	
6715	Pacific Tin. Consol.	
7125	Potomac Elec. Power	
7182	Public Ser. (N.M.)	
7187	Pub. Ser. Elec. & Gas	
7200	Puget Sound Pwr. & Lt.	
8080	Southern New Eng. Tel.	
8275	Standard Shares	
8320	Steel Co. of Canada	
8697	Todd Shipyards Corp.	
8785	Tucson Gas & Elec.	
8810	UGI Corp.	
9200	Universal Leaf Tobacco	
9270	Wachovia Corp.	
9580	Wisconsin Elec. Pwr.	
9590	Wisconsin Pwr. & Lt.	
9640	Wrigley (Wm.) Jr.	

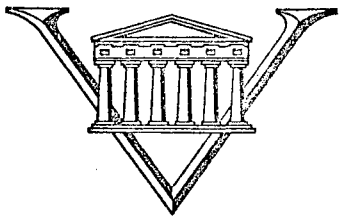
GROUP 24 — BETA (.627 to .677)

Code #		% Total Return
842	Associated Spring	
865	Atlanta Gas Light	
980	Balt. Gas & Elec.	
1107	Belden Corp.	
1640	Carling O'Keefe Ltd.	
1800	Cen. Maine Power	
1990	Cincinnati Gas & Elec.	
2019	Citizen's Util. "B"	
2160	Columbia Gas	
2195	Cominco Ltd.	
2690	Dayton Power & Lt.	
2730	Delmarva Pwr. & Lt.	
2808	Dillon Cos.	
2990	Duquesne Light	
3050	Eastern Util. Assoc.	
3163	Equitable Life Mtg.	
3430	First Union Real Est.	
3603	Gas Service Co.	
4027	G't Lakes Dredge	
4405	Hubbard Real Estate	
4412	Hudson Pulp & Paper	
4582	Int'l Holdings	
4730	Iowa-Ill. Gas & Elec.	
4778	James (Fred S.) & Co.	
4890	Kansas Gas & Elec.	
4900	Kansas Power & Lt.	
4950	Kentucky Utilities	
5190	Lincoln First Banks	
5330	Louisville Gas & Elec.	
5725	Merchants Inc.	
5883	Missouri Pub. Serv.	
5940	Montana Power	
6067	Nabisco	
6200	Nat'l Fuel Gas	
6273	Nat'l Utilities & Ind.	
6300	New England Elec.	
6310	New England G. & E.	
6320	New England Tel & Tel	
6390	N.Y. State Elec. & Gas	
6465	Northern & Central Gas	
6490	Northern Nat. Gas	
6510	Northern States Pwr.	
6540	Northwest Bancorp.	
6570	Ohio Edison	
6690	Pacific Lighting	
6840	Penn. Power & Lt.	
6940	Phila. Electric	
6997	Piedmont Nat. Gas	
7123	Portland Gen'l Elec.	
7404	Retail Credit Co.	
7520	Rochester Gas & Elec.	
7696	Savannah Elec. & Pwr.	
7965	Skaggs Cos.	
8023	Southeast Banking Co.	
8265	Standard Prud. Corp.	
8390	SuCrest Corp.	
8695	Tobin Packing Co.	
8940	United Corp.	
9005	United Illuminating	
9220	Utah Power & Lt.	
9300	Walker (Hiram)	
9373	Washington Water Pwr.	

GROUP 25 — BETA (.160 to .626)

Code #		% Total Return
125	Alabama Gas Corp.	☐ _____
260	Amalgamated Sugar	☐ _____
443	Amer. Gen'l Bond Fd.,	☐ _____
825	ASA, Ltd.	☐ _____
1050	Bayuk Cigars	☐ _____
1370	Brooklyn Union Gas	☐ _____
1535	Campbell Red Lake	☐ _____
1985	Cincinnati Bell	☐ _____
2478	Conwood Corp.	☐ _____
2850	Dome Mines	☐ _____
2945	Drexel Bond-Deb.	☐ _____
3076	Edison Bros. Stores	☐ _____
3140	Empire Dist. Elec.	☐ _____
3159	Equimark Corp.	☐ _____
3160	Equitable Gas	☐ _____
3335	Fidelity Union Banc.	☐ _____
3405	First Nat'l State Bank	☐ _____
3425	First Union Inc.	☐ _____
3432	First Wisconsin Corp.	☐ _____
3641	Gen'l Bancshares	☐ _____
4030	G't Northern Iron	☐ _____
4126	Hackensack Water	☐ _____
4320	Hollinger Mines Ltd.	☐ _____
4350	Homestake Mining	☐ _____
4361	Hormel (George A.) & Co.	☐ _____
4470	Indiana Gas Co.	☐ _____
4595	Int'l Mining Corp.	☐ _____
4700	Interstate Power	☐ _____
4720	Iowa Elec. Lt. & Pwr.	☐ _____
4750	Iowa Public Service	☐ _____
4797	John Hancock Invest.	☐ _____
4895	Kansas-Nebraska	☐ _____
5080	Laclede Gas	☐ _____
5543	Mass Mutual Mtg. Realty	☐ _____
5553	Mayer (Oscar) & Co., Inc.	☐ _____
5788	Michigan Sugar	☐ _____
5880	Missouri Pacific	☐ _____
6045	Mountain States Tel.	☐ _____
6064	Mutual of Omaha Inv.	☐ _____
6237	Nat'l Presto Ind.	☐ _____
6270	Nat'l Tea	☐ _____
6400	Niagara Mohawk	☐ _____
6480	Northern Ind. P.S.	☐ _____
6541	Northern Mutual Life	☐ _____
6590	Oklahoma Nat Gas	☐ _____
6710	Pacific Tel & Tel	☐ _____
6945	Phila. Suburban	☐ _____
7040	Pitts Forgings	☐ _____
7350	Remington Arms	☐ _____
7645	St. Joseph Lt. & Pwr.	☐ _____
7880	Shell Transport	☐ _____
7939	Simon & Schuster	☐ _____
8005	Smucker (J.M.) Co.	☐ _____
8025	Southeastern Pub. Ser.	☐ _____
8113	South Jersey Ind.	☐ _____
8161	Springs Mills	☐ _____
8700	Toledo Edison	☐ _____
8850	Union Electric	☐ _____
9009	United Jersey Banks	☐ _____
9370	Washington Gas Lt.	☐ _____
9398	Westcoast Transmission	☐ _____
9600	Wisconsin Pub. Ser.	☐ _____

THE VALUE LINE INTERCOLLEGIATE CONTEST IN STOCK MARKET JUDGMENT



ARNOLD BERNHARD & CO., INC.
THE VALUE LINE BUILDING
5 EAST 44th STREET
NEW YORK, N.Y. 10017

APPENDIX C

COMPUTER PRINTOUT OF CALCULATIONS FOR FOURTH QUARTER, 1974

LISTING OF INPUT VALUES FOR EACH FIRM

OBS	A	B	E	D	PA	PB	SPA	SPB	TBR
1	-.0018	1.0265	1.37	0.37	51.75	51.50	68.90	68.18	.07528
2	.0063	0.8141	0.81	0.38	21.25	22.38	69.27	71.91	.07528
3	.0010	0.7999	0.35	0.09	7.00	7.13	73.08	73.88	.07880
4	.0066	0.6979	1.68	1.00	22.13	23.00	73.88	73.90	.07892
5	.0051	0.5705	0.36	0.23	18.25	18.00	73.88	73.90	.07892
6	.0010	1.0063	0.51	0.40	12.88	13.38	67.17	68.11	.07524
7	-.0039	0.8308	0.18	0.13	6.63	6.75	68.20	69.27	.07528
8	.0035	0.9454	2.09	0.63	90.75	92.50	73.88	73.90	.07892
9	.0027	1.3724	0.44	0.08	28.25	28.88	69.94	69.47	.07328
10	-.0022	1.0619	0.52	0.08	4.75	4.75	72.83	70.09	.07892
11	-.0062	1.4713	0.24	0.05	4.13	4.13	66.91	67.65	.07058
12	.0000	1.0008	1.71	0.75	30.13	31.00	67.14	67.44	.06963
13	.0060	1.6105	0.31	0.05	32.13	32.00	65.60	65.01	.07172
14	-.0003	0.9696	0.43	0.18	14.38	14.50	65.01	66.13	.07524
15	.0099	1.4101	0.32	0.10	12.50	12.50	74.91	75.21	.07880
16	.0101	0.6747	0.86	0.30	19.00	18.88	75.21	74.75	.07880
17	.0010	0.3578	0.68	0.38	16.13	16.25	65.60	65.01	.07172
18	-.0005	0.7579	0.67	0.34	16.75	16.88	71.14	69.79	.06698
19	.0050	1.0814	0.90	0.40	38.38	37.63	68.90	68.18	.07528
20	.0076	0.1924	0.63	0.25	13.13	13.13	69.97	69.94	.07328
21	-.0045	0.4040	0.51	0.43	11.78	12.38	65.96	66.91	.06963
22	-.0041	0.5763	0.33	0.05	5.00	5.25	68.90	68.18	.07583
23	-.0098	0.9687	0.26	0.05	4.75	4.75	66.88	65.96	.06963
24	-.0027	0.6533	0.43	0.20	8.38	8.38	74.75	75.11	.07880
25	-.0021	0.7279	0.43	0.18	6.75	7.25	67.58	66.46	.07058
26	-.0084	0.5092	0.71	0.20	16.38	16.38	73.88	73.90	.07892
27	.0115	1.0851	0.95	0.37	30.00	29.50	68.90	68.18	.07528
28	.0005	0.6695	1.03	0.55	31.25	31.50	67.41	67.17	.07524
29	-.0063	0.6606	1.26	0.23	17.25	17.75	73.35	73.67	.07604
30	.0035	1.0406	0.43	0.08	23.00	23.00	74.91	75.21	.07880
31	-.0005	0.9345	1.72	0.43	30.38	31.25	73.88	73.90	.07892
32	.0009	1.1209	1.00	0.45	49.00	50.50	71.44	72.74	.07722
33	.0008	0.1667	0.80	0.29	12.25	12.38	67.41	67.17	.07524
34	.0051	0.7681	1.41	0.70	27.50	28.00	68.90	68.18	.07528
35	-.0001	1.6677	0.10	0.03	5.00	4.63	67.45	67.67	.07172
36	-.0071	0.3616	0.54	0.43	12.50	12.63	73.08	73.88	.07880
37	-.0046	0.8081	0.49	0.40	12.38	12.50	69.27	71.91	.07528
38	-.0061	0.2936	0.37	0.30	9.88	10.13	74.75	75.11	.07880
39	.0002	0.5227	0.54	0.32	14.25	13.63	70.12	70.22	.07524
40	-.0053	0.2579	0.37	0.34	11.25	11.00	67.41	67.17	.07524
41	-.0014	0.5160	0.53	0.28	16.00	16.75	67.58	67.90	.07058
42	.0023	0.6969	0.50	0.30	11.75	12.00	66.13	67.41	.07524
43	.0064	0.8940	0.70	0.25	12.75	12.63	72.83	70.09	.07892
44	-.0010	1.1635	0.81	0.25	10.63	10.88	66.46	67.07	.07058
45	-.0017	0.6348	1.15	0.50	20.63	20.75	68.83	68.90	.07328
46	.0176	1.0588	1.38	0.28	21.63	22.50	73.67	75.15	.07604
47	.0046	0.8657	0.89	0.50	24.25	24.25	69.97	69.94	.07328
48	-.0017	0.4417	0.58	0.18	8.50	8.50	67.44	66.88	.06963
49	-.0069	0.7991	0.23	0.35	9.88	10.13	73.88	73.90	.07892
50	-.0063	0.4233	0.48	1.00	46.50	45.00	68.83	68.90	.07328
51	-.0030	1.2183	0.23	0.17	4.38	4.63	67.14	67.44	.06963
52	-.0036	1.4027	0.25	0.13	7.63	8.25	65.01	66.13	.07524
53	-.0071	0.8805	0.22	0.13	7.25	7.25	70.22	71.03	.07524
54	-.0007	1.2392	0.10	0.10	4.00	4.13	68.90	68.18	.07528
55	-.0043	1.5759	0.82	0.53	51.25	51.00	68.83	68.90	.07328

LISTING OF INPUT VALUES FOR EACH FIRM

OBS	A	B	E	D	PA	PB	SPA	SPB	TBR
56	-.0154	0.9008	0.02	0.02	2.00	2.00	63.39	63.54	.06385
57	-.0072	0.5978	0.06	0.14	4.75	4.88	74.91	75.21	.07880
58	.0014	0.4495	0.63	0.31	17.75	18.00	73.67	75.15	.07604
59	-.0054	0.8116	0.51	0.49	13.50	14.38	67.90	67.58	.07058
60	-.0164	1.0763	0.94	0.45	29.50	28.88	67.67	67.28	.07172
61	.0225	0.8922	1.36	0.35	33.38	34.25	68.11	69.97	.07524
62	.0059	1.2599	0.58	0.15	11.63	12.88	68.20	69.27	.07528
63	-.0059	0.7535	0.38	0.25	10.25	10.00	67.28	65.60	.07172
64	-.0033	0.9771	0.60	0.34	12.28	12.75	67.17	68.11	.07524
65	.0017	0.6706	1.71	0.45	22.25	23.00	73.06	73.35	.07604
66	.0002	1.1130	0.55	0.10	10.38	10.00	67.90	67.58	.07058
67	.0020	1.1197	0.61	0.42	17.25	18.25	66.46	67.07	.07058
68	.0027	0.9540	0.58	0.18	11.75	11.75	62.34	62.28	.06385
69	-.0051	1.1505	0.81	0.32	13.63	14.00	67.41	67.17	.07524
70	-.0015	1.0151	1.12	0.04	19.75	19.75	68.90	68.18	.07528
71	.0098	0.7694	2.24	1.35	19.25	20.50	67.67	67.28	.07172
72	-.0044	0.6553	0.30	0.10	4.13	4.38	65.60	65.01	.07172
73	-.0009	0.4079	0.56	0.29	10.88	10.88	62.34	62.28	.06385
74	.0020	0.8179	0.39	0.15	8.13	8.00	73.06	73.35	.07604
75	-.0055	0.6137	0.47	0.42	12.25	12.50	73.88	73.90	.07892
76	.0052	1.1948	1.39	0.40	39.50	39.25	68.90	68.18	.07528
77	.0062	0.5441	0.82	0.33	18.88	18.00	71.14	69.79	.06698
78	.0046	1.3518	1.14	0.15	40.00	40.38	73.88	73.90	.07892
79	-.0016	0.7675	0.91	0.23	14.00	14.25	73.88	73.90	.07892
80	-.0004	0.5826	0.03	0.15	6.75	6.00	67.44	66.88	.06963
81	.0020	0.6788	1.10	0.50	25.13	24.25	67.44	66.88	.06963
82	-.0319	1.7240	1.16	0.13	2.63	2.75	62.34	62.28	.06385
83	.0013	0.7713	0.38	0.14	20.00	20.75	73.08	73.88	.07880
84	-.0019	1.1592	0.13	0.10	4.25	4.13	62.28	63.38	.06385
85	-.0006	1.0773	0.45	0.35	11.13	11.88	70.12	70.22	.07524
86	-.0077	0.4575	0.58	0.43	13.25	13.75	68.90	68.18	.07528
87	-.0096	0.6349	0.52	0.10	5.88	5.88	67.14	67.44	.06963
88	-.0005	0.4632	0.93	0.26	17.75	18.00	74.91	75.21	.07880
89	.0059	1.5646	0.37	0.10	20.25	20.00	67.14	67.44	.06963
90	-.0035	1.1455	0.40	0.24	33.50	33.63	70.09	70.12	.07892
91	.0077	0.6841	0.38	0.09	8.13	8.13	74.91	75.21	.07880
92	-.0099	0.2823	0.59	0.22	9.13	9.13	69.94	69.47	.07328
93	-.0022	0.3442	1.22	0.60	23.63	24.38	73.90	74.31	.07892
94	-.0007	0.9328	3.51	1.55	67.88	68.88	73.08	73.88	.07880
95	.0025	0.5138	0.30	0.15	7.00	6.75	68.90	68.18	.07528
96	.0017	0.6112	1.61	0.38	15.88	16.25	66.91	67.65	.07058
97	-.0049	0.5283	0.32	0.08	4.13	4.00	73.88	73.90	.07892
98	.0024	1.0025	1.01	0.25	17.63	18.00	74.91	75.21	.07880
99	-.0016	0.4329	0.85	0.50	19.50	20.50	67.17	68.11	.07524
100	-.0130	0.7669	0.26	0.44	14.25	15.00	73.13	73.50	.07524
101	.0038	0.9732	0.26	0.05	5.38	5.50	74.91	75.21	.07880
102	.0002	1.1118	0.69	0.34	16.75	16.88	68.90	68.18	.07528
103	-.0027	0.5989	1.80	0.38	20.00	20.25	68.90	68.18	.07528
104	-.0009	1.3828	0.51	0.15	25.25	25.50	65.60	65.01	.07172
105	.0133	1.1961	0.40	0.10	12.25	12.63	65.60	65.01	.07172
106	.0027	1.0413	0.40	0.11	21.00	20.75	67.45	67.67	.07172
107	-.0006	1.4629	0.36	0.19	21.25	21.25	68.18	67.90	.07528
108	.0010	0.9022	0.38	0.14	20.75	20.75	65.60	65.01	.07172
109	.0005	0.5084	0.48	0.25	10.75	11.00	73.67	75.15	.07604
110	.0046	1.1004	0.95	0.25	14.38	14.50	68.11	69.97	.07524

LISTING OF INPUT VALUES FOR EACH FIRM

OBS	A	B	E	D	PA	PB	SPA	SPB	TBR
111	.0063	1.1089	1.03	.40	24.88	25.38	73.67	75.15	.07604
112	-.0030	0.1290	0.42	.30	12.00	12.25	73.88	73.90	.07892
113	-.0001	0.9070	0.66	.27	14.88	14.63	68.18	67.90	.07528
114	.0066	0.7616	1.48	.23	22.25	23.00	68.20	69.27	.07528
115	.0006	0.7146	0.43	.28	11.50	12.50	73.67	75.15	.07604
116	-.0020	0.4627	0.68	.42	17.25	17.63	73.88	73.90	.07892
117	.0026	0.8314	0.92	.28	36.25	37.00	66.46	67.07	.07058
118	-.0025	1.6312	0.64	.28	24.75	25.00	65.60	65.01	.07172
119	.0014	1.1158	0.55	.25	8.88	9.25	65.60	65.01	.07172
120	-.0074	0.6864	0.42	.20	13.13	13.88	73.67	75.15	.07604
121	-.0121	1.3654	0.94	.35	21.25	21.00	68.90	68.18	.07528
122	.0009	1.0808	0.69	.32	13.50	13.25	71.07	70.71	.06698
123	-.0015	0.3838	0.56	.25	10.50	10.63	67.14	67.44	.06963
124	.0002	0.7317	0.40	.06	4.50	4.75	67.14	67.44	.06963
125	-.0032	0.7072	0.57	.55	16.13	16.50	62.34	62.28	.06385
126	.0031	1.1478	1.12	.37	17.13	18.75	65.01	66.13	.07524
127	-.0021	0.7252	0.51	.36	12.00	12.38	70.12	70.22	.07524
128	.0000	0.2549	0.52	.38	15.38	16.00	70.09	70.12	.07892
129	-.0146	0.6624	0.30	.10	4.50	4.50	65.96	66.91	.06963
130	.0111	0.3116	0.81	.40	28.00	28.25	71.14	69.79	.06698
131	.0080	1.3299	0.88	.38	28.88	27.75	64.95	62.34	.06698
132	-.0002	0.6647	0.73	.55	18.75	19.38	68.90	68.18	.07528
133	-.0113	1.3635	0.24	.04	3.38	2.88	73.13	73.50	.07524
134	.0005	0.6426	0.54	.10	8.75	9.25	69.27	71.91	.07528
135	.0059	1.1123	0.39	.13	5.50	5.88	70.12	70.22	.07524
136	.0051	0.6631	0.23	.10	5.13	5.38	67.45	67.67	.07172
137	.0054	1.0276	0.65	.25	73.00	73.75	74.91	75.21	.07880
138	.0044	1.3082	0.88	.30	12.63	13.51	71.14	69.79	.06698
139	-.0076	0.5322	0.15	.10	3.63	3.88	72.83	70.09	.07892
140	-.0014	1.5980	0.61	.15	14.00	14.50	66.91	67.65	.07058
141	-.0037	0.6409	0.41	.43	18.63	19.25	68.90	68.18	.07528
142	.0077	1.5842	1.13	.30	74.50	73.88	65.60	65.01	.07172
143	.0069	1.4559	0.57	.35	65.63	68.50	68.11	69.97	.07524
144	.0040	0.3274	0.95	.25	13.25	13.50	73.50	72.28	.07524
145	-.0060	0.1707	0.41	.26	10.25	11.00	68.11	69.97	.07524
146	.0071	0.6235	0.88	.25	10.25	11.25	65.60	65.01	.07172
147	.0014	1.2175	0.21	.15	4.75	4.63	67.82	64.84	.06698
148	.0002	1.6848	0.90	.13	7.25	7.50	67.67	67.28	.07172
149	.0019	0.5931	0.85	.50	18.38	19.00	66.88	65.96	.06963
150	-.0014	1.1791	0.75	.11	12.50	12.63	65.60	65.01	.07172
151	-.0037	0.2713	0.36	.21	9.13	9.75	69.27	71.91	.07528
152	.0052	0.3826	0.53	.25	9.00	9.25	68.20	69.27	.07528
153	.0000	0.7337	0.72	.20	37.88	38.00	67.67	67.28	.07172
154	.0013	1.0635	0.52	.11	9.50	9.38	65.01	66.13	.07524
155	.0059	1.5269	0.48	.24	30.75	31.13	68.83	68.90	.07328
156	-.0061	0.6977	0.45	.41	11.00	11.38	74.91	75.21	.07880
157	.0004	0.3985	0.75	.33	14.25	14.63	69.27	71.91	.07528
158	.0024	1.2839	1.42	.40	48.38	48.63	73.88	73.90	.07892
159	.0096	0.6950	0.41	.08	6.38	6.75	68.18	67.90	.07528
160	-.0016	0.4213	1.01	.50	20.38	21.13	69.27	68.20	.07528
161	.0015	1.3752	0.77	.24	19.00	19.50	67.41	67.17	.07524
162	-.0053	0.7307	0.36	.25	10.13	10.50	67.28	65.60	.07172
163	-.0026	0.5183	0.48	.23	9.50	9.75	68.20	69.27	.07528
164	-.0006	1.8313	0.57	.09	16.63	17.00	66.46	67.07	.07058
165	.0066	0.2270	0.52	.14	14.13	14.25	67.58	66.46	.07058

LISTING OF INPUT VALUES FOR EACH FIRM

OBS	A	B	E	D	PA	PB	SPA	SPB	TBR
166	-.0014	0.9688	0.67	.15	8.75	9.00	65.60	65.01	.07172
167	-.0124	1.3163	0.17	.03	3.25	3.50	71.14	69.79	.06698
168	-.0035	0.8493	0.44	.22	12.38	11.63	75.21	74.75	.07880
169	-.0012	0.9555	0.33	.23	9.75	9.88	68.11	69.97	.07524
170	.0042	0.8140	0.77	.45	35.63	35.88	68.90	68.18	.07528
171	.0082	1.0332	2.24	.55	34.13	34.63	68.11	69.97	.07524
172	-.0016	0.7899	1.27	.63	24.00	24.75	68.83	68.90	.07328
173	.0047	1.1232	0.58	.18	9.25	9.75	73.08	73.88	.07880
174	.0060	1.3264	1.17	.45	29.25	29.25	73.88	73.90	.07892
175	-.0111	1.6859	0.42	.17	15.13	15.00	65.60	65.01	.07172
176	-.0078	1.0896	0.45	.25	9.75	9.63	73.08	73.88	.07880
177	.0056	0.9762	0.50	.17	11.75	12.13	67.90	68.20	.07528
178	.0051	1.2329	0.26	.07	5.75	5.63	77.82	76.98	.05669
179	.0055	1.0244	0.43	.03	5.25	5.38	66.88	65.96	.06963
180	.0008	0.6245	2.30	.65	42.75	45.75	68.11	69.97	.07524
181	-.0025	0.8959	0.43	.14	5.75	5.75	73.88	73.90	.07892
182	.0046	0.8040	0.48	.44	11.63	12.50	69.27	71.91	.07528
183	.0051	0.8481	1.03	.42	17.38	17.88	67.14	67.44	.06963
184	-.0070	0.8010	0.35	.35	10.25	10.50	69.97	69.94	.07328
185	-.0012	0.8753	1.05	.56	26.13	26.13	68.90	68.18	.07528
186	.0041	0.9402	1.46	.53	43.50	43.75	74.91	75.21	.07880
187	-.0048	0.4264	0.85	.40	20.50	20.50	68.90	68.18	.07528
188	.0061	0.5982	1.01	.50	50.63	50.75	74.91	75.21	.07880
189	-.0077	0.6742	0.64	.24	14.00	14.00	68.83	68.90	.01328
190	.0002	0.7781	0.76	.28	13.23	13.38	73.88	73.90	.07892
191	.0047	0.9962	1.21	.30	27.75	28.00	73.67	75.15	.07604
192	.0023	0.6962	1.25	.50	27.00	27.75	68.83	68.90	.07328
193	-.0014	0.6087	0.71	.50	16.13	16.63	68.56	67.16	.07113
194	.0036	1.1629	1.42	.70	69.75	70.50	68.83	68.90	.07328
195	-.0074	1.3870	-0.39	.03	2.13	2.25	68.20	69.27	.07528
196	-.0043	0.7232	0.14	.13	5.75	5.75	62.34	62.28	.06385
197	-.0010	0.7215	0.06	.15	3.75	3.75	67.28	65.60	.07172
198	.0047	1.0046	0.40	.10	8.38	8.63	67.41	67.17	.07524
199	.0035	0.6848	0.77	.20	8.13	8.50	68.83	68.90	.07328
200	.0075	1.3031	0.11	.10	6.00	5.88	71.07	70.71	.06688

TABLE OF VALUES FOR TEST-CREATED VARIABLES

OBS	RCRA	RCRE	RCRF	CP	PC	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.0048544	.0104725	-.0056181	0.28933	-0.25	0.7820	0.3580	-0.6757	1.5068	.0071845	0.27007	-5.7301	-3.1301
2	-.0504915	-.0285739	-.0219176	0.49052	1.13	1.2908	-0.2908	2.9737	-1.9737	.0159794	0.46914	6.1131	8.7131
3	-.0182328	-.0084010	-.0098319	0.07010	0.13	0.7789	0.3621	1.4444	-0.4444	.0126227	0.25714	-1.1414	1.4586
4	-.0378261	.0012228	-.0390489	0.89812	0.87	0.8981	0.1849	0.8700	0.2301	.0434783	0.59524	-4.0696	-1.4696
5	.0138889	.0009960	.0128929	-0.23207	-0.25	-1.0090	1.7568	-1.0870	1.8152	.0127778	0.63889	-9.5333	-6.9333
6	-.0373692	-.0136900	-.0236792	0.31683	0.50	0.7921	0.3443	1.2500	-0.2500	.0298954	0.78431	-0.6568	1.9432
7	-.0177778	-.0135642	-.0042136	0.02844	0.12	0.2188	0.8359	0.9231	0.1429	.0192593	0.72222	-2.9852	-0.3852
8	-.0189189	.0004607	-.0193796	1.79262	1.75	2.8454	-1.8454	2.7778	-1.7778	.0068108	0.30144	0.5481	3.1481
9	-.0218144	.0097200	-.0315344	0.91071	0.63	11.3839	-10.3839	7.8750	-6.8750	.0027701	0.18182	2.3515	4.9515
10	.0000000	.0410536	-.0410536	0.19500	0.00	2.4376	-1.4376	0.0000	1.0000	.0168421	0.15385	-6.9789	-4.3789
11	.0000000	-.0174620	.0174620	-0.07212	0.00	-1.4424	2.0818	0.0000	1.0000	.0121065	0.20833	-5.7477	-3.1477
12	-.0280645	-.0044522	-.0236123	0.73198	0.87	0.9760	0.0469	1.1600	-0.1600	.0241935	0.43860	-1.5935	1.0065
13	.0040625	.0156477	-.0115852	0.37073	-0.13	7.4145	-6.4145	-2.6000	2.9500	.0015625	0.16129	-4.0625	-1.4625
14	-.0082759	-.0164727	.0081968	-0.11885	0.12	-0.6603	1.4952	0.6667	0.5000	.0124138	0.41860	-3.6759	-1.0759
15	.0000000	-.0037689	.0037689	-0.04711	0.00	-0.4711	1.3533	0.0000	1.0000	.0080000	0.31250	-4.6800	-2.0800
16	.0063559	.0062706	.0000853	-0.00161	-0.12	-0.0054	1.0040	-0.4000	1.3000	.0158898	0.34884	-8.3839	-5.7839
17	-.0073846	.0036244	-.0110090	0.17890	0.12	0.4708	0.6469	0.3158	0.7632	.0233846	0.55882	-6.7600	-4.1600
18	-.0077014	.0146230	-.0223244	0.37684	0.13	1.1083	-0.1083	0.3824	0.7132	.0201422	0.50746	-5.8346	-3.2346
19	.0199309	.0123963	.0075346	-0.28353	-0.75	-0.7088	1.5316	-1.8750	2.4063	.0106298	0.44444	-10.5458	-7.9458
20	.0000000	.0018301	-.0018301	0.02403	0.00	0.0961	0.9279	0.0000	1.0000	.0190404	0.39683	-7.5505	-4.9505
21	-.0484653	-.0064764	-.0419888	0.51982	0.60	1.2089	-0.2089	1.3953	-0.3953	.0347334	0.84314	0.9703	3.5703
22	-.0476190	.0053895	-.0530086	0.27830	0.25	5.5659	-4.5659	5.0000	-4.0000	.0095238	0.15152	7.3048	9.9048
23	.0000000	.0115597	-.0115597	0.05491	0.00	1.0982	-0.0982	0.0000	1.0000	.0105263	0.19231	-5.3368	-2.7368
24	.0000000	-.0035662	.0035662	-0.02988	0.00	-0.1494	1.1121	0.0000	1.0000	.0238663	0.46512	-8.8053	-6.2053
25	-.0689655	.0119206	-.0808861	0.58642	0.50	3.2579	-2.2579	2.7778	-1.7778	.0248276	0.41860	8.8759	11.4759
26	.0000000	-.0016688	.0016688	-0.02734	0.00	-0.1367	1.1025	0.0000	1.0000	.0122100	0.28169	-5.7746	-3.1746
27	.0169492	.0137343	.0032148	-0.09484	-0.50	-0.2563	1.1922	-1.3514	2.0135	.0125424	0.38947	-10.2678	-7.6678
28	-.0079365	.0025878	-.0105243	0.33152	0.25	0.6028	0.5479	0.4545	0.6591	.0174603	0.53398	-5.0762	-2.4762
29	-.0281690	-.0040302	-.0241388	0.42846	0.50	1.8629	-0.8629	2.1739	-1.1739	.0129577	0.18254	1.3549	3.9549
30	.0000000	-.0034631	.0034631	-0.07965	0.00	-0.9956	1.7467	0.0000	1.0000	.0034783	0.18605	-3.5043	-0.9043
31	-.0278400	-.0003330	-.0275070	0.85959	0.87	1.9991	-0.9991	2.0233	-1.0233	.0137600	0.25000	1.0608	3.6608
32	-.0297030	-.0198885	-.0098145	0.49563	1.50	1.1014	-0.1014	3.3333	-2.3333	.0089109	0.45000	2.8059	5.4059
33	-.0105008	.0009968	-.0114976	0.14234	0.13	0.4908	0.6319	0.4483	0.6638	.0234249	0.36250	-5.9603	-3.3603
34	-.0178571	.0091985	-.0270556	0.75756	0.50	1.0822	-0.0822	0.7143	0.4444	.0250000	0.49645	-4.4571	-1.8571
35	.0799136	-.0056260	.0855396	-0.39605	-0.37	-13.2016	10.9012	-12.3333	10.2500	.0064795	0.30000	-25.0622	-22.4622
36	-.0102930	-.0051421	-.0051509	0.06506	0.13	0.1513	0.8865	0.3023	0.7733	.0340459	0.79630	-8.7758	-6.1758
37	-.0096000	-.0305319	.0209319	-0.26165	0.12	-0.6541	1.4906	0.3000	0.7750	.0320000	0.81633	-8.4240	-5.8240
38	-.0246792	-.0024131	-.0222660	0.22556	0.25	0.7519	0.3976	0.8333	0.2857	.0296150	0.81081	-3.8833	-1.2833
39	.0454879	-.0005663	.0460541	-0.62772	-0.62	-1.9616	2.4712	-1.9375	2.4531	.0234776	0.59259	-20.5310	-17.9310
40	.0227273	.0000762	.0226510	-0.24916	-0.25	-0.7328	1.5496	-0.7353	1.5515	.0309091	0.91892	-16.5455	-13.9455
41	-.0447761	-.0020804	-.0421957	0.70678	0.75	2.5242	-1.5242	2.6786	-1.6786	.0167164	0.52830	4.6955	7.2955
42	-.0208333	-.0126852	-.0081481	0.09778	0.25	0.3259	0.7556	0.8333	0.2857	.0250000	0.60000	-3.6833	-1.0833
43	.0095012	.0362610	-.0267598	0.33798	-0.12	1.3519	-0.3519	-0.4800	1.3600	.0197941	0.35714	-10.2168	-7.6168
44	-.0229779	-.0108264	-.0121516	0.13221	0.25	0.5288	0.6034	1.0000	0.0000	.0229779	0.30864	-2.6000	0.0000
45	-.0057831	-.0008820	-.0049011	0.10170	0.12	0.2034	0.8475	0.2400	0.8200	.0240964	0.43478	-7.3614	-4.7614
46	-.0386667	-.0173491	-.0213175	0.47964	0.87	1.7130	-0.7130	3.1071	-2.1071	.0124444	0.20290	4.2178	6.8178
47	.0000000	.0013292	-.0013292	0.03223	0.00	0.0645	0.9517	0.0000	1.0000	.0206186	0.56180	-7.9608	-5.3608
48	.0000000	.0035080	-.0035080	0.02982	0.00	0.1657	0.8758	0.0000	1.0000	.0211765	0.31034	-8.1059	-5.5059
49	-.0246792	-.0015353	-.0231439	0.23445	0.25	0.6699	0.4664	0.7143	0.4444	.0345503	1.52174	-5.1666	-2.5666
50	.0333333	-.0015275	.0348609	-1.56874	-1.50	-1.5667	2.1766	-1.5000	2.1250	.0222222	2.08333	-17.0444	-14.4444
51	-.0539557	-.0060779	-.0479177	0.22186	0.25	1.3051	-0.3051	1.4706	-0.4706	.0367171	0.73913	1.8924	4.4924
52	-.0751515	-.0245931	-.0505584	0.41711	0.62	3.2085	-2.2085	4.7692	-3.7692	.0157576	0.52000	12.8424	15.4424
53	.0000000	-.0114263	.0114263	-0.08284	0.00	-0.6372	1.4779	0.0000	1.0000	.0179310	0.59091	-7.2621	-4.6621
54	-.0314770	.0128770	-.0443540	0.18318	0.13	1.8318	-0.8318	1.3000	-0.3000	.0242131	1.00000	-0.7114	1.8886
55	.0049020	-.0026234	.0075253	-0.38379	-0.25	-0.7241	1.5431	-0.4717	1.3538	.0103922	0.64634	-6.5765	-3.9765

TABLE OF VALUES FOR TEST-CREATED VARIABLES

OBS	RORA	RORE	RORF	CP	PC	X1	TO1	X2	TO2	DP	DE	X3	X4
56	.000000	-.0051822	.005182	-0.01036	0.00	-0.51822	1.38866	0.00000	1.00000	.0100000	1.00000	-5.2000	-2.6000
57	-.026639	-.0037026	-.022937	0.11193	0.13	0.79951	0.33402	0.92857	0.13333	.0286885	2.33333	-3.1328	-0.5328
58	-.013889	-.0084114	-.005477	0.09859	0.25	0.31805	0.76147	0.80645	0.32432	.0172222	0.49206	-3.4667	-0.8667
59	-.061196	.0028142	-.064010	0.92047	0.88	1.87851	-0.87851	1.79592	-0.79592	.0340751	0.96078	4.4515	7.0515
60	.021468	.0029379	.018530	-0.53515	-0.62	-1.18923	1.89192	-1.37778	2.03333	.0155817	0.47872	-12.2330	-9.6330
61	-.025401	-.0191860	-.006215	0.21288	0.87	0.60823	0.54383	2.48571	-1.48571	.0102190	0.25735	1.3474	3.9474
62	-.097050	-.0183567	-.078693	1.01357	1.25	6.75711	-5.75711	8.33333	-7.33333	.0116460	0.25862	19.6050	22.2050
63	.025000	.0181849	.006815	-0.06815	-0.25	-0.27260	1.20445	-1.00000	1.75000	.0250000	0.65789	-15.6000	-13.0000
64	-.036863	-.0141385	-.022724	0.28973	0.47	0.85216	0.25760	1.38235	-0.38235	.0266667	0.56667	0.0510	2.6510
65	-.032609	-.0022150	-.030394	0.69906	0.75	1.55346	-0.55346	1.66667	-0.66667	.0195652	0.26316	0.7913	3.3913
66	.038000	.0052795	.032720	-0.32720	-0.38	-3.27205	3.45404	-3.80000	3.85000	.0100000	0.18182	-15.0800	-12.4800
67	-.054795	-.0098161	-.044978	0.82086	1.00	1.95442	-0.95442	2.38095	-1.38095	.0230137	0.68852	5.6630	8.2630
68	.000000	.0014704	-.001470	0.01728	0.00	0.09598	0.92801	0.00000	1.00000	.0153191	0.31034	-6.5830	-3.9830
69	-.026429	.0030472	-.029476	0.41266	0.37	1.28957	-0.28957	1.15625	-0.15625	.0228571	0.39506	-1.6714	0.9286
70	.000000	.0104154	-.010415	0.20570	0.00	5.14259	-4.14259	0.00000	1.00000	.0020253	0.03571	-3.1266	-0.5266
71	-.060976	.0064836	-.067459	1.38291	1.25	1.02438	-0.02438	0.92593	0.13793	.0658537	0.60268	-3.8683	-1.2683
72	-.057078	.0051623	-.062240	0.27261	0.25	2.72611	-1.72611	2.50000	-1.50000	.0228311	0.33333	6.3041	8.9041
73	.000000	.0003584	-.000358	0.00390	0.00	0.01345	0.98992	0.00000	1.00000	.0266544	0.51786	-9.5301	-6.9301
74	.016250	-.0027804	.019030	-0.15224	-0.13	-1.01496	1.76122	-0.86667	1.65000	.0187500	0.38462	-11.7000	-9.1000
75	-.020000	-.0011488	-.018851	0.23564	0.25	0.56105	0.57922	0.59524	0.55357	.0336000	0.89362	-6.1360	-3.5360
76	.006369	.0136010	-.007232	0.28384	-0.25	0.70960	0.45009	-0.62500	1.46875	.0101911	0.28777	-6.9057	-4.3057
77	.048889	.0118824	.037007	-0.66612	-0.88	-2.01854	2.51390	-2.66667	3.00000	.0183333	0.40244	-20.0778	-17.4778
78	-.009411	.0004474	-.009858	0.39806	0.38	2.65377	-1.65377	2.53333	-1.53333	.0037147	0.13158	-1.1191	1.4809
79	-.017544	-.0004571	-.017087	0.24349	0.25	1.05863	-0.05863	1.08696	-0.08696	.0161404	0.25275	-2.2351	0.3649
80	.125000	.0049100	.120090	-0.72054	-0.75	-4.80360	4.60270	-5.00000	4.75000	.0250000	5.00000	-41.6000	-39.0000
81	.036289	.0061698	.030119	-0.73038	-0.88	-1.46077	2.09558	-1.76000	2.32000	.0206186	0.45455	-17.3959	-14.7959
82	-.043636	-.0048969	-.038739	0.10653	0.12	0.81949	0.30582	0.92308	0.14286	.0472727	0.11207	-3.5455	-0.9455
83	-.036145	-.0080226	-.028122	0.58353	0.75	4.16808	-3.16808	5.35714	-4.35714	.0067470	0.36842	5.0434	7.6434
84	.029056	-.0205377	.049593	-0.20482	-0.12	-2.04821	2.53616	-1.20000	1.90000	.0242131	0.76923	-16.4499	-13.8499
85	-.063131	-.0016765	-.061455	0.73008	0.75	2.08595	-1.08595	2.14286	-1.14286	.0294613	0.77778	6.1542	8.7542
86	-.036364	.0034484	-.039812	0.54742	0.50	1.27306	-0.27306	1.16279	-0.16279	.0312727	0.74138	-1.2764	1.3236
87	.000000	-.0046465	.004647	-0.02732	0.00	-0.27321	1.20491	0.00000	1.00000	.0170068	0.19231	-7.0218	-4.4218
88	-.013889	-.0017849	-.012104	0.21787	0.25	0.83797	0.27888	0.96154	0.07407	.0144444	0.27957	-2.7444	-0.1444
89	.012500	-.0059312	.018431	-0.36862	-0.25	-3.68623	3.76468	-2.50000	2.87500	.0050000	0.27027	-7.1500	-4.5500
90	-.003866	-.0012343	-.002631	0.08849	0.13	0.36872	0.72346	0.54167	0.59375	.0071365	0.60000	-3.4504	-0.8504
91	.000000	-.0010930	.001093	-0.00889	0.00	-0.09874	1.07405	0.00000	1.00000	.0110701	0.23684	-5.4782	-2.8782
92	.000000	.0001322	-.000132	0.00121	0.00	0.00549	0.99589	0.00000	1.00000	.0240964	0.37288	-8.8651	-6.2651
93	-.030763	-.0021400	-.028623	0.69783	0.75	1.16304	-0.16304	1.25000	-0.25000	.0246103	0.49180	-1.0003	1.5997
94	-.014518	-.0102203	-.004298	0.29602	1.00	0.19098	0.85676	0.64516	0.51613	.0225029	0.44160	-4.6761	-2.0761
95	.037037	.0060666	.030970	-0.20905	-0.25	-1.39367	2.04525	-1.66667	2.25000	.0222222	0.50000	-18.0074	-15.4074
96	-.022769	-.0062402	-.016529	0.26860	0.37	0.70684	0.45341	0.97368	0.05128	.0233846	0.23602	-2.7600	-0.1600
97	.032500	-.0009798	.033480	-0.13392	-0.13	-1.67399	2.25549	-1.62500	2.21875	.0200000	0.25000	-16.2500	-13.6500
98	-.020556	-.0035196	-.017036	0.30665	0.37	1.22659	-0.22659	1.48000	-0.48000	.0138889	0.24752	-0.8667	1.7333
99	-.048780	-.0061304	-.042650	0.87433	1.00	1.74865	-0.74865	2.00000	-1.00000	.0243902	0.58824	3.7415	6.3415
100	-.050000	-.0063931	-.043607	0.65410	0.75	1.48660	-0.48660	1.70455	-0.70455	.0293333	1.69231	2.7733	5.3733
101	-.021818	-.0031138	-.018704	0.10287	0.12	2.05748	-1.05748	2.40000	-1.40000	.0090909	0.19231	0.7091	3.3091
102	-.007701	.0117486	-.019450	0.32832	0.13	0.96563	0.06645	0.38235	0.71324	.0201422	0.49275	-5.8346	-3.2346
103	-.012346	.0059007	-.018246	0.36949	0.25	0.97234	0.05383	0.65789	0.50658	.0187654	0.21111	-4.2691	-1.6691
104	-.009804	.0122640	-.022068	0.56273	0.25	3.75155	-2.75155	1.66667	-0.66667	.0058824	0.29412	-1.5804	1.0196
105	-.030087	.0134611	-.043548	0.55001	0.38	5.50014	-4.50014	3.80000	-2.80000	.0079177	0.25000	3.1641	5.7641
106	.012048	-.0028567	.014905	-0.30928	-0.25	-2.81161	3.10871	-2.27273	2.70455	.0053012	0.27500	-7.1108	-4.5108
107	.000000	.0057785	-.005779	0.12279	0.00	0.64629	0.51529	0.00000	1.00000	.0089412	0.52778	-4.9247	-2.3247
108	.000000	.0084149	-.008415	0.17461	0.00	1.24721	-0.24721	0.00000	1.00000	.0067470	0.36842	-4.3542	-1.7542
109	-.022727	-.0097686	-.012959	0.14255	0.25	0.57018	0.57236	1.00000	0.00000	.0227273	0.52083	-2.6000	0.0000
110	-.008276	-.0283608	.020085	-0.29123	0.12	-1.16493	1.87369	0.48000	0.64000	.0172414	0.26316	-4.9310	-2.3310

TABLE OF VALUES FOR TEST-CREATED VARIABLES

OBS	RCRA	RCRE	RCRF	CP	PC	X1	TC1	X2	TO2	DP	DE	X3	X4
111	-.C197C1	-.0206105	.000910	-0.02309	0.50	-0.0577	1.0433	1.2500	-0.2500	.0157604	0.38835	-1.5756	1.0244
112	-.020408	-.0003705	-.020038	0.24546	0.25	0.8182	0.3077	0.8333	0.2857	.0244898	0.71429	-3.6612	-1.0612
113	.017088	.0037471	.013341	-0.19518	-0.25	-0.7229	1.5422	-0.9259	1.6944	.0184552	0.40909	-11.8413	-9.2413
114	-.032609	-.0103753	-.022233	0.51137	0.75	2.2233	-1.2233	3.2609	-2.2609	.0100000	0.15541	3.2783	5.8783
115	-.080000	-.0138698	-.066130	0.82663	1.00	2.9522	-1.9522	3.5714	-2.5714	.0224000	0.65116	12.3760	14.9760
116	-.021554	-.0003621	-.021192	0.37362	0.38	0.8896	0.1989	0.9048	0.1739	.0238230	0.61765	-3.1899	-0.5899
117	-.020270	-.0069958	-.013274	0.49116	0.75	1.7541	-0.7541	2.6786	-1.6786	.0075676	0.30435	0.7027	3.3027
118	-.010000	.0141299	-.024130	0.60325	0.25	2.1545	-1.1545	0.8929	0.1935	.0112000	0.43750	-2.9120	-0.3120
119	-.040000	.0103745	-.050375	0.46596	0.37	1.8639	-0.8639	1.4800	-0.4800	.0270270	0.45455	0.7730	3.3730
120	-.054035	-.0149062	-.039128	0.54310	0.75	2.7155	-1.7155	3.7500	-2.7500	.0144092	0.47619	7.7026	10.3026
121	.011905	.0118932	.000012	-0.00024	-0.25	-0.0007	1.0005	-0.7143	1.5357	.0166667	0.37234	-10.0286	-7.4286
122	.018868	.0056618	.013206	-0.17498	-0.25	-0.5468	1.4101	-0.7813	1.5859	.0241509	0.46377	-13.7649	-11.1649
123	-.012230	-.0018423	-.010387	0.11042	0.13	0.4417	0.6688	0.5200	0.6100	.0235183	0.44643	-5.5351	-2.9351
124	-.052632	-.0031430	-.049489	0.23507	0.25	3.9178	-2.9178	4.1667	-3.1667	.0126316	0.15000	7.8000	10.4000
125	-.022424	.0001132	-.022537	0.37187	0.37	0.6761	0.4893	0.6727	0.4932	.0333333	0.96491	-5.4364	-2.8364
126	-.086400	-.0188623	-.067538	1.26633	1.62	3.4225	-2.4225	4.3784	-3.3784	.0197333	0.33036	14.7333	17.3333
127	-.030695	-.0013732	-.029321	0.36300	0.38	1.0083	-0.0083	1.0556	-0.0556	.0290792	0.70588	-2.1800	0.4200
128	-.038750	.0001171	-.038867	0.62187	0.62	1.6365	-0.6365	1.6316	-0.6316	.0237500	0.73077	1.3000	3.9000
129	.000000	-.0122345	.012234	-0.05506	0.00	-0.5506	1.4129	0.0000	1.0000	.0222222	0.33333	-8.3778	-5.7778
130	-.008850	.0084249	-.017274	0.48800	0.25	1.2200	-0.2200	0.6250	0.5313	.0141593	0.49383	-3.9805	-1.3805
131	.040721	.0571942	-.016473	0.45714	-1.13	1.2030	-0.2030	-2.9737	3.2303	.0136937	0.43182	-16.7477	-14.1477
132	-.032508	.0070765	-.039584	0.76714	0.63	1.3948	-0.3948	1.1455	-0.1455	.0283798	0.75342	-1.5267	1.0733
133	.173611	-.0092291	.182840	-0.52658	-0.50	-13.1645	10.8734	-12.5000	10.3750	.0138889	0.16667	-51.3500	-48.7500
134	-.054054	-.0233880	-.030666	0.28366	0.50	2.8366	-1.8366	5.0000	-4.0000	.0108108	0.18519	8.6432	11.2432
135	-.064626	-.0004365	-.064189	0.37743	0.38	2.9033	-1.9033	2.9231	-1.9231	.0221088	0.33333	8.4544	11.0544
136	-.046468	-.0010429	-.045426	0.24439	0.25	2.4439	-1.4439	2.5000	-1.5000	.0185874	0.43478	4.6491	7.2491
137	-.010169	-.0030273	-.007142	0.52674	0.75	2.1070	-1.1070	3.0000	-2.0000	.0033898	0.38462	-0.8373	1.7627
138	-.065137	.0261061	-.091243	1.23269	0.88	4.1090	-3.1090	2.9333	-1.9333	.0222058	0.34091	8.5621	11.1621
139	-.064433	.0194271	-.083860	0.32538	0.25	3.2538	-2.2538	2.5000	-1.5000	.0257732	0.66667	7.4515	10.0515
140	-.034483	-.0179223	-.016560	0.24013	0.50	1.6008	-0.6008	3.3333	-2.3333	.0103448	0.24590	3.6759	6.2759
141	-.032208	.0061321	-.038340	0.73804	0.62	1.7164	-0.7164	1.4419	-0.4419	.0223377	1.04878	-0.0338	2.5662
142	.008392	.0157563	-.007364	0.54408	-0.62	1.8136	-0.8136	-2.0667	2.5500	.0040606	0.26549	-5.8377	-3.2377
143	-.041898	-.0374539	-.004444	0.30441	2.87	0.8697	0.2305	8.2000	-7.2000	.0051095	0.61404	6.9650	9.5650
144	-.018519	.0065208	-.025039	0.33803	0.25	1.3521	-0.3521	1.0000	0.0000	.0185185	0.26316	-2.6000	0.0000
145	-.068182	-.0054977	-.062684	0.68953	0.75	2.6520	-1.6520	2.8846	-1.8846	.0236364	0.63415	8.9818	11.5818
146	-.088889	.0071824	-.096071	1.08080	1.00	4.3232	-3.3232	4.0000	-3.0000	.0222222	0.28409	14.7333	17.3333
147	.025918	.0561794	-.030261	0.14011	-0.12	0.9341	0.1237	-0.8000	1.6000	.0323974	0.71429	-17.7620	-15.1620
148	-.033333	.0096173	-.042951	0.32213	0.25	2.4779	-1.4779	1.9231	-0.9231	.0173333	0.14444	1.5600	4.1600
149	-.032632	.0087614	-.041393	0.78647	0.62	1.5729	-0.5729	1.2400	-0.2400	.0263158	0.58824	-0.9579	1.6421
150	-.010293	.0103715	-.020665	0.26099	0.13	2.3727	-1.3727	1.1818	-0.1818	.0087094	0.14667	-2.1883	0.4117
151	-.063590	-.0104891	-.053101	0.51773	0.62	2.4654	-1.4654	2.9524	-1.9524	.0215385	0.58333	8.3333	10.9333
152	-.027027	-.0046912	-.022336	0.20661	0.25	0.8264	0.2958	1.0000	0.0000	.0270270	0.47170	-2.6000	0.0000
153	-.003158	.0043265	-.007484	0.28441	0.12	1.4220	-0.4220	0.6000	0.5500	.0052632	0.27778	-3.1474	-0.5474
154	.012793	-.0177702	.030563	-0.28668	-0.12	-2.6062	2.9547	-1.0909	1.8182	.0117271	0.21154	-8.9753	-6.3753
155	-.012207	-.0005198	-.011687	0.36382	0.38	1.5159	-0.5159	1.5833	-0.5833	.0077096	0.50000	-1.4307	1.1693
156	-.033392	-.0039114	-.029481	0.33549	0.38	0.8183	0.3076	0.9268	0.1364	.0360281	0.91111	-3.2854	-0.6854
157	-.025974	-.0143758	-.011598	0.16968	0.38	0.5142	0.6144	1.1515	-0.1515	.0225564	0.44000	-1.7114	0.8886
158	-.005141	.0000464	-.005187	0.25225	0.25	0.6306	0.5270	0.6250	0.5313	.0082254	0.28169	-3.4020	-0.8020
159	-.054815	.0048743	-.059689	0.40290	0.37	5.0363	-4.0363	4.6250	-3.6250	.0118519	0.19512	8.5704	11.1704
160	-.035495	.0064574	-.041952	0.88644	0.75	1.7729	-0.7729	1.5000	-0.5000	.0236630	0.49505	0.4762	3.0762
161	-.025641	.0051050	-.030746	0.59955	0.50	2.4981	-1.4981	2.0833	-1.0833	.0123077	0.31169	0.8667	3.4667
162	-.035238	.0177273	-.052965	0.55614	0.37	2.2245	-1.2245	1.4800	-0.4800	.0238095	0.69444	0.3714	2.9714
163	-.025641	-.0083866	-.017254	0.16823	0.25	0.7314	0.4234	1.0870	-0.0870	.0235897	0.47917	-2.0667	0.5333
164	-.021765	-.0170013	-.004763	0.08098	0.37	0.8998	0.1822	4.1111	-3.1111	.0052941	0.15789	1.6824	4.2824
165	-.008421	.0053553	-.013776	0.19631	0.12	1.4022	-0.4022	0.8571	0.2500	.0098246	0.26923	-2.9649	-0.3649

TABLE OF VALUES FOR TEST-CREATED VARIABLES

OBS	RORA	RORE	RORF	CP	PC	X1	TO1	X2	TO2	DP	DE	X3	X4
166	-.0277778	.0085210	-.0362988	0.32669	0.25	2.1779	-1.1779	1.66667	-0.66667	.0166667	0.22388	0.2889	2.8889
167	-.0714286	.0229007	-.0943293	0.33015	0.25	11.0051	-10.0051	8.33333	-7.33333	.0085714	0.17647	13.7429	16.3429
168	.0644884	.0045721	.0599163	-0.69683	-0.75	-3.1674	3.3755	-3.40909	3.55682	.0189166	0.50000	-24.2853	-21.6853
169	-.0131579	-.0256270	.0124691	-0.12319	0.13	-0.5356	1.4017	0.56522	0.57609	.0232794	0.69697	-5.2316	-2.6316
170	-.0069677	.0094899	-.0164576	0.59050	0.25	1.3122	-0.3122	0.55556	0.58333	.0125418	0.58442	-4.0493	-1.4493
171	-.0144383	-.0258350	.0113966	-0.39467	0.50	-0.7176	1.5382	0.90909	0.16667	.0158822	0.24554	-2.9754	-0.3754
172	-.0303030	-.0010633	-.0292397	0.72368	0.75	1.1487	-0.1487	1.19048	-0.19048	.0254545	0.49606	-1.3394	1.2606
173	-.0512821	-.0112598	-.0400223	0.39022	0.50	2.1679	-1.1679	2.77778	-1.77778	.0184615	0.31034	5.9333	8.5333
174	.0000000	.0007420	-.0007420	0.02170	0.00	0.0482	0.9638	0.00000	1.00000	.0153846	0.38462	-6.6000	-4.0000
175	.0086667	.0128912	-.0042246	0.06337	-0.13	0.3728	0.7204	-0.76471	1.57353	.0113333	0.40476	-7.8000	-5.2000
176	.0124611	-.0133857	.0258468	-0.24890	-0.12	-0.9956	1.7467	-0.48000	1.36000	.0259605	0.55556	-12.5896	-9.9896
177	-.0313273	-.0031672	-.0281600	0.34158	0.38	2.0093	-1.0093	2.23529	-1.23529	.0140148	0.34000	1.9012	4.5012
178	.0213144	.0144225	.0068919	-0.03880	-0.12	-0.5543	1.4157	-1.71429	2.28571	.0124334	0.26923	-11.3744	-8.7744
179	-.0241636	.0153816	-.0395452	0.21275	0.13	7.0918	-6.0918	4.33333	-3.33333	.0055762	0.06977	2.2327	4.8327
180	-.0655738	-.0163323	-.0492415	2.25280	3.00	3.4658	-2.4658	4.61538	-3.61538	.0142077	0.28261	10.7552	13.3552
181	.0000000	-.0007109	.0007109	-0.00409	0.00	-0.0292	1.0219	0.00000	1.00000	.0243478	0.32558	-8.9304	-6.3304
182	-.0696000	-.0285401	-.0410599	0.51325	0.87	1.1665	-0.1665	1.97727	-0.97727	.0352000	0.91667	6.3440	8.9440
183	-.0279642	-.0027120	-.0252522	0.45151	0.50	1.0750	-0.0750	1.19048	-0.19048	.0234899	0.40777	-1.4367	1.1633
184	-.0238095	-.0010003	-.0228092	0.23950	0.25	0.6843	0.4799	0.71429	0.44444	.0333333	1.00000	-5.0762	-2.4762
185	.0000000	.0090395	-.0090395	0.23620	0.00	0.4218	0.6837	0.00000	1.00000	.0214313	0.53333	-8.1721	-5.5721
186	-.0057143	-.0029122	-.0028021	0.12259	0.25	0.2313	0.8265	0.47170	0.64623	.0121143	0.36301	-4.2640	-1.6640
187	.0000000	.0037090	-.0037090	0.07603	0.00	0.1901	0.8574	0.00000	1.00000	.0195122	0.47059	-7.6732	-5.0732
188	-.0023645	-.0010443	-.0013202	0.06700	0.12	0.1340	0.8995	0.24000	0.82000	.0098522	0.49505	-4.5468	-1.9468
189	.0000000	-.0022083	.0022083	-0.03092	0.00	-0.1288	1.0966	0.00000	1.00000	.0171429	0.37500	-7.0571	-4.4571
190	-.0112108	-.0001032	-.0111075	0.14862	0.15	0.5308	0.6019	0.53571	0.59821	.0209268	0.36842	-5.1262	-2.5262
191	-.0089286	-.0186780	.0097494	-0.27298	0.25	-0.9099	1.6825	0.83333	0.28571	.0107143	0.24793	-3.0643	-0.4643
192	-.0270270	-.0001617	-.0268653	0.74551	0.75	1.4910	-0.4910	1.50000	-0.50000	.0180180	0.40000	-0.2577	2.3423
193	-.0300661	.0125159	-.0425820	0.70814	0.50	1.4163	-0.4163	1.00000	0.00000	.0300661	0.70423	-2.6000	0.0000
194	-.0106383	-.0005074	-.0101309	0.71423	0.75	1.0203	-0.0203	1.07143	-0.07143	.0099291	0.49296	-2.4156	0.1844
195	-.0533333	-.0230168	-.0303166	0.06821	0.12	2.2737	-1.2737	4.00000	-3.00000	.0133333	-0.07692	7.8000	10.4000
196	.0000000	-.0000953	.0000953	-0.00055	0.00	-0.0042	1.0032	0.00000	1.00000	.0226087	0.92857	-8.4783	-5.8783
197	.0000000	.0183543	-.0183543	0.06883	0.00	0.4589	0.6559	0.00000	1.00000	.0400000	2.50000	-13.0000	-10.4000
198	-.0289687	.0045281	-.0334968	0.28908	0.25	2.8908	-1.8908	2.50000	-1.50000	.0115875	0.25000	1.9191	4.5191
199	-.0435294	.0000931	-.0436225	0.37079	0.37	1.8540	-0.8540	1.85000	-0.85000	.0235294	0.25974	2.6000	5.2000
200	.0204082	.0080564	.0123518	-0.07263	-0.12	-0.7263	1.5447	-1.20000	1.90000	.0170068	0.90909	-12.3279	-9.7279

SPEARMAN CORRELATION COEFFICIENTS FOR TOTAL SAMPLE

	N	SUM	MEAN	MIN VALUE	MAX VALUE	CORRECTED SS	STANDARD DEV
X1	200	186.94137	0.9347069	-13.201612	11.3839297	1217.7162	2.47369697
X2	200	179.91450	0.8995725	-12.500000	8.3333333	1140.3542	2.39383024
X3	200	-682.43907	-3.4121954	-51.350000	19.6049689	14206.1671	8.44912862
DP	200	3.73216	0.0186608	0.001562	0.0658537	0.0170	0.00924383
DE	200	100.65623	0.5032811	-0.076923	5.0000000	42.7512	0.46349751
TO1	200	-0.99256	-0.0049628	-10.383930	10.9012088	984.1438	2.22383598
TO2	200	4.64459	0.0232229	-7.333333	10.3750000	915.3714	2.14472759
PC	200	52.95000	0.2647500	-1.500000	3.0000000	56.2544	0.53168164
CP	200	49.54751	0.2477375	-1.568738	2.2527969	37.2995	0.43293730

SPEARMAN CORRELATION COEFFICIENTS FOR TOTAL SAMPLE

N = 200 SPEARMAN CORRELATION COEFFICIENTS / PROB > |R| UNDER HO: RHO=0

	X1	X2	X3	DP	DE	TO1	TO2	PC	CP
X1	1.000000 0.0000	0.814875 0.0001	0.836760 0.0001	-0.110856 0.1140	-0.209456 0.0033	-1.000000 0.0001	-0.814875 0.0001	0.668032 0.0001	0.835450 0.0001
X2	0.814875 0.0001	1.000000 0.0000	0.961377 0.0001	-0.031681 0.6606	-0.140154 0.0449	-0.814875 0.0001	-1.000000 0.0001	0.866041 0.0001	0.720296 0.0001
X3	0.836760 0.0001	0.961377 0.0001	1.000000 0.0000	-0.086981 0.2183	-0.165919 0.0178	-0.836760 0.0001	-0.961377 0.0001	0.839008 0.0001	0.735388 0.0001
DP	-0.110856 0.1140	-0.031681 0.6606	-0.086981 0.2183	1.000000 0.0000	0.653427 0.0001	0.110856 0.1140	0.031681 0.6606	0.151052 0.0307	0.104670 0.1362
DE	-0.209456 0.0033	-0.140154 0.0449	-0.165919 0.0178	0.653427 0.0001	1.000000 0.0000	0.209456 0.0033	0.140154 0.0449	0.065018 0.6368	0.049879 0.5098
TO1	-1.000000 0.0001	-0.814875 0.0001	-0.836760 0.0001	0.110856 0.1140	0.209456 0.0033	1.000000 0.0000	0.814875 0.0001	-0.668032 0.0001	-0.835450 0.0001
TO2	-0.814875 0.0001	-1.000000 0.0001	-0.961377 0.0001	0.031681 0.6606	0.140154 0.0449	0.814875 0.0001	1.000000 0.0000	-0.866041 0.0001	-0.720296 0.0001
PC	0.668032 0.0001	0.866041 0.0001	0.839008 0.0001	0.151052 0.0307	0.065018 0.6368	-0.668032 0.0001	-0.866041 0.0001	1.000000 0.0000	0.830426 0.0001
CP	0.835450 0.0001	0.720296 0.0001	0.735388 0.0001	0.104670 0.1362	0.049879 0.5098	-0.835450 0.0001	-0.720296 0.0001	0.830426 0.0001	1.000000 0.0000

SIMPLE STATISTICS OF TOTAL SAMPLE TEST-CREATED VARIABLES

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	200	0.934707	2.473697	6.119177	186.941374	1217.716161	-13.201612	11.383930	264.649
TC1	200	-0.004963	2.223836	4.945446	-0.992558	984.143847	-10.383930	10.901209	44810.184
X2	200	0.899573	2.393830	5.730423	179.914503	1140.354220	-12.500000	8.333333	266.108
TC2	200	0.023223	2.144728	4.599856	4.644587	915.371431	-7.333333	10.375000	9235.386
DP	200	0.018661	0.009244	0.000085	3.732163	0.017004	0.001563	0.065854	49.536
DE	200	0.503281	0.463498	0.214830	100.656230	42.751158	-0.076923	5.000000	92.095
X3	200	-3.412195	8.449129	71.387774	-682.439073	14206.167119	-51.350000	19.604969	247.616
X4	200	-0.812195	8.449129	71.387774	-162.439073	14206.167119	-48.750000	22.204969	1040.283

TAX BRACKETS TO1 AND TO2 FOR TOTAL 200 FIRM SAMPLE

OBS	X1	TO1	X2	TO2	X3	X4
1	.934707	.122582	.899573	.182524	-3.4122	-.812195

DATA ARRANGED BY DECILE ACCORDING TO THE VALUE OF DP

OBS	FIRM	X1	TO1	X2	TO2	DP	DE	X3	X4	DECILE1
1	13	7.4145	-6.4145	-2.6000	2.9500	.0015625	0.16129	-4.0625	-1.4625	1
2	70	5.1426	-4.1426	0.0000	1.0000	.0020253	0.03571	-3.1266	-0.5266	1
3	9	11.3839	-10.3839	7.8750	-6.8750	.0027701	0.18182	2.3515	4.9515	1
4	137	2.1070	-1.1070	3.0000	-2.0000	.0033898	0.38462	-0.8373	1.7627	1
5	30	-0.9956	1.7467	0.0000	1.0000	.0034783	0.18605	-3.5043	-0.9043	1
6	78	2.6538	-1.6538	2.5333	-1.5333	.0037147	0.13158	-1.1191	1.4809	1
7	142	1.8136	-0.8136	-2.0667	2.5500	.0040606	0.26549	-5.8377	-3.2377	1
8	89	-3.6862	3.7647	-2.5000	2.8750	.0050000	0.27027	-7.1500	-4.5500	1
9	143	0.8697	0.2305	8.2000	-7.2000	.0051095	0.61404	6.9650	9.5650	1
10	153	1.4220	-0.4220	0.6000	0.5500	.0052632	0.27778	-3.1474	-0.5474	1
11	164	0.8998	0.1822	4.1111	-3.1111	.0052941	0.15789	1.6824	4.2824	1
12	106	-2.8116	3.1087	-2.2727	2.7045	.0053012	0.27500	-7.1108	-4.5108	1
13	179	7.0918	-6.0918	4.3333	-3.3333	.0055762	0.06977	2.2327	4.8327	1
14	104	3.7516	-2.7516	1.6667	-0.6667	.0058824	0.29412	-1.5804	1.0196	1
15	35	-13.2016	10.9012	-12.3333	10.2500	.0064795	0.30000	-25.0622	-22.4622	1
16	83	4.1681	-3.1681	5.3571	-4.3571	.0067470	0.36842	5.0434	7.6434	1
17	108	1.2472	-0.2472	0.0000	1.0000	.0067470	0.36842	-4.3542	-1.7542	1
18	8	2.8454	-1.8454	2.7778	-1.7778	.0068108	0.30144	0.5481	3.1481	1
19	90	0.3687	0.7235	0.5417	0.5938	.0071365	0.60000	-3.4504	-0.8504	1
20	1	0.7820	0.3580	-0.6757	1.5068	.0071845	0.27007	-5.7301	-3.1301	1
21	117	1.7541	-0.7541	2.6786	-1.6786	.0075676	0.30435	0.7027	3.3027	2
22	155	1.5159	-0.5159	1.5833	-0.5833	.0077096	0.50000	-1.4307	1.1693	2
23	105	5.5001	-4.5001	3.8000	-2.8000	.0079177	0.25000	3.1641	5.7641	2
24	15	-0.4711	1.3533	0.0000	1.0000	.0080000	0.31250	-4.6800	-2.0800	2
25	158	0.6306	0.5270	0.6250	0.5313	.0082254	0.28169	-3.4020	-0.8020	2
26	167	11.0051	-10.0051	8.3333	-7.3333	.0085714	0.17647	13.7429	16.3429	2
27	150	2.3727	-1.3727	1.1818	-0.1818	.0087094	0.14667	-2.1883	0.4117	2
28	32	1.1014	-0.1014	3.3333	-2.3333	.0089109	0.45000	2.8059	5.4059	2
29	107	0.6463	0.5153	0.0000	1.0000	.0089412	0.52778	-4.9247	-2.3247	2
30	101	2.0575	-1.0575	2.4000	-1.4000	.0090909	0.19231	0.7091	3.3091	2
31	22	5.5659	-4.5659	5.0000	-4.0000	.0095238	0.15152	7.3048	9.9048	2
32	165	1.4022	-0.4022	0.8571	0.2500	.0098246	0.26923	-2.9649	-0.3649	2
33	188	0.1340	0.8995	0.2400	0.8200	.0098522	0.49505	-4.5468	-1.9468	2
34	194	1.0203	-0.0203	1.0714	-0.0714	.0099291	0.49296	-2.4156	0.1844	2
35	66	-3.2720	3.4540	-3.8000	3.8500	.0100000	0.18182	-15.0800	-12.4800	2
36	56	-0.5182	1.3887	0.0000	1.0000	.0100000	1.00000	-5.2000	-2.6000	2
37	114	2.2233	-1.2233	3.2609	-2.2609	.0100000	0.15541	3.2783	5.8783	2
38	76	0.7096	0.4501	-0.6250	1.4688	.0101911	0.28777	-6.9057	-4.3057	2
39	61	0.6082	0.5438	2.4857	-1.4857	.0102190	0.25735	1.3474	3.9474	2
40	140	1.6008	-0.6008	3.3333	-2.3333	.0103448	0.24590	3.6759	6.2759	2
41	55	-0.7241	1.5431	-0.4717	1.3538	.0103922	0.64634	-6.5765	-3.9765	3
42	23	1.0982	-0.0982	0.0000	1.0000	.0105263	0.19231	-5.3368	-2.7368	3
43	19	-0.7088	1.5316	-1.8750	2.4063	.0106298	0.44444	-10.5458	-7.9458	3
44	191	-0.9099	1.6825	0.8333	0.2857	.0107143	0.24793	-3.0643	-0.4643	3
45	134	2.8366	-1.8366	5.0000	-4.0000	.0108108	0.18519	8.6432	11.2432	3
46	91	-0.0987	1.0741	0.0000	1.0000	.0110701	0.23684	-5.4782	-2.8782	3
47	118	2.1545	-1.1545	0.8929	0.1935	.0112000	0.43750	-2.9120	-0.3120	3
48	175	0.3728	0.7204	-0.7647	1.5735	.0113333	0.40476	-7.8000	-5.2000	3
49	198	2.8908	-1.8908	2.5000	-1.5000	.0115875	0.25000	1.9191	4.5191	3
50	62	6.7571	-5.7571	8.3333	-7.3333	.0116460	0.25862	19.6050	22.2050	3
51	154	-2.6062	2.9547	-1.0909	1.8182	.0117271	0.21154	-8.9753	-6.3753	3
52	159	5.0363	-4.0363	4.6250	-3.6250	.0118519	0.19512	8.5704	11.1704	3
53	11	-1.4424	2.0818	0.0000	1.0000	.0121065	0.20833	-5.7477	-3.1477	3
54	166	0.2313	0.8265	0.4717	0.6462	.0121143	0.36301	-4.2640	-1.6640	3
55	26	-0.1367	1.1025	0.0000	1.0000	.0122100	0.28169	-5.7746	-3.1746	3

DATA ARRANGED BY DECILE ACCORDING TO THE VALUE OF DP

OBS	FIRM	X1	TO1	X2	TO2	DP	DE	X3	X4	DECILE1
56	161	2.4981	-1.4981	2.0833	-1.0833	.0123077	.311688	0.8667	3.4667	3
57	14	-0.6603	1.4952	0.6667	0.5000	.0124138	.418605	-3.6759	-1.0759	3
58	178	-0.5543	1.4157	-1.7143	2.2857	.0124334	.269231	-11.3744	-8.7744	3
59	46	1.7130	-0.7130	3.1071	-2.1071	.0124444	.202899	4.2178	6.8178	3
60	170	1.3122	-0.3122	0.5556	0.5833	.0125418	.584416	-4.0493	-1.4493	3
61	27	-0.2563	1.1922	-1.3514	2.0135	.0125424	.389474	-10.2678	-7.6678	4
62	3	0.7789	0.3621	1.4444	-0.4444	.0126227	.257143	-1.1414	1.4586	4
63	124	3.9178	-2.9178	4.1667	-3.1667	.0126316	.150000	7.8000	10.4000	4
64	5	-1.0090	1.7568	-1.0870	1.8152	.0127778	.638889	-9.5333	-6.9333	4
65	29	1.8629	-0.8629	2.1739	-1.1739	.0129577	.182540	1.3549	3.9549	4
66	195	2.2737	-1.2737	4.0000	-3.0000	.0133333	-.076923	7.8000	10.4000	4
67	131	1.2030	-0.2030	-2.9737	3.2303	.0136937	.431818	-16.7477	-14.1477	4
68	31	1.9991	-0.9991	2.0233	-1.0233	.0137600	.250000	1.0608	3.6608	4
69	98	1.2266	-0.2266	1.4800	-0.4800	.0138889	.247525	-0.8667	1.7333	4
70	133	-13.1645	10.8734	-12.5000	10.3750	.0138889	.166667	-51.3500	-48.7500	4
71	177	2.0093	-1.0093	2.2353	-1.2353	.0140148	.340000	1.9012	4.5012	4
72	130	1.2200	-0.2200	0.6250	0.5313	.0141593	.493827	-3.9805	-1.3805	4
73	180	3.4658	-2.4658	4.6154	-3.6154	.0142077	.282609	10.7552	13.3552	4
74	120	2.7155	-1.7155	3.7500	-2.7500	.0144092	.476190	7.7026	10.3026	4
75	88	0.8380	0.2789	0.9615	0.0741	.0144444	.279570	-2.7444	-0.1444	4
76	68	0.0960	0.9280	0.0000	1.0000	.0153191	.310345	-6.5830	-3.9830	4
77	174	0.0482	0.9638	0.0000	1.0000	.0153846	.384615	-6.6000	-4.0000	4
78	60	-1.1892	1.8919	-1.3778	2.0333	.0155817	.478723	-12.2330	-9.6330	4
79	52	3.2085	-2.2085	4.7692	-3.7692	.0157576	.520000	12.8424	15.4424	4
80	111	-0.0577	1.0433	1.2500	-0.2500	.0157604	.388350	-1.5756	1.0244	4
81	171	-0.7176	1.5382	0.9091	0.1667	.0158822	.245536	-2.9754	-0.3754	5
82	16	-0.0054	1.0040	-0.4000	1.3000	.0158898	.348837	-8.3839	-5.7839	5
83	79	1.0586	-0.0586	1.0870	-0.0870	.0161404	.252747	-2.2351	0.3649	5
84	121	-0.0007	1.0005	-0.7143	1.5357	.0166667	.372340	-10.0286	-7.4286	5
85	166	2.1779	-1.1779	1.6667	-0.6667	.0166667	.223881	0.2889	2.8889	5
86	41	2.5242	-1.5242	2.6786	-1.6786	.0167164	.528302	4.6955	7.2955	5
87	10	2.4376	-1.4376	0.0000	1.0000	.0168421	.153846	-6.9789	-4.3789	5
88	2	1.2908	-0.2908	2.9737	-1.9737	.0169794	.469136	6.1131	8.7131	5
89	87	-0.2732	1.2049	0.0000	1.0000	.0170068	.192308	-7.0218	-4.4218	5
90	200	-0.7263	1.5447	-1.2000	1.9000	.0170068	.909091	-12.3279	-9.7279	5
91	189	-0.1288	1.0966	0.0000	1.0000	.0171429	.375000	-7.0571	-4.4571	5
92	58	0.3180	0.7615	0.8065	0.3243	.0172222	.492063	-3.4667	-0.8667	5
93	110	-1.1649	1.8737	0.4800	0.6400	.0172414	.263158	-4.9310	-2.3310	5
94	148	2.4779	-1.4779	1.9231	-0.9231	.0173333	.144444	1.5600	4.1600	5
95	28	0.6028	0.5479	0.4545	0.6591	.0174603	.533981	-5.0762	-2.4762	5
96	53	-0.6372	1.4779	0.0000	1.0000	.0179310	.590909	-7.2621	-4.6621	5
97	192	1.4910	-0.4910	1.5000	-0.5000	.0180180	.400000	-0.2577	2.3423	5
98	77	-2.0185	2.5139	-2.6667	3.0000	.0183333	.402439	-20.0778	-17.4778	5
99	113	-0.7229	1.5422	-0.9259	1.6944	.0184552	.409091	-11.8413	-9.2413	5
100	173	2.1679	-1.1679	2.7778	-1.7778	.0184615	.310345	5.9333	8.5333	5
101	144	1.3521	-0.3521	1.0000	0.0000	.0185185	.263158	-2.6000	0.0000	6
102	136	2.4439	-1.4439	2.5000	-1.5000	.0185874	.434783	4.6491	7.2491	6
103	74	-1.0150	1.7612	-0.8667	1.6500	.0187500	.384615	-11.7000	-9.1000	6
104	103	0.9723	0.0538	0.6579	0.5066	.0187654	.211111	-4.2691	-1.6691	6
105	168	-3.1674	3.3755	-3.4091	3.5568	.0189166	.500000	-24.2853	-21.6853	6
106	20	0.0961	0.9279	0.0000	1.0000	.0190404	.396825	-7.5505	-4.9505	6
107	7	0.2188	0.8359	0.9231	0.1429	.0192593	.722222	-2.9852	-0.3852	6
108	187	0.1901	0.8574	0.0000	1.0000	.0195122	.470588	-7.6732	-5.0732	6
109	65	1.5535	-0.5535	1.6667	-0.6667	.0195652	.263158	0.7913	3.3913	6
110	126	3.4225	-2.4225	4.3784	-3.3784	.0197333	.330357	14.7333	17.3333	6

DATA ARRANGED BY DECILE ACCORDING TO THE VALUE OF DP

OBS	FIRM	X1	TO1	X2	TO2	DP	DE	X3	X4	DECILE1
111	43	1.35190	-0.35190	-0.48000	1.36000	.0197941	0.35714	-10.2168	-7.6168	6
112	97	-1.67399	2.25549	-1.62500	2.21875	.0200000	0.25000	-16.2500	-13.6500	6
113	18	1.10834	-0.10834	0.38235	0.71324	.0201422	0.50746	-5.8346	-3.2346	6
114	102	0.96563	0.06645	0.38235	0.71324	.0201422	0.49275	-5.8346	-3.2346	6
115	47	0.06447	0.95165	0.00000	1.00000	.0206186	0.56180	-7.9608	-5.3608	6
116	81	-1.46077	2.09558	-1.76000	2.32000	.0206186	0.45455	-17.3959	-14.7959	6
117	190	0.53078	0.60191	0.53571	0.59821	.0209268	0.36842	-5.1262	-2.5262	6
118	48	0.16565	0.87576	0.00000	1.00000	.0211765	0.31034	-8.1059	-5.5059	6
119	185	0.42179	0.68366	0.00000	1.00000	.0214313	0.53333	-8.1721	-5.5721	6
120	151	2.46539	-1.46539	2.95238	-1.95238	.0215385	0.58333	8.3333	10.9333	6
121	135	2.90333	-1.90333	2.92308	-1.92308	.0221088	0.33333	8.4544	11.0544	7
122	138	4.10898	-3.10898	2.93333	-1.93333	.0222058	0.34091	8.5621	11.1621	7
123	129	-0.55055	1.41291	0.00000	1.00000	.0222222	0.33333	-8.3778	-5.7778	7
124	95	-1.39367	2.04525	-1.66667	2.25000	.0222222	0.50000	-18.0074	-15.4074	7
125	50	-1.56874	2.17655	-1.50000	2.12500	.0222222	2.08333	-17.0444	-14.4444	7
126	146	4.32321	-3.32321	4.00000	-3.00000	.0222222	0.28409	14.7333	17.3333	7
127	141	1.71638	-0.71638	1.44186	-0.44186	.0223377	1.04878	-0.0338	2.5662	7
128	115	2.95224	-1.95224	3.57143	-2.57143	.0224000	0.65116	12.3760	14.9760	7
129	94	0.19098	0.85676	0.64516	0.51613	.0225029	0.44160	-4.6761	-2.0761	7
130	157	0.51419	0.61436	1.15152	-0.15152	.0225564	0.44000	-1.7114	0.8886	7
131	196	-0.00422	1.00316	0.00000	1.00000	.0226087	0.92857	-8.4783	-5.8783	7
132	109	0.57018	0.57236	1.00000	0.00000	.0227273	0.52083	-2.6000	0.0000	7
133	72	2.72611	-1.72611	2.50000	-1.50000	.0228311	0.33333	6.3041	8.9041	7
134	69	1.28957	-0.28957	1.15625	-0.15625	.0228571	0.39506	-1.6714	0.9286	7
135	44	0.52884	0.60337	1.00000	0.00000	.0229779	0.30864	-2.6000	0.0000	7
136	67	1.95442	-0.95442	2.38095	-1.38095	.0230137	0.68852	5.6630	8.2630	7
137	169	-0.53563	1.40172	0.56522	0.57609	.0232794	0.69697	-5.2316	-2.6316	7
138	17	0.47078	0.64692	0.31579	0.76316	.0233846	0.55882	-6.7600	-4.1600	7
139	96	0.70684	0.45341	0.97368	0.05128	.0233846	0.23602	-2.7600	-0.1600	7
140	33	0.49083	0.63188	0.44828	0.66379	.0234249	0.36250	-5.9603	-3.3603	7
141	39	-1.96162	2.47121	-1.93750	2.45313	.0234776	0.59259	-20.5310	-17.9310	8
142	183	1.07502	-0.07502	1.19048	-0.19048	.0234899	0.40777	-1.4367	1.1633	8
143	123	0.44167	0.66875	0.52000	0.61000	.0235183	0.44643	-5.5351	-2.9351	8
144	199	1.85396	-0.85396	1.85000	-0.85000	.0235294	0.25974	2.6000	5.2000	8
145	163	0.73144	0.42341	1.08696	-0.08696	.0235897	0.47917	-2.0667	0.5333	8
146	145	2.65202	-1.65202	2.88462	-1.88462	.0236364	0.63415	8.9818	11.5818	8
147	160	1.77289	-0.77289	1.50000	-0.50000	.0236630	0.49505	0.4762	3.0762	8
148	128	1.63651	-0.63651	1.63158	-0.63158	.0237500	0.73077	1.3000	3.9000	8
149	162	2.22455	-1.22455	1.48000	-0.48000	.0238095	0.69444	0.3714	2.9714	8
150	116	0.88956	0.19891	0.90476	0.17391	.0238230	0.61765	-3.1899	-0.5899	8
151	24	-0.14942	1.11207	0.00000	1.00000	.0238663	0.46512	-8.8053	-6.2053	8
152	92	0.00549	0.99589	0.00000	1.00000	.0240964	0.37288	-8.8651	-6.2651	8
153	45	0.20340	0.84745	0.24000	0.82000	.0240964	0.43478	-7.3614	-4.7614	8
154	122	-0.54682	1.41011	-0.78125	1.58594	.0241509	0.46377	-13.7849	-11.1849	8
155	12	0.97598	0.04692	1.16000	-0.16000	.0241935	0.43860	-1.5935	1.0065	8
156	54	1.83182	-0.83182	1.30000	-0.30000	.0242131	1.00000	-0.7114	1.8886	8
157	84	-2.04821	2.53616	-1.20000	1.90000	.0242131	0.76923	-16.4499	-13.8499	8
158	181	-0.02920	1.02190	0.00000	1.00000	.0243478	0.32558	-8.9304	-6.3304	8
159	99	1.74865	-0.74865	2.00000	-1.00000	.0243902	0.58824	3.7415	6.3415	8
160	112	0.81820	0.30766	0.83333	0.28571	.0244898	0.71429	-3.6612	-1.0612	8
161	93	1.16304	-0.16304	1.25000	-0.25000	.0246103	0.49180	-1.0003	1.5997	9
162	25	3.25791	-2.25791	2.77778	-1.77778	.0248276	0.41860	8.8759	11.4759	9
163	42	0.32592	0.75556	0.83333	0.28571	.0250000	0.60000	-3.6833	-1.0833	9
164	80	-4.80360	4.60270	-5.00000	4.75000	.0250000	5.00000	-41.6000	-39.0000	9
165	34	1.08223	-0.08223	0.71429	0.44444	.0250000	0.49645	-4.4571	-1.8571	9

DATA ARRANGED BY DECILE ACCORDING TO THE VALUE OF DP

OBS	FIRM	X1	TO1	X2	TO2	DP	DE	X3	X4	DECILE1
166	63	-0.27260	1.20445	-1.00000	1.75000	.0250000	0.65789	-15.6000	-13.0000	9
167	172	1.14870	-0.14870	1.19048	-0.19048	.0254545	0.49606	-1.3394	1.2606	9
168	139	3.25377	-2.25377	2.50000	-1.50000	.0257732	0.66667	7.4515	10.0515	9
169	176	-0.99562	1.74671	-0.48000	1.36000	.0259605	0.55556	-12.5896	-9.9896	9
170	149	1.57293	-0.57293	1.24000	-0.24000	.0263158	0.58824	-0.9579	1.6421	9
171	73	0.01345	0.98992	0.00000	1.00000	.0266544	0.51786	-9.5301	-6.9301	9
172	64	0.85216	0.25760	1.38235	-0.38235	.0266667	0.56667	0.0510	2.6510	9
173	119	1.86386	-0.86386	1.48000	-0.48000	.0270270	0.45455	0.7730	3.3730	9
174	152	0.82643	0.29580	1.00000	0.00000	.0270270	0.47170	-2.6000	0.0000	9
175	132	1.39480	-0.39480	1.14545	-0.14545	.0283798	0.75342	-1.5267	1.0733	9
176	57	0.79951	0.33402	0.92857	0.13333	.0286885	2.33333	-3.1328	-0.5328	9
177	127	1.00833	-0.00833	1.05556	-0.05556	.0290792	0.70588	-2.1800	0.4200	9
178	100	1.48660	-0.48660	1.70455	-0.70455	.0293333	1.69231	2.7733	5.3733	9
179	85	2.08595	-1.08595	2.14286	-1.14286	.0294613	0.77778	6.1542	8.7542	9
180	38	0.75185	0.39763	0.83333	0.28571	.0296150	0.81081	-3.8833	-1.2833	9
181	6	0.79207	0.34427	1.25000	-0.25000	.0298954	0.78431	-0.6568	1.9432	10
182	193	1.41628	-0.41628	1.00000	0.00000	.0300661	0.70423	-2.6000	0.0000	10
183	40	-0.73283	1.54962	-0.73529	1.55147	.0309091	0.91892	-16.5455	-13.9455	10
184	86	1.27306	-0.27306	1.16279	-0.16279	.0312727	0.74138	-1.2764	1.3236	10
185	37	-0.65412	1.49059	0.30000	0.77500	.0320000	0.81633	-8.4240	-5.8240	10
186	147	0.93407	0.12370	-0.80000	1.60000	.0323974	0.71429	-17.7620	-15.1620	10
187	125	0.67612	0.48928	0.67273	0.49315	.0333333	0.96491	-5.4364	-2.8364	10
188	184	0.68428	0.47992	0.71429	0.44444	.0333333	1.00000	-5.0762	-2.4762	10
189	75	0.56105	0.57922	0.59524	0.55357	.0336000	0.89362	-6.1360	-3.5360	10
190	36	0.15129	0.88653	0.30233	0.77326	.0340459	0.79630	-8.7758	-6.1758	10
191	59	1.87851	-0.87851	1.79592	-0.79592	.0340751	0.96078	4.4515	7.0515	10
192	49	0.66985	0.49641	0.71429	0.44444	.0345508	1.52174	-5.1666	-2.5666	10
193	21	1.20889	-0.20889	1.39535	-0.39535	.0347334	0.84314	0.9703	3.5703	10
194	182	1.16647	-0.16647	1.97727	-0.97727	.0352000	0.91667	6.3440	8.9440	10
195	156	0.81826	0.30757	0.92683	0.13636	.0360281	0.91111	-3.2854	-0.6854	10
196	51	1.30505	-0.30505	1.47059	-0.47059	.0367171	0.73913	1.8924	4.4924	10
197	197	0.45886	0.65586	0.00000	1.00000	.0400000	2.50000	-13.0000	-10.4000	10
198	4	0.89812	0.18491	0.87000	0.23009	.0434783	0.59524	-4.0696	-1.4696	10
199	82	0.81949	0.30582	0.92308	0.14286	.0472727	0.11207	-3.5455	-0.9455	10
200	71	1.02438	-0.02438	0.92593	0.13793	.0658537	0.60268	-3.8683	-1.2683	10

SIMPLE STATISTICS FOR TEST-CREATED VARIABLES BY DP DECILE

DECILE1=1

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	20	1.663327	4.936163	24.365709	33.266538	462.948475	-13.201612	11.383930	296.764
TO1	20	-0.901297	4.348825	18.912282	-18.025949	359.333355	-10.383930	10.901209	482.507
X2	20	0.927381	4.460422	19.895366	18.547629	378.011947	-12.333333	8.200000	480.970
TO2	20	-0.193716	3.905859	15.255738	-3.874313	289.859023	-7.200000	10.250000	2016.285
X3	20	-2.862499	6.505902	42.326755	-57.249987	804.208349	-25.062203	6.964964	227.280
X4	20	-0.262499	6.505902	42.326755	-5.249987	804.208349	-22.462203	9.564964	2478.445

DECILE1=2

X1	20	1.779341	2.891814	8.362590	35.586827	158.889213	-3.272048	11.005080	162.522
TO1	20	-0.799385	2.826831	7.990971	-15.987693	151.828454	-10.005080	3.454036	353.626
X2	20	1.787944	2.491921	6.209670	35.758878	117.983731	-3.800000	8.333333	139.374
TO2	20	-0.827087	2.387434	5.699841	-16.541735	108.296987	-7.333333	3.850000	288.656
X3	20	-0.850387	5.959146	35.511423	-17.007742	674.717029	-15.080000	13.742857	700.757
X4	20	1.749613	5.959146	35.511423	34.992258	674.717029	-12.480000	16.342857	340.598

DECILE1=3

X1	20	0.952965	2.267608	5.142045	19.059305	97.698861	-2.606220	6.757107	237.953
TO1	20	-0.043433	2.163958	4.682713	-0.868662	88.971542	-5.757107	2.954665	4982.276
X2	20	1.157616	2.515187	6.326167	23.152322	120.197166	-1.875000	8.333333	217.273
TO2	20	-0.200127	2.446663	5.986160	-4.002538	113.737041	-7.333333	2.406250	1222.556
X3	20	-2.087630	7.552075	57.033835	-41.752598	1083.642874	-11.374423	19.604969	361.754
X4	20	0.512370	7.552075	57.033835	10.247402	1083.642874	-8.774423	22.204969	1473.949

DECILE1=4

X1	20	0.559329	3.531905	12.474353	11.186576	237.012708	-13.164493	3.917843	631.454
TO1	20	0.259408	2.856187	8.157806	5.188158	154.998310	-2.917843	10.873370	1101.041
X2	20	0.710248	3.786062	14.334269	14.204958	272.351104	-12.500000	4.769231	533.062
TO2	20	0.058223	3.163016	10.004670	1.164462	190.088726	-3.769231	10.375000	5432.579
X3	20	-3.620312	13.734571	188.638431	-72.406233	3584.130189	-51.350000	12.842424	379.375
X4	20	-1.020312	13.734571	188.638431	-20.406233	3584.130189	-48.750000	15.442424	1346.115

DECILE1=5

X1	20	0.507562	1.370987	1.879605	10.151242	35.712501	-2.018537	2.524207	270.112
TO1	20	0.424004	1.272124	1.618299	8.480073	30.747688	-1.524207	2.513903	300.027
X2	20	0.567497	1.436232	2.062762	11.349943	39.192485	-2.666667	2.973684	253.082
TO2	20	0.380675	1.318609	1.738729	7.613507	33.035853	-1.973684	3.000000	346.387
X3	20	-4.566525	6.580739	43.306123	-91.330504	822.816343	-20.077778	6.113137	144.108
X4	20	-1.966525	6.580739	43.306123	-39.330504	822.816343	-17.477778	8.713137	334.638

DECILE1=6

X1	20	0.500308	1.530681	2.342983	10.006167	44.516682	-3.167391	3.422519	305.947
TO1	20	0.432237	1.370930	1.879448	8.644730	35.709516	-2.422519	3.375543	317.171
X2	20	0.361903	1.709124	2.921103	7.238060	55.500963	-3.409091	4.378378	472.260
TO2	20	0.564113	1.551499	2.407148	11.282263	45.735810	-3.378378	3.556818	275.033
X3	20	-5.872655	8.756147	76.670116	-117.453103	1456.732204	-24.285297	14.733333	149.100
X4	20	-3.272655	8.756147	76.670116	-65.453103	1456.732204	-21.685297	17.333333	267.555

SIMPLE STATISTICS FOR TEST-CREATED VARIABLES BY DP DECILE

DECILE1=7

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	20	1.069703	1.663146	2.766054	21.394056	52.555035	-1.568738	4.323210	155.477
TO1	20	-0.077778	1.609580	2.590748	-1.555566	49.224208	-3.323210	2.176554	2069.446
X2	20	1.191994	1.507175	2.271576	23.839878	43.159949	-1.666667	4.000000	126.441
TO2	20	-0.205648	1.447395	2.094953	-4.112968	39.804115	-3.000000	2.250000	703.820
X3	20	-1.490972	8.755574	76.660080	-29.819431	1456.541526	-18.007407	14.733333	587.240
X4	20	1.109028	8.755574	76.660080	22.180569	1456.541526	-15.407407	17.333333	789.481

DECILE1=8

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	20	0.706294	1.264544	1.599071	14.125885	30.382355	-2.048209	2.652020	179.039
TO1	20	0.262251	1.149925	1.322328	5.245018	25.124226	-1.652020	2.536157	438.483
X2	20	0.733149	1.155659	1.335549	14.662972	25.375422	-1.937500	2.884615	157.630
TO2	20	0.237253	1.063426	1.130875	4.745063	21.486627	-1.884615	2.453125	448.224
X3	20	-4.272580	7.160550	51.273483	-85.451607	974.196177	-20.531034	8.981818	167.593
X4	20	-1.672580	7.160550	51.273483	-33.451607	974.196177	-17.931034	11.581818	428.114

DECILE1=9

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	20	0.840781	1.673915	2.801990	16.815625	53.237817	-4.803599	3.257914	199.090
TO1	20	0.113313	1.456089	2.120196	2.266252	40.283717	-2.257914	4.602700	1285.019
X2	20	0.784927	1.625096	2.640936	15.698543	50.177783	-5.000000	2.777778	207.038
TO2	20	0.157009	1.378984	1.901598	3.140187	36.130354	-1.777778	4.750000	878.282
X3	20	-3.900088	10.700181	114.493874	-78.001752	2175.383608	-41.600000	8.875862	274.357
X4	20	-1.300088	10.700181	114.493874	-26.001752	2175.383608	-39.000000	11.475862	823.035

DECILE1=10

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	20	0.767458	0.627647	0.393941	15.349153	7.484876	-0.732828	1.878506	81.783
TO1	20	0.281054	0.600519	0.360624	5.621080	6.851850	-0.878506	1.549621	213.667
X2	20	0.773066	0.715291	0.511641	15.461319	9.721180	-0.800000	1.977273	92.527
TO2	20	0.261533	0.684743	0.468873	5.230659	8.908593	-0.977273	1.600000	261.819
X3	20	-4.598306	6.203948	38.488977	-91.966116	731.290561	-17.761987	6.344000	134.918
X4	20	-1.998306	6.203948	38.488977	-39.966116	731.290561	-15.161987	8.944000	310.460

CALCULATION OF TAX BRACKETS TO1 AND TO2 BY DP DECILE

DECILE1=1

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	1.66333	-.663327	.927381	.135404	.0015625	.16129	-2.8625	-.262499

DECILE1=2

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	1.77934	-.779341	1.78794	-.787944	.00756757	.304348	-.850387	1.74961

DECILE1=3

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.952965	.0898438	1.15762	-.157616	.0103922	.646341	-2.08763	.51237

DECILE1=4

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.559329	.580503	.710248	.449314	.0125424	.389474	-3.62031	-1.02031

DECILE1=5

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.507562	.619328	.567497	.574377	.0158822	.245536	-4.56653	-1.96653

DECILE1=6

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.500308	.624769	.361903	.728573	.0185185	.263158	-5.87266	-3.27266

DECILE1=7

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	1.0697	-.0697028	1.19199	-.191994	.0221088	.333333	-1.49097	1.10903

DECILE1=8

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.706294	.454053	.733149	.421283	.0234776	.592593	-4.27258	-1.67258

DECILE1=9

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.840781	.2747	.784927	.354008	.0246103	.491803	-3.90009	-1.30009

CALCULATION OF TAX BRACKETS TO1 AND TO2 BY DP DECILE

DECILE1=10

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.767456	.377338	.773066	.369921	.0298954	.784314	-4.59831	-1.99831

SPEARMAN CORRELATION COEFFICIENTS BASED ON DP DECILES

	N	SUM	MEAN	MIN VALUE	MAX VALUE	CORRECTED SS	STANDARD DEV
X1	10	9.347069	0.9347069	0.5003084	1.77934134	1.8638819	0.45508020
X2	10	8.995725	0.8995725	0.3619030	1.78794391	1.4341246	0.39918313
X3	10	-34.121954	-3.4121954	-5.8726551	-0.85038711	22.1254130	1.56792194
DP	10	0.166557	0.0166557	0.0015625	0.02989537	0.0006855	0.00872709
DE	10	4.212190	0.4212190	0.1612903	0.78431373	0.3626703	0.20074039
TO1	10	1.508164	0.1508164	-0.7793413	0.62476873	2.3677461	0.51291608
TO2	10	1.895326	0.1895326	-0.7879439	0.72857274	1.8439212	0.45263687

SPEARMAN CORRELATION COEFFICIENTS BASED ON DP DECILES

N = 10 SPEARMAN CORRELATION COEFFICIENTS / PROB > |R| UNDER HO: RHO=0

	X1	X2	X3	DP	DE	TO1	TO2
X1	1.000000 0.0000	0.963636 0.0001	0.842424 0.0026	-0.393939 0.2594	-0.018182 0.9592	-1.000000 0.0001	-0.963636 0.0001
X2	0.963636 0.0001	1.000000 0.0000	0.878788 0.0011	-0.296970 0.5915	0.127273 0.7249	-0.963636 0.0001	-1.000000 0.0001
X3	0.842424 0.0026	0.878788 0.0011	1.000000 0.0000	-0.563636 0.0875	-0.078788 0.8225	-0.842424 0.0026	-0.878788 0.0011
DP	-0.393939 0.2594	-0.296970 0.5915	-0.563636 0.0875	1.000000 0.0000	0.575758 0.0794	0.393939 0.2594	0.296970 0.5915
DE	-0.018182 0.9592	0.127273 0.7249	-0.078788 0.8225	0.575758 0.0794	1.000000 0.0000	0.018182 0.9592	-0.127273 0.7249
TO1	-1.000000 0.0001	-0.963636 0.0001	-0.842424 0.0026	0.393939 0.2594	0.018182 0.9592	1.000000 0.0000	0.963636 0.0001
TO2	-0.963636 0.0001	-1.000000 0.0001	-0.878788 0.0011	0.296970 0.5915	-0.127273 0.7249	0.963636 0.0001	1.000000 0.0000

DATA ARRANGED BY DECILE ACCORDING TO VALUE OF DE

OBS	FIRM	X1	TO1	X2	TO2	DP	DE	X3	X4	DECILE2
1	195	2.2737	-1.2737	4.0000	-3.0000	.0133333	-.076923	7.8000	10.4000	1
2	70	5.1426	-4.1426	0.0000	1.0000	.0020253	.035714	-3.1266	-0.5266	1
3	179	7.0918	-6.0918	4.3333	-3.3333	.0055762	.069767	2.2327	4.8327	1
4	82	0.8195	0.3058	0.9231	0.1429	.0472727	.112069	-3.5455	-0.9455	1
5	78	2.6538	-1.6538	2.5333	-1.5333	.0037147	.131579	-1.1191	1.4809	1
6	148	2.4779	-1.4779	1.9231	-0.9231	.0173333	.144444	1.5600	4.1600	1
7	150	2.3727	-1.3727	1.1818	-0.1818	.0087094	.146667	-2.1883	0.4117	1
8	124	3.9178	-2.9178	4.1667	-3.1667	.0126316	.150000	7.8000	10.4000	1
9	22	5.5659	-4.5659	5.0000	-4.0000	.0095238	.151515	7.3048	9.9048	1
10	10	2.4376	-1.4376	0.0000	1.0000	.0168421	.153846	-6.9789	-4.3789	1
11	114	2.2233	-1.2233	3.2609	-2.2609	.0100000	.155405	3.2783	5.8783	1
12	164	0.8998	0.1822	4.1111	-3.1111	.0052941	.157895	1.6824	4.2824	1
13	13	7.4145	-6.4145	-2.6000	2.9500	.0015625	.161290	-4.0625	-1.4625	1
14	133	-13.1645	10.8734	-12.5000	10.3750	.0138889	.166667	-51.3500	-48.7500	1
15	167	11.0051	-10.0051	8.3333	-7.3333	.0085714	.176471	13.7429	16.3429	1
16	9	11.3839	-10.3839	7.8750	-6.8750	.0027701	.181818	2.3515	4.9515	1
17	66	-3.2720	3.4540	-3.8000	3.8500	.0100000	.181818	-15.0800	-12.4600	1
18	29	1.8629	-0.8629	2.1739	-1.1739	.0129577	.182540	1.3549	3.9549	1
19	134	2.8366	-1.8366	5.0000	-4.0000	.0108108	.185185	8.6432	11.2432	1
20	30	-0.9956	1.7467	0.0000	1.0000	.0034783	.186047	-3.5043	-0.9043	1
21	87	-0.2732	1.2049	0.0000	1.0000	.0170068	.192308	-7.0218	-4.4218	2
22	23	1.0982	-0.0982	0.0000	1.0000	.0105263	.192308	-5.3368	-2.7368	2
23	101	2.0575	-1.0575	2.4000	-1.4000	.0090909	.192308	0.7091	3.3091	2
24	159	5.0363	-4.0363	4.6250	-3.6250	.0118519	.195122	8.5704	11.1704	2
25	46	1.7130	-0.7130	3.1071	-2.1071	.0124444	.202899	4.2178	6.8178	2
26	11	-1.4424	2.0818	0.0000	1.0000	.0121065	.208333	-5.7477	-3.1477	2
27	103	0.9723	0.0538	0.6579	0.5066	.0187654	.211111	-4.2691	-1.6691	2
28	154	-2.6062	2.9547	-1.0909	1.8182	.0117271	.211538	-8.9753	-6.3753	2
29	166	2.1779	-1.1779	1.6667	-0.6667	.0166667	.223881	0.2889	2.8889	2
30	96	0.7068	0.4534	0.9737	0.0513	.0233846	.236025	-2.7600	-0.1600	2
31	91	-0.0987	1.0741	0.0000	1.0000	.0110701	.236842	-5.4782	-2.8782	2
32	171	-0.7176	1.5382	0.9091	0.1667	.0158822	.245536	-2.9754	-0.3754	2
33	140	1.6008	-0.6008	3.3333	-2.3333	.0103448	.245902	3.6759	6.2759	2
34	98	1.2266	-0.2266	1.4800	-0.4800	.0138889	.247525	-0.8667	1.7333	2
35	191	-0.9099	1.6825	0.8333	0.2857	.0107143	.247934	-3.0643	-0.4643	2
36	97	-1.6740	2.2555	-1.6250	2.2187	.0200000	.250000	-16.2500	-13.6500	2
37	105	5.5001	-4.5001	3.8000	-2.8000	.0079177	.250000	3.1641	5.7641	2
38	198	2.8908	-1.8908	2.5000	-1.5000	.0115875	.250000	1.9191	4.5191	2
39	31	1.9991	-0.9991	2.0233	-1.0233	.0137600	.250000	1.0608	3.6608	2
40	79	1.0586	-0.0586	1.0870	-0.0870	.0161404	.252747	-2.2351	0.3649	2
41	3	0.7789	0.3621	1.4444	-0.4444	.0126227	.257143	-1.1414	1.4586	3
42	61	0.6082	0.5438	2.4857	-1.4857	.0102190	.257353	1.3474	3.9474	3
43	62	6.7571	-5.7571	8.3333	-7.3333	.0116460	.258621	19.6050	22.2050	3
44	199	1.8540	-0.8540	1.8500	-0.8500	.0235294	.259740	2.6000	5.2000	3
45	65	1.5535	-0.5535	1.6667	-0.6667	.0195652	.263158	0.7913	3.3913	3
46	110	-1.1649	1.8737	0.4800	0.6400	.0172414	.263158	-4.9310	-2.3310	3
47	144	1.3521	-0.3521	1.0000	0.0000	.0185185	.263158	-2.6000	0.0000	3
48	142	1.8136	-0.8136	-2.0667	2.5500	.0040606	.265487	-5.8377	-3.2377	3
49	178	-0.5543	1.4157	-1.7143	2.2857	.0124334	.269231	-11.3744	-8.7744	3
50	165	1.4022	-0.4022	0.8571	0.2500	.0098246	.269231	-2.9649	-0.3649	3
51	1	0.7820	0.3580	-0.6757	1.5068	.0071845	.270073	-5.7301	-3.1301	3
52	89	-3.6862	3.7647	-2.5000	2.8750	.0050000	.270270	-7.1500	-4.5500	3
53	106	-2.8116	3.1087	-2.2727	2.7045	.0053012	.275000	-7.1108	-4.5108	3
54	153	1.4220	-0.4220	0.6000	0.5500	.0052632	.277778	-3.1474	-0.5474	3
55	88	0.8380	0.2789	0.9615	0.0741	.0144444	.279570	-2.7444	-0.1444	3

DATA ARRANGED BY DECILE ACCORDING TO VALUE OF DE

OBS	FIRM	X1	TO1	X2	TO2	DP	DE	X3	X4	DECILE2
56	26	-0.1367	1.1025	0.0000	1.0000	.0122100	.281690	-5.7746	-3.1746	3
57	158	0.6306	0.5270	0.6250	0.5313	.0082254	.281690	-3.4020	-0.8020	3
58	180	3.4658	-2.4658	4.6154	-3.6154	.0142077	.282609	10.7552	13.3552	3
59	146	4.3232	-3.3232	4.0000	-3.0000	.0222222	.284091	14.7333	17.3333	3
60	76	0.7096	0.4501	-0.6250	1.4688	.0101911	.287770	-6.9057	-4.3057	3
61	104	3.7516	-2.7516	1.6667	-0.6667	.0058824	.294118	-1.5804	1.0196	4
62	35	-13.2016	10.9012	-12.3333	10.2500	.0064795	.300000	-25.0622	-22.4622	4
63	8	2.8454	-1.8454	2.7778	-1.7778	.0068108	.301435	0.5481	3.1481	4
64	117	1.7541	-0.7541	2.6786	-1.6786	.0075676	.304348	0.7027	3.3027	4
65	44	0.5288	0.6034	1.0000	0.0000	.0229779	.308642	-2.6000	0.0000	4
66	48	0.1657	0.8758	0.0000	1.0000	.0211765	.310345	-8.1059	-5.5059	4
67	68	0.0960	0.9280	0.0000	1.0000	.0153191	.310345	-6.5830	-3.9830	4
68	173	2.1679	-1.1679	2.7778	-1.7778	.0184615	.310345	5.9333	8.5333	4
69	161	2.4981	-1.4981	2.0833	-1.0833	.0123077	.311688	0.8667	3.4667	4
70	15	-0.4711	1.3533	0.0000	1.0000	.0080000	.312500	-4.6800	-2.0800	4
71	181	-0.0292	1.0219	0.0000	1.0000	.0243478	.325581	-8.9304	-6.3304	4
72	126	3.4225	-2.4225	4.3784	-3.3784	.0197333	.330357	14.7333	17.3333	4
73	135	2.9033	-1.9033	2.9231	-1.9231	.0221088	.333333	8.4544	11.0544	4
74	72	2.7261	-1.7261	2.5000	-1.5000	.0228311	.333333	6.3041	8.9041	4
75	129	-0.5506	1.4129	0.0000	1.0000	.0222222	.333333	-8.3778	-5.7778	4
76	177	2.0093	-1.0093	2.2353	-1.2353	.0140148	.340000	1.9012	4.5012	4
77	138	4.1090	-3.1090	2.9333	-1.9333	.0222058	.340909	8.5621	11.1621	4
78	16	-0.0054	1.0040	-0.4000	1.3000	.0158898	.348837	-8.3839	-5.7839	4
79	43	1.3519	-0.3519	-0.4800	1.3600	.0197941	.357143	-10.2168	-7.6168	4
80	33	0.4908	0.6319	0.4483	0.6638	.0234249	.362500	-5.9603	-3.3603	4
81	186	0.2313	0.8265	0.4717	0.6462	.0121143	.363014	-4.2640	-1.6640	5
82	190	0.5308	0.6019	0.5357	0.5982	.0209268	.368421	-5.1262	-2.5262	5
83	83	4.1681	-3.1681	5.3571	-4.3571	.0067470	.368421	5.0434	7.6434	5
84	108	1.2472	-0.2472	0.0000	1.0000	.0067470	.368421	-4.3542	-1.7542	5
85	121	-0.0007	1.0005	-0.7143	1.5357	.0166667	.372340	-10.0286	-7.4286	5
86	92	0.0055	0.9959	0.0000	1.0000	.0240964	.372881	-8.8651	-6.2651	5
87	189	-0.1288	1.0966	0.0000	1.0000	.0171429	.375000	-7.0571	-4.4571	5
88	74	-1.0150	1.7612	-0.8667	1.6500	.0187500	.384615	-11.7000	-9.1000	5
89	137	2.1070	-1.1070	3.0000	-2.0000	.0033898	.384615	-0.8373	1.7627	5
90	174	0.0482	0.9638	0.0000	1.0000	.0153846	.384615	-6.6000	-4.0000	5
91	111	-0.0577	1.0433	1.2500	-0.2500	.0157604	.388350	-1.5756	1.0244	5
92	27	-0.2563	1.1922	-1.3514	2.0135	.0125424	.389474	-10.2678	-7.6678	5
93	69	1.2896	-0.2896	1.1563	-0.1563	.0228571	.395062	-1.6714	0.9286	5
94	20	0.0961	0.9279	0.0000	1.0000	.0190404	.396825	-7.5505	-4.9505	5
95	192	1.4910	-0.4910	1.5000	-0.5000	.0180180	.400000	-0.2577	2.3423	5
96	77	-2.0185	2.5139	-2.6667	3.0000	.0183333	.402439	-20.0778	-17.4778	5
97	175	0.3728	0.7204	-0.7647	1.5735	.0113333	.404762	-7.8000	-5.2000	5
98	183	1.0750	-0.0750	1.1905	-0.1905	.0234899	.407767	-1.4367	1.1633	5
99	113	-0.7229	1.5422	-0.9259	1.6944	.0184552	.409091	-11.8413	-9.2413	5
100	14	-0.6603	1.4952	0.6667	0.5000	.0124138	.418605	-3.6759	-1.0759	5
101	25	3.2579	-2.2579	2.7778	-1.7778	.0248276	.418605	8.8759	11.4759	6
102	131	1.2030	-0.2030	-2.9737	3.2303	.0136937	.431818	-16.7477	-14.1477	6
103	136	2.4439	-1.4439	2.5000	-1.5000	.0185874	.434783	4.6491	7.2491	6
104	45	0.2034	0.8475	0.2400	0.8200	.0240964	.434783	-7.3614	-4.7614	6
105	118	2.1545	-1.1545	0.8929	0.1935	.0112000	.437500	-2.9120	-0.3120	6
106	12	0.9760	0.0469	1.1600	-0.1600	.0241935	.438596	-1.5935	1.0065	6
107	157	0.5142	0.6144	1.1515	-0.1515	.0225564	.440000	-1.7114	0.8886	6
108	94	0.1910	0.8568	0.6452	0.5161	.0225029	.441595	-4.6761	-2.0761	6
109	19	-0.7088	1.5316	-1.8750	2.4063	.0106258	.444444	-10.5458	-7.9458	6
110	123	0.4417	0.6688	0.5200	0.6100	.0235183	.446429	-5.5351	-2.9351	6

DATA ARRANGED BY DECILE ACCORDING TO VALUE OF DE

OBS	FIRM	X1	TO1	X2	TO2	DP	DE	X3	X4	DECILE2
111	32	1.10140	-0.10140	3.33333	-2.33333	.0089109	.450000	2.8059	5.4059	6
112	119	1.86386	-0.86386	1.48000	-0.48000	.0270270	.454545	0.7730	3.3730	6
113	81	-1.46077	2.09558	-1.76000	2.32000	.0206186	.454545	-17.3959	-14.7959	6
114	122	-0.54682	1.41011	-0.78125	1.58594	.0241509	.463768	-13.7849	-11.1849	6
115	24	-0.14942	1.11207	0.00000	1.00000	.0238663	.465116	-8.8053	-6.2053	6
116	2	1.29083	-0.29083	2.97368	-1.97368	.0169794	.469136	6.1131	8.7131	6
117	187	0.19009	0.85744	0.00000	1.00000	.0195122	.470588	-7.6732	-5.0732	6
118	152	0.82643	0.29580	1.00000	0.00000	.0270270	.471698	-2.6000	0.0000	6
119	120	2.71551	-1.71551	3.75000	-2.75000	.0144092	.476190	7.7026	10.3026	6
120	60	-1.18923	1.89192	-1.37778	2.03333	.0155817	.478723	-12.2330	-9.6330	6
121	163	0.73144	0.42341	1.08696	-0.08696	.0235897	.479167	-2.0667	0.5333	7
122	93	1.16304	-0.16304	1.25000	-0.25000	.0246103	.491803	-1.0003	1.5997	7
123	58	0.31805	0.76147	0.80645	0.32432	.0172222	.492063	-3.4667	-0.8667	7
124	102	0.96563	0.06645	0.38235	0.71324	.0201422	.492754	-5.8346	-3.2346	7
125	194	1.02033	-0.02033	1.07143	-0.07143	.0099291	.492958	-2.4156	0.1844	7
126	130	1.22001	-0.22001	0.62500	0.53125	.0141593	.493827	-3.9805	-1.3805	7
127	160	1.77289	-0.77289	1.50000	-0.50000	.0236630	.495050	0.4762	3.0762	7
128	188	0.13400	0.89950	0.24000	0.82000	.0098522	.495050	-4.5468	-1.9468	7
129	172	1.14870	-0.14870	1.19048	-0.19048	.0254545	.496063	-1.3394	1.2606	7
130	34	1.08223	-0.08223	0.71429	0.44444	.0250000	.496454	-4.4571	-1.8571	7
131	155	1.51591	-0.51591	1.58333	-0.58333	.0077096	.500000	-1.4307	1.1693	7
132	168	-3.16739	3.37554	-3.40909	3.55682	.0189166	.500000	-24.2853	-21.6853	7
133	95	-1.39367	2.04525	-1.66667	2.25000	.0222222	.500000	-18.0074	-15.4074	7
134	18	1.10834	-0.10834	0.38235	0.71324	.0201422	.507463	-5.8346	-3.2346	7
135	73	0.01345	0.98992	0.00000	1.00000	.0266544	.517857	-9.5301	-6.9301	7
136	52	3.20851	-2.20851	4.76923	-3.76923	.0157576	.520000	12.8424	15.4424	7
137	109	0.57018	0.57236	1.00000	0.00000	.0227273	.520833	-2.6000	0.0000	7
138	107	0.64629	0.51529	0.00000	1.00000	.0089412	.527778	-4.9247	-2.3247	7
139	41	2.52421	-1.52421	2.67857	-1.67857	.0167164	.528302	4.6955	7.2955	7
140	185	0.42179	0.68366	0.00000	1.00000	.0214313	.533333	-8.1721	-5.5721	7
141	28	0.60275	0.54793	0.45455	0.65909	.0174603	.533981	-5.0762	-2.4762	8
142	176	-0.99562	1.74671	-0.48000	1.36000	.0259605	.555556	-12.5896	-9.9896	8
143	17	0.47078	0.64692	0.31579	0.76316	.0233846	.558824	-6.7600	-4.1600	8
144	47	0.06447	0.95165	0.00000	1.00000	.0206186	.561798	-7.9608	-5.3608	8
145	64	0.85216	0.25760	1.38235	-0.38235	.0266667	.566667	0.0510	2.6510	8
146	151	2.46539	-1.46539	2.95238	-1.95238	.0215385	.583333	8.3333	10.9333	8
147	170	1.31222	-0.31222	0.55556	0.58333	.0125418	.584416	-4.0493	-1.4493	8
148	99	1.74865	-0.74865	2.00000	-1.00000	.0243902	.588235	3.7415	6.3415	8
149	149	1.57293	-0.57293	1.24000	-0.24000	.0263158	.588235	-0.9579	1.6421	8
150	53	-0.63724	1.47793	0.00000	1.00000	.0179310	.590909	-7.2621	-4.6621	8
151	39	-1.96162	2.47121	-1.93750	2.45313	.0234776	.592593	-20.5310	-17.9310	8
152	4	0.89812	0.18491	0.87000	0.23009	.0434783	.595238	-4.0696	-1.4696	8
153	42	0.32592	0.75556	0.83333	0.28571	.0250000	.600000	-3.6833	-1.0833	8
154	90	0.36872	0.72346	0.54167	0.59375	.0071365	.600000	-3.4504	-0.8504	8
155	71	1.02438	-0.02438	0.92593	0.13793	.0658537	.602679	-3.8683	-1.2683	8
156	143	0.86974	0.23049	8.20000	-7.20000	.0051095	.614035	6.9650	9.5650	8
157	116	0.88956	0.19891	0.90476	0.17391	.0238230	.617647	-3.1899	-0.5899	8
158	145	2.65202	-1.65202	2.88462	-1.88462	.0236364	.634146	8.9818	11.5818	8
159	5	-1.00901	1.75676	-1.08696	1.81522	.0127778	.638889	-9.5333	-6.9333	8
160	55	-0.72414	1.54310	-0.47170	1.35377	.0103922	.646341	-6.5765	-3.9765	8
161	115	2.95224	-1.95224	3.57143	-2.57143	.0224000	.651163	12.3760	14.9760	9
162	63	-0.27260	1.20445	-1.00000	1.75000	.0250000	.657895	-15.6000	-13.0000	9
163	139	3.25377	-2.25377	2.50000	-1.50000	.0257732	.666667	7.4515	10.0515	9
164	67	1.95442	-0.95442	2.38095	-1.38095	.0230137	.688525	5.6630	8.2630	9
165	162	2.22455	-1.22455	1.48000	-0.48000	.0238095	.694444	0.3714	2.9714	9

DATA ARRANGED BY DECILE ACCORDING TC VALUE OF DE

OBS	FIRM	X1	TO1	X2	TO2	DP	DE	X3	X4	DECILE2
166	169	-0.53563	1.40172	0.56522	0.57609	.0232794	0.69697	-5.2316	-2.6316	9
167	193	1.41628	-0.41628	1.00000	0.00000	.0300661	0.70423	-2.6000	0.0000	9
168	127	1.00833	-0.00833	1.05556	-0.05556	.0290792	0.70588	-2.1800	0.4200	9
169	112	0.81820	0.30766	0.83333	0.28571	.0244898	0.71429	-3.6612	-1.0612	9
170	147	0.93407	0.12370	-0.80000	1.60000	.0323974	0.71429	-17.7620	-15.1620	9
171	7	0.21878	0.83591	0.92308	0.14286	.0192593	0.72222	-2.9852	-0.3852	9
172	128	1.63651	-0.63651	1.63158	-0.63158	.0237500	0.73077	1.3000	3.9000	9
173	51	1.30505	-0.30505	1.47059	-0.47059	.0367171	0.73913	1.8924	4.4924	9
174	86	1.27306	-0.27306	1.16279	-0.16279	.0312727	0.74138	-1.2764	1.3236	9
175	132	1.39480	-0.39480	1.14545	-0.14545	.0283798	0.75342	-1.5267	1.0733	9
176	84	-2.04821	2.53616	-1.20000	1.90000	.0242131	0.76923	-16.4499	-13.8499	9
177	85	2.08595	-1.08595	2.14286	-1.14286	.0294613	0.77778	6.1542	8.7542	9
178	6	0.79207	0.34427	1.25000	-0.25000	.0298954	0.78431	-0.6568	1.9432	9
179	36	0.15129	0.88653	0.30233	0.77326	.0340459	0.79630	-8.7758	-6.1758	9
180	38	0.75185	0.39763	0.83333	0.28571	.0296150	0.81081	-3.8833	-1.2833	9
181	37	-0.65412	1.49059	0.30000	0.77500	.0320000	0.81633	-8.4240	-5.8240	10
182	21	1.20889	-0.20889	1.39535	-0.39535	.0347334	0.84314	0.9703	3.5703	10
183	75	0.56105	0.57922	0.59524	0.55357	.0336000	0.89362	-6.1360	-3.5360	10
184	200	-0.72628	1.54471	-1.20000	1.90000	.0170068	0.90909	-12.3279	-9.7279	10
185	156	0.81826	0.30757	0.92683	0.13636	.0360281	0.91111	-3.2854	-0.6854	10
186	182	1.16647	-0.16647	1.97727	-0.97727	.0352000	0.91667	6.3440	8.9440	10
187	40	-0.73283	1.54962	-0.73529	1.55147	.0309091	0.91892	-16.5455	-13.9455	10
188	196	-0.00422	1.00316	0.00000	1.00000	.0226087	0.92857	-8.4783	-5.8783	10
189	59	1.87851	-0.87851	1.79592	-0.79592	.0340751	0.96078	4.4515	7.0515	10
190	125	0.67612	0.48928	0.67273	0.49315	.0333333	0.96491	-5.4364	-2.8364	10
191	54	1.83182	-0.83182	1.30000	-0.30000	.0242131	1.00000	-0.7114	1.8886	10
192	56	-0.51822	1.38866	0.00000	1.00000	.0100000	1.00000	-5.2000	-2.6000	10
193	184	0.68428	0.47992	0.71429	0.44444	.0333333	1.00000	-5.0762	-2.4762	10
194	141	1.71638	-0.71638	1.44186	-0.44186	.0223377	1.04878	-0.0338	2.5662	10
195	49	0.66985	0.49641	0.71429	0.44444	.0345508	1.52174	-5.1666	-2.5666	10
196	100	1.48660	-0.48660	1.70455	-0.70455	.0293333	1.69231	2.7733	5.3733	10
197	50	-1.56874	2.17655	-1.50000	2.12500	.0222222	2.08333	-17.0444	-14.4444	10
198	57	0.79951	0.33402	0.92857	0.13333	.0286885	2.33333	-3.1328	-0.5328	10
199	197	0.45886	0.65586	0.00000	1.00000	.0400000	2.50000	-13.0000	-10.4000	10
200	80	-4.80360	4.60270	-5.00000	4.75000	.0250000	5.00000	-41.6000	-39.0000	10

SIMPLE STATISTICS FOR TEST-CREATED VARIABLES BY DE DECILE

DECILE2=1

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	20	2.747361	5.184267	26.876620	54.947225	510.655775	-13.164493	11.383930	188.700
TO1	20	-1.954899	4.620996	21.353603	-39.097984	405.718453	-10.383930	10.873370	236.380
X2	20	1.795777	4.537434	20.588308	35.915532	391.177856	-12.500000	8.333333	252.673
TO2	20	-1.028730	3.944400	15.558288	-20.574598	295.607475	-7.333333	10.375000	383.424
DP	20	0.010815	0.009824	0.000097	0.216296	0.001834	0.001563	0.047273	90.843
DE	20	0.137691	0.063502	0.004033	2.753814	0.076618	-0.076923	0.186047	46.119
X3	20	-1.660227	13.341568	177.997436	-33.204540	3381.951287	-51.350000	13.742857	803.599
X4	20	0.939773	13.341568	177.997436	18.795460	3381.951287	-48.750000	16.342857	1419.659

DECILE2=2

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	20	1.015802	2.054310	4.220190	20.316034	80.183619	-2.606220	5.500143	202.235
TO1	20	-0.103007	1.926339	3.710783	-2.060130	70.504879	-4.500143	2.954665	1870.114
X2	20	1.334022	1.622043	2.631024	26.680449	49.989455	-1.625000	4.625000	121.590
TO2	20	-0.348759	1.572280	2.472064	-6.975181	46.969220	-3.625000	2.218750	450.821
DP	20	0.013744	0.003956	0.000016	0.274876	0.000297	0.007918	0.023385	28.782
DE	20	0.227116	0.023592	0.000557	4.542317	0.010575	0.192308	0.252747	10.387
X3	20	-2.068721	5.476511	29.992175	-41.374416	569.851320	-16.250000	8.570370	264.729
X4	20	0.531279	5.476511	29.992175	10.625584	569.851320	-13.650000	11.170370	1030.816

DECILE2=3

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	20	0.996855	2.268902	5.147917	19.937101	97.810429	-3.686234	6.757107	227.606
TO1	20	-0.057914	2.103171	4.423327	-1.158280	84.043209	-5.757107	3.764675	3631.540
X2	20	0.953243	2.576726	6.639518	19.064869	126.150844	-2.500000	8.333333	270.311
TO2	20	-0.047973	2.440574	5.956401	-0.959453	113.171615	-7.333333	2.875000	5087.429
DP	20	0.012196	0.005742	0.000033	0.243910	0.000626	0.004061	0.023529	47.080
DE	20	0.270841	0.009818	0.000096	5.416819	0.001832	0.257143	0.287770	3.625
X3	20	-1.049112	7.791631	60.709515	-20.982247	1153.480789	-11.374423	19.604969	742.688
X4	20	1.550888	7.791631	60.709515	31.017753	1153.480789	-8.774423	22.204969	502.398

DECILE2=4

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	20	0.828135	3.614013	13.061089	16.562690	248.160684	-13.201612	4.108978	436.404
TO1	20	0.009659	2.951706	8.712568	0.193173	165.538795	-3.108978	10.901209	30560.250
X2	20	0.759458	3.398586	11.550390	15.189152	219.457404	-12.333333	4.378378	447.502
TO2	20	0.080979	2.784294	7.752295	1.619583	147.293609	-3.378378	10.250000	3438.285
DP	20	0.016578	0.006569	0.000043	0.331556	0.000820	0.005882	0.024348	39.624
DE	20	0.323455	0.019843	0.000394	6.469093	0.007481	0.294118	0.362500	6.135
X3	20	-2.123730	8.826430	77.905874	-42.474597	1480.211610	-25.062203	14.733333	415.610
X4	20	0.476270	8.826430	77.905874	9.525403	1480.211610	-22.462203	17.333333	1853.240

DECILE2=5

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	20	0.390114	1.297777	1.684224	7.802285	32.000261	-2.018537	4.168078	332.666
TO1	20	0.565191	1.221738	1.492644	11.303823	28.360237	-3.168078	2.513903	216.164
X2	20	0.391917	1.682546	2.830961	7.838346	53.788268	-2.666667	5.357143	429.312
TO2	20	0.537889	1.574119	2.477851	10.757773	47.079166	-4.357143	3.000000	292.648
DP	20	0.015710	0.005702	0.000033	0.314209	0.000618	0.003390	0.024096	36.294
DE	20	0.387726	0.016199	0.000262	7.754719	0.004986	0.363014	0.418605	4.178
X3	20	-5.997181	5.463638	29.851343	-119.943628	567.175519	-20.077778	5.043373	91.103
X4	20	-3.397181	5.463638	29.851343	-67.943628	567.175519	-17.477778	7.643373	160.829

SIMPLE STATISTICS FOR TEST-CREATED VARIABLES BY DE DECILE

DECILE2=6

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	20	0.765927	1.282488	1.644775	15.318532	31.250727	-1.460767	3.257914	167.443
TO1	20	0.209896	1.216195	1.479130	4.197911	28.103473	-2.257914	2.095575	579.429
X2	20	0.682831	1.835689	3.369756	13.656617	64.025359	-2.973684	3.750000	268.835
TO2	20	0.229458	1.672437	2.797044	4.589151	53.143841	-2.750000	3.230263	728.865
DP	20	0.019694	0.005631	0.000032	0.393889	0.000602	0.008911	0.027027	28.591
DE	20	0.451143	0.016991	0.000289	9.022864	0.005485	0.418605	0.478723	3.766
X3	20	-4.132785	7.819563	61.145569	-82.655699	1161.765815	-17.395876	8.875862	189.208
X4	20	-1.532785	7.819563	61.145569	-30.655699	1161.765815	-14.795876	11.475862	510.154

DECILE2=7

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	20	0.750196	1.316591	1.733412	15.003929	32.934828	-3.167391	3.208513	175.500
TO1	20	0.228434	1.177129	1.385634	4.568676	26.327040	-2.208513	3.375543	515.304
X2	20	0.710234	1.576115	2.484138	14.204682	47.198628	-3.409091	4.769231	221.915
TO2	20	0.261166	1.439124	2.071078	5.223311	39.350485	-3.769231	3.556818	551.039
DP	20	0.018742	0.005978	0.000036	0.374841	0.000679	0.007710	0.026654	31.895
DE	20	0.504038	0.015127	0.000229	10.080754	0.004348	0.479167	0.533333	3.001
X3	20	-4.293929	7.513298	56.449650	-85.878589	1072.543355	-24.285297	12.842424	174.975
X4	20	-1.693929	7.513298	56.449650	-33.878589	1072.543355	-21.685297	15.442424	443.543

DECILE2=8

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	20	0.539510	1.176362	1.383827	10.790199	26.292709	-1.961619	2.652020	218.043
TO1	20	0.435878	1.070783	1.146577	8.717555	21.784966	-1.652020	2.471214	245.661
X2	20	1.004239	2.064488	4.262110	20.084773	80.980090	-1.937500	8.200000	205.577
TO2	20	-0.012513	2.016939	4.068044	-0.250254	77.292840	-7.200000	2.453125	16119.118
DP	20	0.022875	0.013189	0.000174	0.457493	0.003305	0.005109	0.065854	57.656
DE	20	0.592676	0.028861	0.000833	11.853521	0.015826	0.533981	0.646341	4.870
X3	20	-3.574284	7.046239	49.649491	-71.485676	943.340321	-20.531034	8.981818	197.137
X4	20	-0.974284	7.046239	49.649491	-19.485676	943.340321	-17.931034	11.581818	723.222

DECILE2=9

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	20	1.065740	1.214779	1.475688	21.314791	28.038068	-2.048209	3.253770	113.985
TO1	20	-0.073346	1.146935	1.315460	-1.466921	24.993739	-2.253770	2.536157	1563.731
X2	20	1.062425	1.164806	1.356774	21.248493	25.778708	-1.200000	3.571429	109.637
TO2	20	-0.073879	1.106826	1.225063	-1.477578	23.276199	-2.571429	1.900000	1498.163
DP	20	0.027296	0.004459	0.000020	0.545918	0.000378	0.019259	0.036717	16.335
DE	20	0.725985	0.045560	0.002076	14.519697	0.039438	0.651163	0.810811	6.276
X3	20	-2.369008	7.810014	60.996326	-47.380167	1158.930200	-17.761987	12.376000	329.674
X4	20	0.230992	7.810014	60.996326	4.619833	1158.930200	-15.161987	14.976000	3381.081

DECILE2=10

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	20	0.247429	1.524235	2.323293	4.948587	44.142563	-4.803599	1.878506	616.028
TO1	20	0.690481	1.262912	1.594946	13.809620	30.303967	-0.878506	4.602700	182.903
X2	20	0.301579	1.569555	2.463503	6.031589	46.806555	-5.000000	1.977273	520.445
TO2	20	0.634592	1.300794	1.692065	12.691833	32.149227	-0.977273	4.750000	204.981
DP	20	0.028959	0.007415	0.000055	0.579174	0.001045	0.010000	0.040000	25.606
DE	20	1.412132	0.991157	0.982391	28.242630	18.665437	0.816327	5.000000	70.189
X3	20	-6.852976	10.402170	108.205141	-137.059517	2055.897679	-41.600000	6.344000	151.791
X4	20	-4.252976	10.402170	108.205141	-85.059517	2055.897679	-39.000000	8.944000	244.586

CALCULATION OF TAX BRACKETS TO1 AND TC2 BY DE DECILE

DECILE2=1

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	2.74736	-1.74736	1.79578	-.795777	.0108148	.137691	-1.66023	.939773

DECILE2=2

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	1.0158	-.0158017	1.33402	-.334022	.0137438	.227116	-2.06872	.531279

DECILE2=3

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.996855	.00627014	.953243	.089336	.0121955	.270841	-1.04911	1.55089

DECILE2=4

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.828135	.293319	.759458	.387802	.0165778	.323455	-2.12373	.47627

DECILE2=5

OBS	X1	TC1	X2	TO2	DP	DE	X3	X4
1	.390114	.707414	.391917	.706062	.0157105	.387736	-5.99718	-3.39718

DECILE2=6

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.765927	.379351	.682831	.481592	.0196945	.451143	-4.13278	-1.53278

DECILE2=7

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.750196	.399749	.710234	.449331	.0187421	.504038	-4.29393	-1.69393

DECILE2=8

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.53951	.595368	1.00424	-.00423865	.0228746	.592676	-3.57428	-.974284

DECILE2=9

OBS	X1	TO1	X2	TC2	DP	DE	X3	X4
1	1.06574	-.0657396	1.06242	-.0624246	.0272959	.725985	-2.36901	.230992

CALCULATION OF TAX BRACKETS TO1 AND TO2 BY DE DECILE

DECILE2=1 C

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.247429	.814428	.301579	.773815	.0289587	1.41213	-6.85298	-4.25298

SPEARMAN CORRELATION COEFFICIENTS BASED ON DE DECILES

	N	SUM	MEAN	MIN VALUE	MAX VALUE	CORRECTED SS	STANDARD DEV
X1	10	9.347069	0.9347069	0.2474293	2.7473613	4.3123249	0.69220461
X2	10	8.995725	0.8995725	0.3015795	1.7957766	1.7500526	0.44096518
X3	10	-34.121954	-3.4121954	-6.8529758	-1.0491123	33.0509612	1.91633218
DP	10	0.186608	0.0186608	0.0108148	0.0289587	0.0003400	0.00614656
DE	10	5.032811	0.5032811	0.1376907	1.4121315	1.1959567	0.36453268
TO1	10	1.366996	0.1366996	-1.7473613	0.8144280	4.7789469	0.72869342
TO2	10	1.691476	0.1691476	-0.7957766	0.7738154	2.1521515	0.48900711

SPEARMAN CORRELATION COEFFICIENTS BASED ON DE DECILES

N = 10 SPEARMAN CORRELATION COEFFICIENTS / PROB > |R| UNDER HO: RHO=0

	X1	X2	X3	DP	DE	TC1	TC2
X1	1.000000 0.0000	0.854545 0.0020	0.842424 0.0026	-0.515152 0.1253	-0.587879 0.0718	-1.000000 0.0001	-0.854545 0.0020
X2	0.854545 0.0020	1.000000 0.0000	0.806061 0.0051	-0.454545 0.1850	-0.515152 0.1253	-0.854545 0.0020	-1.000000 0.0001
X3	0.842424 0.0026	0.806061 0.0051	1.000000 0.0000	-0.684848 0.0279	-0.733333 0.0154	-0.842424 0.0026	-0.806061 0.0051
DP	-0.515152 0.1253	-0.454545 0.1850	-0.684848 0.0279	1.000000 0.0000	0.963636 0.0001	0.515152 0.1253	0.454545 0.1850
DE	-0.587879 0.0718	-0.515152 0.1253	-0.733333 0.0154	0.963636 0.0001	1.000000 0.0000	0.587879 0.0718	0.515152 0.1253
TC1	-1.000000 0.0001	-0.854545 0.0020	-0.842424 0.0026	0.515152 0.1253	0.587879 0.0718	1.000000 0.0000	0.854545 0.0020
TC2	-0.854545 0.0020	-1.000000 0.0001	-0.806061 0.0051	0.454545 0.1850	0.515152 0.1253	0.854545 0.0020	1.000000 0.0000

APPENDIX D

COMPUTER PRINTOUT OF CALCULATIONS FOR TOTAL 1600 OBSERVATION SAMPLE

SPEARMAN CORRELATION COEFFICIENTS FOR TOTAL SAMPLE

	N	SUM	MEAN	MIN VALUE	MAX VALUE	CORRECTED SS	STANDARD DEV
X1	1600	1337.6212	0.8360133	-44.88258	56.2129847	45157.7942	5.31425180
X2	1600	1417.0149	0.8856343	-43.75000	45.8333333	41058.8747	5.06733118
X3	1600	-4597.9368	-2.8737105	-126.17647	27.5423729	94250.8637	7.67747547
DP	1600	20.5262	0.0128288	0.00033	0.0658537	0.0865	0.00735532
DE	1600	720.1718	0.4501074	-0.40000	5.0000000	237.5422	0.38543053
TD1	1600	-56.6620	-0.0354137	-55.21298	34.6619377	36954.7727	4.80740860
TD2	1600	-155.7704	-0.0973565	-44.83333	33.8125000	32956.4882	4.53989943
PC	1600	393.7100	0.2460687	-7.50000	5.7500000	820.9300	0.71652084
CP	1600	348.3744	0.2177340	-6.70114	3.2703115	582.1298	0.60337276

SPEARMAN CORRELATION COEFFICIENTS FOR TOTAL SAMPLE

N = 1600 SPEARMAN CORRELATION COEFFICIENTS / PROB > |R| UNDER HO: RHO=0

	X1	X2	X3	DP	DE	TO1	TO2	PC	CP
X1	1.000000 0.0000	0.772313 0.0001	0.780769 0.0001	0.043164 0.0804	0.001151 0.9622	-1.000000 0.0001	-0.772318 0.0001	0.704647 0.0001	0.896063 0.0001
X2	0.772313 0.0001	1.000000 0.0000	0.956314 0.0001	0.041034 0.0967	0.010185 0.6870	-0.772313 0.0001	-1.000000 0.0001	0.901500 0.0001	0.709097 0.0001
X3	0.780769 0.0001	0.956314 0.0001	1.000000 0.0000	0.007267 0.7688	-0.011290 0.6566	-0.780769 0.0001	-0.956313 0.0001	0.889496 0.0001	0.728459 0.0001
DP	0.043164 0.0804	0.041034 0.0967	0.007267 0.7688	1.000000 0.0000	0.647591 0.0001	-0.043164 0.0804	-0.041052 0.0966	0.202893 0.0001	0.210729 0.0001
DE	0.001151 0.9622	0.010185 0.6870	-0.011290 0.6566	0.647591 0.0001	1.000000 0.0000	-0.001151 0.9622	-0.010205 0.6865	0.186249 0.0001	0.191294 0.0001
TO1	-1.000000 0.0001	-0.772313 0.0001	-0.780769 0.0001	-0.043164 0.0804	-0.001151 0.9622	1.000000 0.0000	0.772318 0.0001	-0.704647 0.0001	-0.896063 0.0001
TO2	-0.772318 0.0001	-1.000000 0.0001	-0.956313 0.0001	-0.041052 0.0966	-0.010205 0.6865	0.772318 0.0001	1.000000 0.0000	-0.901496 0.0001	-0.709099 0.0001
PC	0.704647 0.0001	0.901500 0.0001	0.889496 0.0001	0.202893 0.0001	0.186249 0.0001	-0.704647 0.0001	-0.901496 0.0001	1.000000 0.0000	0.805380 0.0001
CP	0.896063 0.0001	0.709097 0.0001	0.728459 0.0001	0.210729 0.0001	0.191294 0.0001	-0.896063 0.0001	-0.709099 0.0001	0.805380 0.0001	1.000000 0.0000

SIMPLE STATISTICS OF TOTAL SAMPLE TEST-CREATED VARIABLES

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	1600	0.836013	5.314252	28.241272	1337.621215	45157.794181	-44.882584	56.212985	635.666
TC1	1600	-0.035414	4.807409	23.111177	-56.661971	36954.772725	-55.212985	34.661938	13574.984
X2	1600	0.885634	5.067331	25.677845	1417.014901	41058.874687	-43.750000	45.833333	572.170
TC2	1600	-0.097356	4.539899	20.610687	-155.770400	32956.488199	-44.833333	33.812500	4663.170
DP	1600	0.012829	0.007355	0.000054	20.526155	0.086507	0.000333	0.065854	57.334
DE	1600	0.450107	0.385431	0.148557	720.171836	237.542151	-0.400000	5.000000	85.631
X3	1600	-2.873711	7.677475	58.943630	-4597.936826	94250.863683	-126.176471	27.542373	267.162
X4	1600	-0.273711	7.677475	58.943630	-437.936826	94250.863683	-123.576471	30.142373	2804.962

TAX BRACKETS TO1 AND TO2 FOR TOTAL 1600 OBSERVATION SAMPLE

OBS	X1	TO1	X2	TO2	X3	X4
1	.836013	.281767	.885634	.205257	-2.87371	-.273711

SIMPLE STATISTICS FOR TEST-CREATED VARIABLES BY DP DECILE

DECILE1=1

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	161	1.653184	14.765336	218.015143	266.162586	34882.422822	-44.882584	56.212985	893.145
TO1	161	-1.632098	13.392898	179.369712	-262.767834	28699.153919	-55.212985	34.661938	820.594
X2	161	0.462526	13.443450	180.726345	74.466697	28916.215231	-43.750000	45.833333	2906.528
TO2	161	-0.567908	12.063984	145.539708	-91.433147	23286.353238	-44.833333	33.812500	2124.286
X3	161	-3.325011	8.595474	73.882179	-535.326759	11821.148646	-44.909091	27.542373	258.510
X4	161	-0.725011	8.595474	73.882179	-116.726759	11821.148646	-42.309091	30.142373	1185.565

DECILE1=2

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	159	-0.083096	4.960685	24.608391	-13.212308	3888.125826	-21.424286	12.597001	5969.804
TO1	159	0.633555	4.234179	17.928269	100.735219	2832.666576	-11.597001	17.068214	668.321
X2	159	0.564672	5.785462	33.471571	89.782809	5288.508150	-25.000000	16.085714	1024.571
TO2	159	-0.005440	5.047910	25.481396	-0.864953	4026.060538	-15.085714	19.750000	92793.205
X3	159	-3.084871	7.280308	53.002884	-490.494435	8374.455655	-34.992186	13.246704	236.000
X4	159	-0.484871	7.280308	53.002884	-77.094435	8374.455655	-32.392186	15.846704	1501.495

DECILE1=3

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	160	0.653147	3.680726	13.547746	104.503480	2154.091577	-13.201612	12.803492	563.537
TO1	160	0.110974	3.271209	10.700811	17.755866	1701.428942	-11.803492	10.901209	2947.722
X2	160	0.983280	3.914548	15.323686	157.324776	2436.465998	-12.555556	13.700000	398.111
TO2	160	-0.218673	3.519428	12.386375	-34.987729	1969.433575	-12.700000	10.416667	1609.446
X3	160	-2.545445	7.017241	49.241674	-407.271144	7829.426121	-25.062203	21.414545	275.678
X4	160	0.054555	7.017241	49.241674	8.728856	7829.426121	-22.462203	24.014545	12862.609

DECILE1=4

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	160	1.197112	3.019362	9.116547	191.537862	1449.530943	-14.136005	11.005080	252.221
TO1	160	-0.319921	2.713099	7.360909	-51.187378	1170.384496	-10.005080	11.602004	848.053
X2	160	1.417096	3.011044	9.066385	226.735306	1441.555161	-11.666667	10.866667	212.480
TO2	160	-0.524879	2.772678	7.687741	-83.980668	1222.350853	-9.866667	9.750000	528.251
X3	160	-1.626695	7.131822	50.862878	-260.271185	8087.197589	-34.205886	21.256169	438.424
X4	160	0.973305	7.131822	50.862878	155.728815	8087.197589	-31.605886	23.856169	732.743

DECILE1=5

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	160	0.743169	2.159871	4.665042	118.907069	741.741751	-9.766019	7.525051	290.630
TO1	160	0.163578	1.950045	3.802677	26.172544	604.625658	-6.525051	8.324515	1192.117
X2	160	0.922353	2.251887	5.070994	147.576488	806.288100	-8.857143	8.333333	244.146
TO2	160	-0.008811	2.048908	4.198025	-1.409757	667.485926	-7.333333	7.642857	23254.029
X3	160	-2.779636	6.447098	41.565074	-444.741788	6608.846710	-28.675581	19.604969	231.940
X4	160	-0.179636	6.447098	41.565074	-28.741788	6608.846710	-26.075581	22.204969	3588.975

DECILE1=6

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	160	0.672730	2.020670	4.083106	107.636850	649.213828	-13.164493	4.486322	300.368
TO1	160	0.236116	1.728179	2.986602	37.778569	474.869712	-3.486322	10.873370	731.919
X2	160	0.722118	2.249713	5.061208	115.538812	804.732151	-12.500000	5.000000	311.544
TO2	160	0.177119	1.960978	3.845434	28.339024	611.424083	-4.000000	10.375000	1107.153
X3	160	-3.563404	7.806167	60.936244	-570.144680	9688.862766	-51.350000	10.906494	219.065
X4	160	-0.963404	7.806167	60.936244	-154.144680	9688.862766	-48.750000	13.506494	810.259

SIMPLE STATISTICS FOR TEST-CREATED VARIABLES BY DP DECILE

DECILE1=7

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	160	0.902491	1.360845	1.851900	144.398513	294.452123	-3.705478	5.160503	150.788
TQ1	160	0.082735	1.286529	1.655158	13.237670	263.170047	-4.160503	3.779109	1554.992
X2	160	1.018120	1.495971	2.237929	162.899152	355.830748	-3.846154	5.956522	146.935
TQ2	160	-0.035153	1.440519	2.075094	-5.624501	329.939930	-4.956522	3.884615	4097.838
X3	160	-2.534521	5.987311	35.847892	-405.523402	5699.814867	-21.870588	15.925000	236.230
X4	160	0.065479	5.987311	35.847892	10.476598	5699.814867	-19.270588	18.525000	9143.901

DECILE1=8

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	160	0.894687	1.213050	1.471490	143.149937	233.966973	-3.495774	6.629605	135.584
TQ1	160	0.107116	1.154969	1.333954	17.138632	212.098671	-5.629605	3.621831	1078.237
X2	160	0.937100	1.375149	1.891036	149.935986	300.674678	-4.133333	6.791667	146.745
TQ2	160	0.060582	1.297223	1.682786	9.693169	267.563022	-5.791667	4.100000	2141.256
X3	160	-2.881651	6.263412	39.230327	-461.064178	6237.621947	-25.145045	24.410463	217.355
X4	160	-0.281651	6.263412	39.230327	-45.064178	6237.621947	-22.545045	27.010463	2223.819

DECILE1=9

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	160	0.855628	1.117019	1.247732	136.900489	198.389452	-3.167391	4.108978	130.550
TQ1	160	0.152573	1.064347	1.132835	24.411660	180.120805	-3.108978	3.375543	697.599
X2	160	0.916184	1.130507	1.278047	146.589455	203.209465	-3.409091	4.378378	123.393
TQ2	160	0.087655	1.079403	1.165110	14.024742	185.252481	-3.378378	3.556818	1231.427
X3	160	-3.037731	5.902958	34.844913	-486.037000	5540.341176	-24.285297	14.733333	194.321
X4	160	-0.437731	5.902958	34.844913	-70.037000	5540.341176	-21.685297	17.333333	1348.535

DECILE1=10

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	160	0.860230	1.567676	2.457608	137.636737	390.759631	-13.200473	4.323210	182.239
TQ1	160	0.125394	1.338490	1.791554	20.063082	284.857119	-3.323210	10.900355	1067.425
X2	160	0.913534	1.596922	2.550160	146.165419	405.475464	-13.428571	4.000000	174.807
TQ2	160	0.065459	1.360719	1.851555	10.473421	294.397267	-3.000000	11.071429	2078.738
X3	160	-3.356639	12.265321	150.438090	-537.062254	23919.656368	-126.176471	14.733333	365.405
X4	160	-0.756639	12.265321	150.438090	-121.062254	23919.656368	-123.576471	17.333333	1621.027

CALCULATION OF TAX BRACKETS TO1 AND TC2 BY DP DECILE

DECILE1=1

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	1.65318	-.653184	.462526	.653105	.000333333	.176471	-3.32501	-.725011

DECILE1=2

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	-.0830963	1.06232	.564672	.576496	.00380952	.169492	-3.08487	-.484871

DECILE1=3

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.653147	.51014	.98328	.0328904	.00595745	.283784	-2.54544	.0545553

DECILE1=4

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	1.19711	-.197112	1.4171	-.417096	.008	.28169	-1.62669	.973305

DECILE1=5

OBS	X1	TC1	X2	TO2	DP	DE	X3	X4
1	.743169	.408696	.922353	.144105	.0100524	.328767	-2.77964	-.179636

DECILE1=6

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.67273	.493147	.722118	.434911	.0122353	.541667	-3.5634	-.963404

DECILE1=7

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.902491	.177692	1.01812	-.0181197	.0143403	.384615	-2.53452	.0654787

DECILE1=8

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.894687	.190558	.9371	.118356	.0164948	.769231	-2.88165	-.281651

DECILE1=9

OBS	X1	TO1	X2	TC2	DP	DE	X3	X4
1	.855628	.252316	.916184	.154668	.0186846	.167785	-3.03773	-.437731

CALCULATION OF TAX BRACKETS TO1 AND TO2 BY DP DECILE

DECILE1=10

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.86023	.245261	.913534	.159169	.0222222	.561798	-3.35664	-.756639

SPEARMAN CORRELATION COEFFICIENTS BASED ON DP DECILES

	N	SUM	MEAN	MIN VALUE	MAX VALUE	CORRECTED SS	STANDARD DEV
X1	10	8.349281	0.8349281	-0.0830963	1.6531838	1.72046478	0.43722163C
X2	10	8.856982	0.8856982	0.4625261	1.4170957	0.62402208	0.263316893
X3	10	-28.735604	-2.8735604	-3.5634043	-1.6266949	2.77082948	0.554860291
DP	10	0.112130	0.0112130	0.0003333	0.0222222	0.00042822	0.006897834
DE	10	3.665299	0.3665299	0.1677852	0.7692308	0.36121433	0.200337031
TO1	10	2.489837	0.2489837	-0.6531838	1.0623222	1.83627421	0.451697318
TO2	10	1.838485	0.1838485	-0.4170957	0.6531054	0.86944940	0.310814235

SPEARMAN CORRELATION COEFFICIENTS BASED ON DP DECILES

N = 10 SPEARMAN CORRELATION COEFFICIENTS / PROB > |R| UNDER HO: RHO=0

	X1	X2	X3	DP	DE	TO1	TO2
X1	1.000000 0.0000	0.224242 0.5387	0.236364 0.5162	0.078788 0.8225	0.103030 0.7728	-1.000000 0.0001	-0.224242 0.5387
X2	0.224242 0.5387	1.000000 0.0000	0.890909 0.0008	0.224242 0.5387	0.224242 0.5387	-0.224242 0.5387	-1.000000 0.0001
X3	0.236364 0.5162	0.890909 0.0008	1.000000 0.0000	-0.127273 0.7249	-0.115151 0.7487	-0.236364 0.5162	-0.890909 0.0008
DP	0.078788 0.8225	0.224242 0.5387	-0.127273 0.7249	1.000000 0.0000	0.503030 0.1361	-0.078788 0.8225	-0.224242 0.5387
DE	0.103030 0.7728	0.224242 0.5387	-0.115151 0.7487	0.503030 0.1361	1.000000 0.0000	-0.103030 0.7728	-0.224242 0.5387
TO1	-1.000000 0.0001	-0.224242 0.5387	-0.236364 0.5162	-0.078788 0.8225	-0.103030 0.7728	1.000000 0.0000	0.224242 0.5387
TO2	-0.224242 0.5387	-1.000000 0.0001	-0.890909 0.0008	-0.224242 0.5387	-0.224242 0.5387	0.224242 0.5387	1.000000 0.0000

SIMPLE STATISTICS FOR TEST-CREATED VARIABLES BY DE DECILE

DECILE2=1

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	161	1.968448	13.389845	179.287947	316.920155	28686.071520	-44.882584	56.212985	680.223
TC1	161	-1.702565	12.204027	148.938265	-274.112997	23830.122342	-55.212985	34.661938	716.802
X2	161	0.911344	11.382784	129.567764	146.726387	20730.842306	-43.750000	43.750000	1249.011
TC2	161	-0.696889	10.171208	103.453475	-112.199177	16552.556053	-42.750000	33.812500	1459.516
DP	161	0.005635	0.005678	0.000032	0.907132	0.005157	0.000542	0.047273	100.761
DE	161	0.115844	0.093234	0.008693	18.650822	1.390824	-0.400000	0.171429	80.483
X3	161	-2.882026	9.421919	88.772550	-464.006250	14203.608004	-51.350000	27.542373	326.920
X4	161	-0.282026	9.421919	88.772550	-45.406250	14203.608004	-48.750000	30.142373	3340.793

DECILE2=2

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	159	0.481492	6.265798	39.260226	76.557307	6203.115677	-31.010258	35.684218	1301.328
TC1	159	0.122621	5.556336	30.872865	19.496717	4877.912675	-34.684218	24.257693	4531.313
X2	159	1.063218	6.857770	47.029015	169.051711	7430.584350	-19.444444	45.833333	645.001
TC2	159	-0.443107	6.266996	39.275243	-70.454060	6205.488448	-44.833333	15.583333	1414.329
DP	159	0.008399	0.004735	0.000022	1.335431	0.003542	0.000333	0.021480	56.370
DE	159	0.199308	0.019324	0.000373	31.689939	0.059001	0.171429	0.233918	9.696
X3	159	-2.476394	7.845717	61.555272	-393.746711	9725.732977	-30.931034	21.414545	316.820
X4	159	0.123606	7.845717	61.555272	19.653289	9725.732977	-28.331034	24.014545	6347.380

DECILE2=3

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	160	0.376861	4.431866	19.641432	60.297814	3122.987686	-31.379534	16.058654	1175.994
TC1	160	0.360535	3.763026	14.160367	57.685574	2251.498298	-15.058654	24.534651	1043.734
X2	160	0.510695	4.884760	23.860882	81.711241	3793.880248	-33.700000	20.000000	956.492
TC2	160	0.215019	4.230474	17.896913	34.403051	2845.609203	-19.000000	26.275000	1967.488
DP	160	0.009514	0.004381	0.000019	1.522168	0.003052	0.002119	0.023529	46.051
DE	160	0.257020	0.013994	0.000196	41.123234	0.031139	0.233918	0.281690	5.445
X3	160	-3.287448	7.628802	58.198625	-525.991676	9253.581329	-35.854700	19.604969	232.058
X4	160	-0.687448	7.628802	58.198625	-109.991676	9253.581329	-33.254700	22.204969	1109.728

DECILE2=4

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	160	0.593540	4.056462	16.454880	94.966434	2616.325906	-13.201612	28.020667	683.435
TC1	160	0.188516	3.680072	13.542933	30.162516	2153.326306	-27.020667	10.901209	1952.130
X2	160	0.945793	4.392581	19.294769	151.326906	3067.868296	-14.200000	29.000000	464.434
TC2	160	-0.162076	4.021089	16.169153	-25.932113	2570.895350	-28.000000	11.650000	2480.994
DP	160	0.010351	0.005119	0.000026	1.656200	0.004166	0.001765	0.032941	49.449
DE	160	0.305471	0.014542	0.000211	48.875346	0.033623	0.282051	0.333333	4.760
X3	160	-3.446545	12.376793	153.185003	-551.447261	24356.415527	-126.176471	21.256169	359.107
X4	160	-0.846545	12.376793	153.185003	-135.447261	24356.415527	-123.576471	23.856169	1462.035

DECILE2=5

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	160	0.704948	3.075693	9.459885	112.791687	1504.121787	-21.424286	6.737699	436.301
TC1	160	0.137907	2.606072	6.791613	22.065097	1079.866537	-5.737699	17.068214	1889.734
X2	160	0.735820	3.803178	14.464164	117.731149	2299.801998	-25.000000	9.500000	516.863
TC2	160	0.078350	3.196690	10.218828	12.536079	1624.793604	-8.500000	19.750000	4079.987
DP	160	0.011129	0.005455	0.000030	1.780612	0.004732	0.002269	0.024096	49.018
DE	160	0.358851	0.014120	0.000199	57.416115	0.031700	0.333333	0.384615	3.935
X3	160	-2.761893	6.695537	44.830221	-441.902831	7128.005160	-34.992186	24.410463	242.426
X4	160	-0.161893	6.695537	44.830221	-25.902831	7128.005160	-32.392186	27.010463	4135.787

SIMPLE STATISTICS FOR TEST-CREATED VARIABLES BY DE DECILE

DECILE2=6

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	160	0.915393	2.509601	6.298100	146.462868	1001.397842	-14.490210	6.739459	274.156
TC1	160	-0.022912	2.181611	4.759426	-3.665842	756.748805	-5.739459	11.867657	9521.899
X2	160	1.110394	3.149599	9.919977	177.663030	1577.276295	-16.307692	12.500000	283.647
TC2	160	-0.237697	2.788786	7.777327	-38.031570	1236.594983	-11.500000	13.230769	1173.251
DP	160	0.012598	0.005439	0.000030	2.015682	0.004703	0.002129	0.027341	43.171
DE	160	0.410792	0.016886	0.000285	65.726717	0.045334	0.384615	0.439024	4.110
X3	160	-1.850900	6.633997	44.009915	-296.144030	6997.576542	-22.767064	15.148503	358.420
X4	160	0.749100	6.633997	44.009915	119.855970	6997.576542	-20.167064	17.748503	885.596

DECILE2=7

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	160	0.665517	1.668727	2.784649	106.482718	442.759130	-5.224720	7.267359	250.741
TC1	160	0.270637	1.516423	2.299539	43.301964	365.626685	-6.267359	4.918540	560.316
X2	160	0.709785	1.801444	3.245202	113.565533	515.987161	-7.500000	6.955556	253.802
TC2	160	0.231142	1.618373	2.619122	36.982774	416.442052	-5.955556	6.625000	700.163
DP	160	0.014343	0.005780	0.000033	2.294856	0.005311	0.002901	0.027027	40.296
DE	160	0.473444	0.018595	0.000346	75.751097	0.054981	0.439024	0.500000	3.928
X3	160	-3.247930	5.481414	30.045904	-519.668829	4777.298802	-24.285297	12.754782	168.766
X4	160	-0.647930	5.481414	30.045904	-103.668829	4777.298802	-21.685297	15.354782	845.988

DECILE2=8

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	160	0.878222	1.879092	3.530985	140.515589	561.426659	-7.823423	7.467602	213.965
TC1	160	0.082866	1.720866	2.961381	13.258521	470.859632	-6.467602	6.867567	2076.692
X2	160	1.023033	1.867916	3.489111	163.685293	554.768657	-6.578947	7.041667	182.586
TC2	160	-0.056766	1.736297	3.014727	-9.082550	479.341622	-6.041667	5.934211	3058.695
DP	160	0.016147	0.006017	0.000036	2.583565	0.005757	0.002667	0.040334	37.265
DE	160	0.544441	0.027641	0.000764	87.110511	0.121482	0.500000	0.590909	5.077
X3	160	-2.845391	5.378432	28.927532	-455.262617	4599.477606	-21.870588	12.842424	189.023
X4	160	-0.245391	5.378432	28.927532	-39.262617	4599.477606	-19.270588	15.442424	2191.777

DECILE2=9

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	160	0.886685	1.487783	2.213497	141.869590	351.946077	-3.910722	8.664872	167.792
TC1	160	0.098386	1.410075	1.988311	15.741772	316.141413	-7.664872	3.933041	1433.206
X2	160	0.868317	2.031717	4.127872	138.930758	656.331699	-7.485714	13.541667	233.983
TC2	160	0.078257	1.880074	3.534676	12.521179	562.013554	-12.541667	6.614286	2402.424
DP	160	0.017952	0.007272	0.000053	2.872291	0.008407	0.004314	0.065854	40.507
DE	160	0.665200	0.049689	0.002469	106.432031	0.392569	0.590909	0.744681	7.470
X3	160	-3.072292	6.360014	40.449783	-491.566716	6431.515520	-25.145045	12.675000	207.012
X4	160	-0.472292	6.360014	40.449783	-75.566716	6431.515520	-22.545045	15.275000	1346.628

DECILE2=10

VARIABLE	N	MEAN	STANDARD DEV	VARIANCE	SUM	CORRECTED SS	LOW	HIGH	C.V. %
X1	160	0.879732	1.563423	2.444293	140.757052	388.642583	-6.610692	12.597001	177.716
TC1	160	0.121279	1.460723	2.133711	19.404708	339.260040	-11.597001	5.958019	1204.427
X2	160	0.978893	1.550532	2.404149	156.622893	382.259690	-6.500000	12.500000	158.396
TC2	160	0.021787	1.455346	2.118033	3.485987	336.767301	-11.500000	5.875000	6679.756
DP	160	0.022239	0.006404	0.000041	3.558169	0.006521	0.003899	0.040000	28.797
DE	160	1.171225	0.810250	0.656505	187.396021	104.384240	0.753425	5.000000	69.180
X3	160	-2.863749	6.381187	40.719542	-458.199906	6474.407117	-41.600000	12.876190	222.826
X4	160	-0.263749	6.381187	40.719542	-42.199906	6474.407117	-39.000000	15.476190	2419.413

CALCULATION OF TAX BRACKETS TO1 AND TO2 BY DE DECILE

DECILE2=1

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	1.96845	-.968448	.911344	.162872	.00563467	.115844	-2.88203	-.282026

DECILE2=2

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.481492	.638881	1.06322	-.0632183	.00839894	.199308	-2.47639	.123606

DECILE2=3

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.376861	.717354	.510695	.616979	.00951355	.25702	-3.28745	-.687448

DECILE2=4

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.59354	.554845	.945793	.102839	.0103512	.305471	-3.44655	-.846545

DECILE2=5

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.704948	.45566	.73582	.417947	.0111288	.358851	-2.76189	-.161893

DECILE2=6

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.915393	.156014	1.11039	-.110394	.012598	.410792	-1.8509	.7491

DECILE2=7

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.665517	.500862	.709785	.449871	.0143428	.473444	-3.24793	-.64793

DECILE2=8

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.878222	.217115	1.02303	-.0230331	.0161473	.544441	-2.84539	-.245391

DECILE2=9

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.886685	.203563	.868317	.23272	.0179518	.6652	-3.07229	-.472292

CALCULATION OF TAX BRACKETS TO1 AND TC2 BY DE DECILE

DECILE2=10

OBS	X1	TO1	X2	TO2	DP	DE	X3	X4
1	.879732	.214714	.978893	.0413413	.0222386	1.17123	-2.86375	-.263749

SPEARMAN CORRELATION COEFFICIENTS BASED ON DE DECILES

	N	SUM	MEAN	MIN VALUE	MAX VALUE	CORRECTED SS	STANDARD DEV
X1	10	8.350839	0.8350839	0.3768613	1.9684482	1.73650755	0.439255373
X2	10	8.857292	0.8857292	0.5106953	1.1103939	0.30815530	0.185039124
X3	10	-28.73457C	-2.8734570	-3.4465454	-1.8509002	1.89626741	0.459016753
DP	10	0.128306	0.0128306	0.0056347	0.0222386	0.00021954	0.004939016
DE	10	4.501596	0.4501596	0.1158436	1.1712251	0.81842763	0.301556634
T01	10	2.690560	0.2690560	-0.9684482	0.7173540	2.06210718	0.478667965
T02	10	1.827925	0.1827925	-0.1103939	0.6169786	0.53328071	0.243420237

SPEARMAN CORRELATION COEFFICIENTS BASED ON DE DECILES

N = 10 SPEARMAN CORRELATION COEFFICIENTS / PROB > |R| UNDER HO: RHO=0

	X1	X2	X3	DP	DE	TO1	TO2
X1	1.000000 0.0000	0.321212 0.6321	0.345455 0.3295	0.284848 0.5706	0.284848 0.5706	-1.000000 0.0001	-0.321212 0.6321
X2	0.321212 0.6321	1.000000 0.0000	0.672727 0.0319	0.078788 0.8225	0.078788 0.8225	-0.321212 0.6321	-1.000000 0.0001
X3	0.345455 0.3295	0.672727 0.0319	1.000000 0.0000	0.042424 0.9031	0.042424 0.9031	-0.345455 0.3295	-0.672727 0.0319
DP	0.284848 0.5706	0.078788 0.8225	0.042424 0.9031	1.000000 0.0000	1.000000 0.0001	-0.284848 0.5706	-0.078788 0.8225
DE	0.284848 0.5706	0.078788 0.8225	0.042424 0.9031	1.000000 0.0001	1.000000 0.0000	-0.284848 0.5706	-0.078788 0.8225
TO1	-1.000000 0.0001	-0.321212 0.6321	-0.345455 0.3295	-0.284848 0.5706	-0.284848 0.5706	1.000000 0.0000	0.321212 0.6321
TO2	-0.321212 0.6321	-1.000000 0.0001	-0.672727 0.0319	-0.078788 0.8225	-0.078788 0.8225	0.321212 0.6321	1.000000 0.0000

VITA

Brian Durwin Martin

Candidate for the Degree of

Master of Business Administration

Thesis: THE DETERMINATION OF MARGINAL STOCKHOLDER TAX RATES AND ITS USE IN TESTING THE CLIENTELE EFFECT

Major Field: Business Administration

Biographical:

Personal Data: Born in Houston, Texas, November 7, 1949, the son of Mr. and Mrs. B. D. Martin; married July 31, 1971 to the former Lanita Kay White.

Education: Graduated from Charles H. Milby High School, Houston, Texas, in May, 1968; received the Bachelor of Business Administration degree from the Stephen F. Austin State University, Nacogdoches, Texas, in August, 1973; completed the requirements for the Master of Business Administration degree of Oklahoma State University in July, 1975.

Professional Experience: Graduate assistant, Department of Administrative Sciences, Oklahoma State University, 1973-1975.

Name: Brian D. Martin Date of Degree: July, 1975

Institution: Oklahoma State University

Location: Stillwater, Oklahoma

Title of Study: THE DETERMINATION OF MARGINAL STOCKHOLDER TAX RATES AND ITS USE IN TESTING THE CLIENTELE EFFECT

Pages in Study: 114 Candidate for Master of Business Administration

Major Field: Business Administration

Purpose of Study: Marginal Stockholder Tax Rates play an important role in many facets of modern financial theory. This paper was intended to extend an earlier study by Edwin J. Elton and Martin J. Gruber by redefining their test statistic in accordance with modern capital market theory. By observing the ex-dividend behavior of common stocks, it is theoretically possible to infer marginal stockholder tax rates. Identification of such rates would allow an examination of the relationships between those rates and a firm's dividend policy as measured by its dividend yield and payout ratio. A significant relationship between these variables would lend support to Miller and Modigliani's Clientele Effect (each firm is assumed to have a body of stockholders who find its dividend policy optimum).

Findings and Conclusions: The study found that marginal stockholder tax rates could be inferred using the newly defined test statistic. Although results concerning a firm's dividend yield and marginal stockholder tax rates were less than definitive, a plausible explanation for the outcome is offered. A significant relationship was found between payout ratios and implied tax rates, however, using the redefined statistic. On the basis of the tests conducted in this study, it appears the adjusted (redefined) statistic is a better measure for determining marginal stockholder tax rates than the statistic used by Elton and Gruber.

ADVISER'S APPROVAL James J. Ang