# ANALYSIS OF STOCK MARKET REACTION TO THE EXCHANGE OF DISCOUNTED LONG-TERM CORPORATE BONDS

by

John Consaul Gardner, Sr.

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ABSTRACT

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This research attempts to determine the stock market effects of announcements of bond for bond exchanges and to determine if the effects are directly associated with the cash flows resulting from the exchange. The bond for bond exchange, unlike exchanges between classes of securities, does not alter the firm's capital structure since the market value of debt remains constant. The exchange does, however, result in a coincidental adjustment in net cash flows.

A stock market return analysis is conducted on the three days surrounding the announcements of each exchange. These announcements consist of the proposal, terms, and results of the exchange announcements. The research assumes a semi-strong form of market efficiency, as it relates to publicly available information, and an equilibrium pricing of common stocks consistent with the capital asset pricing model. Results of the analysis show significant positive stock returns exist during the proposal announcement period and insignificant returns around the terms and results announcement periods. These results suggest that shareholders impound the economic effects of the exchange when the proposal to exchange the firm's bonds is made.

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To test the relationship between the relative size of the excess returns and the net cash flows resulting from the exchange, a correlation analysis is performed. Insignificant correlations are evidenced in each of the three announcement periods. Correlations between the excess returns aggregated over the three announcement periods and the cash flows are also insignificant.

The lack of correlation between excess returns and cash flows is likely to be caused by either 1) a mis-specification of the cash flow model, or 2) factors other than those incorporated in the cash flow model having an economic impact upon shareholder wealth. Assuming the cash flow model reasonably measures the net present value of an exchange, Jensen and Meckling's agency theory provides an explanation of what these other economic effects might be. In particular, if debt covenents are written in terms of book values of capital structure components, the reduction in long-term debt can provide greater flexibility to managers in terms of dividend decisions, future debt issues, and working capital maintenance.

DEDICATION

This dissertation is dedicated to my beloved wife Susan. Her emotional stability and mental perseverance contributed immeasurably to the completion of this study.

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John Consaul Gardner, Sr.

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# CHAPTER I

# INTRODUCTION

## Background

Changes in capital structures resulting from corporations exchanging two classes of their own securities have recently been studied to determine any effect on the wealth of the respective security holders. Two recent studies by Masulis [1980] and Mikkelson [1981] analyzed exchanges between various classes of securities.[1] Central to their analysis was the assumption that the exchanges of securities between different classes of security holders represented "pure" capital structure changes. "Pure" capital structure changes occur when the exchange is not confounded by changes in a firm's asset composition or any other simultaneous cash inflows or outflows.[2] The results of their empirical investigations were consistent with Modigliani-Miller [1963] in that a relationship appeared to exist between resultant increases (decreases) in tax shield caused by the exchange and increases (decreases) in shareholder wealth.[3]

A separate body of research exists which deals with exchanges within a class of securities, i.e., debt for debt exchanges. This literature proposes no capital structure effect on shareholder wealth since the market values of the two debt issues in the exchange are approximately equal.[4] Analysis of the effects of bond for bond

exchanges has focused on the impact of the net cash flows generated by the exchange upon shareholder wealth. The majority of the extant literature dealing with the net cash flow impact of corporate bond refundings was concerned with the replacement of higher interest rate debt with lower rate new issues. This research focused upon the issuer's trade-off between higher new bond principal amounts and lower interest costs. Authors such as Bierman [1966, 1972], Bowling [1966], Schwartz [1967] and Weingartner [1967] have contributed research in this area.

A second form of bond exchanges, exchanges of discounted long-term corporate bonds, occurs in high interest rate periods. During the 1970's, when interest rates were historically high and a large volume of corporate debt financing prevailed, a number of new issues were exchanged for outstanding lower coupon rate bonds. Analysis of the net cash flows generated by these exchanges focused upon the issuer's trade-off between lower new bond principal amounts and higher interest costs. Research related to the investment aspects of the exchange decision was conducted by Ang [1975], Johnson and Klein [1974], Kalotay [1978] and Laber [1978]. Each of these authors addressed the capital budgeting consideration of bond exchanges. The cash flow models proposed by these authors will be considered separately in Chapter II.

The purpose of this study is to test for the information content of the announcements of the exchanging of discounted corporate bonds. Bond exchanges that occurred over the years 1973 through 1979 will be included in the study. In addition, proposed cash flows resulting from the bond exchanges will be investigated separately to

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determine if a relationship exists between shifts in shareholder wealth and the net cash flow of the exchange. The proposed cash flow effect on shareholder wealth is discussed in the section to follow.

## NPV and Shareholder Wealth

The effect of the exchange on shareholder wealth, assuming all benefits accrue to the common shareholder, can be modeled as follows:

Assuming no exchange, the share price equals

$$P_o = \frac{P_1 + D_1}{1 + r} \quad . \qquad \text{(Eq. 1)}$$

Adding the exchange at $t_o$ and separating the NPV from $P_1$, we have

$$P'_o = \frac{P_1 + D_1}{1 + r} + \frac{NPV_o}{S_o} = P_o + \frac{NPV_o}{S_o} \quad , \qquad \text{(Eq. 2)}$$

where: $P_o$ = current stock price,

$P_1$ = expected stock price at the end of period one without exchange,

$D_1$ = expected dividend at the end of period one,

$NPV_o$ = net present value of the exchange,

$S_o$ = number of shares of common stock outstanding,

$r$ = rate of return required by common shareholders,

$P'_o$ = current stock price which includes any wealth effect from the exchange,

$t_o$ = current time period,

and therefore

$$P'_o - P_o = \frac{NPV_o}{S_o} = \Delta P_o \quad . \qquad \text{(Eq. 3)}$$

The effect on the market value of common stock would be

$$\frac{\Delta P_o}{P_o} = \frac{NPV_o}{P_o S_o} \quad . \qquad \text{(Eq. 4)}$$

The proposed change in stock market value due to the exchange is what this research will be investigating. The hypotheses to be tested and the associated research methodology applied will be divided into two distinct parts.

## Hypotheses and Methodology - Part 1

The first phase of the research will examine the effect on shareholder wealth caused by the announcement of the exchange. Relevant announcement dates are those dates on which new information concerning the exchange is first released to the market. For bond exchanges the proposed relevant dates are:

1. The initial announcement of the firm's proposed exchange,
2. Announcement of the term of the bond exchange, and
3. Announcement of the final results of the exchange.

The announcement process normally involves several additional interim results announcements and time extensions of the exchange. Most firms in the sample studied made two or more announcements of results or extensions. Chapter III contains an in-depth discussion of the exchange process.

The hypotheses to be tested are:

1. Initial Announcement Hypothesis

$H_o : \frac{\Delta P_{t_1}}{P_{t_1}} = 0$ - No significant changes in common stock prices of exchanging firms is due to the announcement of the exchange decision ($t_1$).

$H_1 : \frac{\Delta P_{t_1}}{P_{t_1}} \neq 0$ - A significant change in common stock prices of exchanging firms is due to the announcement of the exchange decision ($t_1$).

2. Terms Announcement Hypothesis

$H_o : \frac{\Delta P_{t_2}}{P_{t_2}} = 0$ - No significant change in common stock prices of exchanging firms is due to the announcement of the terms of exchange ($t_2$).

$H_1 : \frac{\Delta P_{t_2}}{P_{t_2}} \neq 0$ - A significant change in common stock prices of exchanging firms is due to the announcement of the terms of exchange ($t_2$).

3. Results Announcement Hypothesis

$H_o : \frac{\Delta P_{t_3}}{P_{t_3}} = 0$ - No significant change in common stock prices of exchanging firms is due to the announcement of results of the exchange ($t_3$).

$H_1 : \frac{\Delta P_{t_3}}{P_{t_3}} \neq 0$ - A significant change in common stock prices of exchanging firms is due to the announcement of results of the exchange ($t_3$).

The above hypotheses relate to any change in shareholder wealth reflected in price changes at the initial announcement date ($P_{t_1}$), the announcement of terms date ($P_{t_2}$) and the final results announcement ($P_{t_3}$).

An excess returns analysis, discussed thoroughly in Chapter IV, will be conducted using the mean adjusted returns model as an estimation model.[5] Z-tests will be conducted on daily mean returns of the sample around the announcement periods. If significant excess returns are detected around any of the announcement dates, the significant periods will be further analyzed to determine the relationship of a proposed NPV calculation to these returns. This will be accomplished

in Part II.

## Hypotheses and Methodology - Part II

Given the excess returns determined in Part I, correlation analysis, similar to that conducted by Beaver, Clarke and Wright [1979], will be performed to investigate the relationship between the relative magnitudes of the individual firm's excess returns and the firm's standardized net present value.

The hypothesis to be tested is:

$H_0 : \rho_{rn} \leq 0$

The abnormal returns of the individual common stocks of exchanging firms are not positively correlated with the standardized net present values of the bond exchanges.

$H_1 : \rho_{rn} > 0$

The abnormal returns of the individual common stocks of exchanging firms are positively correlated with the standardized net present values of the bond.

where 0 = correlation factor
R = excess returns
N = standardized NPV calculation

Assuming R and N are jointly drawn from the same distribution, the correlation factor will measure the level of dependence between the two variables. The two variables are the individual excess returns and the standardized NPV calculation. The standardization procedure involves a division of the NPV by the average value of the firm's common stock over the five trading days prior to the announcement date. Chapter IV provides an in-depth discussion of research methodology employed.

Based upon empirical results obtained by Masulis [1980], common stock returns of exchanging firms would be expected to be most affected at the time of the initial announcement. This implies investors can sufficiently forecast the cash flow impact of the exchange without waiting to learn the actual terms of the exchange. Investors can essentially impute the terms of exchange based upon current economic conditions.

## Implications for Capital Market Efficiency

The analysis of the exchange process will be an examination of the semi-strong market efficiency hypothesis. By investigating daily return data around the announcement dates, a determination of how rapidly the information is incorporated in share prices can be examined. Any lagged effect might be considered as an indication of market inefficiency.

Results may be confounded by the presence of insider information, as well as any signalling that the exchange itself might convey to security holders. In addition, a concomitant effect due to a change in expected bankruptcy costs and any effect of incomplete capital markets may confound the results. The analysis of these issues, however, is beyond the scope of the research conducted here. Possible inferences will be discussed when empirical results are reviewed in Chapter V.

## Additional Firm Effects

While the proposed cash flow generated by the exchange is of economic consequence and is the focal point of this research, other firm specific variables are affected by the exchange process. As pointed out by Johnson and Klein [1974], additional consequences of

the exchange would be the improvement of the firm's financial ratios and the effect on current earnings.

Selected financial ratios affected by the exchange would include profitability and debt utilization ratios. Profitability ratios such as profit margin, return on investment and return on equity are affected in the year of repurchase. Income would be inflated by the gain on retirement of the old bonds.[6] The inflated income number results in an inflated numerator in the profitability ratios making them more attractive.[7] This enhancement of profitability would be of a one period duration after which they would revert to normal levels. The new ratio levels may in fact ultimately fall below pre-exchange levels due to additional interest payments on the new bond issue.

With debt utilization ratios, the reduction of outstanding debt will improve comparative debt ratios, such as debt to total assets and debt to equity. Other utilization ratios like the times interest earned ratio would normally improve in the year of refund due to the gain on the retirement but may decline in subsequent periods depending upon the increase in yearly interest payments and continued income generation.[8] The actual increase in interest payments may, in fact, be quite small, its magnitude depending upon the reduction in principal versus the increase in the stated interest rate.

The effect of the exchange on current earnings has changed with modifications in the generally accepted accounting principles (GAAP). Little attention has been devoted to gains on retirement of discounted bonds until Paton and Paton [1955] presented a discussion on its possibility of occurrence. ARB #43 issued in 1953, as well as contemporary literature of the time, was devoted mainly to refunding

in periods of lower interest rates. ARB #43 recommended the amortization of gains or losses on retirement over the remainder of the retired issue's life. A direct write-off to income or retained earnings was also acceptable.

Effective January 1, 1973, APBO #26 required recognition of gains or losses in income in the period of debt extinguishment and separate identification. With Opinion #26, amortization of gains and losses to future periods was discontinued and APBO #9 (Reporting Results of Operations) was relied upon to determine whether these items should be reported as ordinary or extraordinary. In compliance with APBO #9, they were reported as extraordinary items.

Effective September 30, 1973, APBO #30 was issued to supercede Opinion #9. The scope of the extraordinary items classification was drastically reduced and, in doing so, gains and losses on debt extinguishment became ordinary income items.

In 1975, due to pressures from the accounting profession and especially the Securities and Exchange Commission, the Financial Accounting Standards Board issued FAS #4 requiring firms to include gains or losses on all extinguishments of debt occurring after March 31, 1975, as an extraordinary item in the income statement. Retroactive application of FAS #4 was encouraged but not required.

In summary, for reporting periods ending before April 1, 1975, firms could report gains or losses on repurchases of bonds as ordinary income. In the case of refunding discounted bonds, income and earnings per share figures would be inflated by the gain. For reporting periods ending after April 1, 1975, gains on retirement of discounted bonds are reported as extraordinary items. This research includes the

years 1973 through 1979, which means both methods of reporting were used by firms constituting this sample.

While this research does not address any possible difference attributable to the form of income classification, several authors have researched this issue. Gonedes [1975] found shareholder wealth was not affected by the form of classification while Eskew and Wright [1976] did find a relationship. This study deals with the exchange announcements, however, and not with the resultant financial reporting. Future research will be conducted to clarify the reporting issue.

## Contracting Theory Consideration

As pointed out by Holthausen [1981], Leftwich [1981, 1983] and others, corporate lending agreement restrictions are usually based in some manner on generally accepted accounting principles (GAAP). These restrictions are written to protect the interests of bondholders since decisions managers may make to maximize the value of stockholder wealth may also reduce the wealth of bondholders. Jensen and Meckling [1976] discuss the existence of the potential conflict between classes of security holders and the associated "bonding costs" resulting in protective covenants.[9] Incurrence of these costs acts to reduce the potential conflict between stockholders and bondholders. Restrictions imposed and normally monitored using GAAP include dividend payments, additional debt insurance, maintenance of working capital and merger activities, among others.

As delineated above, the exchange of discounted bonds results in improvements in some firm-specific financial variables. If covenants are based upon accounting numbers, the exchange can provide

greater flexibility to managers in regard to decisions concerning dividends, additional debt issues and working capital maintenance. This in turn could result in a shift in wealth from the bondholder to the stockholder, in which case a positive return on equity securities would be expected. This issue will be addressed when the results are evaluated in Chapter V.

## Rational Versus Irrational Investor Theories

As proposed by Collins, Rozeff and Dhaliwal [1981], theories of stock price behavior can be divided into irrational investor (i.e., disregard for real cash flows) and rational investor (i.e., valuing real cash flows using valuation models).

The irrational investor theory assumes investors value the firm according to the accounting numbers provided. In other words, the investor does not "look through" the accounting numbers, i.e., their cash flow implications. In terms of this study, the irrational investor theory would predict a possible shift in shareholder wealth due to the exchange's effect upon book value financial ratios and the reported accounting gain (both discussed above). This author assumes a rational investor theory applies to shareholder valuation and price changes are caused by a change in expected cash flows or a change in the discount rate used to discount the future cash flows.[10] Therefore, the cash flow model proposed in Chapter IV will be used to estimate the impact of the exchange on the value of the firm.

## Summary

The bond for bond exchange provides a theoretical opportunity to examine an investment cash flow in a market setting without the

confounding effects of an associated adjustment in capital structure. The refund announcement dates will be tested for abnormal returns to detect the effect upon shareholder wealth. These excess returns will then be compared to a standardized net present value of the exchange to determine whether a direct association exists. This form of analysis assumes shareholders are rational investors and therefore value securities according to the discounted value of their cash flows.

## Organization of the Study

In Chapter II a review of the relevant literature will be presented. Since a major justification for conducting this study concerns capital structure theory and related empirical investigations, these topics will be addressed first. Next, the theoretical and empirical literature relating to the investment principles will be reviewed. Chapter III contains a discussion of the debt exchange framework. Included in this is a discussion of the legal requirements of debt exchanges and the effects on the firm and bondholders. In addition, the criteria used to select the sample for this study will be addressed. In Chapter IV the research methodology to be used in this study will be reviewed. Chapter V will present the results generated from the research methodology and Chapter VI will discuss these results and subsequent conclusions drawn.

## Chapter I - Footnotes

1. Masulis [1980] investigated announcements of (1) exchanges of debt with outstanding common stock, (2) exchanges of preferred stock with outstanding common stock and (3) exchanges of debt with outstanding preferred stock. Mikkelson [1981] investigated called convertible bonds, i.e., forced conversions of debt for common stock.

2. Non-"pure" capital structure changes would be those that will also affect the firm's asset structure simultaneously. For example, a new issue of stock includes a cash inflow whereas repurchasing bonds requires a cash outflow.

3. Masulis also related the announcement's effect on security returns to a wealth distribution effect. His findings were consistent with both the interest tax shield and wealth distribution hypotheses.

4. See Modigliani-Miller [1958] and Fama-Miller [1972].

5. Both Masulis and Mikkelson used the mean adjusted returns model in their analyses. This study will also use the market model for comparative purposes.

6. The accounting gain on the bond exchange is equal to the savings in principal less (plus) any unamortized discount (premium) on the repurchased debt.

7. Inflated profitability ratios apply to refunds before 1975 when the gain was reported as ordinary income. Since 1975 the gain has been reported as an extraordinary item.

8. Coverage ratios normally exclude extraordinary items. Therefore, the effect of the exchange on the coverage ratio depends on how the gain was treated, i.e., as ordinary income prior to 1975 and as an extraordinary item since 1975.

9. Bonding costs include audits by public accountants, bonding against manager malfeasance and contractual limitations on manager's decision-making power.

10. See Collins, Rozeff and Dhaliwal [1981] for a complete discussion of rational verses irrational investment behavior.

# CHAPTER II

## LITERATURE REVIEW

The following is a review of the literature that constitutes the theoretical basis of this study. The literature pertaining to capital structure will be reviewed first since the investigation of bond exchanges is dependent upon stability in relationships between classes of securities in the capital structure. Next, a review of literature relating bond exchanges to investment principles will be presented. This review includes a discussion of proposed cash flow models used to symbolize these proposed investment relationships. Literature concerning alternative discount rates to be used in these cash flow models will also be presented. Finally, empirical studies will be reviewed that attempted to test for the proposed investment relationships.

### Capital Structure Theory - Under Perfect Capital Markets

Capital structure theory attempts to explain the relationship between firm value and the composition of its capital structure. Modigliani and Miller [1958], under limiting assumptions including riskless debt[1] and perfect capital markets, demonstrate that the value of the firm is independent of its capital structure composition. M & M contend that, given two firms in the same risk class and varying only in their capital composition, arbitrage forces will prevent the

assignment of different values to the two firms. The irrelevance of capital structure proposition was supported by additional researchers employing different models. Some of these studies include Hirshleifer [1966, 1970], Robicheck and Myers [1966], and Stiglitz [1969] who used time-state preference models, and Hamada [1969] and Rubinstein [1973] who used modern portfolio theory to derive the capital structure irrelevance argument.

## Capital Structure Theory - Relaxing Assumptions

Subsequent theoretical investigations pertained to the appropriateness of a perfect capital market assumption. Modigliani and Miller [1963] introduced corporate taxes into their analysis and concluded that the tax deductibility of interest payments increases the attractiveness of issuing debt. This implies that increasing the tax shield by incorporating more debt into the capital structure would result in an increase in value to one or more classes of security holders. Miller [1977] revised this conclusion with the introduction of personal taxation. He showed that the inclusion of differential personal taxation, where the marginal rate of taxation on interest payments is higher than the capital gains tax rate, could affect the investment behavior of security holders. He concludes that equilibrium can exist in a perfect capital market where both corporate and differential personal tax rates exist if debt policy has no effect on firm value. This means the beneficial tax shield effect of interest payments would be perfectly offset by the negative effect of differential personal tax rates. DeAngelo and Masulis [1979] go on to show that differential personal tax rates do not totally offset the tax shield advantage of

debt. However, this benefit may increase at a decreasing rate when bankruptcy costs are included.[2]

The inclusion of expected bankruptcy costs is another possible counteractive factor that may offset the potentially beneficial tax-shield effect of interest payments. Baxter [1967], Kraus and Litzenberger [1973] and Scott [1976] reviewed increases in the probability of incurring bankruptcy costs due to increased leverage. The general conclusion was that a high degree of leverage increases the probability of incurring bankruptcy costs by increasing the riskiness of the overall earnings stream of the firm. Therefore, other things being equal, an abundance of debt can cause the total value of the firm to fall.

Expected costs associated with bankruptcy and reorganization include court costs, manager's time, legal and accounting fees and business disruption costs. These costs would not be incurred by highly levered firms who engage in a voluntary recapitalization. Recapitalization costs are or include the costs of the exchange offer. Warner [1976] estimates the costs of bankruptcy and indicates their relative size in relation to firm value is small.[3]

In summary, the foundations of capital structure theory are inconclusive in regard to the composition of securities that maximize the value of the firm. While inclusion of debt increases the tax shield on interest payments (implying an all debt capital structure maximizes firm value), other factors such as personal taxes and bankruptcy costs confound the implied advantage of debt.

## Empirical Investigations of Capital Structure Theory

Masulis [1980] empirically investigated the impact of capital structure change on the values of firm's securities. He analyzed announcements of "pure" capital structure changes, i.e., exchanges between common stock, preferred stock and debt, and finds statistically significant effects on the returns of these securities. The significant results provide evidence of a relationship between an increase in shareholder wealth with the increase in corporate tax shield from the exchange. The results are also consistent with proposed wealth redistribution effects between classes of security holders. The results provide no evidence, however, regarding any association between changes in shareholder wealth and changes in the probability of bankruptcy.

Masulis's sample consisted of 163 exchanges in which there were 85 debt for common, 43 preferred for common and 43 debt for preferred exchange offers. Using the mean adjusted returns model for estimating betas, Masulis looked at the portfolio returns for these securities and conducted t-tests on the excess residuals over the two day period (t=0 and t=1) of the announcement. Significant results and a direct relationship to the change in interest tax shield was proposed. No tax shield effect was found during the announcement of preferred for common exchanges which substantiated the existence of a positive relationship between tax shield on debt and common stock returns. Masulis also analyzed bond and preferred stock return data and discovered offsetting price adjustments occurred (as compared to the common stock for which they were exchanged) with the capital structure change. These results were consistent with his wealth redistribution hypothesis which predicts offsetting price changes in the individual classes of

securities of the firm and no change in total firm value.

Implications of agency theory are also recognized in the Masulis study. The empirical results suggest in cases where firms decrease leverage stockholders' wealth is not being maximized. This would be consistent with agency theory if management reduced debt to avoid bankruptcy and thereby maximize the value of their personal labor contracts. As Masulis concludes, the exchange decision "may or may not be consistent with maximizing the firm's net present value,"[4] a proposition this research addresses. His results are consistent with the proposition that the positive effects on stock returns associated with increased leverage are larger than the expected costs of bankruptcy.

Mikkelson [1981] extends the work of Masulis to include called convertible securities. He uses a similar research methodology, including estimating betas with the mean adjusted returns model and conducting t-tests using equity returns over the announcement period. Mikkelson finds a significant reduction in stock prices over the two (2) day announcement period of convertible debt calls but no significant effect when convertible preferred was called. These results, like those of Masulis, support the hypothesis of a tax shield effect.

These findings are consistent with Modigliani and Miller [1963] as they show an association between changes in debt and changes in stockholder wealth. This conclusion is reinforced by the fact that no shift in stockholder wealth was detected when convertible preferred stock calls were analyzed by Mikkelson and when preferred stock was exchanged for common by Masulis.[5]

## Bond Exchanges - An Investment Decision

Laber [1979] states, "Managers doubtless weigh many factors in making capital structure decisions and apparently find other considerations to be more important than tax shields . . . since refinancing costs are incurred, the investment portion of the decision probably was a separate concern." Both Masulis and Mikkelson assume the observed security reactions are related to tax shield and associated wealth redistribution effects. Their conclusions may be invalid if the results are confounded by the investment decision.[6] Bond for bond exchanges provide an opportunity to test for an investment effect on shareholder wealth since the market value of the firm's debt remains essentially the same before and after the exchange. Research related to the investment decision aspects of bond exchanges is divided between (1) specification of the impact of refunding on shareholder wealth and (2) determination of an appropriate discount rate. The shareholder wealth impact of bond exchanges can be further sub-divided between the derivation of capital structure relationships from Modigliani and Miller propositions and cash flow models.

First, research concerned with the Modigliani and Miller capital structure propositions and their relationship to the investment aspect of bond exchanges will be discussed. Studies by Yawitz and Anderson [1977], Laber [1979] and Livingston [1979] have contributed to this area of research. This will be followed by studies that have focused on modeling the cash flows of the bond exchange. The chapter will conclude with a review of the literature concerned with the determination of an appropriate rate to discount these cash flows.

## Yawitz and Anderson

Yawitz and Anderson [1977] (Y&A) view the refunding decision related to premium bonds by dividing the decision between a pure leverage and a pure refunding decision.[7] With the aid of a one period model derived from Modigliani and Miller [1958], they address the question of how much debt to re-issue after refunding the old bond (leverage decision).

Y & A derive a one period capital structure model and conclude that "only by issuing bonds having the same total coupon as the original debt can the firm retain its original financial leverage and not alter the income distribution available for the equity holders." This "pure" refunding maintains the distribution of future income, net of refunding costs, to shareholders at the pre-refunding expected value and variance. For premium bonds:

$$\Delta E_R = L_{1,n} - (1-T)(C+U) \qquad \text{(Eq. 5)}$$

where

$L_{1,n}$ = market value of n - maturity bond

$L_2$ = par value of $L_{1,n}$

U = refunding costs

T = tax rate

C = call price of bonds

$E_R$ = equity value prior to drop in market rates

If no transaction costs are involved (U = 0) and the bond is called at its book value, the above equation reduces to:

$$\Delta E_R = L_{1,n} - L_2 \, . \qquad \text{(Eq. 6)}$$

This result assumes T does not affect the transaction. These assumptions effectively eliminate any investment decision implications of the refund. The pure refunding case, given their assumptions, result in $\Delta E_R = 0$, i.e., no leverage effect on stockholder wealth.

Once an appropriate level of new debt is determined, Y & A address the subject of a suitable discount rate (refunding decision). Evaluation of the appropriate discount rate assumes the firm has altered its financial risk and accrues the benefits of refunding as a reduction in future interest obligations. Under these assumptions Yawitz and Anderson show that in other than the perpetuity case, after tax future interest obligations should be discounted by the pre-tax rate on debt.[8] This holds for callable bonds where "the refunding is conceptually equivalent to the bondholders 'giving up' a portion of their bonds to the equity holders in exchange for the removal of the call feature." Although Yawitz and Anderson deal with refunds of premium bonds, the conclusions they reach are applicable to evaluation of the discounted bond refund decision. Resulting comments to Yawitz and Anderson's research were forwarded by Laber [1979] and Livingston [1979].

## Laber

Laber argues that Y & A's condition of "pure refunding" was restrictive and their decision rules for "pure" or non-pure refundings are unnecessarily complex. Laber re-evaluates Yawitz and Anderson's conclusion in terms of a hybrid Modigliani and Miller valuation model developed by Ofer and Taggart [1977]. They develop the following model:

$$\frac{(1-t)(i_2-i_1)L_2}{i_1} + t\Delta L_2 > (1-t)RC \qquad \text{(Eq. 7)}$$

where: $t$ = tax rate
$i_2$ = interest rate on old bonds
$i_1$ = interest rate on new bonds
RC = cost of refunding
$L_2$ = par of outstanding bonds

which, if realized, would result in an increase in shareolder wealth. The first term relates the benefit associated with the investment decision while the second represents the effect of capital structure change. If the sum of these two terms is greater than the cost of refunding, shareholder wealth is increased. They go on to show that this model is essentially the same as that proposed by Yawitz and Anderson for "pure" refunding and consistent with their model when mixed refunds are evaluated. Laber's model draws attention to the prospect of investment decision criteria other than tax shields on interest being an integral part of a decision that combines investment and capital structure considerations.

## Livingston

Miles Livingston [1979] also commented on Y and A's derivation. He argues that Y and A should have compared "stockholder wealth after refunding with stockholder wealth after the change in interest rates" to separate the impact of the refund due to an interest rate change with that of the refunding itself. In addition, he shows that given the M and M framework requires certainty of interest rates, it is incorrect to use this framework to evaluate the refunding decision where interest rate uncertainty exists. Yawitz and Anderson [1979] reply by demonstrating the refunding should be evaluated under the constraint of equating the firm's capital structure after the refunding

to that of the firm if the calls were allowed to expire (premium bonds). This assumption, if utilized, effectively negates Livingston's conclusion since he assumes the value after the call expires equals the par value of the debt ($L_2$) instead of the market value of the bond ($L_{1,n}$).

In response to Laber, Y and A attack his assumption that to maintain constant leverage requires the market value of debt to remain constant. Y and A assume "constancy of contractual liabilities" which would not result in a negative effect from a reduction in the tax shield.

The relevancy of each argument is dependent upon the reader's willingness to accept the alternative assumptions. In relation to this study, Laber's assumptions are consistent with evidence found in exchanges of discounted bonds. In particular, the contractual liabilities do not remain constant as was also the case in both Masulis and Mikkelson's research. An additional implication to this study is the theoretical concern over the combined effect (i.e., investment versus capital structure) that potentially results in a stockholder wealth adjustment.

## Cash Flow Models

Cash flow models were developed by Ang [1975], Bowling [1966], Johnson and Klein [1974], Kalatoy [1978], Laber [1978], Sibley [1974] and Loy and Toole [1980]. All models were essentially equivalent except for the assumptions made by the particular author. Each model addressed the capital budgeting facets of bond repurchases or exchanges at a discount and/or premium. The models proposed, however, were

either general in nature, did not incorporate tax considerations, dealt directly with cash repurchases and/or assumed a coincidental maturity date for both issues. A model is presented in Chapter IV that incorporates cash flows relating specifically to discounted bond exchanges. This proposed model is assumed to be a reasonable estimate of the cash flows associated with the exchange and not necessarily a theoretically flawless model.[9]

Johnson and Klein

Johnson and Klein promote three reasons a firm might refund discounted bonds: 1) increase reported earnings, 2) enhance financial ratios and 3) a positive cashflow. Their cashflow model is:

$$NPV = \sum_{i=1}^{2n} \frac{1/2(I_o - I_a)(1-TR)}{(i+r/2)^i} + \frac{P_o - P_a}{(1+r/2)^{2n}} - \sum_{t=1}^{2m} \frac{1/2D_t(TR)}{(1+r/2)^t} \qquad \text{(Eq.8)}$$

where: $I_o$ and $I_a$ = annual interest payments on old and new bonds respectively

$P_o$ and $P_a$ = principal payments on old and new bonds respectively

TR = marginal tax rate

n = remaining years to maturity of bonds

m = number of years a reduction in depreciation is realized

r/2 = semi-annual after-tax discount rate

$D_t$ = annual depreciation reduction.

Johnson and Klein assume coincidental maturity of the two bond issues, semi-annual interest payments, the firm uses its gain from the refund to write down the depreciable value of its assets for tax purposes, the after-tax discount rate is the appropriate rate and refunding expenditures are immaterial and not included. As discussed in Chapter

IV actual bond exchanges are not consistent with most of these assumptions.

Ang

Ang's model for discounted bonds:[10]

$$\frac{P(r_o^m) - P(r_o^m, r_t, d)}{(1+r_t)^T} - \sum_{i=1}^{T} \frac{(\gamma R_t - R_o)}{(1+r_t)^i} - \frac{S_t}{(1+r_t)^T} > 0 \qquad \text{(Eq. 9)}$$

where: $P(r_o^m)$ = initial price of existing bonds

$P(r_o^m, r_t, d)$ = market price of existing bonds with a current market yield of $r_t$ and d periods to maturity

$S_t$ = refunding costs

$\gamma = \frac{P(r_o^m, r_t, d) + S_t}{P(r_o^m)}$ = ratio of value S at issue of new and existing bonds

$R_t$ and $R_o$ = coupon rates on new and old bonds respectively.

The $\gamma$ is simply an adjustment to the coupon rate in calculating interest payments which takes into account the change in principal amounts. This model is similar to Johnson and Klein's except it incorporates refunding costs (including the gain on refunding),[11] no interest rate payment assumption, no tax treatment assumption for the gain, and use of a before tax borrowing rate for discounting cash flows.

Ang also evaluates a model for premium bonds. He concludes that bond refunds can have positive cash flows regardless of whether they are premium or discount bonds. An implication resulting from this conclusion is that management's decision to issue debt may not be substantially affected by interest rate levels. This implication

is somewhat contrary to intuitive thinking, especially in light of the fact that premium bonds have been given far greater emphasis in the financial literature.

Laber's cash flow model is essentially the same as Johnson and Klein's with the exception of using a before-tax discount rate and his consideration of financing costs. Laber concludes, however, that positive NPV's are unlikely and therefore managers appear to refund discounted bonds because of paper gains and/or enhanced financial ratios. This conjecture has not been supported empirically and will be addressed in this research design.

## Ofer and Taggart

Ofer and Taggart evaluate the bond refunding in an M and M valuation framework and incorporate present value considerations. They derive decision rules:

$$RC(1-\tau) < \frac{(1-\tau)(r-r')D}{r'} \qquad \text{(Eq. 10)}$$

and:

$$RC(1-\tau) < \frac{(1-\tau)(r-r')D}{r'(1-\tau)} \qquad \text{(Eq. 11)}$$

where: $RC$ = tax deductible cost of refunding
$\tau$ = tax rate
$r, r'$ = old and new interest rates on debt respectively
$D$ = par value of debt

The difference between the two decision rules is the discount rate used to determine the present value of the change in interest payments. Notice the models assume the size of debt remains constant, otherwise an additional term representing the change in principal would be

required. The first rule is applicable to an equity-financed refunding while the second represents a debt-financed refunding. The discount rate is adjusted for taxes due to the deductibility of the financing bonds' interest. The conclusion drawn from their decision rules is that the appropriate discount rate to use in the present value calculation depends upon how the refunding is financed and how debt capacity is measured.[12]

## Kalotay

Kalotay's model is one of the most comprehensive:

(Eq. 12)

$$NPV = -p + \sum_{j=1}^{n} \frac{(1-t)i_o}{[1+(1-t)i]^j} + \frac{1}{[1+(1-t)i]^n} - \sum_{k=0}^{m} \frac{t(1-p)}{M+1} \frac{1}{[1+(1-t)i]^k} - (1-t)^e$$

where: 1st term = purchase price
2nd term = discounted interest payments
3rd term = discounted principal payment
4th term = tax obligation associated with the gain 1-p
5th term = miscellaneous refunding expenses

Kalotoy is not concerned with a "correct" discount rate, although he uses the after-tax marginal cost of debt. After going through an example of an actual refund (Grumman Corp.), he concludes that the firm must be a taxable entity for the refunding operation to be profitable. In this study all sample firms are taxable entities.

## Loy and Toole

Loy and Toole [1980] have developed the most recent and relatively extensive net present value calculation for exchange of dis-

counted bonds:

$$NPV = -I_o + \sum_{j=1}^{M} \frac{(1-t)\,[c^R P_j^R - c^N P_j^N]}{(1+k/2)^j} + \sum_{j=1}^{M} \frac{(1-t)\,[c^x \phi_j^R - c^x \phi_j^N]}{(1+k/2)^j}$$

$$+ \frac{(P_M^N + \phi_M^N) - (P_M^R + \phi_M^R)}{(1+k/2)^M} - \sum_{j=o}^{D} \frac{T_j}{(1+k/2)^j} \qquad \text{(Eq. 13)}$$

where:

$I_o$ = initial investment outlay for refunding expenses

$M$ = number of semiannual periods of financing horizon

$j$ = a semiannual interest period

$t$ = the marginal federal income tax rate

$c^R, c^N$ = semiannual coupon rate, old and new bond issue, respectively

$P_j^R, P_j^N$ = outstanding principal amount in period j, old and new bond issue, respectively

$\phi_j^R, \phi_j^N$ = outstanding principal amount in period j for assumed refinancing of all principal payments between period 0 and j on the old and new bond issues, respectively

$D$ = number of semiannual periods over which the tax expense on the early debt extinguishment is realized

$T_j$ = the semiannual tax expense on the early debt extinguishment

$c^x$ = semiannual yield to maturity on the new bond issue

$k/2$ = semiannual, before-tax, risk-adjusted discount rate which equals $c^x$

The Loy and Toole model is essentially the same as other models presented. They use the before-tax rate of debt on the new bond issue and in the third term allow for sinking fund payments. The sinking fund factor results in the same present value as the normal assumption

of a balloon payment since the reinvestment rate for both is the discount (new debt) rate.

To summarize, a number of cash flow models have been forwarded with varying assumptions relating to each. Most, however, have dealt with the refunding of premium bonds. Those dealing with discounted bonds are generally consistent with the model proposed in this study but are limited by their assumption(s) of no tax, a cash repurchase of the bonds or a coincidental maturity date for both bond issues.

## Discount Rate

Three different discount rates have been proposed as appropriate in evaluating the refunding of discounted bonds:

1. the firm's cost of capital
2. the firm's before-tax cost of debt
3. the firm's after-tax cost of debt

In general, since Bowlin's [1966] paper advocating the cost of debt as the appropriate discount rate, use of the firm's cost of capital for bond refunds has been deemed inappropriate by subsequent authors.[13] Bowlin argued that the firm's cost of capital includes a risk premium related to the uncertainty associated with future cash flows from assets. Cash flows connected to the refunding decision are generally certain in nature. The only risk associated with the refunding decision is default risk related to the new bond issue. This default risk on principal and interest payments is embodied within the rate of interest on debt. Therefore, a suitable discount rate would be less than the firm's cost of capital, i.e., the before or after-tax cost of debt.

Arguments advocating the use of a before-tax rate of interest on new debt to discount the refunding cash flows were developed by Bierman [1972] and Gordon [1974]. These arguments relate to opportunity costs of the funds used in refunding. Since an investor can receive the before-tax rate of interest if he acquires the bonds directly, it is argued the before-tax rate of interest is the opportunity cost and appropriate discount rate.

## Bierman

Bierman's purpose was to develop a procedure to bypass the question of the appropriate discount rate. Bierman first formulates the present values of current debt discounted by current bond yields. The net benefits:

$$V = P - (C + B) \qquad \text{(Eq. 14)}$$

where: P = amount of bonds issued
C = transactions costs
B = cash outflows of debt

He assumes the NPV's of debt before and after the refund remain the same.

Bierman then assumes the same maturity amount of debt. This keeps the liability the same before and after the refund and the interest payments and initial outlay different. The net benefits:

$$V^* = (I-I^*)\, A_{n/r} - C \qquad \text{(Eq. 15)}$$

where: I = current interest payment
$I^*$ = interest on new debt
$A_{n/r}$ = present value of an annuity discounted at r, the current interest rate.

which reduces :

$$V^* = P - (C + B) \qquad \text{(Eq. 16)}$$

Therefore:

$$V = V^* \text{ if } I^* = rB \qquad \text{(Eq. 17)}$$

He therefore concludes that the value of debt before and after the refund is equal only when the before-tax rate of interest is used as the discount rate.

## Gordon

Gordon's argument for a before-tax discount rate is based upon the opportunity cost to the investors in the company. He asserts that investors can earn the before-tax cost of debt when investing in similar securities. Therefore, this rate should be used to discount the bonds' cash flows assuming investors' opportunity cost is the primary investment criterion in a refunding decision in spite of the fact that the firm's cost is after-tax.

Advocates of the use of the after-tax discount rate on new debt include Bowlin [1966] and Mayor and McCoin [1974]. Ofer and Taggart [1977] also advocate the after-tax discount rate but under a limiting assumption.

## Bowlin

Bowlin [1966] states "the discount rate to apply to future interest savings should be the total cost (including both explicit and implicit costs) of the funds necessary to make the investment."[14] He concludes that the net cash investment required to finance the

refunding can be obtained by debt which in turn would not require a change in equity in order to maximize the firm's capital structure. Therefore, the net yield (after-tax cost of debt) which represents the firm's cost of debt should be used as the discount rate applied to the net cash investment.

### Mayor and McCoin

Mayor and McCoin [1974] attempt to resolve the appropriate discount rate dilemma by viewing the refunding decision in terms of the financial theory of the firm.[15] They review the refunding process as a pure refunding, i.e., affects only the debt refunded and a mixed refunding, i.e. affects other balance sheet items as in cash repurchase of debt or bond for stock exchanges. The pure refunding analysis is comparable to that performed by Bowlin and, like Bowlin, they conclude the after-tax cost of debt be used in a pure refunding case. In mixed refunding they propose a rate equal to the opportunity cost of risk-adjusted net rate of return on the firm's best alternative use of funds. This rate should never be lower than the net refunding rate since the firm has the alternative of buying back its own debt.

### Ofer and Taggart

Ofer and Taggart [1977] review the refunding decision in light of the valuation of a firm's securities. They incorporate M and M's 1963 market valuation theory in their evaluation of bond refundings. First they show the before-tax interest rate is appropriate when the firm's net refunding costs are equity financed. Alternatively, if refunding costs are financed by the new bond issue, the after-tax cost of debt is appropriate. In addition, Ofer and Taggart conclude that

the determination of an appropriate discount rate is related to how debt capacity is defined. If defined in terms of a debt coverage ratio, the after-tax rate on new debt is appropriate. If defined in terms of debt to equity ratio, the before-tax rate on new debt is appropriate.

In summary, the rate of interest on new debt is generally considered the appropriate discount rate to use in analyzing refunding decisions. The major point of contention relates to use of a before or after-tax rate. In this study both the before and after-tax interest rates on new debt will be used to discount refunding cash flows. Major consideration will be given to after-tax calculations, however, since most of the literature and this author believe in its theoretical justification.

## Empirical Tests of Bond Refundings

Only two authors, Bowlin [1966] and Loy and Toole [1980], attempted any serious empirical analysis of bond refunding.

### Bowlin

Bowlin developed a questionnaire which he sent to 33 public utilities that refunded premium bonds during the 1962 through 1963 calendar years. From the 30 responding firms he found that most firms refunded primarily to reduce interest charges and secondly to lengthen the maturity of debt. Bowlin them compared the net yield on the refunding bonds with the calculated rate of return on refunding.[16] More than fifty percent of the after-tax rates of return on the refunding fell between ten and twenty percent while all of the before-tax yields on the refunding fell between four and five percent. His results imply

that none of the refundings were unprofitable, i.e., all had positive rates of return. No extension of the research to shareholder wealth was undertaken or implied.

### Loy and Toole

Loy and Toole under took a net present value analysis of 37 exchanges of discounted convertible bonds occurring during the 1970 through 1977 calendar years. The purpose of their study was to compare the net present value of the refunding with the FASB reporting requirements, i.e., FAS #4. Most of their net present values were negative (30) while FAS #4-reported gains from the extinguishment of the old debt and were categorized as an extraordinary item. In fifteen cases more than half of the reported income for the year was due to the exchange. The results show an inconsistency between the reporting standards and Loy and Toole's calculations of the cash flows associated with the refund. They conclude that an ideal accounting procedure should disclose a realized loss from the refund. No extension of the results to shareholder wealth was pursued which could have aided in proving the validity of their cash flow calculations and resulting inferences. In particular, a change in shareholder wealth should correlate with their cash flow calculations if their assertions are valid.

In summary, empirical evaluations of the exchange decision is a small part of the literature. Authors have not attempted to analyze the economic effects of the exchange decision on shareholder wealth. The purpose of this study is to investigate that proposed relationship.

## Summary

An extensive body of theoretical literature exists concerning capital structure theory beginning with M and M's original propositions. The empirical testing of capital structure theory has been confounded by the simultaneous effects associated with the investment aspect of the decision. Research by Masulis and Mikkelson circumvented the investment factor by analyzing stock for bond exchanges. The bond for bond exchange analyzed in this study allows for a unique opportunity to look at the investment aspect of an exchange since it is not confounded by a change in capital structure since the market value of debt remains constant.

There is a considerable body of literature dealing with the cash flow analysis of bond exchanges. Various cash flow models have been forwarded that are essentially the same except for the definition of particular variables. The major controversy has revolved around an appropriate discount rate to use in the net present value calculation. While the rate on new debt is generally accepted as an appropriate discount rate, a debate still exist over the question of using the before or after-tax rate. As mentioned above, empirical investigations have been minimal and limited in scope.

## Chapter II - Footnotes

1. The riskless debt assumption was shown to be only a simplifying assumption in subsequent work done by Fama and Miller [1972] and Rubinstein [1973].

2. See Kraus and Litzenburger [1973] and/or Brennan and Schwartz [1978].

3. Warner [1976] estimates the direct costs of bankruptcy for a sample of 33 railroads.

4. Masulis [1980] pg. 165 and pg. 175.

5. Masulis, for example, found no effect when preferred stock was exchanged for common stock. Since tax shield is the major difference when comparing this exchange to a debt for common stock exchange, an association between the price effect on common stock and tax shield was proposed.

6. Both authors assume "pure" capital structure changes which enables them to assume away any investment aspects of the decision.

7. Yawitz and Anderson assume a refunding of callable bonds with a noncallable issue after a decline in interest rate.

8. Y & A conclude the use of the after tax rate underestimates the value of the refunding to the shareholder. This is demonstrated in the expressions for the value of interest savings:

$$\text{after tax:} \quad \sum_{t=1}^{n} \frac{(i_2-i_1)L_2(1-T)}{[1+i_1(1-t)]^t} = \left(\frac{i_2L_2}{i_1} - L_2\right)\left(1 - \frac{1}{[1+i_1(1-T)]^n}\right)$$

$$= (L_1 - L_2)\,\alpha_n'$$

where: $L_1$ and $L_2$ = two perpetuity values of bonds (old and new respectively)

$i_1$ and $i_2$ = two interest rate (old and new respectively)

$T$ = tax rate

$n$ = number of periods to maturity

and before tax :

$$\sum_{t=1}^{n} \frac{i_2L_2}{(1+i_1)^t} + \frac{L_2}{(1+i_1)^n} - L_2 = \left(\frac{i_2L_2}{i_1} - L_2\right)\left(1 - \frac{1}{(1+i_1)^n}\right)$$

$$= (L_1 - L_2)\alpha_n$$

concluding that since $\alpha_n > \alpha'_n$ for finite n, the after-tax discount rate underestimates the value of refunding to shareholders.

9. The theoretical question concerning the appropriate re-investment rate for the discount periods in which payments are not co-incidental between bond issues is not addressed. The model is forwarded as a reasonable estimate of cash flows resulting from the exchange.

10. Ang also develops a dynamic programming solution for the refunding of discounted bonds (pp. 781-783).

11. Ang does not address the tax effect(s) associated with the refunding gain. He simply includes the gain as a portion of refunding costs.

12. Ofer and Taggart evaluate any beneficial change in the firm's debt capacity from the refunding activity. Evaluation of this benefit is dependent on how debt capacity is measured. If viewed in terms of a coverage ratio, the after-tax interest rate is appropriate since these ratios are incorporate after tax decision rules. Alternatively, if debt capacity is viewed in terms of debt to value ratios the before-tax rate of interest since book value amounts are being compared.

13. Bowlin [1966] and Schwartz [1967] forward persuasive arguments renouncing the use of a firm's cost of capital as the discount rate in bond refundings.

14. Bowlin, Oswald. "The Refunding Decision: Another Special Case in Capital Budgeting." Journal of Finance 21 (March 1966), pg. 63.

15. Major and McCoin develop capital budgeting formulas (i.e., NPV calculations) where the refunding should be undertaken if the NPV of the change (decline) in future debt charges is greater than the refunding expenses.

16. The rate of return is an internal rate of return calculation where the interest savings to maturity of the refunded bonds are discounted back at a rate which equates them with the net cash investment.

# CHAPTER III

## DEBT EXCHANGE FRAMEWORK AND SAMPLE SELECTION
## DEBT EXCHANGE FRAMEWORK

### Bond for Bond Exchange Process

An exchange offer gives holders of one class of securities the opportunity to trade their securities for a different class of the same firm's securities. Types of exchanges include (1) bond and preferred stock, (2) bond and common stock, (3) preferred and common stock and (4) bond for bond exchanges. Masulis examined exchange types (1)-(3). Here the bond for bond exchange is analyzed and specifically, discounted long-term bonds. In the case of discounted bonds, a firm will offer a new bond with a higher coupon rate in exchange for an old bond bearing a lower interest rate. The stated principal value of the new bond is usually above the market value of the old bonds prior to the exchange announcement. The market value of the new bond is generally very close to its principal value which means any difference between the market values of the old bonds and principal value of the new bonds is a form of exchange premium. Table I compares principal values of new bonds with pre-exchange offer market values of old bonds.[1] Taking Athlone Industries as an example, the exchange offered holders of $35 principal 5.7% convertible subordinated bonds the opportunity to exchange these bonds for $30 principal 11% sinking fund bonds. The 5.7% convertible bonds were quoted a market value of $28 one day prior to the

TABLE I

New Issues Principal Value and Old Issues Market Value

| | New Issue(s) Principal | Old Issue(s) Principal | Old Issue(s) Market Value |
|---|---|---|---|
| Allegheny Ludlum Industries Inc. | $ 500 | $ 500 | $460 |
| Athlone Industries Inc. | 30 | 35 | 28 |
| Bay Colony Property Co. | 1,050* | 1,000 | 722.5 |
| Chelsea Industries Inc. | 650 | 1,000 | 570 |
| Columbia Pictures Industries Inc. | 550** | 1,000 | 460 & 470 |
| Condec Corporation | 800 | 1,000 | 590 |
| Cooper Labs Inc. | 600 | 1,000 | 472.5 |
| Dillingham Corporation | 625 | 1,000 | 590 |
| Fairchild Industries Inc. | 875 | 1,000 | 680 |
| Fedders Corporation | 675 | 1,000 | 565 |
| Fibreboard Corporation | 750 | 1,000 | 620 |
| General Instruments | 650 | 1,000 | 517.5 |
| Grumman Corporation | 600 | 1,000 | 510 |
| Insilco | 650 | 1,000 | 595 |
| Institutional Investors Trust | 1,050*** | 1,000 | 885 |
| LTV Corporation | 640 | 1,000 | 568.75 |
| McCulloch Oil Corporation | 550 | 1,000 | 430 |
| Mohawk Data Sciences | 550 | 1,000 | 352.5 |
| Pittston Company | 600 | 1,000 | 562.5 |
| Ramada Inns | 600 | 1,000 | 510 |
| Sanders Associates Inc. | 500 | 1,000 | 330 |
| United Airlines (UAL) | 742 | 1,000 | 645 |
| " " | 644 | 1,000 | 560 |
| Western Union Co. | 560**** | 1,000 | 565 |
| Zapata | 750 | 1,000 | 620 |

*plus 20 shares of common stock @ $2.50 share (market).

**plus 8 shares of common stock @ $8.00 share (market).

***plus 50 shares of common stock @ $2.26 share (market).

****plus $100 cash.

announcement of the exchange. The $2 ($30-$28) represents an exchange premium.

The exchange of bonds is voluntary on the part of bondholders. The process begins with the approval by the firm's board of directors.[2] The approval of security holders is normally not required. This is in contrast to recapitalizations which require all the security holders of the old issue participate in the recapitalization. Similar to an exchange, a recapitalization is usually proposed by management and submitted to the board of directors for approval. If approved by the board, the recapitalization plan is then submitted to the security holders who will be directly affected. Usually a majority of the security holders must approve of the recapitalization plan before it can be undertaken by the firm. If approved, all holders of that security class being retired are normally required to accept the exchange of their securities.[3]

Once the bond for bond exchange is approved by the board of directors, an S-1 registration statement is filed with the Securities and Exchange Commission (SEC).[4] The S-1 statement is required by the SEC if the firm uses outside soliciting agents to carry out the exchange. Most firms in this study did file S-1 statements.

In addition to the S-1 statement, the firm is also required to submit a security registration statement with the listing stock exchange. The registration statement requires specific information regarding the new bond issue and the exchange terms. The information includes a description of new bond issue, terms of the exchange offer, reasons for the bond exchange, potential tax consequences to the firm and other pertinent information. All firms in this study are either

listed on the New York Stock Exchange (NYSE) or American Stock Exchange (ASE). Usually, coincidental with the exchange registration is an announcement in the Wall Street Journal describing the proposed terms of the exchange offer. The terms include face value and coupon rates of the old and new bonds and their exchange relationship.

The firm then sends a prospectus of the exchange to appropriate security holders. This mailing signals the beginning of the exchange offer. The duration of the offer is initially set for approximately 30 days. In most instances, however, exchange offers are extended up to three additional months. These extensions are normally announced in the Wall Street Journal. Once the exchange offer expires, the firm files an 8K report with the SEC. The 8K details the exchange in terms of the number of new securities issued and old securities redeemed. The firm is required to file the 8K within 10 days of the month in which the exchange occurred. This filing is required if any class of the firm's publicly held securities is either increased or decreased by five percent or more.

Public announcements reported in the Wall Street Journal occur when the board of directors initially announce the exchange, when the terms of the exchange are made public, and when the results of the exchange are realized. Due to the prevalence of extensions to the exchange, several results announcements are often reported. Table II shows the public announcements associated with each firm in the sample. In general the entire exchange process, from board of directors' approval to the termination of the exchange offer, takes four to six months.

TABLE II

Individual Firm Announcements

| Firm | Announcements |
|---|---|
| Allegheny Airlines Inc. (U.S. Air) | X Y ZZZZ |
| Allegheny Ludlum Industries, Inc. | X Y Z |
| American Medicorp | X Y ZZZZZZ |
| Athlone Industries, Inc. | X X ZZZ |
| Bay Colony Property Company | X Y ZZ |
| Chase Manhattan Mortgage & Realty Co. | X Y ZZ |
| Chelsea Industries | X Y ZZ |
| Columbia Pictures Industries, Inc. | X Y ZZZ |
| Condec Corporation | X Y ZZ |
| Cooper Labs | X Y ZZZ |
| Dillingham Corporation | X Y ZZ |
| Fairchild Industries, Inc. | X Y ZZ |
| Fedders Corporation | X Y Z |
| Fibreboard Corporation | X Y ZZ |
| General Host | X Y ZZ |
| General Instruments | X Y ZZ |
| Grumman Corporation | X ZZ |
| Gulf & Western Industries, Inc. | X Y ZZ |
| Insilco Corporation | X Y Z |
| Institutional Investors Trust | X Y ZZZ |
| LTV Corporation | X Y ZZZZ |
| McCulloch Oil Corporation | X Y ZZ |
| MGM | X Y ZZZZ |
| Mohawk Data Sciences Corporation | X Y ZZZ |
| National Industries, Inc. | X Y ZZ |
| Pan American Airlines | X Y ZZZZZZ |
| Pioneer Texas Corporation | X Y ZZ |
| Pittston Company | X ZZ |
| Ramada Inns | X Y ZZ |
| Rapid American Corporation | X Y ZZ |
| Roblin Industries, Inc. | X Y ZZ |
| Rusco Industries, Inc. | X Y ZZ |
| Sanders Associates, Inc. | X Y ZZZ |
| Texstar | X Y ZZ |
| United Airlines | X Y ZZZ |
| United Brands, Inc. | X Y ZZ |
| Western Union Company | X Y ZZ |
| White Motor Corporation | X ZZ |
| Wickes Corporation | X Y Z |
| Zapata Corporation | X Y ZZZ |

X - Initial announcement
Y - terms announcement
Z - results or extension announcements

## Reasons for Bond for Bond Exchanges

Reasons given by corporate boards for exchange offers are listed in the NYSE and ASE registration statements. These reasons include:

1. elimination of the conversion feature on the old bond issue
2. extending the maturity value of debt
3. reducing the level of long-term debt in the capital structure
4. increasing the amount of stockholders' equity by the recognized gain on exchange
5. enhancing the probability of conversion to common stock
6. deferring sinking fund payments
7. increasing the fund raising capacity (debt capacity) of the firm by reducing the book value of outstanding debt in the capital structure.

A typical explanation of the reasons for refunding is as follows:

> "The purpose of the Exchange Offer is to strengthen capital structure through (i) an immediate reduction of long-term debt resulting from the lower principal amount of the New Debentures issued in the exchange and an extension of the maturity of the debt that is exchanged, (ii) an increase in stockholder equity resulting from the net gain on the exchange, and (iii) an increase in the likelihood of conversion of debt into equity resulting from the lower conversion prices of the New Debentures."[5]

Table III shows the stated reason(s) each firm reporting this information had for engaging in the refund activity. Most firms gave more than one reason for the exchange. The most common reasons given are to reduce long-term debt and to increase stockholders' equity. While the result of the exchange is to decrease/increase these book values respectively, the market value of debt remains approximately the same. As mentioned in Chapter I, in the context of Jensen-Meckling agency

TABLE III

Reasons for Exchanges of Bonds

| | Eliminate Conversion Feature | Extended Maturity | Reduce Long-term Debt | Increase stock-holders Equity | Enhance Con-version | Defer Sinking Fund Payments | Increase Fund Raising Capacity |
|---|---|---|---|---|---|---|---|
| Allegheny Airlines Inc. (U.S. Air) | | | X | X | X | | |
| Allegheny Ludlum Inc. | | X | | | | | |
| American Medicorp. | | | X | X | | | |
| Athlone Industries, Inc. | | X | X | | | | |
| Bay Colony Property Co. | | X | | | | | |
| Chase Manhattan Mgt. & Rel. | | X | X | X | X | | |
| Chelsea Industries, Inc. | | | X | | X | | |
| Columbia Pictures Ind., Inc. | | | X | X | | X | |
| Condec Corp. | X | | X | X | | | |
| Cooper Labs | | | X | X | | | |
| Dillingham Corp. | | | X | X | X | | |
| Fairchild Industries, Inc. | X | | X | X | | | |
| Fedders Corp. | X | | X | | | | |
| Fibreboard Corp. | | | X | X | X | | X |
| General Instruments | | | X | X | | | |
| Grumman Corp. | | | X | X | X | | |
| Insilco Corp. | | | X | | X | | |
| Institutional Investors | | X | | | | | |
| LTV Corp. | | | X | X | | | |
| McCulloch Oil Corp. | | | X | X | | | |
| Mohawk Data Sciences | | | X | X | X | | |
| Pan American Airlines | | X | X | X | X | | |
| Pittston Company | | X | X | X | | X | |
| Ramada Inns | | | X | X | X | X | |
| Rapid American Corp. | | X | X | X | | | |
| Roblin Industries | | X | X | | | | |
| Sanders Assoc., Inc. | | | X | X | X | | |
| UAL | | X | X | X | X | X | |
| Western Union Co. | X | | | | | | |
| Wickes Corp. | | | X | | X | | |
| Zapata Corp. | | | X | X | | | |

theory, reducing the book value of long-term debt and increasing stockholders' equity can shift wealth from the bondholder to stockholder if debt covenants are written in terms of capital structure relationships. Greater flexibility may be realized by management regarding decisions concerning dividends, future debt issues, and working capital maintenance. This potential wealth effect will result in an increase in stock prices.

Enhancing conversion, the third most quoted reason for exchanging discounted bonds, can also be related to possible agency costs. By making conversion more attractive there exists a greater probability of decreasing the ratio of debt to common stock in the capital structure. This potential decrease can affect stock values by (1) decreasing the corporate tax shield on debt, i.e., decreasing stock prices, (2) increasing the value of debt claims by changing the relative priority of outstanding claims, i.e., decreasing stock prices, and (3) decreasing the probability of bankruptcy, i.e., increasing stock prices.

While the above reasoning has been espoused by management when firms refund their discounted bonds, no research has empirically tested for the possible resulting investor reaction to refunding discounted bonds. Whether or not shareholders react can either support or be contradictory to the above reasons given for engaging in the refund. That information, which this study will supply, would aid managers in evaluating the desirability of exchanging bonds from a cost-benefit perspective.

An important caveat emerges from the proposed reasons for refunding discounted bonds when formulating an appropriate research

design. This caveat pertains to the possible offsetting effect of the financial reporting implications and the cash flow effects of refunds. For example, all firms realize the financial reporting benefits associated with the refunding but, depending upon the terms, refunds will have varying levels of positive or negative net cash flows (measured by NPV). The research design must be constructed to take into account this possible confounding effect. The research design employed here uses NPV as a blocking variable in order to segregate and separately evaluate its effect. Chapter IV will explain and support the model(s) employed.

## Expenses

Fees associated with the exchange offer were relatively significant when outside soliciting agents were utilized. In reporting these expenses estimates were made and maximum costs projected.[6] Expenses incurred in the exchange include fees and expenses of the Soliciting Agent, the Exchange Agent and the Forwarding Agent.[7] Other costs include payments for printing, accounting and legal fees and fees for registering the securities under Federal and State security laws. Expenses are generally based upon the number of old bonds solicited.

Table IV lists the estimated maximum expenses for firms divulging this information in their registration statements. Expenses as a percent of old debt to be exchanged ranged from zero to 7.2 percent with a mean value of 1.94 percent. These expenses are tax deductible for the firm in the year of exchange. Assuming a marginal tax rate of fifty percent, the after-tax cost of exchange expenses

TABLE IV

Expenses of Exchanges

| | Year of Exchange | (A) Estimated Maximum Expenses (millions $) | (B) Maximum* Old Debt to be Exchanged (millions $) | A÷B (%) | (C) Mkt Value of Equity (millions $) | A÷C (%) |
|---|---|---|---|---|---|---|
| Allegheny Airlines, Inc. | 1976 | 1.15 | 58.27 | 1.97 | 32.23 | 3.56 |
| Allegheny Ludlum Ind., Inc. | 1979 | 2.04 | 93.00 | 2.19 | 193.86 | 1.05 |
| American Medicorp. | 1973 | .44 | 48.84 | .90 | 42.05 | 1.04 |
| Athlone Industries, Inc. | 1978 | .68 | 23.93 | 2.84 | 47.87 | 1.42 |
| Bay Colony Property Co. | 1978 | .53 | 17.25 | 3.07 | 6.88 | 7.70 |
| Chelsea Industries, Inc. | 1974 | .90 | 12.50 | 7.20 | 16.25 | 5.53 |
| Columbia Pictures Ind., Inc. | 1975 | .63 | 39.45 | 1.59 | 41.16 | 1.53 |
| Condec Corporation | 1977 | .26 | 19.91 | 1.32 | 20.60 | 1.28 |
| Dillingham Corporation | 1973 | .88 | 50.00 | 1.75 | 90.39 | .97 |
| Fairchild Ind., Inc. | 1978 | .65 | 30.00 | 2.16 | 60.02 | 1.08 |
| Fedders Corporation | 1974 | .16 | 60.00 | .27 | 110.97 | .01 |
| General Instruments | 1976 | .76 | 48.56 | 1.56 | 52.58 | 1.44 |
| Institutional Investors Trust | 1978 | .45 | 16.00 | 2.83 | 16.09 | 2.81 |
| LTV Corporation | 1977 | 2.94 | 181.65 | 1.61 | 135.04 | 2.17 |
| McCulloch Oil Corporation | 1973 | .58 | 30.00 | 2.27 | 79.26 | 1.26 |
| Mohawk Data Sciences Corp. | 1976 | .83 | 30.00 | 2.75 | 19.83 | 4.15 |
| National Industries, Inc. | 1974 | 0.00 | 28.2 | 0.00 | 25.28 | 0.00 |
| Pan American Airlines | 1976 | 3.69 | 90.15 | 4.09 | 291.86 | 1.26 |
| Pittston Company | 1979 | .37 | 61.00 | .61 | 685.77 | .005 |
| Ramada Inns | 1977 | .58 | 58.25 | 1.00 | 87.74 | .66 |
| Sanders Assoc., Inc. | 1975 | .74 | 35.00 | 2.11 | 12.91 | 5.72 |
| UAL | 1977 | .67 | 181.96 | .36 | 486.14 | .13 |
| United Brands Co. | 1973 | 1.05 | 80.00 | 1.31 | 133.76 | .78 |
| Western Union Co. | 1973 | .71 | 75.00 | .95 | 252.9 | .28 |
| Wilkes Corporation | 1977 | .59 | 40.00 | 1.46 | 149.74 | .39 |
| Zapata Corporation | 1976 | .99 | 40.00 | 2.47 | 77.87 | 1.26 |

*Exchange offer expenses are based on the amount of old debt tendered.

equal .97 percent. Table IV also gives before-tax expenses as a percent of the average market value of the equity. Expenses as a percent of equity value average 1.82 percent before tax and .91 percent after tax. These numbers cannot be regarded as insignificant and therefore expenses are included in the cash flow calculations. In the proposed cash flow (NPV) calculation presented in Chapter IV, refunding expenses are included at one percent of the old bonds' value.

## Corporate Tax Consequences of Exchanges

Both Kalotay [1978] and Laber [1978] reviewed the tax consequences of bond for bond exchanges in relation to cash flow models. Both concluded the longer the taxes associated with the gain can be deferred, the more profitable the refunding will be. Laber concludes that a positive net present value can exist in cases where "the asset chosen for reduction in depreciable base has a life longer than that of the outstanding bonds."[8] In other words, the further into the future the gain can be deferred, the greater the likelihood of a positive NPV. The refunding gain can be reported for tax purposes in several ways depending upon the type (classification) of the refund.

Spero and Simon [1979] analyzed the alternative tax treatment accorded various forms of refunds. Recognition or non-recognition of any gain[6] depends upon which of the following three classifications applied to the refund:

1. refunding debt for cash and/or new debt - immediate recognition of gain
2. refunding debt for cash and/or new debt - spreading the gain over asset lives
3. bond for bond exchanges

Under the first classification the company recognizes the gain in the period of repurchase. Although this form of tax treatment normally applies to cash repurchases, several firms in this study chose this alternative in spite of the fact they engaged in bond for bond exchanges (classification 3). They did so in order to take advantage of tax-loss carryforwards. In calculating NPV, firms that elected this alternative (five firms) were given a zero tax effect on the gain. The reasoning for this treatment relates to the fact that the firm could have filed for a tax-free exchange and therefore to choose the use of loss carryforwards to offset the gain implies the company expected to lose the benefits of the carryforward. A rational manager, in maximizing the value of the firm, would not choose to use the carryforwards if he expected to offset future positive taxable income.

The second alternative results in the postponement of gain recognition by adjusting the value of assets purchased with the original bond issue. Election of this alternative generally relates to cash repurchases. However, eight firms in our sample did choose to apply the gain to assets. Four firms applied the gain by reducing their basis in non-depreciable assets while the other four applied the gain to depreciable assets. For non-depreciable assets, the assets chosen were investments in subsidiaries. This treatment is effectively a non-recognition and therefore no tax effect was included in the NPV calculation. In the case of firms applying the gain to the taxable basis of their assets, the gain is spread over the life of the assets by reducing the yearly depreciation charges for tax purposes. The four firms choosing this alternative realized tax consequences in the NPV calculation. The gain was spread over the estimated

average remaining live(s) of long term depreciable assets on the company's balance sheet and a present value was calculated and included in the cash flow model.

Twenty seven chose to treat the refund as a bond for bond exchange for tax purposes. This alternative treats the transaction as a recapitalization which results in no income or loss being recognized. Exhibit 1 presents two examples of refunds and the tax treatment accruing to each. The general IRS code dichotomizes between repurchases and cash (Case #1) and bond for bond exchanges (Case #2). However, as mentioned above, a subset of this study's firms chose to treat the exchange as a repurchase for various reasons.

## Personal Tax Consequences of Exchanges

Taxation effects on debtholders has equal, but opposite, effects to those of the firm. Corporate tax deductions on interest payments and any issue discounts represent taxable income for debtholders. This does not mean, however, that the total taxes paid to the government will be unaffected by an adjustment in debt since the marginal tax on the debtholders and corporation may be different. Moreover, since only a portion of the bondholders voluntarily engaged in the exchange, the transfer of tax liabilities were considered beneficial by a subset of debtholders. For this subset the exchange premiums were apparently large enough to make the exchange acceptable.

## Success of Exchange Offers

The WSJ announcement of the terms of the exchange offers will often include, in addition to specific information regarding the new and old issue (discussed above), a maximum and/or minimum number of

EXHIBIT 1
IRS Rules on Bond Refundings

Case #1 Corporation issues $1 million of 20 year bonds in 1968. Interest is 6% on face value and issue price of $1,000. In 1978 these bonds are selling at $750. The corporation repurchases bonds with a face value of $500,000.

Case #2 Same facts as case #1 except the corporation offers bondholders the opportunity to exchange their bonds for a new issue of $1,000 face value bonds with a total issue amount of $750,000. New bonds mature in 1998 and have a coupon rate of 10%. Assume all old bonds are exchanged for new ones.

Repurchase for Cash - Case #1

Internal Revenue Code of 1974, Section 61(a) states that gross income includes any income received from the discharge of indebtedness. Under Regulation Section 1.61-12 repurchase of bonds at less than face value by the issuing corporation is applicable. In Case #1 the corporation would recognize $125,000 ($500,000 face value minus $375,000 repurchase price) as ordinary income.

If the original issue was sold at a premium or discount, the income recognized would be adjusted accordingly. The amortized premium or discount would be deducted from or added to the original issue price to determine income.

Under the Internal Revenue Code of 1954, Section 108, the corporation can elect not to recognize the gain on repurchase immediately. If the corporation files a consent according to regulations under Section 1017, the gain will be recognized through adjustment of the basis of the property. The gain will be recognized through lower depreciation charges and a larger gain or smaller loss if the property is sold.

The order of asset basis adjustment is as follows:

1. Property (other than inventory, notes or accounts receivable) purchased with the original bond issue.

2. Property (other than indebtedness, notes or accounts receivable) upon which the original debt was a lien.

3. All other property remaining after # 1 and 2 (other than inventory, notes or accounts receivable) ratably adjusted in proportion to the sum of the bases of all these assets.

EXHIBIT 1 (continued)

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4. Inventory, notes and accounts receivable adjusted as in #3.

Bond for Bond Exchanges - Case #2

Bond for bond exchanges should be treated as recapitalizations under Section 368(a)(1)(E). According to such treatment, corporations would realize no income or loss on the exchange. Where stock concession rights are given in addition to the new bond, the tax treatment remains the same.

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securities the firm is willing to exchange. Of the sample of forty firms in this study that exchanged bonds, seventeen set a maximum number of securities to be exchanged while only three mentioned a minimum number of securities. Table V shows the total amount of debt each firm included in the exchange offer (constrained by the maximum provision) in relation to the actual amount of debt exchanged. On the average 65.76% of the old bonds solicited for exchange were actually exchanged. Of the forty exchange offers only one was oversubscribed (United Brands). The results of the exchanges suggest that the exchange premiums discussed previously were not large enough to compensate all securityholders for any transaction costs and personal tax consequences resulting from the exchange.

## Summary

The bond-for-bond exchange process involves two important ingredients that allow for its empirical testing. First the exchange process

TABLE V

Old Debt Issue Potentially Versus Actually Exchanged

| Firm | (A) Total Debt To Potentially Exchange (millions $) | (B) Total Debt Actually Exchanged (millions $) | B ÷ A (%) |
|---|---|---|---|
| Allegheny Airlines Inc. | $ 58.26 | $ 33.94 | 58.2 |
| Allegheny Ludlum Industries, Inc. | 92.00 | 80.00 | 86.9 |
| American Medicorp. | 48.84 | 13.10 | 26.8 |
| Athlone Industries, Inc. | 23.93 | 7.05 | 29.4 |
| Bay Colony Property Company | 23.00 | 12.2 | 53.0 |
| Chase Manhattan Mortgage & Realty Co. | 52.67 | 32.01 | 60.7 |
| Chelsea Industries, Inc. | 12.50 | 8.82 | 70.6 |
| Columbia Pictures Industries, Inc. | 39.43 | 25.00 | 63.3 |
| Cotinental Investment Corporation | 30.00 | 28.33 | 94.4 |
| Condec Corporation | 19.91 | 15.10 | 75.8 |
| Cooper Labs, Inc. | 20.00 | 10.22 | 51.1 |
| Dillingham Corporation | 50.0 | 28.73 | 57.4 |
| Fairchild Industries, Inc. | 30.0 | 18.33 | 61.1 |
| Fedders Corporation | 60.0 | 30.02 | 50.0 |
| Fibreboard Corporation | 19.46 | 15.09 | 77.5 |
| General Host | 46.50 | 33.88 | 72.8 |
| General Instruments | 48.46 | 32.16 | 66.2 |
| Grumman Corporation | 49.49 | 25.10 | 50.7 |
| Gulf & Western Industries, Inc. | 100.00 | 60.00 | 60.0 |
| Insilco | 32.57 | 24.43 | 75.0 |
| Institutional Investors Trust | 20.0 | 14.60 | 73.0 |
| LTV Corporation | 283.38 | 101.68 | 35.8 |
| McCulloch Oil Corporation | 30.0 | 22.42 | 74.7 |
| MGM | 30.01 | 10.21 | 34.0 |
| Mohawk Data Sciences Corporation | 30.0 | 23.31 | 77.7 |
| National Industries | 28.2 | 4.53 | 16.1 |
| Pan Am | 340.6 | 250.2 | 73.4 |
| Pioneer Texas | 15.0 | 13.00 | 86.6 |
| Pittston Company | 61.0 | 39.70 | 65.0 |
| Ramada Inns | 58.25 | 48.07 | 82.5 |
| Rapid American Corporation | 500.0 | 9.93 | 99.3 |
| Roblin Industries, Inc. | 10.0 | 9.93 | 99.3 |
| Rusco Industries, Inc. | 10.0 | 7.44 | 74.4 |
| Sanders Assoc., Inc. | 35.0 | 25.30 | 72.2 |
| Texstar | 7.0 | .89 | 12.7 |
| UAL | 181.96 | 153.75 | 84.5 |
| United Brands Co. | 80.0 | 125.00 | 156.2 |
| Western Union Co. | 75.0 | 54.93 | 73.2 |
| White Motor Corporation | 42.6 | 39.00 | 91.5 |
| Wickes Corporation | 40.0 | 28.32 | 70.8 |
| Zapata Corporation | 65.3 | 39.82 | 61.0 |

itself includes consistent announcement information for each sample firm. Although the time periods between the announcements are not equal across firms, the information provided in each announcement is consistent. (A detailed discussion is included in the Sample Selection section of this chapter.) Second, cash flow information regarding each exchange is available through the sources mentioned above, i.e., the Wall Street Journal, NYSE and ASE bond registration statements and annual reports.

# SAMPLE SELECTION

## Selection Criteria

Sample selection was subject to specific criteria to insure consistent and reliable data from which information effects on shareholder wealth could be observed. The selection criterion were:

1. firms must have their common stock listed on the New York or American Stock Exchanges,
2. firms first announcement date must be determinable,
3. firms with no major announcements concerning investment or capital structure changes during the 30-day period surrounding any announcement date (-15 to +15 days),
4. firms that have not engaged in any major merger activity during the year following the exchange announcement, and
5. firms refunding long-term debt with maturities in greater than one year's time were included.

An initial sample of over 250 firms was found by searching all proposed exchange offers and repurchases over the seven-year period between 1973 and 1979. The major sources of this information was Moody's Bond Guide, Standard and Poor's Called Bond Record, Investment Dealer's Digest, and the National Accounting Research System (NAARS).

The above selection criteria reduced the sample size to 40 firms. Each criterion was verified with the aid of 10K reports, The Wall Street Journal Index and Merger and Acquisition Guide. In addition, the NYSE and ASE bond registration statements were reviewed for those

firms registered on either exchange.[7] Information required within the exchange's registration statements pertaining to the new issue was found to be useful. Such information included management's reasons for the exchange offer and specific exchange information including the date the individual board of directors announced the exchange offering. The board of directors' statement, which was the first announcement date, occurred one day prior to The Wall Street Journal's initial announcement. Of the forty firms meeting the first two criteria, all firms met criteria 3 through 5 as well.

## Sample Industries

The firms within the sample represented 29 different industries as classified by the four-digit Compustat Industry Code. Table VI lists the applicable industries and number of sample firms in each industry. Real estate investment trusts constitute the largest number (four) of sample firms, followed by Air Transportation and Blast Furnaces and Steel Works (three each). Authors such as King [1966], Myers [1973] and Sunder [1973] have raised concern for industry effects when samples are dominated by a few industries. In terms of industry representation this sample covers a broad spectrum of industries. Such an extensive representation effectively eliminates any concern to control for industry effects.

TABLE VI

Industries of Sample Firms

| Industry | Compustat Industry Code | Number of Firms |
|---|---|---|
| Aircraft | 3721 | 1 |
| Aircraft and Parts | 3720 | 1 |
| Air Transportation - Certified | 4511 | 3 |
| Blast Furnaces and Steel Works | 3310 | 3 |
| Conglomerates | 9997 | 2 |
| Construction - Not building | 1600 | 1 |
| Department Stores - Retail | 5331 | 1 |
| Drugs | 2830 | 1 |
| Electronic Components & Accessories | 3670 | 1 |
| Electronic Computing Equipment | 3573 | 1 |
| Fuel and Ice Dealers (Retail) | 5890 | 1 |
| General Building Contractors | 1520 | 1 |
| Hotels - Motels | 7011 | 1 |
| Lumber - Building Material (Retail) | 5211 | 1 |
| Meat Products | 2010 | 2 |
| Metal Works (Misc.) | 3449 | 1 |
| Paints - Varnishes - Lacquers | 2850 | 1 |
| Paper and Allied Products | 2600 | 1 |
| Plastic Products (Misc.) | 3079 | 1 |
| Radio-TV Transmitting Equipment | 3662 | 1 |
| Real Estate Investment Trusts | 6799 | 4 |
| Refrigeration and Service Machines | 3580 | 2 |
| Service - Equipment Rental and Leasing | 7394 | 1 |
| Service - Hospitals | 8060 | |
| Service - Motion Picture Production | 7810 | 2 |
| Telephone Communications | 4811 | 1 |
| Truck and Bus Bodies | 3713 | 1 |
| Valves and Pipe Fittings | 3494 | 1 |
| Water Transportation | 4400 | 1 |

## Distribution of Sample Over Test Period

Distribution of exchange offers over the sample period is contained in Table VII.

TABLE VII

Distribution of Exchange Offers Over Time

| Year | Number of Exchanges |
|---|---|
| 1973 | 6 |
| 1974 | 9 |
| 1975 | 3 |
| 1976 | 6 |
| 1977 | 9 |
| 1978 | 4 |
| 1979 | 3 |

We would expect most exchanges to have occurred during years when bond yields attained relatively high levels. Table VIII charts yearly corporate yield rates over the 1971 through 1980 period.

TABLE VIII

Corporate New Bond Yields
Yearly Averages

| | Aaa | Aa | A | Baa |
|---|---|---|---|---|
| 1971 | 7.39 | 7.51 | 7.78 | 8.46 |
| 1972 | 7.10 | 7.20 | 7.38 | 7.81 |
| 1973 | 7.42 | 7.52 | 7.70 | 8.17 |
| 1974 | 8.57 | 8.77 | 9.17 | 10.24 |
| 1975 | 8.70 | 8.97 | 9.57 | 11.27 |
| 1976 | 8.15 | 8.32 | 8.69 | 9.59 |
| 1977 | 7.88 | 7.97 | 8.22 | 8.67 |
| 1978 | 8.63 | 8.77 | 8.97 | 9.45 |
| 1979 | 9.39 | 9.61 | 9.86 | 10.51 |
| 1980 | 11.74 | 12.18 | 12.75 | 13.69 |

The table shows that bond yields attained relatively high levels beginning in 1973. The number of exchanges vary between years (Table VII) and do not appear to relate directly to the level of yields (Table VIII). Some relation may exist, however, between the high exchange levels of 1973 and 1974 and the issuance of FAS #4. In particular, during 1973 and 1974, firms were able to classify the gains resulting from the refund as ordinary income items on their financial statements. In 1975, when FAS #4 became operative, companies were required to report these gains as extraordinary items. This change may have initially affected managements' incentive to exchange bonds or the proposed adoption of the FAS #4 influenced them to refund in 1973 or 1974.

## Announcement Dates

Table IX lists each firm's time frame for the exchange process. The first announcement date represents the initial public announcement by the board of directors of the firm's intent to exchange their bonds. They were obtained primarily from the individual firm prospectus or NYSE and ASE registration statements. The day following the initial announcement The Wall Street Journal normally reported the proposed exchange. The second date of interest refers to the public announcement of the terms associated with the exchange offer. The Wall Street Journal was the main source of the terms announcement. Closely linked to the second announcement was the SEC registration statement which also delineated the terms of exchange. The third announcement date, again reported by the Wall Street Journal, reflected the results of the exchange itself. These particular dates were chosen

TABLE IX

Firm Specific Time Frames for the Exchange Process

| Firm | Initial Announcement Date | Terms of Exchange Announcement Date | Elapsed Time (Days) | Results Announcement Date | Elapsed Time (Days) |
|---|---|---|---|---|---|
| Allegheny Airlines (U.S. Air) | 8-26-76 | 9-10-76 | 15 | 10-8-76 | 28 |
| Allegheny Ludlum | 9-6-79 | 10-1-79 | 25 | 10-23-79 | 22 |
| American Medicorp | 6-28-73 | 8-21-73 | 54 | 9-11-73 | 21 |
| Athlone Ind. Inc. | 1-20-78 | 5-19-78 | 119 | 6-13-78 | 25 |
| Bay Colony Property Co. | 11-29-77 | 5-4-78 | 157 | 5-24-78 | 20 |
| Chase Manhattan Mortgage & Realty | 5-27-77 | 7-12-77 | 46 | 8-9-77 | 28 |
| Chelsea Industries, Inc. | 1-22-74 | 4-1-74 | 69 | 4-22-74 | 21 |
| Columbia Pictures | 3-17-75 | 5-2-75 | 46 | 6-3-75 | 32 |
| Condec Corporation | 11-19-76 | 1-26-77 | 69 | 3-9-77 | 42 |
| Cooper Labs | 7-15-76 | 8-6-76 | 22 | 8-30-76 | 24 |
| Dillingham Corp. | 11-8-73 | 12-10-73 | 33 | 12-24-73 | 14 |
| Fairchild Ind. Inc. | 11-4-77 | 12-12-77 | 39 | 2-13-78 | 63 |
| Fedders Corp. | 12-27-73 | 3-4-74 | 57 | 4-19-74 | 46 |
| Fibrebound Corp. | 7-18-73 | 8-9-73 | 22 | 8-23-73 | 14 |
| General Host | 8-19-74 | 9-26-74 | 38 | 11-1-74 | 36 |
| General Instruments | 12-16-75 | 1-12-76 | 27 | 3-1-76 | 48 |
| Grumman Corp. | 6-19-74 | -- | -- | 11-29-74 | -- |
| Gulf and Western Ind. | 6-7-77 | 6-13-77 | 6 | 7-6-77 | 23 |
| Insilco Corp. | 3-5-74 | 4-11-74 | 37 | 5-2-74 | 21 |
| Institutional Investors | 9-14-78 | 12-4-78 | 81 | 12-21-78 | 17 |
| LTV Corp. | 5-3-77 | 6-2-77 | 30 | 6-23-77 | 21 |
| McCulloch Oil Corp. | 9-21-73 | 11-26-73 | 35 | 12-17-73 | 22 |
| MGM | 1-30-74 | 4-3-74 | 63 | 5-2-74 | 29 |
| Mohawk Data Sciences Corp. | 12-16-75 | 3-10-76 | 84 | 4-6-76 | 27 |
| National Industries Inc. | 9-13-74 | 10-22-74 | 39 | 11-25-74 | 34 |
| Pan American Airlines | 3-2-76 | 4-30-76 | 59 | 5-21-76 | 21 |
| Pioneer Texas Corp. | 8-12-75 | 10-9-75 | 58 | 11-4-75 | 26 |
| Pittston Corp. | 11-28-78 | -- | -- | -- | -- |
| Ramada Inns | 4-22-77 | 5-17-77 | 25 | 6-9-77 | 23 |
| Rapid American Corp. | 8-25-77 | 11-1-77 | 37 | 12-15-77 | 45 |
| Roblin Ind. Inc. | 9-25-73 | 1-30-74 | 127 | 3-5-74 | 34 |
| Rusco Ind. Inc. | 6-6-77 | 9-7-77 | 93 | 10-7-77 | 30 |
| Sanders Assoc. Inc. | 11-13-74 | 2-21-75 | 100 | 3-19-75 | 26 |
| Texstar Corp. | 5-3-74 | 8-6-74 | 95 | 9-5-74 | 30 |
| United Airlines | 9-29-77 | 10-20-77 | 21 | 11-16-77 | 27 |
| United Brands Co. | 1-8-73 | 2-15-73 | 38 | 3-20-73 | 33 |
| Western Union Co. | 6-21-73 | 7-25-73 | 34 | 8-17-73 | 23 |
| White Motor Corp. | 11-12-79 | -- | -- | 1-7-80 | -- |
| Wickes Corp. | 3-27-74 | 5-31-74 | 65 | 6-18-74 | 18 |
| Zapata Corp. | 2-4-76 | 5-5-76 | 90 | 5-28-76 | 23 |

since the information provided at each date is the most likely to change the market's probability of occurrence and/or magnitude of impact of the event.

As the table shows, initial announcement dates were found for the forty sample firms. Second announcement dates were determined for thirty-seven firms while thirty-nine firms had the results of the exchange published.

Table X gives a further breakdown of the sample firms in terms of the type(s) of debt involved in the exchange offerings. The most prevalent types of exchanges were subordinated debentures (SD) for convertible subordinated debentures (CSD) (15) and convertible subordinated debentures (CSD) for convertible subordinated debentures (CSD) (13). The number of CSD for CSD corresponds to the number of firms in Table X that gave "enhanced conversion" as a reason for exchange. However, the number of SD for CSD exchanges exceeds the firms in Table III that included "eliminate conversion" as a motive for exchange. It appears that either the firm attempted to down-play the fact it was eliminating the conversion feature (which may have been perceived as having a negative impact on the probability of a successful exchange) or assumed the elimination was obvious and did not merit mentioning.

One additional point of interest concerning the sample is the change in maturity date of debt due to the exchange. Table XI shows the extension in maturity date resulting from the exchange. Thirty-six of the forty-nine issues resulted in an extension of ten years or less. The length of time to maturity of the old debt shown in the table discloses the fact that most of the debt refunded had a considerable period to maturity. The combined inference of this information is

TABLE X
Types of Debt Exchanged

| Firm | Year of Exchange | New Debt | Old Debt |
|---|---|---|---|
| Allegheny Airlines Inc. (U.S. Air) | 1976 | CSD | CSD, SD |
| Allegheny Ludlum Industries, Inc. | 1979 | SD | SD |
| American Medicorp | 1973 | SD | CSD |
| Athlone Industries, Inc. | 1978 | SFD | CSD |
| Bay Colony Property Co. | 1978 | SD | SN |
| Case Manhattan Mortgage & Realty Co. | 1977 | CSD | CSD,SN,CSN |
| Chelsea Industries, Inc. | 1974 | CSD | CSD |
| Columbia Pictures Industries, Inc. | 1975 | SD | CSD |
| Condec Corporation | 1977 | SD | CSD |
| Cooper Labs | 1976 | SD | CSD |
| Dillingham Corporation | 1973 | CSD | CSD |
| Fairchild Industries, Inc. | 1978 | SD | CSD |
| Fedders Corporation | 1974 | SD | CSD |
| Fibreboard Corporation | 1973 | CSD | CSD |
| General Host | 1974 | CSD | CSD |
| General Instruments | 1976 | CSD | CSD |
| Grumman Corporation | 1974 | CSD | CSD |
| Gulf & Western Industries, Inc. | 1977 | CSD | CSD |
| Insilco Corporation | 1974 | CSD | CSD |
| Institutional Investors Trust | 1978 | SN | N |
| LTV Corporation | 1977 | SD | SD |
| McCulloch Oil Corporation | 1973 | CSD | CSD |
| MGM | 1974 | SD | CSD |
| Mohawk Data Sciences Corporation | 1976 | CSD | CSD |
| National Industries, Inc. | 1974 | SD | CSD |
| Pan American Airlines | 1976 | CSD | CSD |
| Pioneer Texas Corporation | 1975 | SD | CSD |
| Pittston Company | 1979 | CSD | SD |
| Ramada Inns | 1977 | CSD | CSD |
| Rapid American Corporation | 1977 | SFD | SFD |
| Roblin Industries | 1974 | SD | CSD |
| Rusco Industries, Inc. | 1977 | CD | CD |
| Sanders Assoc., Inc. | 1975 | CSD | CSD |
| Texstar | 1974 | SD | CSD |
| United Airlines | 1977 | SD | CSD |
| United Brands Company | 1973 | SD | CSD |
| Western Union Company | 1973 | SD | CSD |
| White Motor Corporation | 1979 | SFD-SD | SFD-CSD |
| Wickes Corporation | 1977 | CSD | CSD |
| Zapata Corporation | 1976 | SD | Senior D |

Note:
CD = convertible debenture
CSD = convertible subordinated debenture
SD = subordinated debenture
SFD = sinking fund debenture
N = note
SN = subordinated note
CSN = convertible subordinated note

TABLE XI

Changes in Maturity of Debt Exchanged

| Change in Maturity Date* NEW versus OLD Debt Issue | | | | | Announcement Date to Maturity* Date of OLD Debt Issue | | | | |
|---|---|---|---|---|---|---|---|---|---|
| (-5 to -1) years | 0-5 years | 6 to 10 years | 11 to 15 years | 16-20 years | 1-5 years | 6-10 years | 11-15 years | 16-20 years | 21-25 years |
| 4 | 18 | 18 | 6 | 3 | 3 | 9 | 11 | 20 | 6 |

*includes multiple issues of bonds being exchanged.

that firms were generally not refunding debt to refinance maturing issues or substantially extend their maturity. This information is consistent with the reasons given for the exchange in the registration statements of the sample firms. The associated risk premium pertaining to the extended maturity of debt is incorporated in the discount rate (new rate on debt) used in the present value calculations.

## Summary

Forty firms were found that fulfilled the selection criteria proposed. The refunds occurred over the entire test period and involved old issues with a considerable period remaining to maturity. The new issues tended to extend the maturity date and were usually convertible bonds or subordinated debentures exchanged for convertible bonds.

## Chapter III - Footnotes

1. Firms in Table I represent those for which a quoted market price on old debt was available the day prior to the first announcement.

2. The first public announcement concerning the exchange normally appears one day after the board of directors' approval.

3. Most recapitalizations involve the exchange of senior debt securities for junior debt securities or vice versa. Also, recapitalizations of preferred stock are undertaken to eliminate dividends in arrears or to change the stated dividend rate.

4. If outside solicitation is not used by the firm, they are exempt from this registration requirement under Section 3(a)(9) of the Security Act of 1933.

5. Taken from the NYSE Registration Statement of Pan American Airlines.

6. Maximum expenses were estimated and included within the text of the exchange prospectus for the new bond issue. Expenses include a fixed portion plus a variable charge based upon the amount of old debt tendered.

7. The costs were normally based upon a fixed charge by the Soliciting Agents with an additional variable cost based upon the number of old bonds exchanged.

8. The amount of gain subject to tax equals the original issue price less repurchase price [minus(plus) the amount of premium (discount) already amortized].

9. Thirty-three firms and seven firms were listed on the NYSE and ASE, respectively.

# CHAPTER IV

# RESEARCH METHODOLOGY

Chapter IV presents the theoretical foundations and empirical support for the models employed. A description of how the theoretical foundations are integrated into the research design is also included.

## Theoretical Foundations

Given the objective of analyzing market returns, a model that describes an equilibrium expectation of returns in the capital market and helps measure the effects of any new information (i.e., bond exchanges) is required. To begin, a theoretical framework must be developed to permit the hypotheses to be tested. When assessing the impact of an event on stock returns, it is assumed that investors interpreted and reacted to the information received concerning the event. An event ($\theta$) would have information content if the conditional distribution $f(r|\theta)$ is not equal to the unconditional distribution $f(r)$ where r is the return measure on a particular security. Alternatively, if the conditional distribution $f(r|\theta)$ is equal to the unconditional distribution $f(r)$, the event $\theta$ would be viewed as not containing information affecting the security returns.

The information content of a financial event ($\theta$) which may have an impact upon a security return (r) can be reasonably inferred by observing the returns (r) over some time period during which $\theta$ occurred.

The time period is one over which it is reasonable to assume the financial event ($\theta$) may have significantly affected the security return (r). The items needed to determine if the information has affected security returns are: the event, relevant security return, and the time period. In this research the main event to be considered is the exchanging firm's announcement of the exchange. Additional events, the announcement of the exchange terms and the announcement of the refunding results, are also investigated. The security return (r), the dependent variable, is the equity return on firms exchanging their debt during the sample period. The belief that an association exists between the security return and the event is based upon the supposition that the announcement represents one element in the information set available to investors to value the firms' securities. Empirical research relevant to this investigation supports that supposition.[1] The periods chosen over which returns are analyzed are in accordance with empirical evidence related to the speed with which the securities market impounds information into stock returns, i.e., semi-strong form of market efficiency.

Within the context of capital market efficiency, supporting evidence suggests publicly available information is impounded instantaneously into security prices.[2] Other research has also found information effects of economic events reflected in stock prices prior to public disclosure.[3] Based upon these findings periods immediately before, during, and immediately after the particular announcement will be examined. Use of the three day period allows for variations in the time frame between the announcement and the Wall Street Journal report of the announcement. A one-day lag normally exists between the

reporting and the announcement. Specifics concerning the three days chosen for each announcement period are included in the research design discussion at the end of this chapter.

Given the event, security return, and time frame of interest, a model that describes an equilibrium expectation of returns in the capital market and helps measure the effects of any new information (i.e. bond refundings) is required. Assuming the effects of other events can be controlled, the response to exchange information can be evaluated.

Assuming capital market efficiency, which this study does, the normative capital asset pricing model provides a setting for describing equilibrium expectations of returns in the stock market. The capital asset pricing model is that developed by Sharpe [1964] and Lintner [1965].

The Model: $$\bar{R}_{it} = R_F + B_{it} (\bar{R}_{mt} - R_F)$$

assumes a linear relationship between the expected individual security return, $\bar{R}_{it}$, and the expected return on the market portfolio, $\bar{R}_{mt}$. The expected return on asset i, as of the beginning of period r, $\bar{R}_{it}$, is equal to the return on a risk-free security, $R_F$, plus the security beta [$B_{it} = \text{cov}(\tilde{R}_{it}, \tilde{R}_{mt}) / \text{var}(\tilde{R}_{mt})$] times the difference between the expected return on the market portfolio, $\bar{R}_{mt}$, and $R_F$, all in period t. Empirical tests on this and other returns models suggest the CAPM is a reasonably good model for explaining security returns. Empirical tests and the CAPM assumptions are summarized by Jensen [1972].

## Stock Return Methodology

In order to empirically measure abnormal performance of security prices associated with the exchange announcements, a returns expectations model is needed. In this study both a mean adjusted return model used by Masulis [1980] and Mikkelson [1981] and the market model of Sharpe [1964] and Lintner [1965] are used. Both models, along with the market adjusted returns model,[4] were examined by Brown and Warner [1980] in a simulation study. Artificially injected abnormal performance returns were used to determine the ability of each model to detect them. The authors conclude that no one model outperformed the others in the detection of abnormal security performance. The study is in basic agreement with empirical tests that suggest a linear tradeoff between risk and return where only systematic risk affects average returns. Therefore, for purposes of comparing the unconditional distribution f(r) of an information set (exchanging firm's stock) any one form of the CAPM should be as satisfactory as any other. The use of both the market model and mean adjusted return model will provide an empirical extension of Brown and Warner's conclusions by a comparison of their measurement of abnormal security returns.

The mean adjusted return model assumes a security's ex ante expected return, $\bar{R}_{it}$, is equal to some constant level $C_{it}$. The predicted ex post return in period t would be $C_{it}$ which can vary across firms. The estimate of the ex ante return for the $i^{th}$ security where time (t) is the event date, is given by:

$$E(R_i) = C_i = \frac{1}{T_1} \sum_{t=-1}^{-n} R_{it} \qquad \text{(Eq. 18)}$$

where: $E(R_i)$ = the expected rate of return of security i.

$C_i$ = the constant rate of return of security i.

$R_{it}$ = actual returns of security i in period t where t is from minus 1 to minus n.

$T_i$ = the number of returns over the -1 to -n period.

The mean adjusted returns model is consistent with the CAPM in that the security's expected return is constant, the security has a constant systematic risk and the efficient frontier is stationary.

Abnormal returns for the mean adjusted return model are defined as:

$$E_{it} = R_{it} - E(R_i) \qquad \text{(Eq. 19)}$$

which is a comparison of the expected return on security i with the actual or realized return on security i.

Standardizing the abnormal return by the estimated time series standard deviation as well as setting the expected mean to equal zero and standard deviation to equal 1, we have:

$$SE_{it} = E_{it} - \bar{E}_i \; / \; S_i \qquad \text{(Eq. 20)}$$

where: $$S_i = \left[ \sum_{t=-1}^{-n} (R_{it} - \bar{R})^2 \; / \; T_i - 2 \right]^{1/2}$$

Testing the cumulative effects over some specified time period, the test statistic (distributed as a Student t with $T_i$-2 degrees of freedom):

$$\overline{SE}_t = \frac{1}{M} \sum_{i=1}^{m} SE_{it} \qquad \text{(Eq. 21)}$$

The cumulative abnormal return, $\overline{SE}_t$, of sample firms in period t would be the sum of the individual firms' standard abnormal returns, $SE_{it}$, divided by the number of periods M.

To test whether the average abnormal returns across a sample of events is significant, assuming the events are independently distributed with a known expected value, a Z-test similar to that used by Patell [1976] is employed. The Z-test is:

$$Z_{SE} = \left[ \sum_{i=1}^{n} SE_{it} \right] / \left[ \sum_{i=1}^{n} (T_i-2) / T_i-4) \right]^{1/2} \qquad \text{(Eq. 22)}$$

where $Z_{SE}$ would be the Z score on the n firms' cumulative standardized residuals in period t. The cumulative Z score on n firms' standardized residuals over the entire M test period is:

$$Z_{\overline{SE}} = \left[ \sum_{i=1}^{n} \overline{SE}_t \right] / \left[ \sum_{i=1}^{n} (T_i-2 / T_i-4) \right]^{1/2} \qquad \text{(Eq. 23)}$$

Equation 22 tests whether the exchange announcement day under consideration is associated with any excess returns across firms on that day. Equation 23 tests for a similar association but across firms across event days.

The second methodology, market model returns, was developed by Sharpe [1964] and Lintner [1965]. Taking the CAPM:

$$\bar{R}_{it} = R_F + B_{it} (\bar{R}_{mt} - R_F)$$

$$\bar{R}_{it} = R_F + B_{it}\bar{R}_{mt} - B_{it}R_F \qquad \text{(Eq. 24)}$$

assuming $\alpha_i = R_F(1-B)$ we get:

$$\bar{R}_{it} = \alpha + B_{it}\bar{R}_{mt} \qquad \text{(Eq. 25)}$$

The resulting expectations model for estimating a security's market return would be:

$$\tilde{R}_{it} = \alpha_i + \beta_i\tilde{R}_{mt} + \tilde{e}_{it} \qquad \text{(Eq. 26)}$$

where:

$\tilde{R}_{it}$ = the rate of return on security i in period t, a random variable.

$\alpha_i$ and $B_i$ = intercept and slope, respectively of security i

$\tilde{R}_{mt}$ = the rate of return on the market portfolio in period t, a random variable.

$\tilde{e}_{it}$ = a random error factor representing the portion of security i's return that is independent of $R_{mt}$.

$E(\tilde{e}_{it}) = 0$

$\sigma(\tilde{R}_{mt},\tilde{e}_{it}) = 0$ = the covariance of the market return and error term is zero.

$\sigma(\tilde{e}_{it},\tilde{e}_{jt}) = 0$ = the covariance of the error terms between firms at time t is zero.

For a thorough discussion of the market model, its assumptions and derivation, see Fama [1976].

The market model's coefficients, $\alpha_i$ and $B_i$, are estimated over an estimation period (i.e., a designated period prior to the event date) using ordinary least squares techniques. These estimated regression parameters, $a_i$ and $b_i$, are obtained with the use of CRSP daily file from which returns over the expectation period are gathered. These estimated coefficients are then used as parameters of the security's

return during the experimental period, i.e., the period to be tested during which the event has occurred. The forecast error in the experimental period can be defined as:

$$\hat{\mu}_{it} = R_{it} - (\hat{a}_i - \hat{b}_i R_{mt}) \qquad \text{(Eq. 27)}$$

where $\hat{a}_i$ and $\hat{b}_i$ are the estimated regression parameters obtained from the estimation period and t is the experimental period. $R_{mt}$ is a composite daily equal weighted market index. Any abnormal returns occurring in the experimental period would be in $\hat{\mu}$.[5]

Tests for the information content of events were conducted by Beaver [1968], Jaffe [1974] and Patell [1976] to name a few. The standardization of the forecast error $\hat{\mu}_{it}$ will follow Patell's [1976] procedure where:

$$V_{it} = \hat{\mu}_{it} \,/\, S_i \sqrt{C_{it}} \sim t(T_i-2) \qquad \text{(Eq. 28)}$$

with:
$$S_i = \left[\left(\sum_{p=-1}^{-n} \mu_{ip}\right) /T_i-2\right]^{1/2}$$

$C_{it}$ = a measure of the increase in variance caused by predicting outside the regression period.

$$= 1 + \frac{1}{t_i} + (R_{mt} - \bar{R}_m)^2 \;/\; \sum_{p=-1}^{-n} (R_{mp}-\bar{R}_m)^2$$

$$\bar{R}_m = \frac{1}{T_i} \sum_{p=-1}^{-n} R_{mp}$$

p-1 to p-n = the expectations period which immediately precedes the experimental period.

$T_i$ = the number of periods in the expectations period for firm i.

$T_i - 2$ = the number of degrees of freedom.

$R_{mp}$ = the daily market return in period p.

$t_i$ = experimental period for firm i.

Testing the cumulative effects over the experimental period can be done with the statistic:

$$W_{im} = \sum_{t=1}^{m} \hat{\mu}_{it} \; / \; S_i\sqrt{MC_{it}} \sim t(T_i-2) \qquad \text{(Eq. 29)}$$

where m is the number of periods in the experimental period over which the $\hat{\mu}_{it}$'s are summed. This would be a t-test with $T_i-2$ degrees of freedom.

To test across a sample of events for each period assuming the events in the sample are independently distributed with a known expected value, a normalized sum can be formed.[6]

$$Z_{vt} = \left[\sum_{i=1}^{n} V_{it}\right] \Big/ \left[\sum_{i=1}^{n} (T_i-2) \; / \; T_i-4)\right]^{1/2} \qquad \text{(Eq. 30)}$$

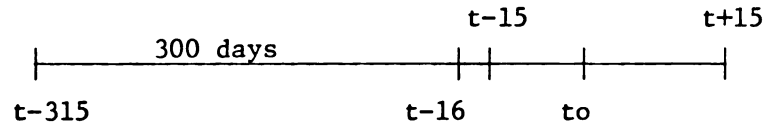
where $Z_{vt}$ would be the Z-score on the cumulative n firms' standardized residuals in period t. The cumulative Z-score on n firms' standardized residuals over the m test period is:

$$Z_{wm} = \left[\sum_{i=1}^{n} W_{im}\right] \Big/ \left[\sum_{i=1}^{n} (T_i-2) \; / \; (T_i-4)\right]^{1/2} \qquad \text{(Eq. 31)}$$

These statistics test for the significance of any excess returns across firms on any event day (Eq. 30) and across firms across event days (Eq. 31).[7] Application of these statistics can be found in Jaffe [1974] and Patell [1976].[8]

## Theoretical Foundations and the Present Research Design

The expectations models, market model and mean returns model, will be applied to a non-experimental period to generate estimated coefficients $a_i$ and $b_i$ and an estimated mean, respectively. The expectations period and initial announcement period are:




where t-315 to t-16 is the expectations period and t-15 to t+15 is the announcement period. The 300 daily returns preceding the initial announcement period were used as the expectations period. A trade-off exists between keeping the number of observations small to avoid inclusion of shifting parameters thus increasing forecast error and increasing the number of observations which can decrease forecast error by increasing n in the variance calculation.[9] Allen and Hagerman [1980] provide evidence that prediction errors are smallest when using 250 to 750 daily returns in the expectations model.[10]

An equally weighted index from the CRSP tapes is used for the market index in the expectations period when using the market model. Evidence provided by Allen and Hagerman [1980] suggests that the use of an equally weighted index reduces the level of prediction errors below those resulting from the use of a value weighted index.

Use of daily data was considered the most appropriate for an event study of this nature. As evidenced by Masulis [1980] and Mikkelson [1981], announcement effects were present over a small period, i.e., two to three days. Use of weekly or monthly data might average

out any shareholder wealth effects. Given these considerations, a 300 day expectations period and a 31 day test period were chosen. While the total test period is thirty-one days, the proposed days of interest will be the three day period surrounding the announcement, $t_{-1}$, $t_0$ and $t_1$. The announcement, $t_0$, is the day of the public announcement of the exchange. Daily Z-statistics, discussed above, will be calculated for each of the 31 days surrounding each of the three exchange announcements. As mentioned previously, the three announcements of interest are (1) the initial announcement of a proposed exchange, (2) the terms of the exchange and (3) the announcement of the final results. This procedure will be a test of the hypotheses, as presented in Chapter I, of whether a change in shareholder wealth results from the announcements associated with the bond for bond exchanges. Table XII summarizes each announcements test period.

TABLE XII

Information Announced in Each Test Period

---

Initial Announcement -

$t_{-1}$ = day prior to the Board of Directors' public announcement

$t_0$ = the Board of Directors' public announcement

$t_{+1}$ = WSJ announcement

Terms Announcement -

$t_{-1}$ = day prior to the WSJ announcement which is usually the day of registration with the SEC.

$t_0$ = WSJ announcement

$t_{+1}$ = day after the Wall Street Journal announcement

Results Announcement -

$t_{-1}$ = day prior to WSJ announcement

$t_0$ = WSJ announcement

$t_{+1}$ = day after the WSJ announcement

---

An additional consideration relates to the time intervals between the announcement dates. Table IX in Chapter III shows that 14 firms had an interval between the date of initial announcement and date of the announcement of terms of less than 30 trading days. This results in an overlap of the 31 day test periods. However, since the announcement effect analysis will center on the three day period around each announcement, no adjustment in test period strategy is required (all but two firms had intervals of three weeks or more between the two announcements). The same consideration applies to the period two to period three announcement interval. For this period most firms had announcements less than 30 days apart. However, only four firms had intervals of less than three weeks.

## Correlation Analysis

As shown in Chapter I, the size of the abnormal returns of each firm i ($AR_i$) in the three day test period(s) is expected to be directly related to the net present value of each exchange standardized by the market value of firm i's stock ($NPV_i$). The market value of firm i's stock is equal to the average value of the individual firm's common stock over the five days prior to the three day announcement period.

To measure the relationship between the abnormal returns observed and standardized NPV, the Spearman rank order correlation will be used. The null hypothesis, as presented in Chapter I, predicts a significant positive relationship between $AR_i$ and $NPV_i$. The Spearman correlation is:

$$P_{RN} = 1 - \left[ 6 \sum_{i=1}^{n} d_i^2 \; / \; n^3 - n \right] \qquad \text{(Eq. 32)}$$

where $d_i$ is equal to the difference between firm i's abnormal return ranking and its standardized NPV ranking. The abnormal returns and NPV's are independently ranked for the n firms. In testing the correlation we assume each joint observation ($AR_i$, $NPV_i$) is independent and drawn from the same distribution.

To test the strength of the relationship the following test statistic is used:

$$t = r_s \sqrt{\frac{N-2}{1-r_s^2}} \sim t(N-2) \qquad \text{(Eq. 33)}$$

where N equals the number of observations. The test statistic is approximately distributed as a t-distribution with N-2 degrees of freedom. If t = positive $\leq t(1-\alpha;N-2)$ then a significant positive relationship exists between the abnormal return (AR) and the standardized net present value of the exchange (NPV).[12] If the NPV formula is a good measure of the exchange's investment cash flow, a positive relationship should exist between the abnormal return of the exchanging firm and the net present value of the exchange standardized by the preannouncement market value of the firm.

Table XIII presents alternative constructs of the NPV calculation to be tested for significance.

TABLE XIII

NPV Calculations to be Tested

| | Assuming 100% exchange | Actual results |
|---|---|---|
| NPV using a before-tax discount rate | 1,2 | 1,2,3 |
| NPV using an after-tax discount rate | 1,2 | 1,2,3 |

Announcements: 1 = initial announcement
2 = announcement of terms
3 = announcement of results

NPV's are calculated assuming the firm exchanges all the bonds they propose as well as the actual results. Table V, Chapter III, showed most firms' actual results were far below their requested level, averaging a 65.76% solicitation. For announcements #1 and #2 both NPV calculations will be tested. Since the results of the exchange are not public, there is a question as to whether investors perceive the actual results when valuing the firms' securities or if a 100% exchange is perceived. For announcement #3 the actual results are known and therefore only the NPV calculation based upon the actual results is included in the test.

## NPV Calculation Proposed

The cash flow model below relates specifically to refunds of discounted bonds and will be used to estimate the NPV of bond exchanges in this study:

$$NPV = \sum_{i=1}^{n} \frac{r_{oi}(1-T)}{(1+r)^{i}} - \sum_{j=1}^{p} \frac{R_{nj}(1-T)}{(1+r)^{j}} + \frac{P_{on}}{(1+r)^{n}} - \frac{P_{np}}{(1+r)^{p}}$$

$$- \sum_{k=1}^{m} \frac{G_k}{(1+r)^{k}} - F(1-T)$$

where:

$R_{oi}$ = annual interest payments on the refunded debt issue.

$R_{nj}$ = annual interest payments on the new debt issue.

$P_{on}$ = principal amount of the refunded debt issue.

$P_{np}$ = principal amount of the new debt issue.

$G_k$ = tax on the exchange gain.

$F$ = miscellaneous refunding expenses.

n = periods to refunded bond's maturity.

p = periods to new bond's maturity.

m = tax deferral period of refunding gain.

r = discount rate.

T = marginal tax rate.

Theoretically, managers acting to maximize shareholder wealth would refund when the present value of the inflows (+) is greater than the present value of the outflows (-). In the above model the inflows relate to the old bond issue and the outflows to the new bond issue and its related costs.

The first and second factors are the after-tax interest payments on the old and new bond issues respectively. The discounted value of the after-tax old interest payments ($R_o$) less the discounted value of the new interest payments ($R_n$) is the present value of the change in after-tax interest resulting from the exchange. Table XIV lists the sample firms and shows the comparative annual interest rates and annual interest payments for the old and new issues as well as the annual difference in after-tax interest payments. A marginal tax rate of fifty percent is assumed in the model. Most exchanges resulted in an increase in annual after-tax interest payments. Therefore, the sum of the first and second factors was negative for most of the exchanges.

The third and fourth factors in the model represent the present value of the principal amounts of old ($P_o$) and new bond issues ($P_n$) respectively. Table XV depicts the book value of the samples old and new bond issues. While the market values are approximately equal, the book values are substantially different. This is expected when the old

TABLE XIV*

Annual Change in After-tax Interest Payments
After the Exchange

| Firm | OLD Interest Rate(s)(%) | NEW Interest Rate(%) | **After Tax OLD Interest Payments ($000) | **After Tax NEW Interest Payments ($000) | **Annual Increase (Decrease) After-Tax Interest Payments ($000) |
|---|---|---|---|---|---|
| Allegheny Airlines Inc. (US Air) | 5.5 -6 | 9.25 | 967 | 1,120 | 153 |
| Allegheny Ludlum Industries Inc. | 9.0 | 10.75 | 3,600 | 4,300 | 700 |
| American Medicorp | 5.5 | 9.5 | 343 | 405 | 62 |
| Athlone Industries Inc. | 5.7 | 11.0 | 201 | 332 | 131 |
| Bay Colony Property Company | 8.5 | 8.5 | 686 | 721 | 35 |
| Chase Manhattan Mortgage & Realty Co. | 6.5 -7.5 | 11.625 | 1,135 | 1,133 | (2) |
| Chelsea Industries | 5.25 | 10.0 | 232 | 287 | 55 |
| Columbia Pictures Industries Inc. | 4.75-5.75 | 11.75 | 694 | 808 | 114 |
| Condec Corporation | 5.0 | 10.0 | 378 | 604 | 226 |
| Cooper Labs | 4.5 | 10.5 | 230 | 322 | 92 |
| Dillingham Corporation | 5.5 | 9.75 | 790 | 876 | 86 |
| Fairchild Industries Inc. | 4.375 | 9.75 | 401 | 781 | 38 |
| Fedders Corporation | 5.0 | 8.875 | 573 | 711 | 128 |
| Fibreboard Corporation | 4.75 | 6.75 | 359 | 382 | 23 |
| General Host | 5.0 | 11.0 | 847 | 1,118 | 271 |
| General Instruments | 5.0 | 10.25 | 804 | 1,071 | 267 |
| Gulf & Western Industries, Inc. | 5.5 | 7.0 | 1,650 | 2,467 | 817 |
| Insilco Corporation | 5.0 | 9.75 | 611 | 774 | 163 |
| Institutional Investors Trust | 7.875 | 8.25 | 575 | 632 | 57 |
| LTV Corporation | 5.0 | 11.0 | 2,542 | 3,579 | 1,037 |
| McCulloch Oil Corporation | 5.0 | 10.5 | 561 | 647 | 86 |
| MGM | 5.0 | 10.0 | 255 | 332 | 77 |
| Mohawk Data Sciences Corporation | 5.5 | 12.0 | 641 | 769 | 128 |
| National Industries Inc. | 5.5 -5.75 | 10.0 | 130 | 171 | 41 |
| Pan American Airlines | 5.25-4.5 | 11.0-9.875 | 6,136 | 7,070 | 934 |
| Pioneer Texas Corporation | 6.75 | 11.75 | 34 | 45 | 11 |
| Pittston Company | 4.0 | 9.25 | 794 | 1,096 | 302 |
| Ramada Inns | 5.0 | 10.0 | 1,202 | 1,442 | 240 |
| Rapid American Corporation | 6.0 | 10.75 | 6,120 | 8,231 | 2,111 |
| Roblin Industries Inc. | 6.5 | 12.0 | 323 | 357 | 34 |
| Russo Industries Inc. | 6.25 | 10.0 | 151 | 181 | 30 |
| Sanders Associates Inc. | 5.0 | 12.0 | 633 | 759 | 74 |
| Texstar | 6.5 | 10.0 | 29 | 33 | 4 |
| United Airlines | 4.25-5.0 | 8.0 | 3,529 | 4,234 | 705 |
| United Brands Inc. | 5.5 | 9.125 | 3,438 | 3,418 | (20) |
| Western Union Company | 5.25 | 10.75 | 1,521 | 1,744 | 223 |
| White Motor Corporation | 5.25-7.25 | 11.0-12.0 | 340 | 487 | 147 |
| Wickes Corporation | 5.125 | 9.0 | 726 | 860 | 134 |
| Zapata Corporation | 4.75 | 10.875 | 946 | 1,624 | 678 |

*Interest payments are based on the actual results of the refunding.
**Assumes a marginal tax rate of 50%.

TABLE XV*

Principal Values of New and Old Bond Issues

| Firm | Principal OLD Bond ($millions) | Principal NEW Bond ($millions) |
|---|---|---|
| Allegheny Airlines Inc. (U.S. Air) | 32.027 | 24.225 |
| Allegheny Ludlum Industries, Inc. | 80.000 | 80.000 |
| American Medicorp | 13.102 | 8.516 |
| Anthone Industries, Inc. | 7.048 | 6.041 |
| Bay Colony Property Company | 16.148 | 16.955 |
| Chase Manhattan Mortgage & Realty Co. | 32.017 | 19.489 |
| Chelsea Industries | 8.827 | 5.738 |
| Columbia Pictures Industries, Inc. | 25.002 | 13.751 |
| Condec Corporation | 15.100 | 12.070 |
| Cooper Labs | 10.223 | 6.134 |
| Dillingham Corporation | 28.736 | 17.960 |
| Fairchild Industries, Inc. | 18.337 | 16.035 |
| Fedders Corporation | 22.893 | 16.025 |
| Fibreboard Corporation | 15.096 | 11.322 |
| General Host | 33.883 | 20.330 |
| General Instruments | 32.164 | 20.907 |
| Grumman Corporation | 25.099 | 15.059 |
| Gulf & Western Industries, Inc. | 60.000 | 70.500 |
| Insilco Corporation | 24.434 | 15.882 |
| Institutional Investors Trust | 15.600 | 15.330 |
| LTV Corporation | 101.687 | 65.079 |
| McCulloch Oil Corporation | 22.422 | 12.332 |
| MGM | 10.218 | 6.642 |
| Mohawk Data Sciences Corporation | 23.310 | 12.821 |
| National Industries, Inc. | 4.538 | 3.424 |
| Pan American Airlines | 250.200 | 134.730 |
| Pioneer Texas Corporation | .948 | .758 |
| Pittston Company | 39.700 | 23.820 |
| Ramada Inns | 48.078 | 28.847 |
| Rapid American Corporation | 204.000 | 153.141 |
| Roblin Industries, Inc. | 9.930 | 5.958 |
| Rusco Industries, Inc. | 4.839 | 3.629 |
| Sanders Associates, Inc. | 25.308 | 12.654 |
| Texstar | .892 | .669 |
| United Airlines | 153.759 | 105.849 |
| United Brands, Inc. | 125.000 | 74.918 |
| Western Union Company | 57.930 | 32.441 |
| White Motor Corporation | 27.378 | 18.941 |
| Wickes Corporation | 28.323 | 19.118 |
| Zapata Corporation | 39.829 | 29.872 |

*Principal amounts are based on actual bonds exchanged.

issue is selling at a discount.[13]

The fifth factor deals with the tax gain realized by the exchange. As pointed out by Laber [1978] and Kalotay [1978] the corporation must be a taxable entity in order for the refunding of its own debt to be profitable.[14] The taxable entity criterion is pivotal since a zero tax rate would mean the present value of cash flow savings at maturity (reduced principal) would equal the present value of the cash flow increase (additional interest payments) over the bond life. Therefore, when miscellaneous refunding expenses are also included, the NPV could never be positive for a non-taxable entity. Both authors focused on the tax treatment associated with the refunding gain. The amount of gain subject to tax would equal the original bond's issue price less new bond issue price minus (plus) the amount of premium (discount) already amortized. Bond for bond exchanges (in contrast to bond repurchases for cash) are normally treated as a recapitalization for tax purposes, in which case no income or loss is realized on the exchange. In the sample of 40 refunds investigated in this study, twenty-seven treated the refund as a bond for bond exchange, thereby recognizing no gain. The other thirteen either reduced the basis of their investment in a subsidiary(s), reduced their basis in non-depreciable assets or reduced their basis in depreciable assets.[15]

The last factor in the net present value formula is the refunding expenses incurred with the exchange. These expenses include soliciting agent, exchange agent, forwarding agent, administrative and legal costs. Estimates of these costs for each exchange are included in the individual stock exchange registration statement.

All factors will be discounted to obtain a net present value

for each exchange. Exhibit #2 is an example of an NPV calculation used in this study.

EXHIBIT #2

NPV Calculation Example

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Example of NPV Calculation using an after tax discount rate:

Grumman Corporation

$4\frac{1}{4}$% bonds due September 1, 1992
- face value $25,099,000

exchanged for:

8% bonds due September 1, 1999
- face value $15,059,400

additional information:
- semi-annual interest payments on both bond issues
- exchange took place in 1974
- tax free exchange
- 50% marginal tax rate
- 1% miscellaneous refunding costs

$$NPV = \sum_{i=1}^{36} \frac{1/2(\$1,066,708)(.5)}{(1+.04/2)^{i}} - \sum_{j=1}^{50} \frac{1/2(\$1,204,752)(.5)}{(1+.04/2)^{j}} + \frac{\$25,099,000}{(1+.04/2)^{36}}$$

$$- \frac{\$15,059,400}{(1+.04/2)^{50}} - .01(\$15,059,400) - 0(G_k)$$

$$= \sum_{i=1}^{36} \frac{\$266.667}{(1.02)^{i}} - \sum_{j=1}^{50} \frac{\$301,188}{(1.02)^{j}} + \frac{\$25,099,000}{(1.02)^{36}} - \frac{\$15,059,400}{(1.02)^{50}}$$

$$- \$150,594$$

$$= \$6,800,009 - \$9,464,531 + \$12,424,005 - \$5,602,096 - \$150,594$$

$$= \$4,006,793$$

Relative NPV = NPV/Market Value of firm's stock

= $4,006,793/$11 per share x 7,277,793 shares

= .05005

---

## Summary

The main purpose of the research is to test for the information content of the announcements of the exchanging of discounted corporate bonds. The effect of the announcements on shareholder wealth will be tested over the three day period surrounding the announcement. To measure any effect upon shareholder wealth two methodologies, the mean adjusted returns and the market model, will be employed and appropriate significance tests performed over the announcement period. Additionally, a correlation analysis will be performed to measure the level of association between any abnormal returns generated from the above methodologies and various market adjusted cash flow calculations over the announcement test dates. Appropriate statistics will then be used to determine the significance of any associations discovered.

## Chapter IV - Footnotes

1. See, for example, Ball and Brown [1968] or Fama, Fisher, Jensen and Roll [1969].

2. See Fama [1970] for a complete discussion.

3. See Sunder [1973].

4. The market adjusted returns methodology assumes the ex ante expected returns across securities are equal. Therefore, the ex post abnormal return for a security is equal to the difference between its return and the market return which is a linear combination of all securities. This methodology is consistent with the CAPM if all securities have a beta of one.

5. This assumes regression assumptions hold. For a complete discussion see Fama [1976].

6. These statistics are formed in accordance with the Lindeberg Central Limit Theorem. For a thorough discussion see Feller [1966].

7. See Penman [1980] for a detailed discussion of this procedure.

8. Simple t-tests were also performed. The Z-statistic, however, is a more conservative test and was used throughout the residual analysis.

9. Blume [1971] shows shifts in parameters over time. Gonedes [1973] provides proof of this tradeoff.

10. Hagerman and Allen [1980] also show smallest prediction errors when using six years of weekly data and seven years of monthly data. Prediction errors are the absolute smallest when using 500 days of daily data.

11. Pearson product-moment correlations coefficients will also be tested for significance.

12. Correlation coefficients and test statistics will be developed for both the mean adjusted return model and the market model.

13. For example, a 5 1/2%, $1,000 face value bond may be exchanged for a 9 1/2% $650 face value bond when the market value of the 5 1/2% bond is approximately $650. Chapter III includes a discussion of the market values of the new and old bond issues.

14. Assuming coincidental maturity dates of new and old bond issues.

15. A complete discussion of tax implications of the exchange is included in Chapter III.

# CHAPTER V

# RESULTS

Chapter V is divided into two parts. The first part examines the results obtained from the stock market returns analysis. The second part reviews the correlation analysis results which are used to examine the descriptive validity to the NPV model(s) employed.

## Part 1: Stock Market Returns Analysis

While both the mean adjusted returns model and the market model were used in this study, only the mean adjusted returns methodology results will be referred to in the analysis to follow. The comparative results from the market model methodology are presented in Appendix B. References will be made to the market model methodology results only if they are inconsistent with those presented. Emphasis is on the mean returns methodology which is consistent with the Masulis [1980] and Mikkelson [1981] investigations. As Brown and Warner [1980] point out, both methodologies perform equally well in measuring abnormal performance.

Rates of return for common stocks included in the sample were obtained from the Center for Research in Security Prices daily returns tape. The market rate of return used in the study was CRSP's combined NYSE and ASE equal weighted index. Expected mean returns for the three thirty-one day experimental periods for firms in the sample

were estimated over the three-hundred day expectations period immediately preceding the first announcement experimental period.[1] The estimated mean returns generated from this estimation period were used for all three announcement period analyses since 1) the announcement periods were relatively close together (see Chapter III, Table IX) and 2) updating the expectations model would mean including the firm's return data from the previous announcement. Any excess returns present in the previous announcement would bias the expectations model estimates. To eliminate this potential bias a single pre-announcement expectations model was used (see Chapter IV for the discussion of research design). As depicted in Chapter IV, Equation (2), the espected ex-ante return for the mean returns model is equal to the average of the daily returns over the expectation period. Abnormal returns were calculated as the difference between the actual daily stock returns of the sample firms ($R_{it}$) and their expected returns [$E(\tilde{R}_i)$] for each of the 31 days in each of the three announcement periods.

## Distributional Properties of Common Stock Daily Rates of Return

Studies analyzing properties of daily common stock rates of return have generally concluded that these returns have a symmetrical distribution, are leptokurtic and serially uncorrelated over time.[2] Although these properties should be found in a random selection of firms taken from the NYSE and ASE, a relatively small non-random sample, as analyzed here, may not possess these properties. To test for these properties, the Studentized Range, skewness, and kurtosis factors were calculated for the sample over each announcement period as shown in Tables XVI, XVII, and XVIII. The average Studentized

TABLE XVI

Statistics on Firm Returns
Period 1 - Mean Model

| Firm | Student-ized t | Kurtosis | Skewness |
|---|---|---|---|
| Allegheny Airlines, Inc. | 4.162 | 2.371 | -.142 |
| Allegheny Ludlum Industries, Inc. | 5.452 | 5.380 | 1.371 |
| American Midicorp. | 3.454 | 1.879 | .153 |
| Athlone Industries, Inc. | 3.685 | 2.114 | -.189 |
| Bay Colony Property | 4.589 | 3.019 | .058 |
| Chase Manhattan Mortgage & Realty Co. | 3.476 | 2.726 | .121 |
| Chelsea Industries, Inc. | 4.956 | 4.517 | 1.100 |
| Columbia Pictures Industries, Inc. | 4.417 | 3.843 | 1.069 |
| Condec Corporation | 4.451 | 2.846 | -.109 |
| Cooper Labs, Incorporated | 4.879 | 4.777 | .872 |
| Dillingham Corporation | 5.124 | 3.947 | .433 |
| Fairchild Industries, Inc. | 4.274 | 3.037 | .495 |
| Fedders Corporation | 5.529 | 5.218 | .798 |
| Fibreboard Corporation | 4.070 | 2.544 | .431 |
| General Host Corporation | 4.794 | 3.523 | -.188 |
| General Instruments | 4.561 | 2.933 | .456 |
| Grumman Corporation | 4.654 | 3.789 | -.504 |
| Gulf & Western Industries, Inc. | 5.277 | 7.212 | 1.500 |
| Insilco Corporation | 3.383 | 2.084 | .242 |
| Institutional Investors | 3.816 | 3.087 | .883 |
| LTV Corporation | 5.330 | 3.924 | .187 |
| McCulloch Oil Corporation | 3.300 | 2.246 | .796 |
| MGM | 4.454 | 3.453 | .137 |
| Mohawk Data Sciences Corporation | 3.959 | 2.187 | .312 |
| National Industries | 3.742 | 2.924 | .426 |
| Pioneer Texas Corporation | 3.903 | 2.658 | -.632 |
| Pittston Company | 4.865 | 2.870 | -.017 |
| Ramada Inns | 4.326 | 2.695 | .305 |
| Rapid American Corporation | 4.379 | 4.122 | -1.139 |
| Roblin Industries, Inc. | 4.552 | 2.894 | -.166 |
| Rusco Industries, Inc. | 4.481 | 3.427 | .706 |
| Sanders Assoc., Inc. | 4.659 | 3.197 | .055 |
| Texstar Corporation | 4.428 | 2.604 | -.097 |
| UAL | 3.817 | 2.568 | .583 |
| United Brands Co. | 4.061 | 2.521 | .411 |
| Western Union Co. | 3.947 | 2.664 | .519 |
| White Motor Corporation | 5.168 | 7.015 | 1.707 |
| Wickes Corporation | 4.981 | 5.245 | 1.058 |
| Zapata Corporation | 5.012 | 5.125 | -1.085 |
| Mean | 4.423 | 3.452 | .321 |

TABLE XVII

Statistics on Firm Returns
Period 2 - Mean Model

| Firm | Student-ized t | Kurtosis | Skewness |
|---|---|---|---|
| Allegheny Airlines, Inc. | 4.430 | 2.719 | .331 |
| Allegheny Ludlum | 4.331 | 5.848 | -1.681 |
| American Medicorp | 4.521 | 3.091 | .541 |
| Athlone Industries, Inc. | 4.543 | 3.924 | .779 |
| Bay Colony Property | 4.504 | 2.901 | .447 |
| Chase Manhattan Mortgage & Realty Co. | 2.838 | 1.821 | .056 |
| Chelsea Industries, Inc. | 3.896 | 2.463 | -.056 |
| Columbia Pictures Industries, Inc. | 4.146 | 3.002 | .613 |
| Condec Corporation | 5.617 | 8.512 | 1.827 |
| Continental Investment Trust | 6.000 | 7.837 | 1.170 |
| Cooper Labs, Incorporated | 3.584 | 2.111 | .248 |
| Dillingham Corporation | 4.503 | 4.026 | 1.135 |
| Fairchild Industries, Inc. | 4.891 | 3.696 | -.301 |
| Fedders Corporation | 5.784 | 5.643 | .756 |
| Fibreboard Corporation | 4.166 | 2.807 | .447 |
| General Host Corporation | 3.684 | 2.108 | .185 |
| General Instruments | 4.433 | 2.587 | .047 |
| Gulf & Western Industries, Inc. | 4.775 | 5.394 | 1.259 |
| Insilco Corporation | 5.267 | 4.281 | .598 |
| Institutional Investors | 4.150 | 3.062 | .546 |
| LTV Corporation | 5.711 | 9.444 | 1.812 |
| McCulloch Oil Corporation | 3.317 | 1.812 | .184 |
| MGM | 5.131 | 3.829 | -.536 |
| Mohawk Data Sciencies Corporation | 4.468 | 3.039 | .399 |
| National Industries | 4.962 | 5.157 | 1.042 |
| Pan Am | 5.426 | 4.321 | -.047 |
| Pioneer Texas Corporation | 4.282 | 3.248 | .743 |
| Ramada Inns | 3.579 | 2.819 | .663 |
| Roblin Industries, Inc. | 4.100 | 2.656 | .030 |
| Rusco Industries, Inc. | 4.124 | 2.541 | .287 |
| Sanders Assoc., Ind. | 4.352 | 2.717 | .302 |
| Texstar Corporation | 4.549 | 3.219 | -.249 |
| UAL | 3.980 | 3.053 | .879 |
| United Brands Co. | 4.824 | 3.316 | -.087 |
| Western Union Co. | 4.914 | 4.138 | -.709 |
| Wickes Corporation | 4.269 | 2.752 | .365 |
| Zapata Corporation | 4.390 | 4.426 | 1.247 |
| Mean | 4.498 | 3.792 | .457 |

TABLE XVIII

Statistics on Firm Returns
Period 3 - Mean Model

| Firm | Student-ized t | Kurtosis | Skewness |
|---|---|---|---|
| Allegheny Airlines, Inc. | 4.411 | 3.524 | .875 |
| Allegheny Ludlum Industries, Inc. | 4.328 | 4.392 | -1.084 |
| American Medicorp. | 4.166 | 2.682 | .245 |
| Athlone Industries, Inc. | 3.748 | 3.011 | .686 |
| Bay Colony Property | 4.226 | 2.588 | .335 |
| Chase Manhattan Mortgage & Realty Co. | 3.177 | 2.262 | .112 |
| Chelsea Industries, Inc. | 5.370 | 4.781 | .687 |
| Columbia Pictures Industries, Inc. | 4.396 | 2.659 | .333 |
| Condec Corporation | 3.921 | 2.590 | .842 |
| Cooper Labs, Incorporated | 4.803 | 4.032 | .842 |
| Dillingham Corporation | 4.444 | 3.403 | 1.011 |
| Fairchild Industries, Inc. | 4.302 | 2.601 | -.182 |
| Fedders Corporation | 4.477 | 5.137 | 1.485 |
| Fibreboard Corporation | 4.235 | 2.731 | .196 |
| General Instruments | 3.813 | 2.230 | .422 |
| Grumman Corporation | 3.687 | 2.122 | .093 |
| Gulf & Western Industries, Inc. | 5.813 | 7.865 | -1.464 |
| Insilco Corporation | 4.486 | 3.547 | .571 |
| Institutional Investors | 4.015 | 3.013 | .657 |
| LTV Corporation | 6.047 | 8.773 | 1.487 |
| McCulloch Oil Corporation | 4.101 | 2.806 | .655 |
| MGM | 5.004 | 4.565 | .884 |
| Mohawk Data Sciences Corporation | 3.345 | 1.783 | -.178 |
| National Industries | 4.886 | 5.657 | 1.231 |
| Pan Am | 4.282 | 2.592 | .561 |
| Pioneer Texas Corporation | 4.123 | 3.456 | .965 |
| Ramada Inns | 4.085 | 3.959 | 1.127 |
| Rapid American Corporation | 4.228 | 2.890 | -.513 |
| Roblin Industries, Inc. | 4.624 | 3.537 | .382 |
| Rusco Industries, Inc. | 3.984 | 2.359 | .367 |
| Sanders Assoc., Inc. | 4.443 | 3.618 | .748 |
| Texstar Corporation | 4.144 | 2.381 | -.153 |
| UAL | 4.041 | 2.478 | .538 |
| United Brands Co. | 5.027 | 4.025 | .225 |
| Western Union Co. | 4.976 | 4.775 | -.998 |
| White Motor Corporation | 3.631 | 2.357 | .634 |
| Wickes Corporation | 4.382 | 3.027 | .299 |
| Zapata Corporation | 4.675 | 5.559 | 1.431 |
| Mean | 4.376 | 3.572 | .411 |

range for the three periods are 4.423, 4.498 and 4.376 respectively. Using the table in Fama [1976], drawings from a normal distribution of 40 observations will produce a Studentized range of 4.96 or less 90% of the time and 5.15 or less 95% of the time. Comparing these figures to the Studentized ranges of the sample, the normality assumption cannot be rejected for approximately 90 percent of the firms in the sample. Even the rejected firms are very close to the range parameter. The kurtosis factors for each, which measure the peakedness of the distribution, averaged 3.452, 3.792 and 3.572 respectively. Given a normal distribution kurtosis of 3.0, the experimental periods' distributions are modestly leptokurtic as expected. Comparing these factors to the expected kurtosis factors for a normal distribution, the upper 5% factor is 3.99.[3] The skewness averages are .321, .457 and 4.11. Comparing these factors to expected skewness factors for a normal distribution, the upper 5% factor is .587 for a sample size of forty.[4] Therefore, we cannot reject the hypothesis that the distributions are normal on the basis of these kurtosis and skewness measures.

## Announcement Effects on Common Stock Returns

For each day (t) in an announcement period a Z-score was calculated based on the average daily residuals. This test assumes the sample of events are independently distributed with a known expected value (see Equation (23), Chapter IV). In this analysis the expected value of the residuals is zero and, given the dispersion of announcement dates over the seven year test period (see Table IX, Chapter III), the independence of the distribution of returns is assumed. The

analysis of the returns of each period that follows is based on results obtained using the mean returns model. As mentioned previously, Appendix B contains comparative data on these returns using the market model methodology.

## First Announcement Period

Table XIX presents the statistics for the first announcement period, i.e., when the firms announce an exchange of bonds will take place in the future. On day $t_0$ when the announcement of the exchange is made, an average daily residual of .02079 is realized. The Z-score of 4.289 provides evidence of a significant reaction to the announcement. Graphs 1, 2 and 3 depict the daily Z-scores, cumulative average residuals and Z-scores on cumulative average residuals respectively, all of which support an announcement effect during the thirty-one day experimental period.

In addition, Tables A-1 through A-3 in Appendix A show individual firm excess returns over the three day announcement period $t_{-1}$, $t_0$, and $t_{+1}$, respectively. From Table A-2 it can be seen that 65 percent of the firms had positive excess returns. The negative residuals were generally small, which shows that the resulting large Z was not caused by several outliers. Positive and negative residuals would be expected in the announcement period since both positive and negative cash flow effects were calculated for firms in the sample.

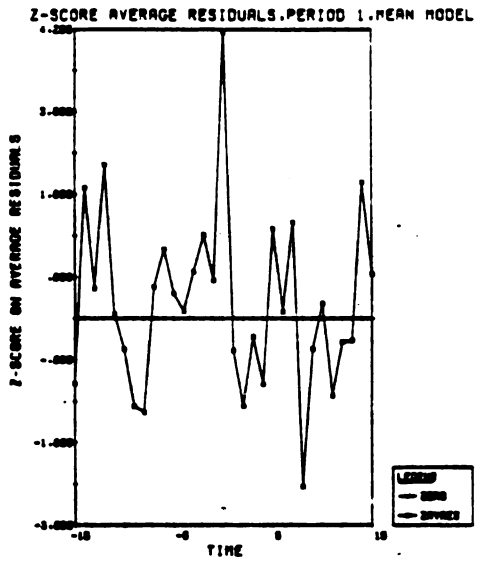
To see if differential Z-scores were realized over the announcement period consistent with the sign of the cash flow calculations, statistics were independently developed for firms with positive and negative NPV calculations. (Appendix D contains the calculations

TABLE XIX

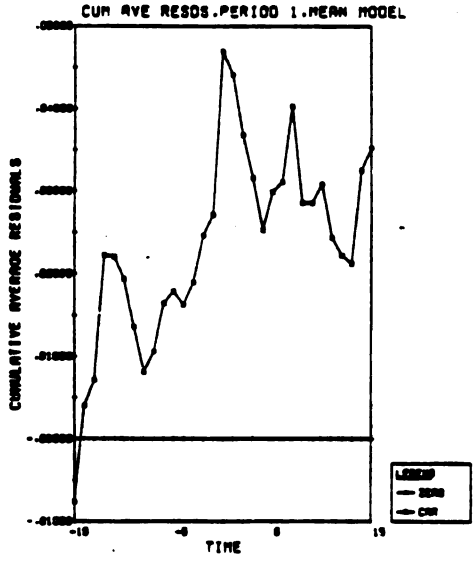
Period 1 - Mean Model Residuals

| Day | Average Residuals | Standard Average Residuals | Standard Cumulative Residuals |
|---|---|---|---|
| -15 | -.00732 | -.87607 | -.87607 |
| -14 | .01173 | 1.88503 | .45684 |
| -13 | .00296 | .41059 | .69390 |
| -12 | .01555 | 2.26011 | 1.82396 |
| -11 | .00048 | .17854 | 1.90380 |
| -10 | -.00246 | -.40696 | 1.73766 |
| - 9 | -.00520 | -1.16710 | 1.29654 |
| - 8 | -.00557 | -1.37234 | .81134 |
| - 7 | .00258 | .47018 | .96807 |
| - 6 | .00702 | 1.17964 | 1.34111 |
| - 5 | .00251 | .53706 | 1.50304 |
| - 4 | -.00162 | .11083 | 1.53503 |
| - 3 | .00280 | .69491 | 1.72777 |
| - 2 | .00554 | 1.19268 | 2.04653 |
| - 1 | .00132 | .35224 | 2.13748 |
| 0 | .02079 | 4.28914 | 3.20976 |
| 1 | -.00236 | -.38291 | 3.11689 |
| 2 | .00667 | -1.15587 | 2.84445 |
| 3 | .00609 | -.39241 | 2.75442 |
| 4 | -.00612 | -.91932 | 2.54886 |
| 5 | .00600 | 1.53278 | 2.88334 |
| 6 | .00100 | .06096 | 2.89634 |
| 7 | .00864 | 1.28478 | 3.16423 |
| 8 | -.01171 | -2.41735 | 2.67079 |
| 9 | .00001 | -.44125 | 2.58254 |
| 10 | .00318 | .35336 | 2.65184 |
| 11 | -.00742 | -1.26654 | 2.40809 |
| 12 | -.00141 | -.21205 | 2.36802 |
| 13 | .00146 | .08644 | 2.38407 |
| 14 | .01282 | 2.20388 | 2.78644 |
| 15 | .00127 | .39901 | 2.85811 |

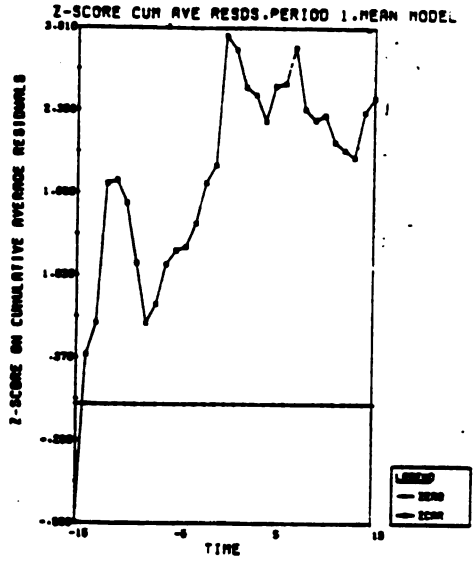
Graph #1




Graph #2




Graph #3



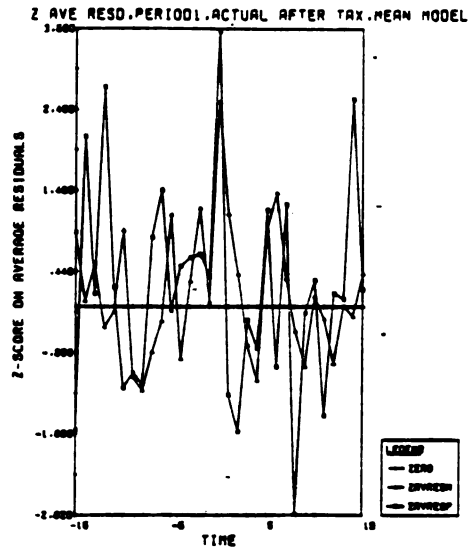
of the firm adjusted NPV calculations for all three periods.) From Table XX, where the NPV's are calculated with an after-tax discount rate applied to the actual number of bonds exchanged, the Z-statistic for positive NPV firms is higher than for negative, 3.465 compared to 2.576 respectively. Both, however, are significant at the 1% level.[5] Graphs 4, 5 and 6 show the relationship between positive and negative NPV firms' Z-scores, cumulative average residuals, and Z-scores on CAR's. It is interesting to note in Graph #5 that although the reaction on $t_0$ is greater for positive firms, the CAR over the 31 day test period is more positively significant for the negative firms (Graph #6). This is also true if we assume investors do not value the exchange according to the actual exchange results (which are unknown at the first announcement date) but to the expectations of 100% exchange. Similar statistics, assuming a 100% exchange, are given in Table XXI and Graphs 7, 8 and 9. Again the CAR's and Z-score on the CAR's are more positive for negative firms. The cause of this anomalous behavior in both cases, given stock market efficiency and the excess returns methodologies used, may be due to either mis-specification of the cash flow model or to the inability of investors to determine the cash flow effects of the exchange in the initial announcement period. Appendix A, Table A-4 with Graphs A-1, A-2 and A-3 and Table A-5 with Graphs A-4, A-5, and A-6 show similar statistics as above, except the before-tax interest rate on new debt is used as the discount rate in the NPV calculations instead of the after-tax interest rate. The results are consistent with those presented above. Spearman rank order correlations of NPV and excess returns in each announcement period will help explain the relationship between cash flow models and

Table XX

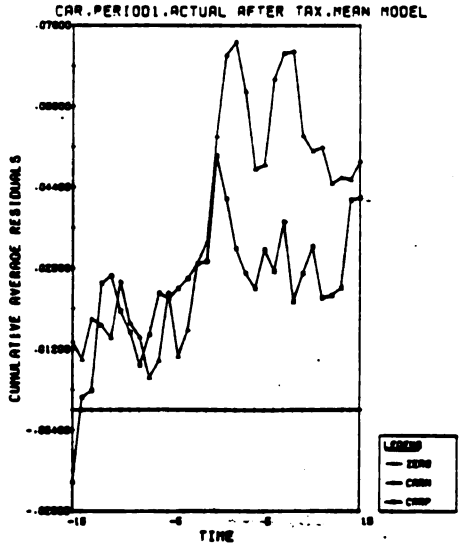
Positive/Negative NPV Firms
Period 1 - After-Tax Discount Rate
Mean Model
Actual Exchange

| | Positive NPV Firms (30) | | | | Negative NPV Firms (10) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | -.01426 | -1.54607 | -.01426 | -.28322 | .01348 | .92574 | .01348 | .29373 |
| -14 | .01683 | 2.13823 | .00256 | .10847 | -.00355 | .06653 | .00992 | .31484 |
| -13 | .00127 | .16150 | .00384 | .13806 | .00804 | .54145 | .01796 | .48664 |
| -12 | .02116 | 2.76089 | .02501 | .64383 | -.00129 | -.26177 | .01667 | .40358 |
| -11 | .00149 | .24531 | .02650 | .68877 | -.00254 | -.06780 | .01413 | .38206 |
| -10 | -.00701 | -1.02259 | .01948 | .50144 | .01119 | .95725 | .02532 | .68580 |
| -9 | -.00421 | -.83706 | .01527 | .34809 | -.00818 | -.88435 | .01713 | .40519 |
| -8 | -.00649 | -.97407 | .00877 | .16965 | -.00282 | -1.05755 | .01431 | .06964 |
| -7 | .00609 | .87417 | .01487 | .32979 | -.00796 | -.57373 | .00635 | -.11240 |
| -6 | .00823 | 1.46838 | .02310 | .59879 | .00338 | -.18401 | .00973 | -.17079 |
| -5 | -.00113 | -.04753 | .02197 | .59008 | .01346 | 1.15644 | .02320 | .19614 |
| -4 | .00206 | .51032 | .02403 | .68357 | -.01269 | -.66222 | .01051 | -.01397 |
| -3 | .00197 | .61986 | .02601 | .79712 | .00529 | .31619 | .01580 | .08634 |
| -2 | .00298 | .66420 | .02899 | .91880 | .01323 | 1.23492 | .02903 | .47818 |
| -1 | .00038 | .37732 | .02938 | .98792 | .00413 | .05095 | .03317 | .49435 |
| 0 | .02079 | 3.46539 | .05018 | 1.62274 | .02080 | 2.57604 | .05397 | 1.31171 |
| 1 | -.00850 | -1.11414 | .04167 | 1.41864 | .01607 | 1.16392 | .07005 | 1.68102 |
| 2 | -.00980 | -1.56933 | .03187 | 1.13116 | .00272 | .40642 | .07277 | 1.80997 |
| 3 | -.00484 | -.17053 | .02702 | 1.09992 | -.00985 | -.48944 | .06291 | 1.65468 |
| 4 | -.00304 | -.52481 | .02398 | 1.00377 | -.01537 | -.92963 | .04754 | 1.35971 |
| 5 | .00772 | 1.21460 | .03170 | 1.22628 | .00084 | .96182 | .04839 | 1.66489 |
| 6 | -.00432 | -.75522 | .02737 | 1.08793 | .01698 | 1.43002 | .06537 | 2.11863 |
| 7 | .00981 | 1.28355 | .03719 | 1.32306 | .00511 | .34638 | .07049 | 2.22853 |
| 8 | -.01574 | -2.61088 | .02145 | .84477 | .00036 | -.31252 | .07086 | 2.12937 |
| 9 | .00559 | -.07452 | .02704 | .93112 | -.01671 | -.75343 | .05414 | 1.89031 |
| 10 | .00528 | .33638 | .03232 | .89274 | -.00309 | .12409 | .05105 | 1.92968 |
| 11 | -.01017 | -1.37182 | .02215 | .64144 | .00082 | -.15702 | .05188 | 1.87986 |
| 12 | .00050 | .16946 | .02266 | .67248 | -.00719 | -.71762 | .04468 | 1.65216 |
| 13 | .00154 | .09353 | .02420 | .68962 | .00124 | .01087 | .04593 | 1.65561 |
| 14 | .01726 | 2.61549 | .04147 | 1.16875 | -.00048 | -.12240 | .04544 | 1.61677 |
| 15 | .00047 | .21897 | .04194 | 1.20887 | .00369 | .41875 | .04913 | 1.74964 |

GRAPH #4




GRAPH #5




GRAPH #6

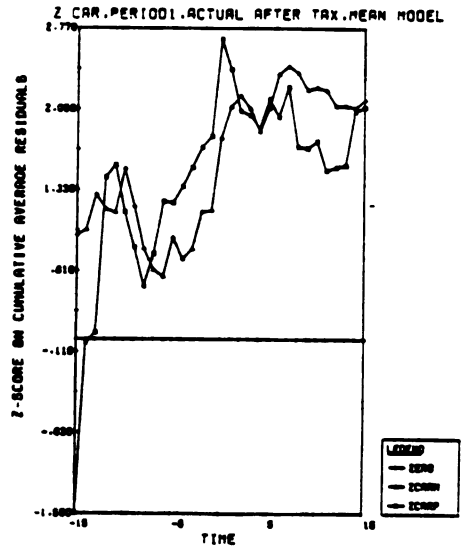
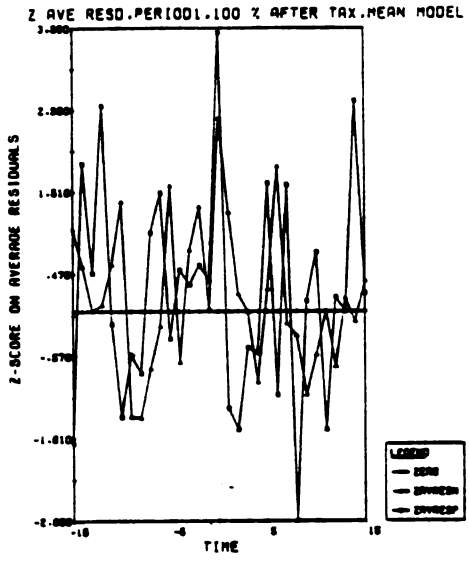


Table XXI

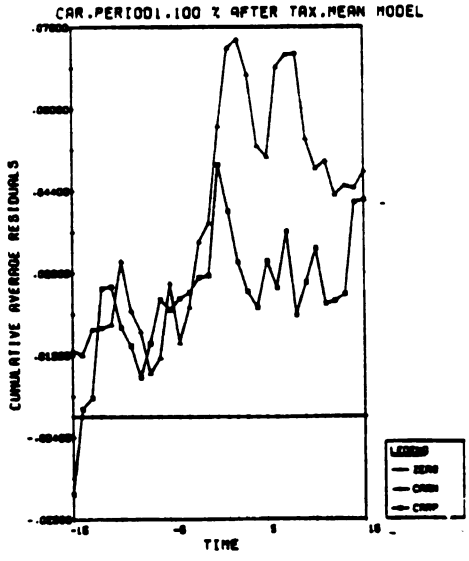
Positive/Negative NPV Firms
Period 1 - After-Tax Discount Rate
Mean Model
100% Exchange

| | Positive NPV Firms (29) | | | | Negative NPV Firms (11) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | -.01502 | -1.67017 | -.01502 | -.31118 | .01297 | 1.04123 | .01297 | .31500 |
| -14 | .01655 | 1.86811 | .00152 | .03688 | -.00096 | -.06136 | .01201 | .48463 |
| -13 | .00220 | .47944 | .00372 | .12621 | .00497 | .00449 | .01699 | .46519 |
| -12 | .02133 | 2.60637 | .02505 | .61183 | .00032 | .07792 | .01731 | .50976 |
| -11 | .00040 | -.15505 | .02546 | .58294 | .00068 | .59229 | .01800 | .60893 |
| -10 | -.00807 | -1.33138 | .01738 | .33488 | .01233 | 1.36570 | .03033 | 1.10615 |
| -9 | -.00351 | -.55081 | .01387 | .23225 | -.00967 | -1.33122 | .02066 | .70542 |
| -8 | -.00613 | -.78206 | .00773 | .08638 | -.00410 | -1.34583 | .01655 | .29826 |
| -7 | .00661 | .99879 | .01435 | .27248 | -.00805 | -.72511 | .00850 | .07689 |
| -6 | .00854 | 1.50167 | .02289 | .55228 | .00301 | -.18875 | .01152 | .32179 |
| -5 | -.00201 | -.34713 | .02088 | .40760 | .01445 | 1.58778 | .02597 | .50214 |
| -4 | .00215 | .52723 | .02304 | .58583 | -.01156 | -.64476 | .01437 | .30709 |
| -3 | .00122 | .33915 | .02426 | .64902 | .00696 | .77447 | .02134 | .54139 |
| -2 | .00283 | .50629 | .02709 | .75826 | .01269 | 1.32239 | .03403 | .94146 |
| -1 | .00042 | .39196 | .02752 | .83130 | .00369 | .03528 | .03773 | .99213 |
| 0 | .02153 | 3.53283 | .04906 | 1.48954 | .01885 | 2.44285 | .05656 | 1.69116 |
| 1 | -.00904 | -1.22168 | .04001 | 1.26191 | .01526 | 1.21344 | .07185 | 2.07037 |
| 2 | -.00985 | -1.49204 | .03016 | .98391 | .00170 | .21644 | .07356 | 2.13645 |
| 3 | -.00580 | -.45533 | .02436 | .89907 | -.00696 | -.00898 | .06660 | 2.13373 |
| 4 | -.00312 | -.52559 | .02123 | .80114 | -.01403 | -.89967 | .05256 | 1.86156 |
| 5 | .00908 | 1.62729 | .03032 | 1.10434 | -.00213 | .26069 | .05051 | 1.94647 |
| 6 | -.00528 | -1.05702 | .02503 | .90740 | .01759 | 1.83254 | .06809 | 2.50087 |
| 7 | -.01099 | -1.60375 | .01402 | 1.20621 | .00244 | -.15461 | .07054 | 2.45428 |
| 8 | -.01626 | -2.64732 | .01976 | .71296 | .00027 | -.31126 | .07081 | 2.36010 |
| 9 | .00636 | .13045 | .02613 | .73726 | -.01672 | -1.65325 | .05409 | 2.04146 |
| 10 | .00662 | .75293 | .03275 | .87755 | -.00585 | -.54869 | .04823 | 1.87547 |
| 11 | -.01079 | -1.45114 | .02196 | .59972 | .00146 | .00595 | .04970 | 1.93727 |
| 12 | .00054 | .18055 | .02250 | .63336 | -.00666 | -.69752 | .04309 | 1.66625 |
| 13 | .00132 | .00014 | .02383 | .63339 | .00183 | .16461 | .04493 | 1.71502 |
| 14 | .01708 | 2.66840 | .04171 | 1.13057 | -.00050 | -.13001 | .04443 | 1.57671 |
| 15 | .00051 | .23090 | .04223 | 1.17359 | .00329 | .38596 | .04772 | 1.76346 |

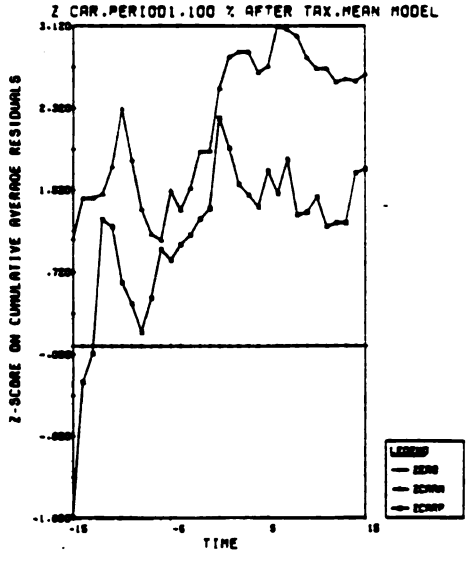
GRAPH #7




GRAPH #8




GRAPH #9



investor behavior. That analysis is contained in Part 2 of this chapter.

## Second Announcement Period

The second announcement delineated the terms of the forthcoming bond exchange.[6] Information presented includes the total bonds being tendered (representing the 100% exchange calculation made in the study), the interest rate on the new bonds being exchanged and any additional terms which may apply to the specific exchange.[7] As in period one, for each day (t) in the thirty-one day announcement period a Z-score was calculated on the average residuals. Table XXII presents the Z-scores for each of the thirty-one days in the second announcement period.[8] The standard average residuals over the three day announcement period ($t_{-1}$, $t_0$, $t_{+1}$) are not significant. Graphs 10, 11 and 12 depict the Z-score on daily average residuals, cumulative average residual and Z-scores on the cumulative average residual respectively. Z-scores of .678, .930 and .541 over the three day announcement period suggests that investors have either 1) already impounded the economic effects of the refund into the stock price or 2) no economic effects result from the exchange. Given the fact that a significant investor reaction occurred in period one, the exchange does have economic substance. Therefore, the logical conclusion to the non-existence of an investor reaction to the terms announcement is that the stock market had already impounded this information prior to the announcement. This seems reasonable since market values of the firms old and proposed debt issue could be estimated prior to the second announcement. Since most second announcements occurred within

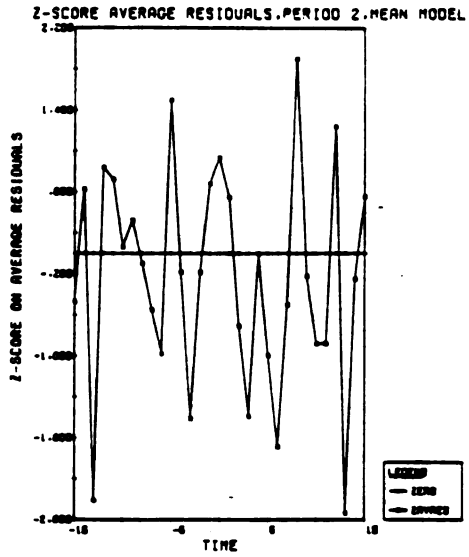
TABLE XXII

Period 2 - Mean Model

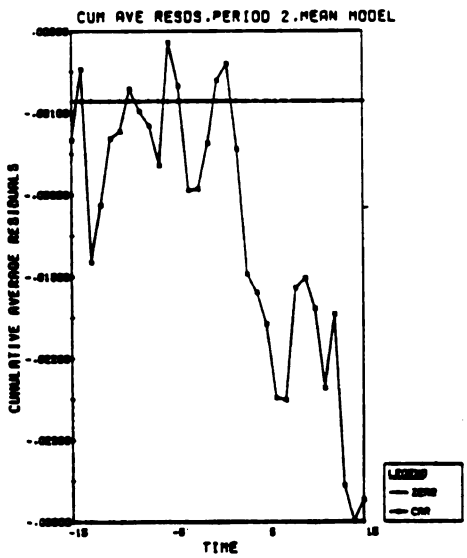
Residuals

| Day | Average Residuals | Standard Average Residuals | Standard Cumulative Residuals |
|---|---|---|---|
| -15 | -.00334 | -.46776 | -.46776 |
| -14 | .00606 | .62593 | -.02516 |
| -13 | -.01649 | -2.41101 | -1.41715 |
| -12 | .00487 | .83580 | -.99925 |
| -11 | .00570 | .71908 | -.67767 |
| -10 | .00060 | .06166 | -.65249 |
| - 9 | .00364 | .32160 | -.53094 |
| - 8 | -.00191 | -.09834 | -.56571 |
| - 7 | -.00126 | -.55316 | -.75009 |
| - 6 | .00336 | -.98142 | -1.06044 |
| - 5 | .01051 | 1.49438 | -.60987 |
| - 4 | -.00371 | -.18377 | -.66292 |
| - 3 | -.00896 | -1.61429 | -1.11065 |
| - 2 | .00014 | -.18534 | -1.16018 |
| - 1 | .00391 | .67818 | -.98508 |
| 0 | .00538 | .93051 | -.75245 |
| 1 | .00141 | .54184 | -.62103 |
| 2 | -.00732 | -.70943 | -.78825 |
| 3 | -.01068 | -1.59151 | -1.15337 |
| 4 | -.00156 | -.00580 | -1.15466 |
| 5 | -.00273 | -.99444 | -1.37167 |
| 6 | -.00627 | -1.88797 | -1.77419 |
| 7 | -.00020 | -.50161 | -1.87878 |
| 8 | .00958 | 1.89711 | -1.49153 |
| 9 | .00083 | -.22328 | -1.53619 |
| 10 | -.00259 | -.87962 | -1.70869 |
| 11 | -.00679 | -.88210 | -1.87846 |
| 12 | .00632 | 1.23739 | -1.64461 |
| 13 | -.01468 | -2.53554 | -2.11545 |
| 14 | -.00305 | -.25125 | -2.16132 |
| 15 | .00185 | .55076 | -2.06240 |

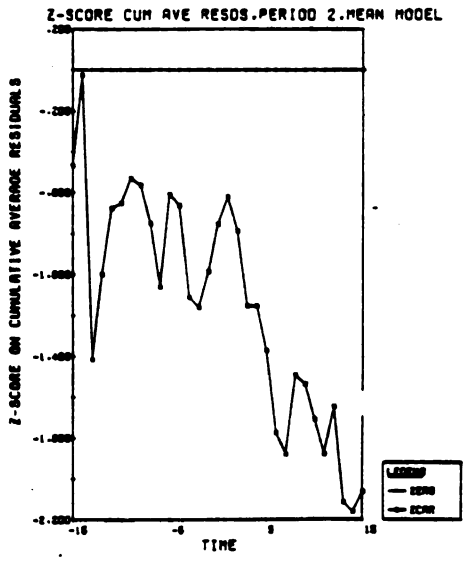
GRAPH #10




GRAPH #11




GRAPH #12



60 days after the initial announcement,[9] investors, realizing this time frame, could assess the impact of the exchange on the firm's cash flows.

As Graph #11 shows, the cumulative average residual in the 15 days prior to the second announcement date indicates that no cumulative market reaction had occurred during this period for the portfolio as a whole. After the announcement there does appear to be a cumulative negative reaction. Additional information released during the second announcement period may have provided investors with new information that altered their original cash flow projections to approximate the cash flows proposed. By analyzing the positive and negative NPV firms' residuals separately over the second announcement period, any differential adjustment of positive versus negative NPV firms can be detected. In addition, significant Z-scores may have been present for both positive and negative NPV firms but in opposite directions, thereby offsetting each other in the total portfolio statistics.

Table XXIII and associated Graphs 13, 14 and 15 and Table XXIV with Graphs 16, 17 and 18 show residual behavior for the positive and negative NPV portfolios over the second announcement period based on actual results and 100% exchange results respectively. The results are consistent in that no significant investor reaction occurred during the three day announcement period for either the positive or negative NPV firms. From Graph 14, it can be seen that the cumulative effect over the thirty-one day announcement period was relatively alike for both portfolios.

As was the case in the first announcement period, the negative NPV firms' CAR's were generally above the positive NPV firms.

TABLE XXIII

Positive/Negative NPV Firms

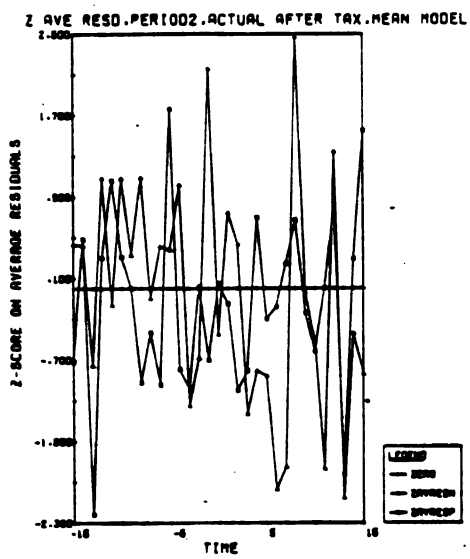
Period 2 - After-Tax Discount Rate

Mean Returns Model

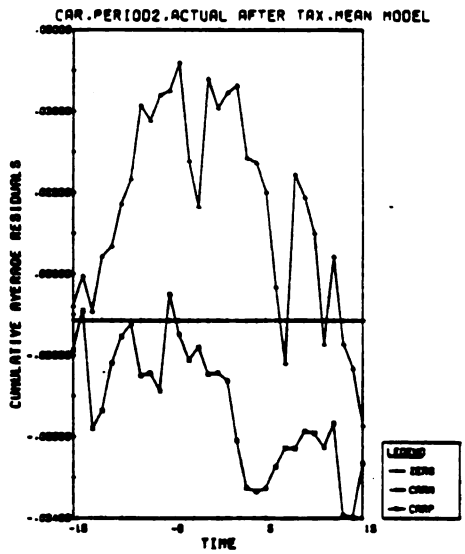
Actual Exchange

| | Positive NPV Firms (25) | | | | Negative NPV Firms (11) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | -.00505 | -.71829 | -.00505 | -.14414 | .00249 | .43178 | .00249 | .13062 |
| -14 | .00672 | .48500 | .00166 | -.04061 | .00514 | .41981 | .00763 | .25763 |
| -13 | -.02020 | -2.21899 | -.01854 | -.49211 | -.00610 | -.76022 | .00152 | .02764 |
| -12 | .00304 | .30142 | -.01550 | -.43162 | .00949 | 1.08146 | .01101 | .35481 |
| -11 | .00822 | 1.05968 | -.00727 | -.21897 | .00171 | -.16719 | .01272 | .30423 |
| -10 | .00453 | .30654 | -.00274 | -.15704 | .00731 | 1.08017 | .02004 | .63102 |
| -9 | .00223 | .00141 | -.00051 | -.15676 | .00430 | .32543 | .02435 | .72947 |
| -8 | -.00899 | -.92413 | -.00950 | -.34221 | .01263 | 1.08728 | .03698 | 1.05840 |
| -7 | .00052 | -.43531 | -.00898 | -.42967 | -.00263 | -.10128 | .03434 | 1.02776 |
| -6 | -.00311 | -.94686 | -.01209 | -.61956 | .00431 | .41310 | .03866 | 1.15274 |
| -5 | .01658 | 1.76097 | .00449 | -.20019 | .00083 | .37709 | .03950 | 1.26682 |
| -4 | -.00688 | -.79557 | -.00239 | -.42584 | .00482 | 1.01453 | .04432 | 1.57375 |
| -3 | -.00436 | -.99558 | -.00674 | -.62263 | -.01689 | -1.15289 | .02742 | 1.22496 |
| -2 | .00218 | .02191 | -.00457 | -.62123 | -.00786 | -.68527 | .01956 | 1.01764 |
| -1 | -.00460 | -.76292 | -.00917 | -.76229 | -.02199 | 2.15457 | .04156 | 1.66947 |
| 0 | .00022 | .04966 | -.00895 | -.75233 | -.00509 | -.45425 | .03646 | 1.53204 |
| 1 | -.00135 | -.15024 | -.01030 | -.76248 | .00266 | .74578 | .03913 | 1.75766 |
| 2 | -.01029 | -1.00053 | -.02060 | -.98526 | .00125 | .43608 | .04038 | 1.88959 |
| 3 | -.00809 | -.80776 | -.02869 | -1.14536 | -.01245 | -1.23390 | .02792 | 1.51630 |
| 4 | -.00072 | .69631 | -.02942 | -1.00562 | -.00088 | -.81161 | .02703 | 1.27076 |
| 5 | .00060 | -.30174 | -.02881 | -1.06616 | -.00501 | -.85951 | .02202 | 1.01073 |
| 6 | .00370 | -.16222 | -.02510 | -1.10274 | -.01628 | -1.97191 | .00574 | .41417 |
| 7 | .00321 | .23957 | -.02189 | -1.09467 | -.01311 | -1.75110 | -.00736 | -.11557 |
| 8 | -.00009 | .67186 | -.02198 | -.91984 | .03248 | 2.46948 | .02511 | .63151 |
| 9 | .00298 | -.24333 | -.01899 | -.96867 | -.00396 | -.03966 | .02114 | .61951 |
| 10 | -.00041 | -.62221 | -.01941 | -1.09354 | -.00612 | -.52301 | .01502 | .46128 |
| 11 | -.00234 | .00316 | -.02176 | -1.09290 | -.01912 | -1.77148 | -.00410 | -.07464 |
| 12 | .00414 | .81699 | -.01761 | -.92095 | .01513 | 1.33916 | .01103 | .33049 |
| 13 | -.01581 | -1.82024 | -.03343 | -1.29422 | -.01507 | -2.05791 | -.00404 | -.29208 |
| 14 | -.00047 | .29303 | -.03390 | -1.23541 | -.00420 | -.44379 | -.00825 | -.42634 |
| 15 | .00936 | 1.54838 | -.02454 | -.92469 | -.00976 | -.83909 | -.01801 | -.68019 |

GRAPH #13




GRAPH #14




GRAPH #15

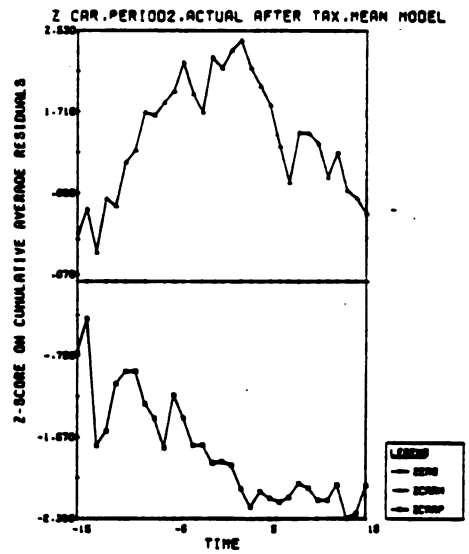
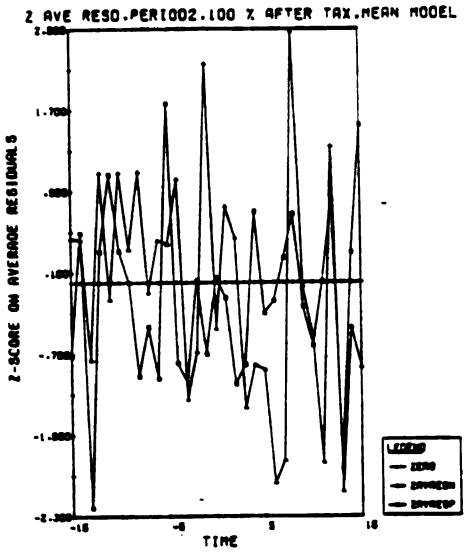


TABLE XXIV

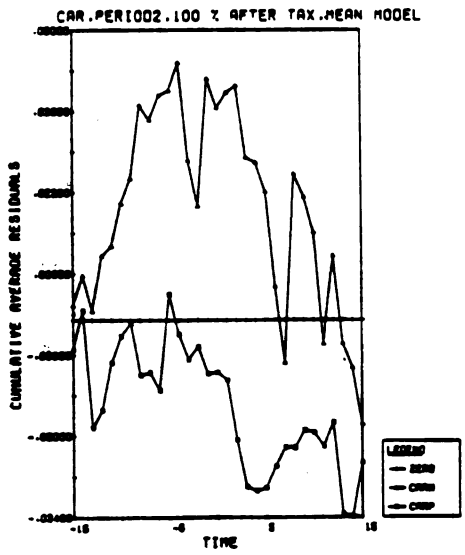
Positive/Negative NPV Firms
Period 2 - After-Tax Discount Rate
Mean Returns Model
100% Exchange

| | Positive NPV Firms (25) | | | | Negative NPV Firms (11) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Zscore on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | -.00505 | -.71829 | -.00505 | -.14414 | .00249 | .43178 | .00249 | .13062 |
| -14 | .00672 | .48500 | .00166 | -.04681 | .00514 | .41981 | .00763 | .25763 |
| -13 | -.02020 | -2.21899 | -.01854 | -.49211 | -.00610 | -.76022 | .00152 | .02764 |
| -12 | .00304 | .30142 | -.01550 | -.43162 | .00949 | 1.08146 | .01101 | .35481 |
| -11 | .00822 | 1.05968 | -.00727 | -.21897 | .00171 | -.16719 | .01272 | .30423 |
| -10 | .00453 | .30859 | -.00274 | -.15704 | .00731 | 1.08017 | .02004 | .63102 |
| -9 | .00223 | .00141 | -.00051 | -.15676 | .00430 | .32543 | .02435 | .72947 |
| -8 | -.00899 | -.92413 | -.00950 | -.34221 | .01263 | 1.08728 | .03698 | 1.05840 |
| -7 | .00052 | -.43581 | -.00898 | -.42967 | -.00263 | -.10128 | .03434 | 1.02776 |
| -6 | -.00311 | -.94636 | -.01209 | -.61958 | .00431 | .41310 | .03866 | 1.15274 |
| -5 | .01658 | 1.76097 | .00449 | -.26619 | .00083 | .37709 | .03950 | 1.26682 |
| -4 | -.00688 | -.79557 | -.00239 | -.42584 | .00482 | 1.01453 | .04432 | 1.57375 |
| -3 | -.00436 | -.99558 | -.00676 | -.62563 | -.01689 | -1.15289 | .02742 | 1.22496 |
| -2 | .00218 | .02191 | -.00457 | -.62123 | -.00786 | -.68527 | .01956 | 1.01764 |
| -1 | -.00460 | -.70292 | -.00917 | -.76229 | .02199 | 2.15457 | .04156 | 1.66947 |
| 0 | .00022 | .04966 | -.00895 | -.75233 | -.00509 | -.45425 | .03646 | 1.53204 |
| 1 | -.00135 | -.15024 | -.01030 | -.78248 | .00266 | .74578 | .03913 | 1.75766 |
| 2 | -.01029 | -1.00053 | -.02060 | -.98326 | .00125 | .43608 | .04038 | 1.88959 |
| 3 | -.00809 | -.80776 | -.02869 | -1.14536 | -.01245 | -1.23390 | .02792 | 1.51630 |
| 4 | -.00072 | .69631 | -.02942 | -1.00562 | -.00088 | -.81161 | .02703 | 1.27076 |
| 5 | .00060 | -.30174 | -.02881 | -1.06618 | -.00501 | -.85951 | .02202 | 1.01073 |
| 6 | .00370 | -.18222 | -.02510 | -1.10274 | -.01628 | -1.97191 | .00574 | .41417 |
| 7 | .00321 | .23957 | -.02189 | -1.05467 | -.01311 | -1.75110 | -.00736 | -.11557 |
| 8 | -.00009 | .67186 | -.02198 | -.91984 | .03248 | 2.46948 | .02511 | .63151 |
| 9 | .00298 | -.24333 | -.01899 | -.96867 | -.00396 | -.03966 | .02114 | .61951 |
| 10 | -.00041 | -.62221 | -.01941 | -1.09354 | -.00612 | -.52301 | .01502 | .46128 |
| 11 | -.00234 | .00316 | -.02176 | -1.09290 | -.01912 | -1.77148 | -.00410 | -.07464 |
| 12 | .00414 | .81699 | -.01761 | -.92895 | .01513 | 1.33916 | .01103 | .33049 |
| 13 | -.01581 | -1.82020 | -.03343 | -1.29422 | -.01507 | -2.05791 | -.00404 | -.29208 |
| 14 | -.00047 | .29303 | -.03390 | -1.23541 | -.00420 | -.44379 | -.00825 | -.42634 |
| 15 | .00936 | 1.54838 | -.02454 | -.92469 | -.00976 | -.83909 | -.01801 | -.68019 |

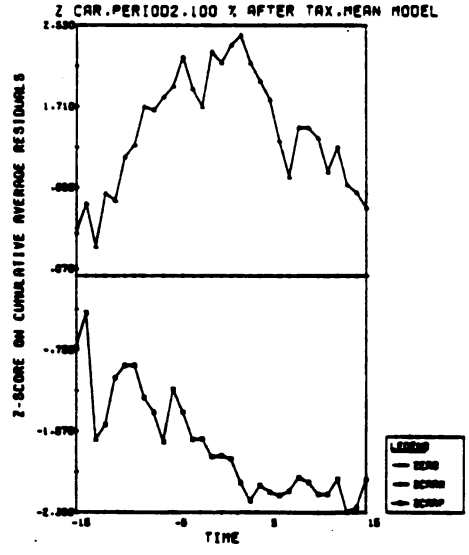
GRAPH #16



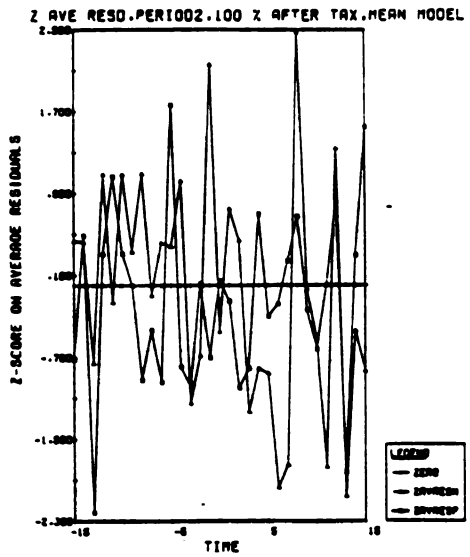

GRAPH #17



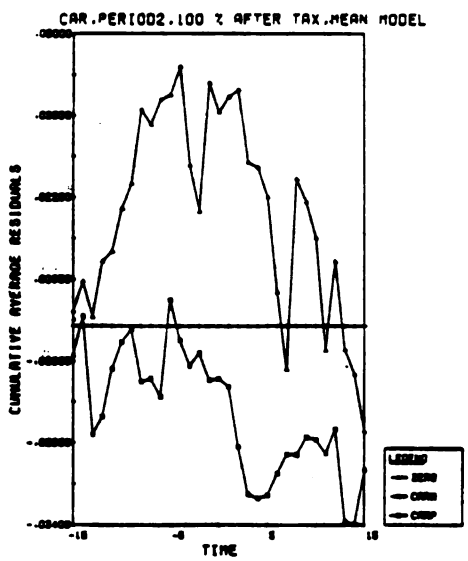

GRAPH #18



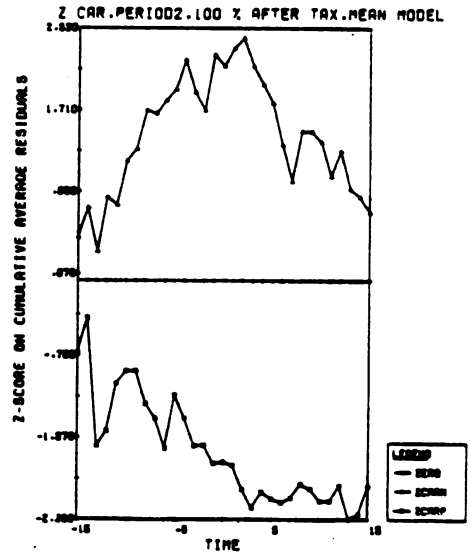
GRAPH #16




GRAPH #17




GRAPH #18



Measurement of the actual relationships will be directly addressed in the correlation analysis to follow.

## Third Announcement Period

Period three is when the announcement of the actual results of the exchange occurs. Since the actual results are known, only the NPV calculations pertaining to actual results are used in the analysis. Investors can now value the effect of the exchange on shareholder wealth with greater certainty given the results announcement. Table XXV and associated Graphs 19, 20 and 21 depict the Z-scores on residuals during the third announcement period. Over the three day announcement period, day $t_{+1}$ exhibits a moderately positive reaction with a Z-score of 1.56. More significant Z-scores are realized on the residuals observed after the three day announcement period. In particular, days $t_{+2}$ and $t_{+6}$ have Z-scores of -2.559 and 2.459 respectively. Greater variation in returns over the post-announcement period was also observed in period 2 (see Graph #10). In Part 2, cumulative residuals over the sixteen day period, $t_{-1}$ to $t_{+15}$, for each of the three announcement periods will be compared to the NPV calculations to determine if the post-announcement residuals are correlated with the NPV calculations.

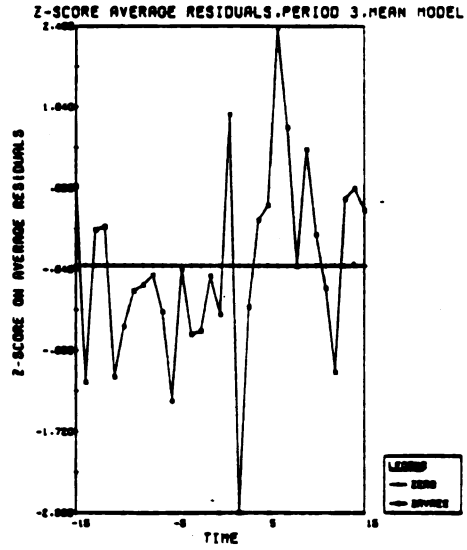
Since the total portfolio returns over the three day announcement period could have averaged out any differential reaction associated with the proposed positive versus negative NPV portfolios, these portfolios were also analyzed separately. Table XXV and Graphs 22 through 24 display results of the residual analysis using the after-tax discount rate and mean returns methodology on positive and

TABLE XXV

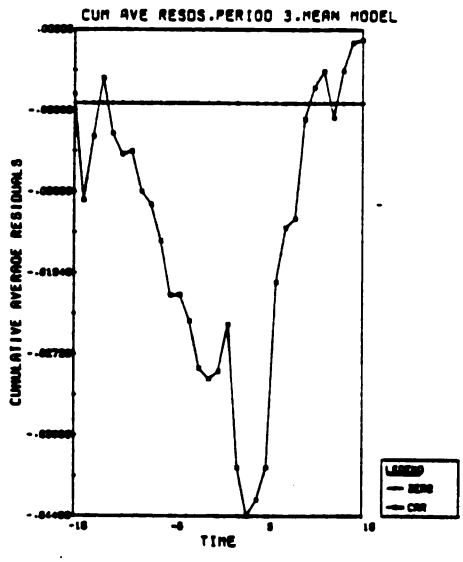
Period 3 - Mean Model Residuals

| Day | Average Residuals | Standard Average Residuals | Standard Cumulative Residuals |
|---|---|---|---|
| -15 | .00097 | .81927 | .81927 |
| | -.01150 | -1.21155 | -.03743 |
| | .00692 | .36845 | .17529 |
| | .00692 | .36845 | .17529 |
| | .00631 | .40411 | .37735 |
| | -.00603 | -1.15433 | -.13888 |
| -10 | -.00225 | -.63017 | -.39615 |
| | .00036 | -.26084 | -.49474 |
| | -.00436 | -.19808 | -.56477 |
| | -.00141 | -.09898 | -.59776 |
| | -.00396 | -4.7796 | -.74891 |
| -5 | -.00586 | -1.40752 | -1.17329 |
| | .00006 | -.03717 | -1.18403 |
| | -.00287 | -.71392 | -1.38203 |
| | -.00511 | -.67613 | -1.56274 |
| | -.00115 | -.10755 | -1.59051 |
| 0 | .00082 | -.50484 | -1.71672 |
| | .00507 | 1.56112 | -1.33809 |
| | -.01552 | -2.55943 | -1.94135 |
| | -.00524 | -.42977 | -2.03995 |
| | .00175 | .47315 | -1.93415 |
| 5 | .00350 | .62319 | -1.79816 |
| | .02009 | 2.45992 | -1.27370 |
| | .00591 | 1.42521 | -.97652 |
| | .00099 | -.00589 | -.97773 |
| | .01079 | 1.19907 | -.73791 |
| 10 | .00345 | .31894 | -.67537 |
| | .00176 | -.23326 | -.72025 |
| | -.00509 | -1.10302 | -.92871 |
| | .00512 | .69120 | -.80035 |
| | .00306 | .79884 | -.65451 |
| 15 | .00034 | .57071 | -.55200 |

GRAPH #19




GRAPH #20




GRAPH #21

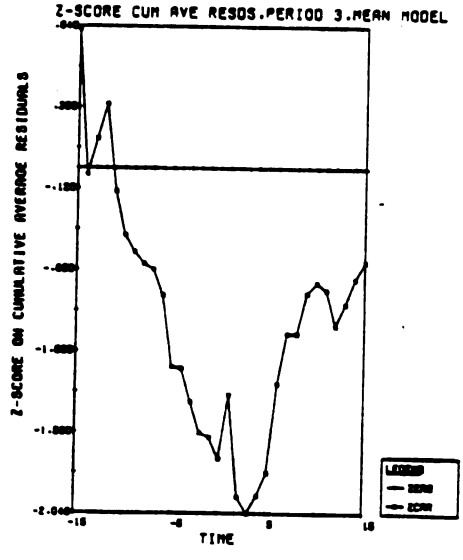
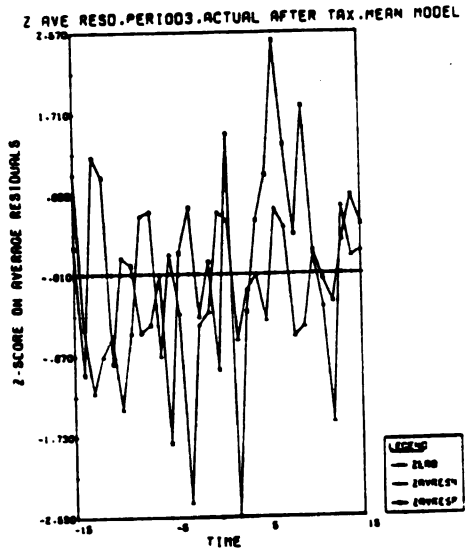


TABLE XXVI

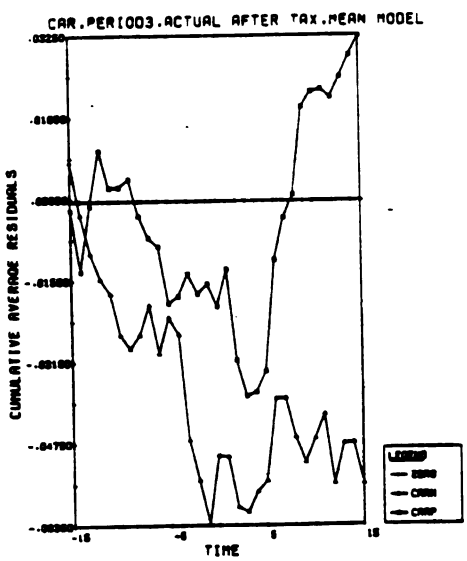
Positive/Negative NPV Firms
Period 3 - After-Tax Discount Rate
Mean Model
Actual Exchange

| | Positive NPV Firms (37) | | | | Negative NPV Firms (11) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | -.00175 | .28787 | -.00175 | .05558 | .00766 | 1.07171 | .00766 | .32422 |
| -14 | -.01199 | -1.06731 | -.01374 | -.15050 | -.01030 | -.57968 | -.00264 | .14685 |
| -13 | .01283 | 1.24433 | -.00091 | .08977 | -.00758 | -1.20469 | -.01022 | -.23375 |
| -12 | .01092 | 1.03634 | .01001 | .28988 | -.00499 | -.87255 | -.01522 | -.49772 |
| -11 | -.00732 | -.95164 | .00268 | .10612 | -.00286 | -.65454 | -.01809 | -.69574 |
| -10 | .00010 | .16905 | .00279 | .13877 | -.00803 | -1.43611 | -.02613 | -1.13020 |
| -9 | .00161 | .09152 | .00440 | .15644 | -.00271 | -.62820 | -.02884 | -1.32025 |
| -8 | -.00726 | -.62693 | -.00285 | .03538 | .00275 | .61405 | -.02609 | -1.13448 |
| -7 | -.00434 | -.54170 | -.00719 | -.06921 | .00579 | .66473 | -.02030 | -.93336 |
| -6 | -.00168 | -.00978 | -.00888 | -.07110 | -.00954 | -.87302 | -.02984 | -1.19750 |
| -5 | -.01113 | -1.80435 | -.02002 | -.41952 | .00709 | .21079 | -.02275 | -1.13373 |
| -4 | .00142 | .22405 | -.01859 | -.37626 | -.00329 | -.42012 | -.02605 | -1.26083 |
| -3 | .00439 | .70687 | -.01419 | -.23976 | -.02073 | -2.43439 | -.04678 | -1.99730 |
| -2 | -.00396 | -.45556 | -.01816 | -.32773 | -.00795 | -.54294 | -.05473 | -2.16156 |
| -1 | .00191 | .13063 | -.01624 | -.30251 | -.00867 | -.40456 | -.06340 | -2.28395 |
| 0 | -.00435 | -1.01848 | -.02060 | -.49918 | .01354 | .65733 | -.04986 | -2.08509 |
| 1 | .00720 | 1.48970 | -.01339 | -.21151 | -.00017 | .56763 | -.05003 | -1.91336 |
| 2 | -.01781 | -2.58637 | -.03121 | -.71094 | -.00989 | -.70498 | -.05992 | -2.12664 |
| 3 | -.00697 | -.40106 | -.03818 | -.78839 | -.00095 | -.17045 | -.06092 | -2.17826 |
| 4 | .00082 | .56869 | -.03736 | -.67857 | .00404 | -.01154 | -.05687 | -2.18170 |
| 5 | .00405 | 1.05340 | -.03331 | -.47516 | .00213 | -.44207 | -.05474 | -2.33050 |
| 6 | .02173 | 2.47833 | -.01157 | .00339 | .01607 | .66930 | -.03866 | -2.12203 |
| 7 | .00830 | 1.37273 | -.00327 | .26847 | .00002 | .49828 | -.03863 | -1.97129 |
| 8 | .00450 | .41892 | .00123 | .34936 | -.00764 | -.66729 | -.04629 | -2.17316 |
| 9 | .01720 | 1.78244 | .01843 | .69355 | -.00493 | -.56392 | -.05121 | -2.34376 |
| 10 | .00296 | .24305 | .02140 | .74049 | .00464 | .21199 | -.04657 | -2.27963 |
| 11 | .00052 | -.05613 | .02193 | .72965 | -.00480 | -.84559 | -.05137 | -2.38418 |
| 12 | -.00162 | -.29797 | .02030 | .67211 | -.01358 | -1.58326 | -.06495 | -2.86316 |
| 13 | .00402 | .36328 | .02432 | .74226 | .00708 | .71554 | -.05792 | -2.54669 |
| 14 | .00424 | .82784 | .02857 | .90212 | .00018 | .18776 | -.05736 | -2.54983 |
| 15 | .00376 | .52257 | .03233 | 1.00303 | -.00805 | .24202 | -.06541 | -2.51667 |

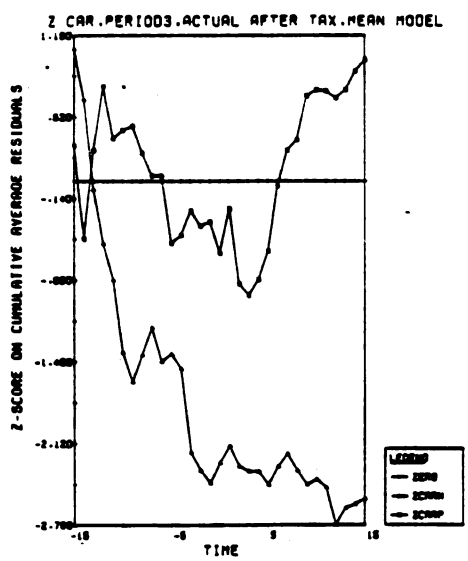
GRAPH #22




GRAPH #23




GRAPH #24



negative portfolios. Z-scores over the three day test period for both positive and negative NPV firms show no significant differential reaction with the announcement of the exchange results. However, a substantially different result was obtained from the analysis when the sample was divided between positive and negative NPV firms using a before-tax discount rate (Table A-14, Graphs A-13 through A-15).[10]

For positive NPV firms days $t_{-1}$ and $t_0$ have small negative residuals while day $t_{+1}$ has a large positive residual with a Z-score significant at 2.5% level. However, given the additional Z-scores over the thirty-one day test period, the larger of which are also positive, no strong conclusions can be drawn from the significant Z in $t_{+1}$. The negative NPV firms, however, have negative Z-scores in each of the three days of the announcement period. The larger Z-score of -2.677 in $t_{+1}$ corresponds with the large positive Z in $T_{+1}$ for positive NPV firms. From Graph A-13 it can be seen that essentially all daily return movements for the two portfolios were in the same direction. This suggests that investors adjusted their valuation consistent with the results announcement. A direct measure of this association between proposed cash flows and investor behavior over the announcement period is provided in the correlation analysis to follow.

## Summary

Results obtained from the mean returns model analysis show significant positive abnormal returns for the entire portfolio during the three day period around the initial announcement date. While the positive NPV firm portfolio had a greater CAR over the three day period, both positive NPV and negative NPV portfolios had significantly

positive residuals. It is apparent that shareholders perceive the exchange as increasing their wealth. Assuming the mean returns model methodology is accurate in measuring abnormal performance, questions arise concerning whether or not the proposed cash flow models, or a close facsimile, are useful measures of the exchange's value to equity holders. Given, however, the fact that no information regarding the terms or timing of the exchange are publicly available in this announcement period, investors may be using some surrogate variables to measure the exchange value. If so, adjustments to their initial announcement valuation would be expected as additional information regarding the exchange is announced publicly. Results from the first announcement do, however, support the semi-strong form of market efficiency.

During the second announcement period, when the terms of the exchange were made public, no significant abnormal returns for the entire portfolio, nor for the positive and negative NPV portfolios taken separately, were realized over the three day period. These results suggest that the market had already incorporated any economic content of this information into the stock price. Either investors were able to calculate and impound this information during the first announcement period or additional sources of information between announcement dates[11] enabled them to revise their probability distributions of expected returns. Both of these possibilities will be addressed directly in the cross-sectional correlation analysis to follow.

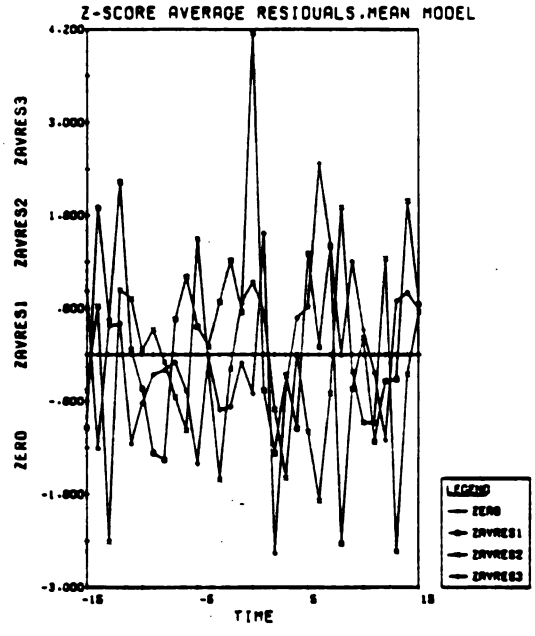
In the third announcement period no significant excess returns were realized for the total portfolio. However, the third

announcement period did provide some interesting results when residuals for the positive versus negative NPV portfolios were examined. For the first time, a modest inconsistency in results existed when the after-tax versus before-tax discount rate NPV portfolio residuals were compared. Both portfolios exhibited more significant abnormal returns when the portfolios were classified by using the before-tax discount rate rather than the after-tax rate. Results using the market model methodology were consistent with this finding. The period three results, in particular the before-tax portfolio results, support the inference that the equity market valued these firms' securities consistent with the proposed cash flow model. This consistency occurred when all cash flow information concerning the actual exchange results became public. This result, however, does not explain the significant excess returns which occurred in the first announcement period.

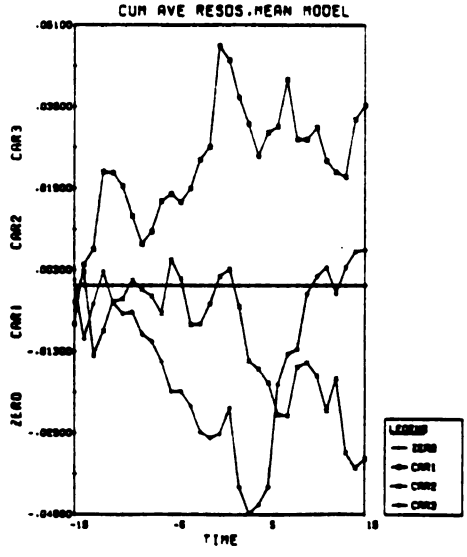
Graphs #25, 26 and 27 depict the residual behavior over all three thirty-one day announcement periods for the entire portfolio. The relative significance of the period one residual is obvious in viewing the graphs. While only period three residuals appear to be directly related to the NPV calculations, the sum of these residuals over all three periods, when compared to NPV calculations, may exhibit a stronger association. This question will be addressed in the correlation analysis.

Finally, as noted previously, an aside to this analysis is to compare the mean adjusted return methodology results with the market model results. Appendix C contains graphic comparisons of the residuals of each model over the three announcement periods. Graphs C-1, C-2 and C-3 are comparative graphs for period one, C-4,

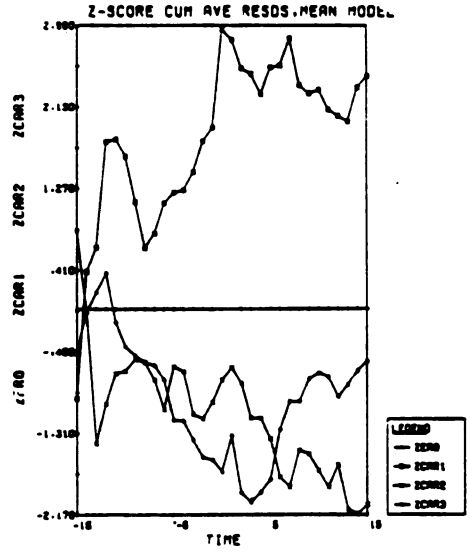
GRAPH #25




GRAPH #26




GRAPH #27



C-5 and C-6 for period two, and C-7, C-8 and C-9 for period three. Brown and Warner [1980], in a comparative analysis, conclude that both models generally measured artificially induced abnormal performance equally well. Reviewing Graph C-1 through C-9, it is apparent that the abnormal performance measurements obtained by the models in this analysis support the conclusions drawn by Brown and Warner [1980]. It appears from the graphs that the mean model may be slightly more conservative but not consistently so.

## Part 2: Correlation Analysis

The preceding residual analysis enabled us to evaluate the abnormal performance of the NPV portfolios. The specific relationship between the size of any firm's abnormal return and the relative size of the firm's NPV was not addressed. As mentioned in Chapter I, the effect of the exchange on the market value of common stock is expected to be directly related to the relative size of the exchange's NPV as follows:

$$\frac{\Delta P_o}{P_o} = \frac{NPV_o}{P_o S}$$

where any abnormal performance due to the exchange is equal to the NPV of the exchange standardized by the pre-exchange market value of the firm's equity. The larger the relative NPV of the exchange, the greater the expected effect on the firm's shareholder wealth.

Correlation analysis enables us to measure the individual announcement's relationship between excess returns and standardized NPV, as well as the relationship between cumulative returns over the three periods and the standardized NPV. Measurement of the cumulative effects of the relationship takes into account any period by period valuation adjustments which may have occurred with the additional announcements of exchange information. Measurement of cumulative effects is valid if the portfolio's systematic risk has not shifted between announcement periods. Since the capital structure of the firm remains constant, the exchange of bonds would theoretically not affect systematic risk.

First Announcement Period

Table XXVII summarizes the Spearman rank order correlation factors when residuals are calculated using the mean adjusted returns methodology and the NPV is calculated using both the after-tax and before-tax discount rates. As the table shows, the relationship between NPV and the residuals is generally negative. The after-tax standardized NPV's exhibit a strongly negative relationship with residuals over the average of the three day period, which is inconsistent with the proposed positive association. Correlations using a before-tax discount rate to calculate the NPV of the cash flows are positive but insignificant. The results suggest a dependency on the discount rate employed to calculate the NPV's. This is not surprising since the NPV calculations are tightly clustered around zero, which can result in large shifts in firm rankings between the two NPV calculations. Tables D-1 through D-4 display the NPV to market value calculations.

Pearson product moment correlations were also calculated and are displayed in Table A-15. These correlations are independent of the means and standard deviations of the variables, but are subject to being biased by several highly correlated observations in the sample of forty firms.[12] As Table A-15 shows, however, the results are consistent with those calculated using the Spearman rank correlations.

The results of period one correlations suggest no positive relationship between NPV and the abnormal returns of the exchange.[13] In the context of investment theory, either the models are mis-specified (assuming the available information is sufficient for investors to value the exchange) or the available information is insufficient and some surrogate variable(s) are being used by investors to value the

TABLE XXVII

Period 1
Spearman Rank Order Correlations
Mean Model Returns

| | After-tax Discount Rate | | Before-tax Discount Rate | |
|---|---|---|---|---|
| | Spearman | Probability | Spearman | Probability |
| 100% Exchange | | | | |
| t - 1 | .1227 | .226 | .3242 | .021 |
| t 0 | -.1371 | .200 | -.0970 | .276 |
| t + 1 | -.1559 | .169 | .0572 | .363 |
| Average | -.2298 | .077 | .0251 | .439 |
| Actual Exchange | | | | |
| t - 1 | .0426 | .398 | .4227 | .004 |
| t 0 | -.1593 | .164 | -.1122 | .246 |
| t + 1 | -.1548 | .171 | -.0362 | .413 |
| Average | -.2831 | .039 | .0636 | .349 |

exchange. If so, these variables exhibit a poor relationship with the cash flow models employed. Other factors related to Jensen-Meckling agency theory may be central to the observed relationships. In particular, if the exchange results in less stringent debt covenants, management may realize greater flexibility regarding dividend payments, future debt issues, and working capital maintenance. The effect of these factors on the investor's probability distributions of expected returns would not be incorporated in the NPV calculation. However, these potential wealth effects are not quantifiable and are beyond the scope of this analysis. The assumption at this point is that these agency costs are insignificant and that the value of the exchange process, as a whole, closely approximates the objective cash flows

proposed. Comparison of total residuals over the three announcement periods with the market adjusted cash flow calculations will provide evidence regarding this assumption. First, the remaining two periods' correlation results will be addressed independently.

## Second Announcement Period

Period two correlations, using the before or after-tax discount rate, exhibit results inconsistent with the proposed investment relationship. As Table XXVII shows, the average correlations of period two residuals and NPV's are negative. As was the case in period one, the average after-tax correlations exhibit a very high level of negative correlation. The correlation's before-tax NPV's and average residuals are more consistent with the proposed relationship of the exchange cash flows and the valuation of common stock. The Spearman correlations presented in Table A-16 and B-27 exhibit a similar relationship, with the after-tax NPV being less consistent (although positive) with investment theory than the before-tax NPV. However, the excess returns in period two were insignificant, which in isolation adds little explanation to the observed excess returns in period one. In fact, if period two's excess returns were strictly due to a reassessment of period one expectations, it is unlikely the standardized NPV's would be correlated with period two abnormal returns. Correlations on the summation of excess returns over the three periods and the standardized NPV will help clarify the relationship.

TABLE XXVIII

Period 2
Spearman Rank Order Correlations
Mean Model Returns

| | After-tax Discount Rate | | Before-tax Discount Rate | |
|---|---|---|---|---|
| | Spearman | Probability | Spearman | Probability |
| 100% Exchange | -.3091 | .034 | -.0386 | .412 |
| t - 1 | -.3091 | .034 | -.0386 | .412 |
| t 0 | .0124 | .472 | -.0314 | .428 |
| t + 1 | -.1421 | .205 | .0394 | .410 |
| Average | -.2394 | .080 | -.0018 | .496 |
| Actual Exchange | | | | |
| t - 1 | -.2934 | .042 | -.0008 | .499 |
| t 0 | -.0088 | .480 | -.0088 | .480 |
| t + 1 | -.1573 | .180 | .0154 | .465 |
| Average | -.2371 | .082 | -.0404 | .408 |

## Third Announcement Period

The announcement of results correlations were performed on actual results data, since this information was now available to investors. As Table XXIX shows, interpretation of results is again dependent upon the discount rate employed in the NPV calculation. The after-tax discount rate correlations are negative while the before-tax correlations are positive. If the investor reaction in period three is independent of the first two periods, the results theoretically support the use of the before-tax discount rate to measure the present value of the net cash flows.[14] However, measurement of the relationship between net cash flows and abnormal returns is

dependent upon when the equity holders incorporated the cash flow information into their security valuation. Since each announcement provided additional cash flow information to investors, the valuation of the exchange's impact could logically be cumulative over the three announcement periods.

TABLE XXIX

Period 3
Spearman Rank Order Correlations
Mean Model Returns
Actual Exchange

| | Spearman | Probability |
|---|---|---|
| After-tax Discount Rate | | |
| t - 1 | -.0944 | .287 |
| t 0 | -.2524 | .064 |
| t + 1 | .0697 | .339 |
| Average | -.1982 | .117 |
| Before-tax Discount Rate | | |
| t - 1 | -.1822 | .137 |
| t 0 | .0612 | .358 |
| t + 1 | .2115 | .102 |
| Average | .0999 | .276 |

Aggregated Correlations

Residuals $t_{-1}$, $t_0$, and $t_{+1}$ in each period were summed respectively over the three announcement periods. If the three announcements comprise the total value of the exchange, the total of the residuals would be correlated with the total value of the exchange as

measured by the NPV. Table XXX summarizes the correlations between the summed residuals and standardized NPV's. The total firm correlations for the after-tax standardized NPV calculations exhibited a negative relationship with the abnormal returns.[15] Similar results are found when the market model is used (Table B-29) regardless of the correlation analysis used (Tables A-18 and B-34). This is not surprising since the relationship between abnormal equity returns and the after-tax standardized NPV's were negative in the three announcement periods.

Correlations between the summed residuals and the before-tax standardized NPV's are positive for both the mean and market model residual analysis using either the Spearman rank or Pearson correlations (Tables XXX, B-29, A-18, and B-34). With the exception of the mean model analysis Spearman correlations, all correlations were significant at the twenty percent level. A correlation significant at the 8 percent level was observed when the Spearman correlation was calculated on the mean model residuals and before-tax NPV's.

While the positive relationships observed above are consistent with the proposed association between standardized NPV's and abnormal equity returns, the results in general do not strongly support that relationship. Therefore, either 1) the nine day period tested does not encompass the entire wealth effect of the exchange, 2) the cash flow models employed are inaccurate, or 3) other factors besides the cash flow variables proposed are being used by investors to value the equity securities. All these possibilities deserve addressing.

TABLE XXX

Spearman Rank Order Correlations
Aggregated Corrrelations
Actual Exchange Results
Mean Model Residuals

| | Spearman | Probability |
|---|---|---|
| After-tax Discount Rate | | |
| t - 1 | -.3308 | .027 |
| t 0 | -.2538 | .071 |
| t + 1 | -.0933 | .298 |
| Average | -.1818 | .148 |
| Before-tax Discount Rate | | |
| t - 1 | .1120 | .261 |
| t 0 | .0804 | .324 |
| t + 1 | .1585 | .182 |
| Average | .2448 | .079 |

Reviewing the CAR graphs of all three periods (Graphs 2, 5, 11, 14, 20 and 23), the possibility exists that other sources of information during the thirty-one day announcement period may have been present and, therefore, the entire wealth valuation process of the exchange would not be encompassed in the nine day CAR's tested. All three periods do exhibit trends of movement in cumulative average residuals after the announcement date. An additional correlation analysis was performed comparing the standardized NPV calculations to the summed CAR's of the sample over the $t_{-1}$ to $t_{+15}$ time period. Table XXXI provides statistics on the analysis.

TABLE XXXI

Spearman Rank Order Correlations
Aggregated 16 Day CAR's
Actual Exchange Results
Mean Model

| | After-tax Discount Rate | | Before-tax Discount Rate | |
|---|---|---|---|---|
| | Spearman | Probability | Spearman | Probability |
| Period 1 | -.3024 | .029 | -.2837 | .039 |
| Period 2 | .0819 | .318 | .0448 | .398 |
| Period 3 | .0975 | .281 | .1329 | .214 |
| Average | -.0118 | .474 | -.1378 | .215 |

Adding the additional time frame did not enhance the proposed NPV/residual relationship. In light of the significant responses during the three day announcement periods in the first and third periods, this result is not surprising. The equity market reacted consistently with the semi-strong form of efficiency and, therefore, it is reasonable to conclude that the valuation process was reasonably encompassed by the three day test periods.

It is not unreasonable to assume the model is, at least, a suitable surrogate measure of the exchange's marginal monetary impact on firm value. The cash flow model does incorporate all objectively determinable cash flows associated with the bond exchange, although a certain degree of subjectivity in determining a few of the individual cash flows (exchange expenses for example) does exist. However, given the unexplained excess returns some additional factors are probably

being valued by equity investors. This conjecture applies in particular to the significant excess returns observed in the first announcement period. The lack of correlation when the largest economic effect on shareholder wealth is observed, when viewed in conjunction with the insignificant cumulative correlations, gives credence to this conjecture. What variable(s) is(are) impacting on shareholder wealth in period one is subject to further investigation.

## Summary

The residual analysis found very significant positive abnormal returns in period one for the total and individual positive and negative portfolios. Results were consistent regardless of the discount rate used on cash flows or the research methodology employed, i.e., market or mean adjusted returns models. Correlations with these residuals and standardized NPV's were not significant, however. The period two and three residual analysis discovered no significant returns for the total portfolio in either period. However, when looking at the individual positive and negative standardized NPV portfolios, moderately significant offsetting residuals were discovered in period three. Correlations between period two and period three residuals with standardized NPV's were not found to be significantly correlated. Correlations between standardized NPV's and summed residuals over the three test periods, using the three day test period and a sixteen day period ($t_{-1}$ to $t_{+15}$) ,were also performed. No highly significant correlations were found.

## Chapter V - Footnotes

1. As mentioned in Chapter IV, Allen and Hagerman [1980] provide evidence that the smallest prediction errors are obtained when using 250 to 750 daily returns in the expectations model.

2. Studies include Fama Fisher Jensen and Roll [1969], Praetz [1972], Blattberg and Gonedes [1974], Jaffe [1974] among others.

3. Normal distribution statistics were obtained from Statistical Methods, 7th Edition by Snedecor and Cochran.

4. Ibid.

5. Five percent and one percent significance levels for Z-scores are approximately 1.65 and 2.33 respectively.

6. Thirty-six firms had their announcement of terms reported by the Wall Street Journal.

7. Additional information included in the terms of exchange announcements normally included the expected time frame of the exchange process and reasons the firm was exchanging bonds.

8. Appendix A, Tables A-6, A-7 and A-8 show individual firm residuals and statistics for Day $t_{-1}$, $t_{-0}$ and $t_{+1}$ respectively. In addition, Table A-9 and associated Graphs A-7, A-8 and A-9 give residuals and statistics for positive and negative NPV firms in period two based upon a before-tax interest rate on new debt being used as the discount rate.

9. Table XI, Chapter III, lists the firms and the lapsed time between announcement dates.

10. Similar results were realized in the market model analysis when after-tax and before-tax discount rates were used to calculate the NPV's.

11. Additional sources of information would, for example, include financial analysts' forecasts, weekly business news publications and trade publications.

12. The Pearson coefficient is:

$$\rho_{rn} = S_{rn}/S_r S_n = \frac{\sum_{i=1}^{m} (AR_i - \overline{AR})(NPV_i - \overline{NPV})}{\left[\sum_{i=1}^{m} (AR_i - \overline{AR}^2\right]^{1/2}\left[\sum_{i=1}^{m} (NPV_i - \overline{NPV}^2\right]^{1/2}}$$

The numerator ($S_{rn}$) is the product of the sum of the deviations from the mean of the residuals and NPV's of m firms, respectively. The product of the sum of deviations is divided by $S_r S_n$ which makes the relationship independent of the standard deviations of AR and NPV. The $S_r S_n$ is equal to the product of the variables', AR and NPV, standard deviations.

To test the strength of the relationship the following test statistic is used.

$$t = \rho_{rn} \sqrt{m-2} \; / \; \sqrt{1-\rho_{rn}^2}$$

If t = positive $\leq$ t(1-$\alpha$; n-2) then a significant positive relationship exists between the abnormal return (AR) and the net present value of the exchange (NPV).

13. The correlation analysis was also conducted using a two day test period, $t_o$ and $t_{+1}$, with results consistent with the three day analysis.[o] The rationale behind the use of the two day test period is based on the author's belief that day $t_{-1}$ is the least likely day in which information concerning the exchange would be available and therefore impounded into the share price.

14. This statement assumes the Spearman rank order correlations are a better measure of association than the Pearson product moment correlations. Table A-17 exhibits the reverse relationship when the Pearson correlation is used.

15. The average market value of stock for the five trading days prior to the first announcement was used to standardize the NPV calculation. Average market values for periods two and three were also separately used in the analysis. Results were consistent regardless of the market standardization method used.

# CHAPTER VI

## SUMMARY, CONCLUSIONS, RESEARCH CONTRIBUTION AND ADDITIONAL RESEARCH SUGGESTIONS

### Summary

Previous research on stock market returns and their association with exchanges of securities has been primarily related to exchanges between different classes of security holders.[1] These forms of exchange result in a redistribution of wealth between the security classes. Bond for bond exchanges, however, involve only one class of security holder whose investment remains essentially equal before and after the exchange. Due to the corporate tax consequences of the exchange, such a transaction results in a net cash inflow or outflow to the individual firm. The purpose of this study was to determine the effects of the exchange on shareholder wealth and to see if any realized effects were related to proposed measures of net cash flows resulting from the exchange.

The research employed both the mean adjusted return model and market model methodologies to calculate any effect on shareholder wealth resulting from the exchange announcements. Assumptions of a semi-strong form of market efficiency, as it relates to publicly available information, and the equilibrium pricing of common stocks being consistent with the capital asset pricing model were made. Firms selected for the study engaged in an exchange of their

outstanding discounted bonds during the seven year period 1973 through 1979. The sample consisted of forty firms.

Periods of thirty-one days surrounding each of three public announcements of the exchange were chosen. The announcements related to the decisions of firms' board of directors to engage in the exchanges, the terms of the exchange agreements, and the results of the exchanges, respectively. Direct testing of the day before, the day of, and the day after each announcement was conducted. These three day periods were chosen based upon evidence from similar research using public announcements of the speed of adjustment in share price. Once residuals were calculated, a Z-score was determined on each daily average residual.

Subsequent to the determination of residuals, the relationship between the net cash flows and the average daily residuals were measured in and over the three periods. Spearman rank order correlations were then determined to measure the degree of association between the two variables.

## Conclusions

Testing for abnormal performance was conducted in each of the three announcement periods on the portfolio of sample firms. Results of these tests, performed on the total portfolio, showed significant abnormal returns in period one, when the exchange was originally announced. However, the possibility existed that offsetting wealth effects could have occurred due to the differential cash flow effects associated with the exchange. These offsetting wealth effects would result from investors reacting positively (negatively) to the positive

(negative) cash flows resulting from the exchange. Tests were therefore conducted to detect abnormal performance on positive versus negative NPV portfolios. Results showed that both portfolios earned significantly abnormal positive returns in period one and modest, offsetting abnormal returns in period three which were consistent with the sign of the cash flow calculation.

These effects on shareholder wealth and their relationship, or lack thereof, with the NPV calculation were substantiated in the correlation analysis. No significantly positive correlations existed between abnormal returns and NPV in the three announcement periods. A further test was conducted to see if the cumulative returns over the three periods were related to NPV since the period two and three returns may have been adjustments to the initial abnormal performance in period one. Investors may not have enough information in period one to measure the actual cash flow effect of the exchange on shareholder wealth since the terms of exchange and actual cash flow results of the exchange are not available until the later announcements. No significant relationship was observed between those cumulative returns and the standardized NPV. Apparently, investors perceive factors other than those incorporated in the NPV calculation as having a greater effect on their wealth. In period one, where the significantly large excess returns are observed, these factors result in positive excess returns regardless of the cash flow calculation's sign.

Factors which may have contributed to the observed market reaction can be addressed in light of several research papers referred to earlier in this study. Laber [1978] states, "managers appear to

refund discounted bonds because of paper gains and/or enhanced financial ratios." These factors would not result in a significant shift in shareholder wealth in an efficient capital market unless some real economic effect on firm value resulted from these "paper gains and/or enhanced ratios." In relation to this study these economic effects, in terms of cash flows, would be significantly larger than the proposed cash flows and positive for all firms.

Jensen and Meckling's agency theory provides a viable explanation of what these "economic effects" may be. Consistent with agency theory, reducing the book value of long-term debt and increasing stockholders' equity ("paper gain") can shift wealth from the bondholder to stockholder if debt covenents are written in terms of capital structure relationships. Greater flexibility may be realized by management regarding decisions concerning dividends, future debt issues and working capital maintenance. These potential effects could readily result in increased shareholder wealth and could certainly dwarf the net cash flows relating to the exchange. While the covenents of each bond issue were not directly reviewed, the reasons listed by each firm for exchanging their bonds were listed in Table V, Chapter III. Almost all firms who supplied this information listed "reduce long-term debt and increase stockholders' equity" as their main reasons for exchange. These are two factors, referred to above in relation to agency theory, which could result in a positive shift in shareholder wealth. This is consistent with the results found in this study, the wealth effect being independent of the cash flows related to the exchange process. Unfortunately, the small sample size and the lack of differentiation of the reasons for exchange across firms does not allow

for testing of excess returns between listed reasons for exchange. However, the consistency between the independence and direction of excess returns observed and the combined agency theory and investment theory explanations of the observed market behavior is conclusive, the major fault being the inability, with this sample, to test the agency theory propositions.

## Research Contributions

Implications of this study can be addressed from a theoretical, as well as, a practical perspective. In terms of capital structure theory, the results are consistent with those found by Masulis [1980] and Mikkelson [1981], when viewed from a wealth re-distribution perspective. Where these authors associcated their positive returns with actual wealth re-distribution between classes of security holders, the wealth re-distribution implied in this study relates to proposed greater flexibility in management's decisions which impact upon shareholder wealth. This greater flexibility results from "book value" changes in one class of security. To test this conclusion in terms of M and M propositions, the relationship between any change in tax shield and abnormal performance should be tested. While the author recognizes that the tax shield is in fact one of the cash flows included in the NPV calculation, investors may be reacting to the bond for bond exchange like other exchanges, i.e., bond for stock. If so, an increase (decrease) in tax shield resulting from the exchange would result in an increase (decrease) in share price. Positive correlations found when using a before-tax discount rate to calculate the NPV supports this proposition. Since a greater portion of the

NPV would be associated with the change in interest payments when the higher discount rate is employed, the resulting NPV is more heavily weighted by the tax shield. This, however, is a topic for future investigation.

Results as they pertain to investment theory are somewhat inconclusive. While positive associations between NPV and excess returns existed when a before-tax discount rate was used, doubt exists as to when the cash flow information was impounded into share price and which discount rate was appropriate in measuring these cash flows. The fact that the returns aggregated over three periods were positively correlated with the before-tax NPV lends some credibility to the use of the before-tax discount rate and the market's cumulative impounding of the NPV information over the three announcement periods. However, the strength of this conclusion is suspect and subject to further investigation. A larger sample would be useful in testing this proposition since individual portfolios in this study were small.

Practical implications of these results related to management's decision of whether or not to exchange discounted bonds and the GAAP relating to exchanges of discounted bonds. The analysis of market returns showed that exchanging discounted bonds result in an initial increase in shareholder wealth regardless of the proposed net cash flow effects of the exchange. While a shareholder reaction to cash flows appears when the exchange is completed, this wealth effect is considerably less significant than the initial reaction. It appears then that firms should exchange discounted bonds when it is <u>practical</u> to do so, with secondary consideration given to the cash flow implications of the exchange. This statement assumes the company can

cover any incremental increases in interest payments and would benefit from a reduction in book value of long-term debt and an increase in stockholders' equity.

In reference to GAAP, financial information concerning the classification of the gain (extraordinary item under FAS #4), other than being considered in the cash flow model, may not be relevant to at least the initial valuation of the exchange by shareholders. Information such as the exchange's effects on debt covenents, dividends and financial ratios may provide more useful information to investors. Additional investigations on managers' reasons for exchanging and the actual debt covenents of sample firms could provide evidence that would further verify these proposed reporting implications.

## Additional Research Suggestions

Additional research suggestions apply to the testing of variables which might better explain the observed security price behavior. In relation to shifts in shareholder wealth, the price behavior of debt issues, both the issue being proposed for exchange and other outstanding issues, could be examined to see if an effect on bondholder wealth existed that was opposite from that realized by shareholders. Its presence would give verification to the proposed shift in shareholder wealth.

Actual debt covenents could also be examined and related to any increased flexibility realized by management in terms of dividend payments, debt capacity, and capital maintenance. A relationship between these variables, or close surrogates, to observed changes in shareholder wealth would also add substance to the conclusions proposed.

Finally, the tests included in this study, as well as those proposed above, would have greater inferential bearing if a larger sample could be developed. This problem can only be resolved by the continued use of the bond exchanges by corporations.

## Chapter VI - Footnotes

1. See Masulis [1980] and Mikkelson [1981].

2. Ibid.

# APPENDIX A

TABLE A-1

Period 1 - Mean Model

Day T-1

| Firm | Firm Residual | Standard Residual-T | Cumulative Standard Residual |
|---|---|---|---|
| Allegheny Airlines (U.S. Air) | .02179 | .60962 | -.81875 |
| Allegheny Ludlum | -.02520 | -1.39110 | 2.66066 |
| American Medicorp | .03594 | .90170 | 1.35480 |
| Athlone Industries, Inc. | -.00066 | -.04426 | 2.68693 |
| Bay Colony Fin. Corporation | .05360 | .84466 | .41650 |
| Chase Manhattan MTG. | .00045 | .01064 | -.80546 |
| Chelsea Inds. Inc. | .06752 | 1.98054 | 5.07809 |
| Columbia Pictures Inc. | -.02383 | -.38390 | 3.36007 |
| Condec Corporation | .03917 | 1.39240 | -1.08576 |
| Cooper Labs Inc. | -.00212 | -.05904 | 1.22930 |
| Dillingham Corporation | .00042 | .01551 | -1.76353 |
| Fairchild Ind. Inc. | -.01075 | -.45802 | 1.94411 |
| Fedders Corporation | .04020 | 1.08916 | 1.70732 |
| Fibreboard Corporation | .00173 | .07525 | 1.99412 |
| General Host Corporation | -.01813 | -.57835 | -1.44119 |
| General Instruments | -.05282 | -1.28657 | -1.62426 |
| Grumman Corporation | .01693 | .55523 | .43887 |
| Gulf & Western Industries, Inc. | -.02690 | -1.47297 | -1.37061 |
| Insilco Corporation | .00141 | .05648 | 1.04783 |
| Institutional Investors | -.04932 | -.78259 | 2.56245 |
| LTV Corporation | .01239 | .50698 | .02428 |
| McCulloch Oil | .09076 | 2.39714 | -.86186 |
| M G M | .00035 | .01005 | -2.17322 |
| Mohawk Data Sciences | -.04563 | -.53208 | -.66439 |
| National Industries | -.03522 | -.95657 | -1.70605 |
| Pan Am | .01442 | .29909 | 2.04715 |
| Pioneer Texas Corporation | -.02667 | -.49029 | -1.65562 |
| Pittston Co. | .00069 | .03580 | -.11259 |
| Ramada Inns Incorporated | -.06864 | -1.89028 | .04901 |
| Rapid American Corporation | .03303 | .79163 | .89672 |
| Roblin Industries, Inc. | .00257 | .06208 | 1.69022 |
| Rusco Industries, Inc. | -.00294 | -.04515 | -.51985 |
| Sanders Assoc. Inc. | -.08523 | -1.46016 | -1.34440 |
| Texstar Corporation | .03714 | .87665 | 1.29476 |
| UAL | -.00554 | -.30265 | -.56292 |
| United Brands Co. | .00019 | -.00717 | -.86682 |
| Western Union Corporation | .00876 | .35543 | -1.15769 |
| White Motor Corporation | .02606 | .59015 | -.91700 |
| Wickes Corporation | -.02264 | -.83353 | 2.45583 |
| Zapata Corporation | .05006 | 1.75379 | .07718 |
| Mean | .00132 | .35224 | -.54818 |

TABLE A-2

Period 1 - Mean Model
Day $T_o$

| Firm | Firm Residual | Standard Residual-T | Cumulative Standard Residual |
|---|---|---|---|
| Allegheny Airlines (U.S. Air) | -.02526 | -.70654 | -.99539 |
| Allegheny Ludlum | -.00104 | -.05787 | 2.64619 |
| American Medicorp | .00469 | .11785 | 1.38426 |
| Athlone Industries, Inc. | -.00066 | -.04426 | 2.67586 |
| Bay Colony Property | .05067 | .79858 | .61615 |
| Chase Manhattan MTG | .05601 | 1.31180 | -.47751 |
| Chelsea Inds. Inc. | .18598 | 5.45494 | 6.44183 |
| Columbia Pictures Inc. | -.04555 | -.73378 | 3.17663 |
| Condec Corporation | -.00192 | -.06826 | -1.10282 |
| Cooper Labs Inc. | -.01527 | -.42543 | 1.12294 |
| Dillingham Corporation | .00042 | .01551 | -1.75965 |
| Fairchild Industries, Inc. | .06835 | 2.90953 | 2.67150 |
| Fedders Corporation | .02680 | .72609 | 1.88884 |
| Fibreboard Corporation | .00173 | .07525 | 2.01293 |
| General Host Corporation | .00109 | .03494 | -1.43245 |
| General Instruments | .05159 | 1.25663 | -1.31010 |
| Grumman Corporation | -.00108 | -.03543 | .43001 |
| Gulf & Western Industries, Inc. | .06754 | 3.69775 | -.44617 |
| Insilco Corporation | .03083 | 1.22760 | 1.35473 |
| Institutional Investors | -.00386 | -.06134 | 2.54711 |
| LTV Corporation | .01224 | .50112 | .14956 |
| McCulloch Oil | .13663 | 3.60841 | .04024 |
| M G M | .09230 | 2.63833 | -1.51364 |
| Mohawk Data Sciences | .07770 | .90599 | -.43789 |
| National Industries | .03259 | .88501 | -1.48480 |
| Pan Am | .01408 | .29211 | 2.12018 |
| Pioneer Texas Corporation | .00342 | -.06286 | -1.67134 |
| Pittston Co. | .04179 | 2.15580 | .42635 |
| Ramada Inns Incorporated | .03736 | 1.02880 | .30622 |
| Rapid American Corporation | -.06811 | -1.63206 | .48870 |
| Roblin Industries, Inc. | -.04089 | -.98451 | 1.44409 |
| Rusco Industries, Inc. | -.00294 | -.04515 | -.53113 |
| Sanders Assoc. Inc. | .00171 | .02946 | -1.33703 |
| Texstar Corporation | -.03304 | -.77990 | 1.09978 |
| UAL | .03987 | 2.17727 | -.01860 |
| United Brands Co. | -.02102 | -.78090 | -1.06204 |
| Western Union Corporation | .02853 | -1.15698 | -1.44694 |
| White Motor Corporation | .02545 | .57635 | -.77291 |
| Wickes Corporation | .00981 | .36140 | 2.54618 |
| Zapata Corporation | .05730 | 2.00710 | .57895 |
| Mean | .02079 | 4.289.4 | 6.84023 |

TABLE A-3

Period 1 - Mean Model
Day T+1

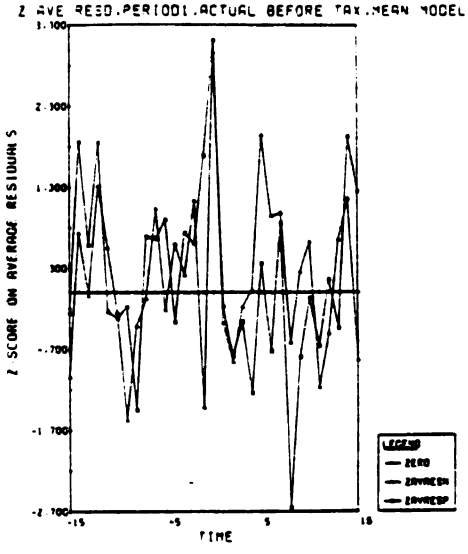
| Firm | Firm Residual | Standard Residual-T | Cumulative Standard Residual |
|---|---|---|---|
| Allegheny Airlines (U.S. Air) | -.00200 | -.05620 | -1.00902 |
| Allegheny Ludlum | -.00104 | -.05787 | 2.63215 |
| American Medicorp | .03500 | .87795 | 1.59719 |
| Athlone Industries, Inc. | .00720 | .27817 | 2.79184 |
| Bay Colony Property | .14804 | 2.33297 | 1.18198 |
| Chase Manhattan MTG | -.05217 | -1.22202 | -.77389 |
| Chelsea Inds. Inc. | .00230 | .06767 | 6.45824 |
| Columbia Pictures Inc. | -.02522 | -.40628 | 3.07809 |
| Condec Corporation | -.00192 | -.06826 | -1.11938 |
| Cooper Labs Inc. | -.04212 | -1.17286 | .83848 |
| Dillingham Corporation | .00042 | .01551 | -1.75589 |
| Fairchild Industries, Inc. | .03608 | 1.53588 | 3.04400 |
| Fedders Corporation | -.03258 | -.88264 | 1.67477 |
| Fibreboard Corporation | .02446 | 1.05939 | 2.26987 |
| General Host Corporation | .00109 | .03494 | -1.42398 |
| General Instruments | -.00197 | -.04814 | -1.32178 |
| Grumman Corporation | -.01878 | -.61565 | .28069 |
| Gulf & Western Industries, Inc. | .00980 | .53665 | -.31601 |
| Insilco Corporation | -.01286 | -.51234 | 1.23047 |
| Institutional Investors | -.02767 | -.43914 | 2.44060 |
| LTV Corporation | -.91141 | -.46718 | .03625 |
| McCulloch Oil | .12133 | 3.20435 | .81741 |
| M G M | -.01017 | -.29081 | -1.58417 |
| Mohawk Data Sciences | -.04409 | -.51414 | -.56259 |
| National Industries | -.00189 | -.05138 | -1.49726 |
| Pan Am | .01376 | .28537 | 2.18939 |
| Pioneer Texas Corporation | .00848 | .15593 | -1.63351 |
| Pittston Co. | -.03877 | -2.00050 | -.05883 |
| Ramada Inns Incorporated | .00032 | .00890 | .30838 |
| Rapid American Corporation | -.07287 | -1.74617 | .06519 |
| Roblin Industries, Inc. | .00257 | .06208 | 1.45915 |
| Rusco Industries, Inc. | -.09385 | -1.43827 | -.71001 |
| Sanders Assoc. Inc. | .04933 | .84521 | -1.13204 |
| Texstar Corporation | .00143 | .00384 | 1.10799 |
| UAL | -.01159 | -.63295 | -.17212 |
| United Brands Co. | .01044 | .38792 | -.96796 |
| Western Union Corporation | -.01030 | -.41770 | -1.54825 |
| White Motor Corporation | -.04655 | -1.05388 | -1.02852 |
| Wickes Corporation | -.01484 | -1.5463 | 2.41367 |
| Zapata Corporation | .00822 | .28805 | .64882 |
| Mean | -.00236 | -.28391 | -.26423 |

TABLE A-4

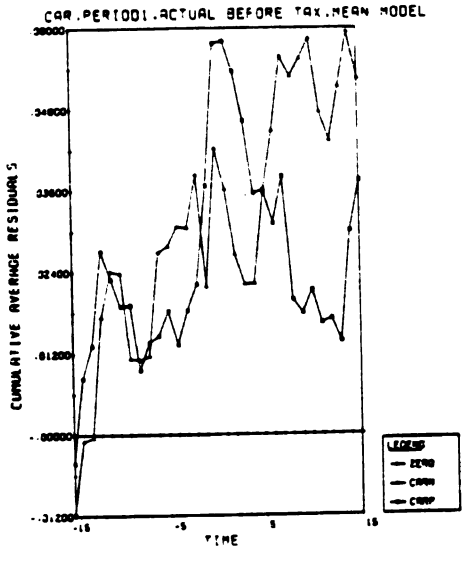
**Positive/Negative NPV Firms**
**Period 1 - Before-Tax Discount Rate**
**Mean Model**
**Actual Exchange**

| | Positive NPV Firms (23) | | | | Negative NPV Firms (17) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | -.00420 | -.25719 | -.00420 | -.05381 | -.01155 | -1.04467 | -.01155 | -.25422 |
| -14 | .01255 | 1.05539 | .00834 | .33437 | .01063 | .73338 | -.00092 | -.07575 |
| -13 | .00478 | .58212 | .01313 | .45616 | .00050 | -.04728 | -.00041 | -.08726 |
| -12 | .01392 | 1.85011 | .02705 | .84324 | .01776 | 1.31487 | .01734 | .23271 |
| -11 | -.00410 | -.23756 | .02295 | .79353 | .00668 | .55020 | .02403 | .36661 |
| -10 | -.00408 | -.31991 | .01886 | .72660 | -.00027 | -.25213 | .02375 | .30525 |
| -9 | .00021 | -.17960 | .01908 | .68902 | -.01253 | -1.58134 | .01121 | -.07957 |
| -8 | -.00954 | -1.45100 | .00953 | .38545 | -.00021 | -.41733 | .01100 | -.18112 |
| -7 | .00405 | .68737 | .01359 | .52926 | .00059 | -.07828 | .01159 | -.20010 |
| -6 | .00094 | .66819 | .01453 | .66906 | .01524 | 1.03228 | .02683 | .05102 |
| -5 | .00368 | .89760 | .01822 | .85685 | .00093 | -.22024 | .02776 | -.00256 |
| -4 | -.00495 | -.36687 | .01327 | .78009 | .00287 | .59675 | .03064 | .14265 |
| -3 | .00502 | .73595 | .01829 | .93407 | -.00020 | .20991 | .03044 | .19373 |
| -2 | .00385 | .60457 | .02215 | 1.06056 | .00783 | 1.12627 | .03828 | .46782 |
| -1 | .01450 | 1.68405 | .03665 | 1.41289 | -.01650 | -1.41849 | .02177 | .12262 |
| 0 | .02110 | 3.11098 | .05775 | 2.06376 | .02038 | 2.96067 | .04216 | .84311 |
| 1 | .00033 | -.17748 | .05809 | 2.02663 | -.00600 | -.38092 | .03615 | .75041 |
| 2 | -.00446 | -.78552 | .05362 | 1.86229 | -.00966 | -.85933 | .02649 | .54129 |
| 3 | -.00735 | -.36161 | .04627 | 1.78663 | -.00440 | -.18131 | .02209 | .49716 |
| 4 | -.01075 | -1.24308 | .03551 | 1.52655 | .00013 | .03573 | .02223 | .50586 |
| 5 | .00053 | .35657 | .03604 | 1.60115 | .01340 | 1.93643 | .03563 | .97710 |
| 6 | -.00498 | -.72563 | .03106 | 1.44934 | .00910 | .93754 | .04474 | 1.20525 |
| 7 | .00691 | .85363 | .03798 | 1.62793 | .01097 | .97785 | .05571 | 1.44322 |
| 8 | -.01821 | -2.65363 | .01977 | 1.07275 | -.00292 | -.62145 | .05278 | 1.29198 |
| 9 | -.00191 | -.79511 | .01785 | .90639 | .00263 | .24798 | .05542 | 1.35233 |
| 10 | .00335 | -.06982 | .02121 | .89179 | .00296 | .62324 | .05838 | 1.50400 |
| 11 | -.00482 | -.66262 | .01639 | .75315 | -.01093 | -1.17204 | .04744 | 1.21678 |
| 12 | .00064 | .15656 | .01703 | .78591 | -.00420 | -.50738 | .04323 | 1.09531 |
| 13 | -.00337 | -.44178 | .01365 | .69348 | .00802 | .64646 | .05126 | 1.25263 |
| 14 | .01628 | 1.91548 | .02994 | 1.09423 | .00814 | 1.15258 | .05940 | 1.53311 |
| 15 | .00737 | 1.24487 | .03731 | 1.35469 | -.00696 | -.83594 | .05244 | 1.32968 |

Graph #A-1




Graph #A-2




Graph #A-3

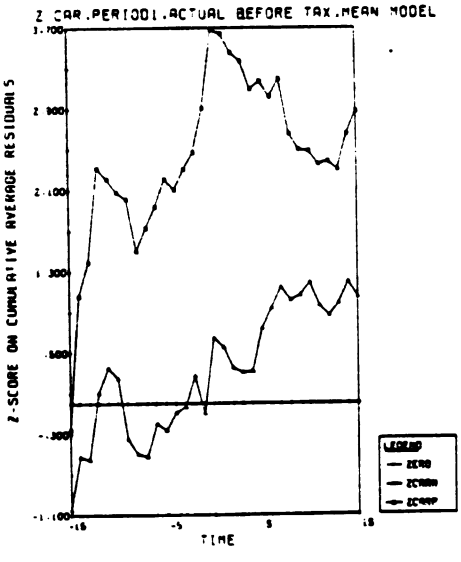
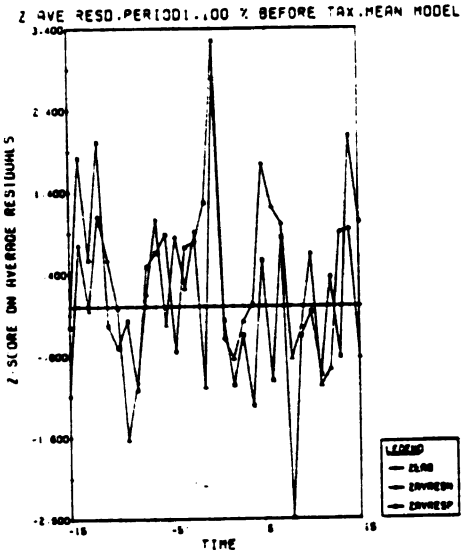


TABLE A-5

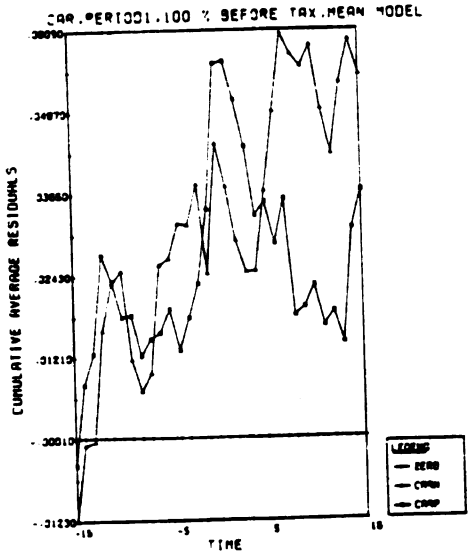
**Positive/Negative NPV Firms**
**Period 1 - Before-Tax Discount Rate**
**Mean Model**
**100% Exchange**

| | Positive NPV Firms (24) | | | | Negative NPV Firms (16) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | -.00401 | -.24997 | -.00401 | -.05119 | -.01225 | -1.07904 | -.01229 | -.27067 |
| -14 | .01204 | 1.81614 | .00802 | .32116 | .01127 | .72473 | -.00102 | -.08166 |
| -13 | .00459 | .27167 | .01262 | .43826 | .00051 | -.05095 | -.00050 | -.05436 |
| -12 | .01484 | 2.01305 | .02746 | .85056 | .01662 | 1.10107 | .01611 | .18356 |
| -11 | -.00391 | -.23075 | .02355 | .90330 | .00708 | .56491 | .02319 | .32527 |
| -10 | -.00533 | -.50455 | .01821 | .69996 | .00183 | -.02251 | .02503 | .31887 |
| -9 | .00021 | -.17401 | .01843 | .66432 | -.01233 | -1.63222 | .01169 | -.09055 |
| -8 | -.00615 | -1.01847 | .01227 | .45573 | -.00471 | -.02249 | .00698 | -.32196 |
| -7 | .00250 | .48796 | .01478 | .55567 | .00269 | .14579 | .00967 | -.26538 |
| -6 | .00092 | .65593 | .01570 | .59001 | .01617 | 1.06183 | .02585 | -.01903 |
| -5 | .00354 | .66051 | .01925 | .97022 | .00096 | -.22923 | .02682 | -.07653 |
| -4 | -.00616 | -.59052 | .01308 | .75760 | .00519 | .64950 | .03201 | .13655 |
| -3 | .00462 | .72227 | .01791 | .90553 | -.00023 | .21416 | .03178 | .19027 |
| -2 | .00519 | .79374 | .02310 | 1.06810 | .00607 | .91366 | .03785 | .41946 |
| -1 | .01104 | 1.26403 | .03414 | 1.32699 | -.01324 | -.99117 | .02461 | .17083 |
| 0 | .02177 | 3.25478 | .05592 | 1.99361 | .01932 | 2.79544 | .04393 | .67205 |
| 1 | .00033 | -.17192 | .05626 | 1.95840 | -.00640 | -.39487 | .03753 | .77300 |
| 2 | -.00575 | -.96725 | .05050 | 1.76029 | -.00805 | -.64295 | .02948 | .61172 |
| 3 | -.00703 | -.38219 | .04347 | 1.68816 | -.00469 | -.18911 | .02478 | .56428 |
| 4 | -.01029 | -1.21510 | .03318 | 1.43929 | .00012 | .03461 | .02490 | .57296 |
| 5 | .00206 | .55837 | .03524 | 1.55365 | .01196 | 1.73906 | .03681 | 1.00935 |
| 6 | -.00625 | -.90662 | .02899 | 1.36755 | .01168 | 1.20922 | .04870 | 1.31268 |
| 7 | .00664 | .83747 | .03563 | 1.53906 | .01164 | 1.00573 | .06034 | 1.56496 |
| 8 | -.01743 | -2.55594 | .01819 | 1.00739 | -.00315 | -.64279 | .05721 | 1.40372 |
| 9 | .00126 | -.36187 | .01944 | .93334 | -.00185 | -.25484 | .05536 | 1.33975 |
| 10 | .00323 | -.06653 | .02269 | .91971 | .00312 | .64020 | .05848 | 1.50038 |
| 11 | -.00604 | -.84004 | .01664 | .74766 | -.00948 | -.97373 | .04900 | 1.25513 |
| 12 | .00211 | .35516 | .01876 | .82940 | -.00772 | -.77026 | .04227 | 1.06291 |
| 13 | -.00465 | -.62385 | .01410 | .66262 | .01065 | .90074 | .05293 | 1.28866 |
| 14 | .01710 | 2.07705 | .03121 | 1.11803 | .00640 | .94079 | .05933 | 1.52465 |
| 15 | .00564 | 1.02729 | .03685 | 1.32644 | -.00526 | -.62728 | .05407 | 1.36750 |

Graph #A-4




Graph #A-5




Graph #A-6

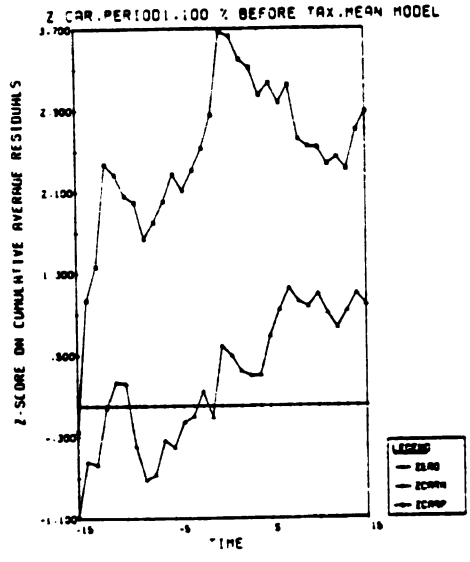


TABLE A-6

Period 2 - Mean Model
Day T-1

| Firm | Firm Residual | Standard Residual-T | Cumulative Standard Residual |
|---|---|---|---|
| Allegheny Airlines (U.S. Air) | -.04854 | -1.37730 | -2.52495 |
| Allegheny Ludlum | .00822 | .44605 | .21288 |
| American Medicorp | -.07345 | -1.75058 | -1.55942 |
| Athlone Industries, Inc. | -.00058 | -.03913 | 1.32022 |
| Bay Colony Property | .03651 | .71456 | -.03188 |
| Chase Manhattan MTG | .00029 | .00712 | .88334 |
| Chelsea Inds. Inc. | .03437 | .91330 | -.00614 |
| Columbia Pictures Inc. | -.04923 | -.79133 | .51828 |
| Condec Corporation | .00880 | .33438 | 1.77388 |
| Contin Investment Trust | .01782 | .49558 | -4.36989 |
| Cooper Labs Inc. | -.01689 | -.46969 | -2.06575 |
| Dillingham Corporation | -.03709 | -1.28587 | -.66406 |
| Fairchild Industries, Inc. | .03853 | 1.57756 | -.82924 |
| Fedders Corporation | -.01768 | -.43004 | .02435 |
| Fibreboard Corporation | -.04280 | -1.80287 | 1.06882 |
| General Host Inc. | .00128 | .04030 | -.59861 |
| General Instruments | .02673 | .66002 | 1.73936 |
| Gulf Western Inds. Inc. | -.00790 | -.43240 | .05096 |
| Insilco Corporation | .01578 | .64313 | .08816 |
| Institutional Investors | -.00157 | -.02600 | -.55235 |
| LVT Corporation | .01421 | .59667 | -1.34695 |
| McCulloch Oil | -.01915 | -.43085 | -1.53554 |
| M G M | .00045 | .01230 | -.90613 |
| Mohawk Data Sciences | -.02649 | -.32703 | 1.70772 |
| National Industries | .09892 | 2.68889 | 1.44849 |
| Pan Am | -.08865 | -1.91265 | -1.30199 |
| Pioneer Texas Corporation | .01945 | .37055 | -.15323 |
| Ramada Inns Incorporated | -.03424 | -.97487 | -.46043 |
| Roblin Industries, Inc. | .12686 | 2.55192 | .92421 |
| Rusco Industries, Inc. | .06426 | 1.02271 | .00504 |
| Sanders Assoc. Inc. | .00073 | .01213 | 1.34025 |
| Texstar Corporation | .02134 | .50328 | 1.46278 |
| UAL | -.00589 | -.32135 | .40808 |
| United Brands Co. | .03980 | 1.48575 | -2.38117 |
| Western Union Corporation | -.01950 | -.79602 | 1.11177 |
| Wickes Corporation | .00086 | .03206 | -2.37029 |
| Zapata Corporation | .05922 | 2.19885 | 1.55644 |
| Mean | .00391 | .67818 | -.98508 |

TABLE A-7

Period 2 - Mean Model
Day $T_o$

| Firm | Firm Residual | Standard Residual-T | Cumulative Standard Residual |
|---|---|---|---|
| Allegheny Airlines (U.S. Air) | -.00168 | -.09101 | .19012 |
| Allegheny Ludlum | .00347 | .08278 | -1.53873 |
| American Medicorp | -.00833 | -.58860 | 1.18057 |
| Athlone Industries, Inc. | .03898 | -.76285 | -.22259 |
| Bay Colony Property | -.05526 | -1.32698 | .55160 |
| Chase Manhattan MTG | .00047 | .01249 | -.00031 |
| Chelsea Inds. Inc. | .01209 | .19435 | .56686 |
| Columbia Pictures Inc. | -.01236 | -.46957 | 1.65649 |
| Condec Corporation | .24964 | 6.94168 | -2.63447 |
| Contin Investment Trust | .02575 | .71607 | -1.88674 |
| Cooper Labs Inc. | -.01896 | -.65737 | -.82840 |
| Dillingham Corporation | .00569 | .23323 | -.77094 |
| Fairchild Industries, Inc. | -.00778 | -.18940 | -.02299 |
| Fedders Corporation | .00863 | .36344 | 1.15968 |
| Fibreboard Corporation | .00128 | .04030 | -.58854 |
| General Host Inc. | .01246 | .30782 | 1.81631 |
| General Instruments | .00095 | .05185 | .06392 |
| Gulf Western Inds. Inc. | .00086 | .03503 | .09692 |
| Insilco Corporation | -.00157 | -.02600 | -.55885 |
| Institutional Investors | .01404 | .58949 | -1.19958 |
| LVT Corporation | -.08784 | -1.97591 | -2.02952 |
| McCulloch Oil | -.02868 | -.78946 | -1.10350 |
| M G M | -.02683 | -.33119 | 1.62492 |
| Mohawk Data Sciences | -.03138 | -.85309 | 1.23522 |
| National Industries | -.00355 | -.07652 | -1.32032 |
| Pan Am | -.00380 | -.07250 | -.17136 |
| Pioneer Texas Corporation | .03851 | 1.09621 | -.18638 |
| Ramada Inns Incorporated | .16853 | 3.39006 | 1.77173 |
| Roblin Industries, Inc. | -.00240 | -.03826 | -.00452 |
| Rusco Industries, Inc. | -.02629 | -.43590 | 1.23127 |
| Sanders Assoc. Inc. | .02092 | .49325 | 1.58609 |
| Texstar Corporation | .00106 | .05771 | .42250 |
| UAL | -.03969 | -1.48195 | -2.75165 |
| United Brands Co. | -.00203 | -.05759 | -2.53935 |
| Western Union Corporation | .02021 | .82479 | 1.31797 |
| Wickes Corporation | .02148 | .79639 | -2.17119 |
| Zapata Corporation | -.00952 | -.35365 | 1.46803 |
| Mean | .00538 | .93051 | -.75245 |

TABLE A-8

Period 2 - Mean Model
Day T+1

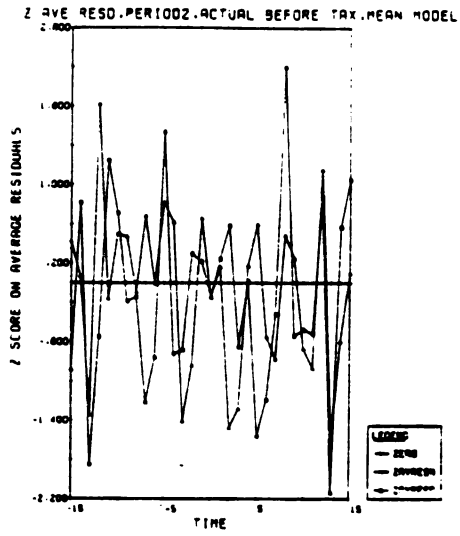
| Firm | Firm Residual | Standard Residual-T | Cumulative Standard Residual |
|---|---|---|---|
| Allegheny Airlines (U.S. Air) | .00322 | .17488 | .23254 |
| Allegheny Ludlum | .00347 | .08278 | -1.51865 |
| American Medicorp | -.00058 | -.03913 | 1.17108 |
| Athlone Industries, Inc. | .03651 | .71456 | -.04929 |
| Bay Colony Property | .05912 | 1.41971 | .89593 |
| Chase Manhattan MTG | .01686 | .44813 | .10567 |
| Chelsea Inds. Inc. | -.01940 | -.31189 | .49122 |
| Columbia Pictures Inc. | -.01247 | -.47383 | 1.54157 |
| Condec Corporation | .05678 | 1.57896 | -2.25151 |
| Contin Investment Trust | -.03059 | -.85034 | -2.09298 |
| Cooper Labs Inc. | -.01935 | -.67096 | -.99114 |
| Dillingham Corporation | .00563 | .23075 | -.71497 |
| Fairchild Industries, Inc. | -.01831 | -.44540 | -.13102 |
| Fedders Corporation | .00099 | .04189 | 1.16984 |
| Fibreboard Corporation | .00128 | .04030 | -.57876 |
| General Host Inc. | -.01438 | -.35505 | 1.73020 |
| General Instruments | .02773 | 1.51759 | .43199 |
| Gulf Western Inds. Inc. | .00086 | .03503 | .10541 |
| Insilco Corporation | -.08491 | -1.40099 | -.89864 |
| Institutional Investors | .00105 | .04431 | -1.18882 |
| LVT Corporation | -.02193 | -.49333 | -2.14917 |
| McCulloch Oil | .04045 | 1.11339 | -.83346 |
| M G M | .01055 | .13023 | 1.65651 |
| Mohawk Data Sciences | .03017 | .82008 | 1.43412 |
| National Industries | -.00354 | -.07652 | -1.33888 |
| Pan Am | .00756 | .14399 | -.13643 |
| Pioneer Texas Corporation | .07289 | 2.07526 | .31695 |
| Ramada Inns Incorporated | -.09337 | -1.87826 | 1.31618 |
| Roblin Industries, Inc. | -.00240 | -.03826 | -.01380 |
| Rusco Industries, Inc. | .00073 | .01213 | 1.23421 |
| Sanders Assoc. Inc. | .00051 | .01204 | 1.58901 |
| Texstar Corporation | -.02691 | -1.46913 | .06619 |
| UAL | -.01425 | -.53202 | -2.88069 |
| United Brands Co. | -.02642 | -.74963 | -2.72116 |
| Western Union Corporation | .01427 | .58229 | 1.45919 |
| Wickes Corporation | .04127 | 1.52986 | -1.80014 |
| Zapata Corporation | .00925 | .34357 | 1.55136 |
| Mean | .00141 | .54184 | -.62103 |

TABLE #A-9

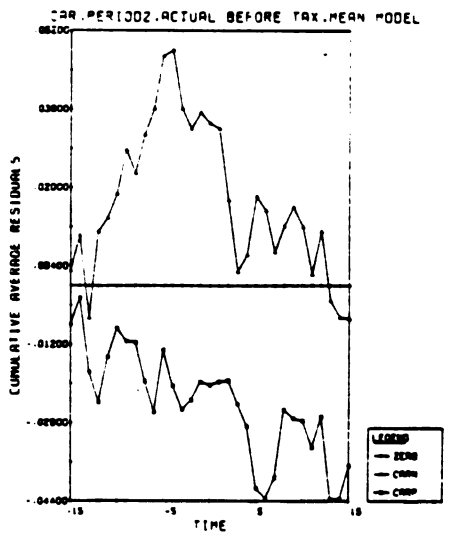
**Positive/Negative NPV Firms**
**Period 2 - Before-Tax Discount Rate**
**Mean Returns Model**
**Actual Exchange**

| | Positive NPV Firms (19) | | | | Negative NPV Firms (17) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | -.00789 | -.89076 | -.00789 | -.20.64 | .00300 | .41797 | .00300 | .10171 |
| -14 | -.00541 | -.61129 | -.00247 | -.01714 | .00715 | .06287 | .01015 | .11701 |
| -13 | -.01510 | -1.65037 | -.01757 | -.44306 | -.01679 | -1.34625 | -.00663 | -.21060 |
| -12 | -.00624 | -.54917 | -.02381 | -.56949 | .01758 | 1.81604 | .01095 | .23133 |
| -11 | .00929 | 1.24391 | -.01451 | -.28315 | .00281 | -.16449 | .01376 | .19130 |
| -10 | .00581 | .70733 | -.00870 | -.12033 | .00489 | .49532 | .01866 | .31184 |
| -9 | -.00260 | -.19067 | -.01130 | -.16422 | .00898 | .46507 | .02764 | .42502 |
| -8 | -.00027 | -.14163 | -.01157 | -.19683 | -.00475 | -.09633 | .02289 | .40158 |
| -7 | -.00788 | -1.21657 | -.01946 | -.47687 | .00787 | .67617 | .03077 | .56613 |
| -6 | -.00632 | -.76046 | -.02579 | -.65193 | .00529 | -.01135 | .03606 | .56336 |
| -5 | .01269 | 1.53688 | -.01309 | -.29815 | .01073 | .81406 | .04680 | .76147 |
| -4 | -.00730 | -.72257 | -.02039 | -.46446 | .00115 | .61522 | .04795 | .91119 |
| -3 | -.00484 | -.68207 | -.02524 | -.62149 | -.01193 | -1.41363 | .03602 | .56717 |
| -2 | .00197 | .29297 | -.02327 | -.55336 | -.00408 | -.83756 | .03193 | .36335 |
| -1 | .00374 | .21446 | -.01952 | -.50399 | .00328 | .65399 | .03522 | .52250 |
| 0 | -.00071 | -.15119 | -.02024 | -.53879 | -.00217 | -.14534 | .03305 | .48713 |
| 1 | .00072 | .24532 | -.01951 | -.48232 | -.00107 | .15035 | .03197 | .52567 |
| 2 | .00026 | .[illegible] | -.01925 | -.34963 | -.01461 | -1.47653 | .01735 | .16635 |
| 3 | -.00483 | -.65329 | -.02409 | -.49901 | -.01455 | -1.28144 | .00279 | -.14549 |
| 4 | -.00455 | -.02166 | -.02864 | -.49402 | .00344 | .16861 | .00623 | -.10445 |
| 5 | -.01274 | -1.55076 | -.04138 | -.95284 | .01189 | .59060 | .01813 | .03926 |
| 6 | -.00196 | -1.18605 | -.04335 | -1.12031 | -.00288 | -.55118 | .01524 | -.09486 |
| 7 | .00421 | -.31948 | -.03913 | -1.19966 | -.00847 | -.78030 | .00677 | -.28475 |
| 8 | .01886 | 2.19770 | -.02524 | -.63397 | .00535 | .47781 | .01213 | -.16847 |
| 9 | -.00176 | -.54120 | -.02702 | -.81855 | .00382 | .24516 | .01595 | -.10881 |
| 10 | -.00052 | -.47673 | -.02755 | -.92629 | -.00398 | -.67125 | .01197 | -.27216 |
| 11 | -.00545 | -.52010 | -.03301 | -1.04804 | -.00973 | -.87129 | .00224 | -.48419 |
| 12 | .00637 | .87213 | -.02663 | -.84725 | .00876 | 1.14596 | .01100 | -.20532 |
| 13 | -.01692 | -2.11684 | -.04356 | -1.33959 | -.01410 | -1.60155 | -.00309 | -.59506 |
| 14 | .00000 | .[illegible]317 | -.04356 | -1.20996 | -.00342 | -.59701 | -.00651 | -.74035 |
| 15 | .00687 | 1.04754 | -.03668 | -.96882 | -.00023 | .09527 | -.00674 | -.71716 |

Graph #A-7




Graph #A-8




Graph #A-9

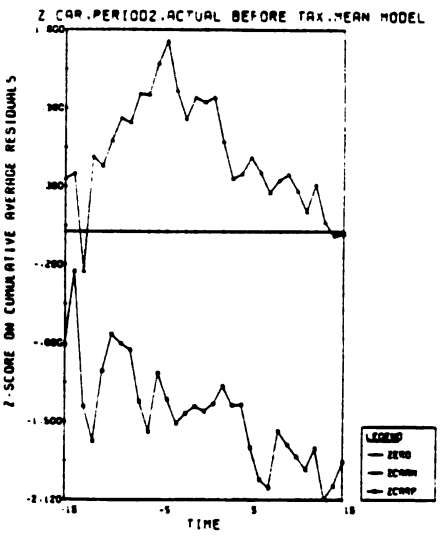
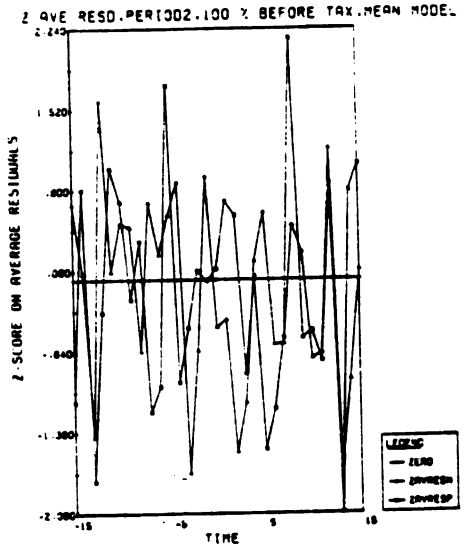


TABLE #A-10

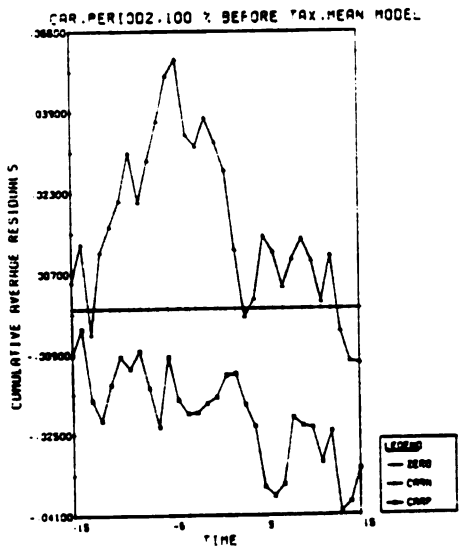
**Positive/Negative NPV Firms**
**Period 2 - Before-Tax Discount Rate**
**Mean Returns Model**
**100% Exchange**

| | Positive NPV Firms (20) | | | | Negative NPV Firms (16) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | -.00921 | -1.08546 | -.00921 | -.24353 | .00533 | .67373 | .00533 | .16900 |
| -14 | .00122 | .06494 | -.00798 | -.21293 | .00750 | .05438 | .01284 | .18264 |
| -13 | -.01427 | -1.79420 | -.02226 | -.46546 | -.01793 | -1.39611 | -.00509 | -.16806 |
| -12 | -.00400 | -.29097 | -.02626 | -.53976 | .01626 | 1.59680 | .01118 | .23298 |
| -11 | .00712 | .99516 | -.01914 | -.30749 | .00512 | .07333 | .01631 | .25138 |
| -10 | .00559 | .69874 | -.01354 | -.15071 | .00511 | .50014 | .02142 | .37665 |
| -9 | -.00240 | -.17652 | -.01194 | -.19032 | .00945 | .46896 | .03087 | .49447 |
| -8 | .00351 | .34121 | -.00842 | -.11376 | -.00977 | -.63513 | .02110 | .33515 |
| -7 | -.00741 | -1.17644 | -.01584 | -.37771 | .00627 | .66656 | .02938 | .50737 |
| -6 | -.00766 | -.95067 | -.02350 | -.59101 | .00758 | .22245 | .03707 | .56317 |
| -5 | .01392 | 1.73366 | -.00958 | -.26199 | .00708 | .57536 | .04615 | .70750 |
| -4 | -.00858 | -.91372 | -.01817 | -.40700 | .00328 | .06831 | .04944 | .92531 |
| -3 | -.00274 | -.42889 | -.02091 | -.50323 | -.01500 | -1.72089 | .03444 | .49364 |
| -2 | .00022 | .07903 | -.02069 | -.48549 | -.00227 | -.62917 | .03216 | .33581 |
| -1 | .00184 | -.00622 | -.01885 | -.48734 | .00563 | .91702 | .03780 | .56584 |
| 0 | .00124 | .09693 | -.01760 | -.46559 | -.00471 | -.42294 | .03308 | .45975 |
| 1 | .00433 | .70159 | -.01327 | -.30816 | -.00565 | -.35364 | .02738 | .37099 |
| 2 | .00032 | .57539 | -.01294 | -.17908 | -.01562 | -1.53240 | .01176 | -.01339 |
| 3 | -.00618 | -.83869 | -.01913 | -.36730 | -.01347 | -1.05487 | -.00171 | -.28604 |
| 4 | -.00425 | -.03045 | -.02338 | -.36046 | .00356 | .16338 | .00184 | -.24705 |
| 5 | -.01209 | -1.50997 | -.03542 | -.69924 | .01254 | .59835 | .01439 | -.09696 |
| 6 | -.00179 | -1.14865 | -.03721 | -.95696 | -.00315 | -.57857 | .01123 | -.24209 |
| 7 | .00235 | -.52063 | -.03486 | -1.07301 | -.00693 | -.57015 | .00430 | -.38511 |
| 8 | .01326 | 2.15137 | -.02159 | -.59113 | .00560 | .46209 | .00990 | -.26418 |
| 9 | -.00161 | -.51817 | -.02320 | -.70735 | .00396 | .24228 | .01387 | -.20340 |
| 10 | -.00042 | -.42534 | -.02362 | -.80955 | -.00432 | -.76233 | .00954 | -.37956 |
| 11 | -.00689 | -.72419 | -.03053 | -.97203 | -.00820 | -.65521 | .00134 | -.54394 |
| 12 | .00612 | .85937 | -.02440 | -.77922 | .00921 | 1.17081 | .01056 | -.25025 |
| 13 | -.01600 | -2.07535 | -.04041 | -1.24485 | -.01507 | -1.66126 | -.00450 | -.66696 |
| 14 | .00192 | .79320 | -.03848 | -1.06668 | -.00604 | -.88651 | -.01055 | -.88964 |
| 15 | .00660 | 1.03034 | -.03188 | -.93571 | -.00033 | .05776 | -.01088 | -.86782 |

Graph #A-10




Graph #A-11




Graph #A-12

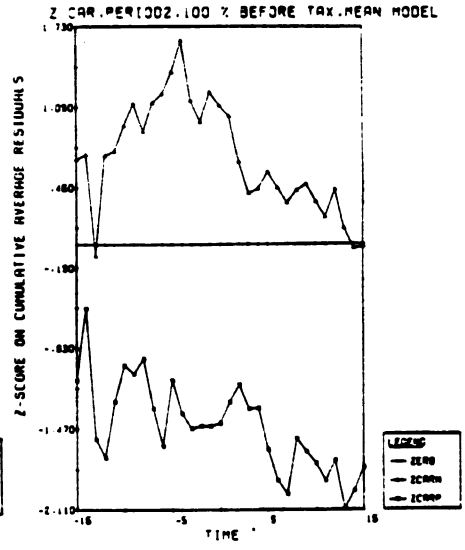


Table #A-11

Period 3 - Mean Return Model
Day T-1

| Firm | Residuals | Standard Residual | Cumulative Standard Residual |
|---|---|---|---|
| Allegheny Airlines Inc. | -.00072 | -.02150 | .29878 |
| Allegheny Ludlum Industries, Inc. | -.02996 | -1.64016 | -3.51163 |
| American Medicorp. | -.02501 | -.59041 | -1.87945 |
| Athlone Industries, Inc. | .00662 | .44062 | .96244 |
| Bay Colony Property | -.04326 | -.83549 | -.53371 |
| Chase Manhattan Mortgage & Realty Co. | -.00032 | -.00765 | -1.1143 |
| Chelsea Industries, Inc. | .00093 | .02507 | 1.29908 |
| Columbia Pictures Industries, Inc. | .02511 | .40984 | -1.55198 |
| Condec Corporation | .01009 | .37782 | -2.79251 |
| Cooper Labs, Incorporated | -.01736 | -.51045 | -1.65920 |
| Dillingham Corporation | -.02085 | -.67499 | -3.17991 |
| Fairchild Industries, Inc. | .00474 | .21655 | 1.56756 |
| Fedders Corporation | .10701 | 2.53293 | -1.55047 |
| Fibreboard Corporation | -.01486 | -.62319 | .63016 |
| General Instruments | -.03257 | -.85425 | 2.99024 |
| Grumman Corporation | .01119 | .34794 | -1.25579 |
| Gulf & Western Industries, Inc. | .03851 | 2.06037 | 1.17327 |
| Insilco Corporation | .00074 | .03038 | .06714 |
| Institutional Investors | -.00185 | -.03031 | .41559 |
| LTV Corporation | .01342 | .57639 | 1.03484 |
| McCulloch Oil Corporation | .05772 | 1.26149 | -1.39481 |
| MGM | .03009 | .82706 | -.10125 |
| Mohawk Data Sciences Corporation | -.00730 | -.09419 | -1.09069 |
| National Industries | -.03316 | -.88918 | .87837 |
| Pan Am | -.02435 | -.61562 | -.13435 |
| Pioneer Texas Corporation | .01758 | .33983 | .01839 |
| Ramada Inns | .00096 | .02832 | 1.30481 |
| Rapid American Corporation | -.00112 | -.02683 | -1.02390 |
| Roblin Industries Inc. | -.09468 | -1.77775 | .06962 |
| Rusco Industries Inc. | -.00154 | -.02582 | .84529 |
| Sanders Assoc Inc. | -.00013 | -.00222 | 2.33981 |
| Texstar Corporation | -.04791 | -1.11097 | -2.32746 |
| UAL | .01459 | .78246 | 3.59989 |
| United Brands Co. | -.05775 | -2.19922 | -.53225 |
| Western Union Co. | .01079 | .43603 | -5.46022 |
| White Motor Corporation | .08832 | 2.19098 | -1.11949 |
| Wickes Corporation | -.01744 | -.64752 | 1.37522 |
| Zapata Corporation | -.01001 | -.37158 | 1.50528 |
| Mean | -.00115 | -.10755 | -1.59051 |

Table #A-12

Period 3 - Mean Return Model

Day $T_o$

| Firm | Average Residual | Standard Average Residuals | Standard Cumulative Residual |
|---|---|---|---|
| Allegheny Airlines Inc. | -.00072 | -.02150 | .29340 |
| Allegheny Ludlum Industries, Inc. | .02703 | 1.47955 | -3.14174 |
| American Medicorp. | .03297 | .77818 | -1.68491 |
| Athlone Industries, Inc. | -.02351 | -1.56473 | .57126 |
| Bay Colony Property | .04189 | .80903 | -.33145 |
| Chase Manhattan Mortgage & Realty Co. | -.00032 | -.00765 | -1.11625 |
| Chelsea Industries,Inc. | .01732 | .46654 | 1.41571 |
| Columbia Pictures Industries, Inc. | -.01923 | -.31396 | -1.63047 |
| Condec Corporation | .00994 | .37204 | -2.69950 |
| Cooper Labs, Incorporated | .01317 | .38737 | -1.56236 |
| Dillingham Corporation | -.08653 | -2.80090 | -3.88014 |
| Fairchild Industries, Inc. | -.00225 | -.10272 | 1.54188 |
| Fedders Corporation | -.02449 | -.57979 | -1.69542 |
| Fibreboard Corporation | -.04737 | -1.98649 | .13354 |
| General Instruments | .01805 | .47346 | 3.10861 |
| Grumman Corporation | -.03715 | -1.15512 | -1.54457 |
| Gulf & Western Industries, Inc. | -.02649 | -1.41745 | .81891 |
| Insilco Corporation | .00074 | .03038 | .07473 |
| Institutional Investors | .07507 | 1.22917 | .72289 |
| LTV Corporation | .00092 | .03952 | 1.04472 |
| McCulloch Oil Corporation | -.07325 | -1.60104 | -1.79507 |
| MGM | .08640 | 2.37415 | .49229 |
| Mohawk Data Sciences Corporation | -.00730 | -.09419 | -1.11424 |
| National Industries | .03035 | .81387 | 1.08184 |
| Pan Am | -.00109 | -.02767 | -.14127 |
| Pioneer Texas Corporation | -.04671 | -.90309 | -.20738 |
| Ramada Inns | .00096 | .02832 | 1.31189 |
| Rapid American Corporation | -.00112 | -.02682 | -1.03061 |
| Roblin Industries Inc. | .14495 | 2.72159 | .75002 |
| Rusco Industries Inc. | -.00154 | -.02582 | .83884 |
| Sanders Assoc Inc. | -.02286 | -.38146 | 2.24444 |
| Texstar Corporation | -.00029 | -.00686 | -2.32918 |
| UAL | -.09189 | -1.91487 | 3.34618 |
| United Brands Co. | .00022 | .00835 | -.53017 |
| Western Union Co. | -.01980 | -.79990 | -5.66020 |
| White Motor Corporation | .00137 | .03393 | -1.1110 |
| Wickes Corporation | -.04609 | -1.71145 | .94735 |
| Zapata Corporation | .03707 | 1.37546 | 1.84915 |
| Mean | .00082 | -.50484 | -1.71672 |

Table #A-13

Period 3 - Mean Return Model
Day T + 1

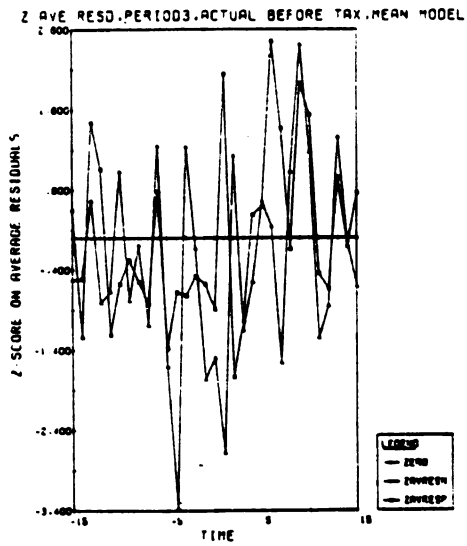
| Firm | Average Residual | Standard Average Residuals | Standard Cumulative Residuals |
|---|---|---|---|
| Allegheny Airlines Inc. | -.00072 | -.02150 | .28819 |
| Allegheny Ludlum Industries, Inc. | .00374 | .20500 | -3.09202 |
| American Medicorp. | .00356 | .08397 | -1.66454 |
| Athlone Industries, Inc. | .02981 | 1.98419 | 1.05249 |
| Bay Colony Property | .00159 | -.03072 | -.33890 |
| Chase Manhattan Mortgage & Realty Co. | -.00032 | -.00765 | -1.11811 |
| Chelsea Industries, Inc. | -.01519 | -.40928 | 1.31645 |
| Columbia Pictures Industries, Inc. | -.04886 | -.79752 | -1.82390 |
| Condec Corporation | -.02679 | -1.00335 | -2.94285 |
| Cooper Labs, Incorporated | .01294 | .38052 | -1.47007 |
| Dillingham Corporation | .09566 | 3.09632 | -3.12917 |
| Fairchild Industries, Inc. | -.03003 | -1.37096 | 1.20937 |
| Fedders Corporation | -.05302 | -1.25506 | -1.99981 |
| Fibreboard Corporation | .00101 | .04236 | .14381 |
| General Instruments | .01763 | .46254 | 3.22079 |
| Grumman Corporation | -.01350 | -.41992 | -1.64641 |
| Gulf & Western Industries, Inc. | .01947 | 1.04154 | 1.07152 |
| Insilco Corporation | .04762 | 1.93876 | .54495 |
| Institutional Investors | -.07328 | -1.19984 | .43188 |
| LTV Corporation | .01326 | .56976 | 1.18298 |
| McCulloch Oil Corporation | -.02411 | -.52696 | -1.92288 |
| MGM | .01823 | .50095 | .61379 |
| Mohawk Data Sciences Corporation | -.03003 | -.38725 | -1.20816 |
| National Industries | -.06441 | -1.72720 | .66293 |
| Pan Am | .02271 | .57427 | -.00199 |
| Pioneer Texas Corporation | -.02638 | -.51004 | -.33108 |
| Ramada Inns | .07239 | 2.12408 | 1.82705 |
| Rapid American Corporation | -.00112 | -.02683 | -1.03711 |
| Roblin Industries Inc. | -.06041 | -1.13422 | .47493 |
| Rusco Industries Inc. | .06512 | 1.08924 | 1.10302 |
| Sanders Assoc Inc. | -.00013 | -.00222 | 2.24391 |
| Texstar Corporation | .09970 | 2.31176 | -1.76849 |
| UAL | .00107 | .05773 | 3.36018 |
| United Brands Co. | -.01516 | -.5775 | -.67023 |
| Western Union Co. | .04216 | 1.70336 | -5.24707 |
| White Motor Corporation | .10137 | 2.51450 | -.50114 |
| Wickes Corporation | .01098 | .40780 | 1.04626 |
| Zapata Corporation | -.00067 | -.02479 | 1.84314 |
| Mean | .00507 | 1.56112 | -1.33809 |

TABLE #A-14

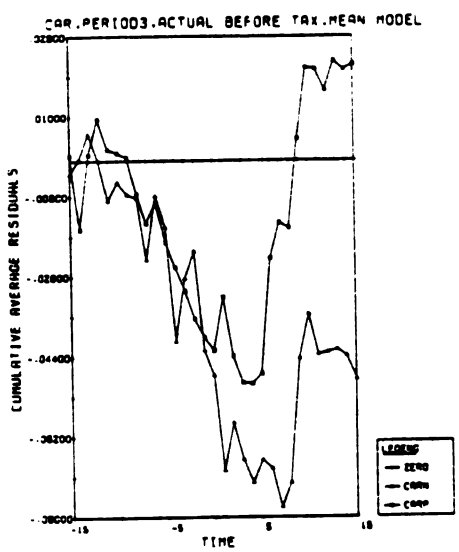
**Positive/Negative NPV Firms**
**Period 3 - Before Tax Discount Rate**
**Mean Returns Model**
**Actual Exchange**

| | Positive NPV Firms (21) | | | | Negative NPV Firms (17) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | .00120 | .34485 | .00120 | .07550 | -.00301 | -.52564 | -.00301 | -.12796 |
| -14 | -.01660 | -1.24220 | -.01540 | -.19647 | .00330 | -.51035 | .00029 | -.25362 |
| -13 | .01678 | 1.43881 | .00137 | .11855 | .00574 | .46602 | .00604 | -.14021 |
| -12 | .00802 | .85794 | .00940 | .30640 | -.00589 | -.80897 | .00014 | -.33706 |
| -11 | -.00680 | -1.20846 | .00260 | .04180 | -.00907 | -.67449 | -.00892 | -.50122 |
| -10 | -.00084 | -.57607 | .00176 | -.08432 | .00410 | .82940 | -.00482 | -.29938 |
| -9 | -.00097 | -.27879 | .00078 | -.14536 | -.00265 | -.78759 | -.00747 | -.49104 |
| -8 | -.00815 | -.55130 | -.00736 | -.26608 | -.00088 | -.09101 | -.00836 | -.51319 |
| -7 | -.00663 | -.82558 | -.01399 | -.44684 | -.01388 | -1.09493 | -.02224 | -.77965 |
| -6 | .00481 | .57717 | -.00917 | -.32047 | .01438 | 1.14577 | -.00786 | -.50082 |
| -5 | -.00917 | -1.38064 | -.01835 | -.62277 | -.00708 | -1.60777 | -.01494 | -.89208 |
| -4 | -.00557 | -.67903 | -.02392 | -.77144 | -.02562 | -3.37036 | -.04056 | -1.71227 |
| -3 | -.00524 | -.72032 | -.02917 | -.92916 | .01418 | 1.13426 | -.02638 | -1.43624 |
| -2 | -.00627 | -.47982 | -.03544 | -1.03422 | .00613 | -.13364 | -.02024 | -1.46877 |
| -1 | -.00417 | -.57542 | -.03961 | -1.16021 | -.02235 | -1.76895 | -.04260 | -1.89925 |
| 0 | -.00291 | -.89127 | -.04253 | -1.35536 | -.00553 | -1.49876 | -.04814 | -2.26398 |
| 1 | .01194 | 2.04310 | -.03058 | -.90801 | -.02140 | -2.67770 | -.06954 | -2.91561 |
| 2 | -.01319 | -1.73513 | -.04378 | -1.28793 | .01076 | 1.01679 | -.05878 | -2.66768 |
| 3 | -.00597 | -1.04689 | -.04976 | -1.51715 | -.00832 | -1.15450 | -.06709 | -2.94864 |
| 4 | -.00025 | .28819 | -.05001 | -1.45405 | -.00512 | -.54725 | -.07221 | -3.08181 |
| 5 | .00234 | .39638 | -.04767 | -1.36726 | .00509 | .45174 | -.06711 | -2.97186 |
| 6 | .02573 | 2.45171 | -.02193 | -.83044 | -.00197 | .14161 | -.06909 | -2.93742 |
| 7 | .00799 | 1.36608 | -.01394 | -.53116 | -.00664 | -1.55480 | -.07774 | -3.31578 |
| 8 | -.00118 | -.13817 | -.01513 | -.56141 | .00552 | .82284 | -.07222 | -3.11554 |
| 9 | .01999 | 1.92154 | .00485 | -.14068 | .02786 | 2.46740 | -.04433 | -2.52969 |
| 10 | .01601 | 1.53454 | .02087 | .19530 | .00986 | 1.06309 | -.03447 | -2.27098 |
| 11 | -.00037 | -.44700 | .02049 | .09743 | -.00899 | -1.24739 | -.04346 | -2.57454 |
| 12 | -.00467 | -.63569 | .01582 | -.04175 | .00055 | -.85044 | -.04290 | -2.76149 |
| 13 | .00655 | .75197 | .02238 | .12289 | .00651 | 1.25460 | -.03638 | -2.47618 |
| 14 | -.00191 | -.11132 | .02046 | .09851 | -.00147 | -.04127 | -.03804 | -2.48622 |
| 15 | .00117 | .56541 | .02163 | .22231 | -.00520 | -.60818 | -.04904 | -2.63423 |

Graph #A-13




Graph #A-14




Graph #A-15

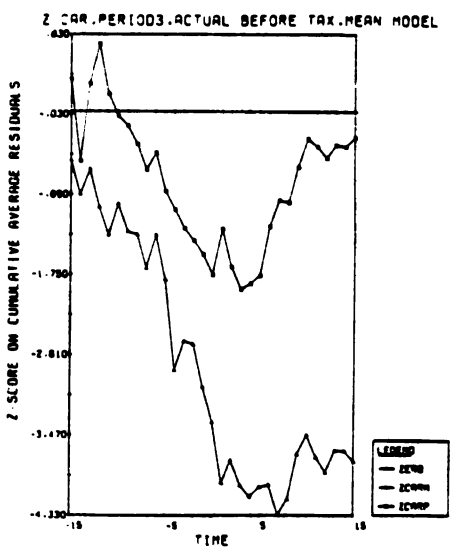


TABLE A-15

Period 1
Pearson Product Moment Correlations
Mean Model Returns

| | After-tax Discount Rate | | Before-tax Discount Rate | |
|---|---|---|---|---|
| | Pearson's | Probability | Pearson's | Probability |
| 100% Exchange | | | | |
| t - 1 | -.0171 | .458 | .1167 | .237 |
| t 0 | .0035 | .491 | -.0151 | .463 |
| t + 1 | -.3127 | .025 | -.1716 | .145 |
| Average | -.1503 | .177 | -.0416 | .399 |
| Actual Exchange | | | | |
| t - 1 | -.0394 | .405 | .2299 | .077 |
| t 0 | -.9875 | .296 | -.0732 | .327 |
| t + 1 | -.3382 | .016 | -.1188 | .233 |
| Average | -.2193 | .087 | -.0031 | .492 |

TABLE A-16

Period 2
Pearson Product Moment Correlations
Mean Model Residuals

| | After-tax Discount Rate | | Before-tax Discount Rate | |
|---|---|---|---|---|
| | Pearson's | Probability | Pearson's | Probability |
| 100% Exchange | | | | |
| t - 1 | -.0780 | .326 | -.0466 | .394 |
| t 0 | -.0605 | .363 | -.1918 | .131 |
| t + 1 | .2317 | .087 | -.2758 | .052 |
| Average | .1628 | .168 | .3692 | .012 |
| Actual Exchange | | | | |
| t - 1 | -.0400 | .408 | -.0127 | .471 |
| t 0 | .1522 | .188 | -.0761 | .330 |
| t + 1 | .0963 | .288 | .2071 | .113 |
| Average | .1740 | .151 | .5036 | .001 |

TABLE A-17

Period 3
Pearson Product Moment Correlations
Actual Exchange Results
Mean Model Residuals

| | Pearson's | Probability |
|---|---|---|
| Before-tax Discount Rate | | |
| t - 1 | -.1281 | .222 |
| t 0 | .1167 | .243 |
| t + 1 | -.0284 | .433 |
| Average | .0593 | .360 |
| After-tax Discount Rate | | |
| t - 1 | -.1415 | .198 |
| t 0 | .0343 | .419 |
| t + 1 | .0477 | .388 |
| Average | .3283 | .021 |

TABLE A-18

Pearson Product Moment Correlations
Aggregated Correlations
Actual Exchange Results
Mean Model Residuals

| | Pearson's | Probability |
|---|---|---|
| After-tax Discount Rate | | |
| t - 1 | -.1531 | .190 |
| t 0 | .0242 | .445 |
| t + 1 | -.1238 | .239 |
| Average | -.1396 | .212 |
| Before-tax Discount Rate | | |
| t - 1 | .0364 | .418 |
| t 0 | .0577 | .371 |
| t + 1 | .1083 | .268 |
| Average | .1210 | .244 |

TABLE A-19

Pearson Product Moment Correlations
Aggregated 16-Day CAR's
Actual Exchange Results
Mean Model Residuals

| | After-tax Discount Rate | | Before-tax Discount Rate | |
|---|---|---|---|---|
| | Pearson's | Probability | Pearson's | Probability |
| Period 1 | -.1565 | .167 | -.2255 | .081 |
| Period 2 | .0558 | .373 | -.0543 | .376 |
| Period 3 | -.0401 | .406 | .0080 | .481 |
| Average | -.0597 | .367 | -.0865 | .311 |

# APPENDIX B

Table #B-1
Statistics on Residuals
Period 1
Market Model

| Firm | Studentized t | Kurtosis | Skewness |
|---|---|---|---|
| Allegheny Airlines Inc. | 3.728 | 2.093 | -.063 |
| Allegheny Ludlum Industries, Inc. | 5.013 | 6.069 | 1.424 |
| American Medicorp. | 3.669 | 1.894 | .106 |
| Athlone Industries, Inc. | 4.015 | 2.393 | .023 |
| Bay Colony Property | 4.146 | 2.544 | .212 |
| Chase Manhattan Mortgage & Realty Co. | 3.672 | 2.658 | .031 |
| Chelsea Industries, Inc. | 4.756 | 4.189 | 1.032 |
| Columbia Pictures Industries, Inc. | 4.558 | 4.044 | 1.017 |
| Condec Corporation | 3.896 | 2.116 | .061 |
| Cooper Labs, Incorporated | 4.965 | 5.472 | 1.053 |
| Dillingham Corporation | 5.207 | 4.203 | .600 |
| Fairchild Industries, Inc. | 4.504 | 3.028 | .439 |
| Fedders Corporation | 5.945 | 5.692 | .573 |
| Fibreboard Corporation | 4.000 | 2.500 | .337 |
| General Host Corporation | 4.810 | 3.474 | .281 |
| General Instruments | 4.525 | 2.721 | -.191 |
| Grumman Corporation | 4.485 | 2.955 | -.196 |
| Gulf & Western Industries, Inc. | 5.518 | 9.765 | 2.17 |
| Insilco Corporation | 3.845 | 2.358 | -.252 |
| Institutional Investors | 4.047 | 2.931 | .589 |
| LTV Corporation | 4.766 | 3.042 | .206 |
| McCulloch Oil Corporation | 3.674 | 2.424 | .747 |
| MGM | 4.586 | 3.622 | -.349 |
| Mohawk Data Sciences Corporation | 3.862 | 2.066 | .206 |
| National Industries | 3.810 | 2.029 | .263 |
| Pan Am | 5.071 | 3.564 | .298 |
| Pioneer Texas Corporation | 4.097 | 2.571 | -.354 |
| Pittston Company | 5.018 | 4.985 | .978 |
| Ramada Inns | 3.943 | 2.169 | .295 |
| Rapid American Corporation | 4.292 | 3.771 | -.970 |
| Roblin Industries Inc. | 4.511 | 2.954 | .204 |
| Rusco Industries Inc. | 4.597 | 3.575 | .656 |
| Sanders Assoc Inc. | 4.132 | 2.298 | .435 |
| Texstar Corporation | 4.255 | 2.653 | -.225 |
| UAL | 3.540 | 2.048 | .288 |
| United Brands Co. | 4.225 | 2.764 | .675 |
| Western Union Co. | 4.161 | 2.376 | .109 |
| White Motor Corporation | 5.254 | 7.784 | 1.804 |
| Wickes Corporation | 4.585 | 3.123 | .531 |
| Zapata Corporation | 4.675 | 4.456 | -.960 |
| Mean | 4.408 | 3.434 | .352 |

Table #B-2
Statistics on Residuals
Period 2
Market Model

| Firm | Studentized t | Kurtosis | Skewness |
|---|---|---|---|
| Allegheny Airlines Inc. | 3.875 | 2.359 | .249 |
| Allegheny Ludlum | 4.411 | 3.559 | -.835 |
| American Medicorp | 4.495 | 2.807 | .306 |
| Athlone Industries,Inc. | 4.626 | 4.340 | 1.050 |
| Bay Colony Property | 4.133 | 2.552 | .472 |
| Chase Manhattan Mortgage & Realty Co. | 2.915 | 1.82 | .026 |
| Chelsea Industries, Inc. | 4.695 | 3.304 | -.471 |
| Columbia Pictures Industries, Inc. | 4.345 | 2.934 | .323 |
| Condec Corporation | 6.015 | 10.022 | 2.017 |
| Continental Investment Trust | 5.97 | 7.689 | 1.128 |
| Cooper Labs, Incorporated | 3.578 | 2.245 | .357 |
| Dillingham Corporation | 4.681 | 4.615 | 1.275 |
| Fairchild Industries, Inc. | 5.106 | 3.705 | -.039 |
| Fedders Corporation | 4.701 | 3.537 | .551 |
| Fibreboard Corporation | 4.618 | 2.955 | .041 |
| General Host Corporation | 4.660 | 3.542 | -.412 |
| General Instruments | 4.246 | 2.941 | .375 |
| Gulf & Western Industries, Inc. | 5.284 | 6.244 | 1.485 |
| Insilco Corporation | 4.996 | 4.326 | .901 |
| Institutional Investors | 4.436 | 3.138 | .404 |
| LTV Corporation | 5.556 | 7.018 | 1.398 |
| McCulloch Oil Corporation | 3.311 | 1.877 | -.134 |
| MGM | 4.957 | 3.480 | -.430 |
| Mohawk Data Sciences Corporation | 4.103 | 3.288 | .746 |
| National Industries | 5.258 | 4.849 | .703 |
| Pan Am | 5.080 | 4.041 | -.428 |
| Pioneer Texas Corporation | 4.253 | 3.276 | .815 |
| Ramada Inns | 3.799 | 2.445 | .451 |
| Roblin Industries Inc. | 3.997 | 2.670 | -.149 |
| Rusco Industries Inc. | 4.118 | 2.560 | .291 |
| Sanders Assoc Inc. | 4.173 | 2.525 | .277 |
| Texstar Corporation | 4.602 | 3.230 | -.089 |
| UAL | 4.155 | 2.595 | .536 |
| United Brands Co. | 4.282 | 3.166 | .124 |
| Western Union Co. | 4.643 | 3.602 | -.671 |
| Wickes Corporation | 4.031 | 2.180 | -.046 |
| Zapata Corporation | 4.469 | 3.868 | 1.105 |
| Mean | 4.501 | 3.656 | .370 |

Table #B-3
Statistics on Residuals
Period 3
Market Model

| Firm | Studentized t | Kurtosis | Skewness |
|---|---|---|---|
| Allegheny Airlines Inc. | 4.152 | 3.011 | .631 |
| Allegheny Ludlum Industries, Inc. | 4.714 | 3.280 | -.211 |
| American Medicorp. | 4.104 | 2.510 | .265 |
| Athlone Industries, Inc. | 4.109 | 3.219 | .799 |
| Bay Colony Property | 4.081 | 2.376 | .310 |
| Chase Manhattan Mortgage & Realty Co. | 3.164 | 2.239 | .035 |
| Chelsea Industries, Inc. | 4.409 | 3.187 | .349 |
| Columbia Pictures Industries, Inc. | 3.828 | 2.283 | .111 |
| Condec Corporation | 3.953 | 2.261 | -.151 |
| Cooper Labs, Incorporated | 4.687 | 4.643 | 1.091 |
| Dillingham Corporation | 4.434 | 3.333 | .989 |
| Fairchild Industries, Inc. | 4.252 | 2.548 | -.088 |
| Fedders Corporation | 4.535 | 3.730 | .617 |
| Fibreboard Corporation | 4.603 | 3.037 | -.148 |
| General Instruments | 4.049 | 2.681 | .663 |
| Grumman Corporation | 4.156 | 2.449 | .016 |
| Gulf & Western Industries, Inc. | 5.768 | 6.637 | -1.076 |
| Insilco Corporation | 4.661 | 3.938 | .533 |
| Institutional Investors | 4.117 | 3.004 | .476 |
| LTV Corporation | 5.762 | 8.636 | 1.709 |
| McCulloch Oil Corporation | 4.318 | 4.046 | 1.104 |
| MGM | 4.935 | 4.446 | .768 |
| Mohawk Data Sciences Corporation | 3.593 | 1.886 | .159 |
| National Industries | 4.899 | 5.239 | 1.211 |
| Pan Am | 3.641 | 1.952 | .193 |
| Pioneer Texas Corporation | 4.125 | 3.462 | .971 |
| Ramada Inns | 3.898 | 2.849 | .610 |
| Rapid American Corporation | 4.071 | 2.647 | .043 |
| Roblin Industries Inc. | 4.703 | 3.259 | .204 |
| Rusco Industries Inc. | 3.990 | 2.387 | .413 |
| Sanders Assoc Inc. | 4.632 | 3.870 | .924 |
| Texstar Corporation | 3.998 | 2.211 | -.096 |
| UAL | 4.810 | 3.476 | .333 |
| United Brands Co. | 4.887 | 4.502 | .808 |
| Western Union Co. | 5.082 | 4.150 | -.622 |
| White Motor Corporation | 3.573 | 2.042 | .385 |
| Wickes Corporation | 3.936 | 2.157 | -.244 |
| Zapata Corporation | 4.964 | 6.012 | 1.509 |
| Mean | 4.156 | 3.410 | .448 |

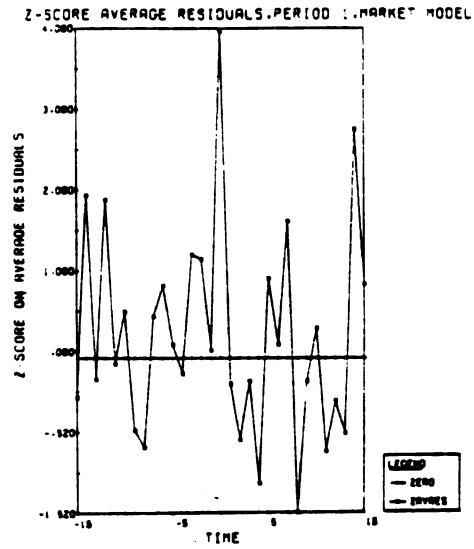
TABLE B-4

Period 1 - Market Model

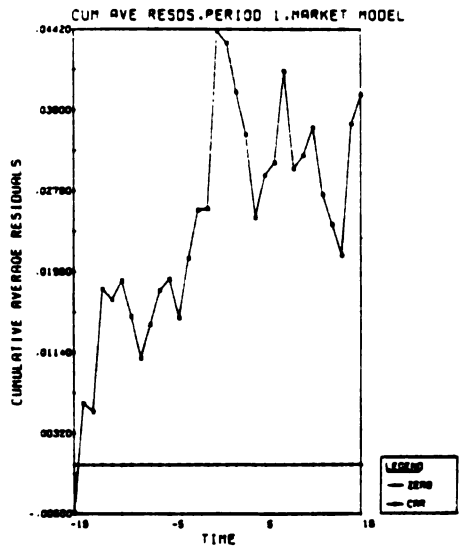
Residuals

| Day | Average Residuals | Standard Average Residuals | Standard Cumulative Residuals |
|---|---|---|---|
| -15 | -.00496 | -.47940 | -.47940 |
| -14 | .01103 | 1.97602 | .91786 |
| -13 | -.00085 | -.27599 | .75851 |
| -12 | .01278 | 1.99440 | 1.75571 |
| -11 | -.00051 | .02947 | 1.76889 |
| -10 | .00197 | .57801 | 2.00487 |
| - 9 | -.00309 | -.79846 | 1.70307 |
| - 8 | -.00498 | -1.23281 | 1.26721 |
| - 7 | .00337 | .49491 | 1.43218 |
| - 6 | .00429 | 1.03429 | 1.75925 |
| - 5 | .00210 | .32114 | 1.85608 |
| - 4 | -.00399 | -.18362 | 1.80307 |
| - 3 | .00569 | 1.20330 | 2.13681 |
| - 2 | .00457 | 1.15508 | 2.44552 |
| - 1 | -.00121 | -.13528 | 2.41059 |
| 0 | .01904 | 4.19079 | 3.45829 |
| 1 | -.00109 | -.29553 | 3.38661 |
| 2 | -.00449 | -.92963 | 3.16749 |
| 3 | -.00458 | -.31688 | 3.09479 |
| 4 | -.00788 | -1.44853 | 2.77089 |
| 5 | .00593 | 1.25404 | 3.04454 |
| 6 | .00039 | .01206 | 3.04712 |
| 7 | .00844 | 1.52320 | 3.36473 |
| 8 | -.00972 | -1.86668 | 2.98369 |
| 9 | .00144 | -.27443 | 2.92880 |
| 10 | .00338 | .45497 | 3.01803 |
| 11 | -.00795 | -1.33501 | 2.76111 |
| 12 | -.00281 | -.49018 | 2.66847 |
| 13 | -.00116 | -.60106 | 2.55686 |
| 14 | .01432 | 2.97334 | 3.09971 |
| 15 | .00175 | .70114 | 3.22564 |

Graph #B-1




Graph #B-2




Graph #B-3

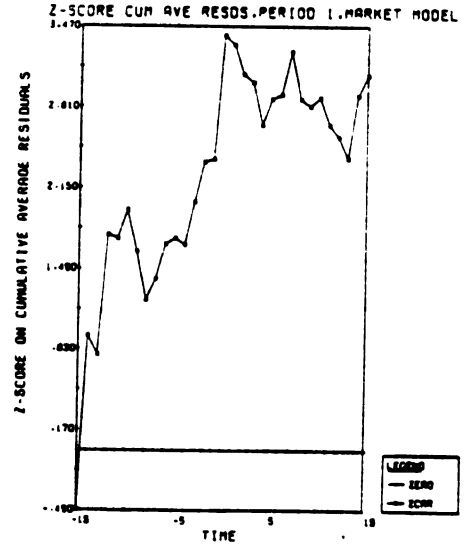


TABLE B-5

Period 1 - Market Model
Day T-1

| Firm | Firm Residual | Standard Residual-T | Cumulative Standard Residual |
|---|---|---|---|
| Allegheny Airlines (U.S. Air) | .01184 | .34609 | .39089 |
| Allegheny Ludlum | -.01391 | -.82488 | 2.69634 |
| American Medicorp | .02942 | .77052 | .83999 |
| Athlone Industries, Inc. | .00230 | .15888 | 3.83234 |
| Bay Colony Property | .06665 | 1.07398 | -.87380 |
| Chase Manhattan MTG | -.00048 | -.01126 | -.64414 |
| Chelsea Inds. Inc. | .06996 | 2.16971 | 5.25123 |
| Columbia Pictures Inc. | -.04094 | -.68404 | 3.51415 |
| Condec Corporation | .02305 | .87070 | 1.07022 |
| Cooper Labs Inc. | -.00362 | -.10276 | 1.15930 |
| Dillingham Corporation | -.00380 | -.14039 | -1.50196 |
| Fairchild Industries, Inc. | -.01270 | -.55817 | 2.44288 |
| Fedders Corporation | -.02290 | -.70568 | 1.36247 |
| Fibreboard Corporation | -.00200 | -.09287 | .84052 |
| General Host Corporation | -.01116 | -.28122 | -.28210 |
| General Instruments | -.05586 | -1.62477 | -1.37332 |
| Grumman Corporation | .02382 | .84594 | .15330 |
| Gulf & Western Industries, Inc. | -.02120 | -1.28954 | -1.24790 |
| Insilco Corporation | .00018 | .00769 | .78060 |
| Institutional Investors | -.03802 | .61145 | 2.32440 |
| LTV Corporation | .00088 | .04230 | -.95501 |
| McCulloch Oil | .07471 | 2.07899 | 1.58117 |
| M G M | .00080 | .02375 | -1.82638 |
| Mohawk Data Sciences | -.04778 | -.56617 | -.51118 |
| National Industries | -.01661 | -.44447 | -.96418 |
| Pan Am | .01138 | .24636 | 2.08021 |
| Pioneer Texas Corporation | -.02864 | -.52765 | -1.35994 |
| Pittston Co. | -.00274 | -.16027 | .67779 |
| Ramada Inns Incorporated | -.05781 | -1.65570 | -.13009 |
| Rapid American Corporation | .03690 | .88985 | .92700 |
| Roblin Industries, Inc. | -.00226 | -.05606 | 1.22236 |
| Rusco Industries, Inc. | -.01377 | -.21119 | -.51398 |
| Sanders Assoc. Inc. | -.05764 | -1.03918 | -1.28262 |
| Texstar Corporation | .03733 | .90028 | 1.26924 |
| UAL | -.00612 | -.39120 | 1.19343 |
| United Brands Co. | -.00379 | -.14712 | -.49510 |
| Western Union Corporation | .00208 | .09144 | -.49004 |
| White Motor Corporation | .00492 | .11575 | -.67961 |
| Wickes Corporation | -.02642 | -1.07705 | 2.27976 |
| Zapata Corporation | .04501 | 1.81239 | -1.37630 |
| Mean | -.00121 | -.13528 | 2.41059 |

TABLE B-6

Period 1 - Market Model
Day $T_o$

| Firm | Firm Residual | Standard Residual-T | Cumulative Standard Residual |
|---|---|---|---|
| Allegheny Airlines (U.S. Air) | -.01587 | -.46425 | -.50695 |
| Allegheny Ludlum | -.00579 | -.34464 | 2.61018 |
| American Medicorp | -.01322 | -.34506 | .75373 |
| Athlone Industries, Inc. | .00091 | .06284 | 3.84806 |
| Bay Colony Property | .08634 | 1.37874 | -.52911 |
| Chase Manhattan MTG | .06009 | 1.40742 | -.29229 |
| Chelsea Inds. Inc. | .17332 | 5.36378 | 6.59217 |
| Columbia Pictures Inc. | -.06542 | -1.09230 | 3.24107 |
| Condec Corporation | -.00288 | -.10924 | -1.09754 |
| Cooper Labs Inc. | -.00897 | -.25428 | 1.09573 |
| Dillingham Corporation | -.00690 | -.25392 | -1.56545 |
| Fairchild Industries, Inc. | .05768 | 2.52197 | 3.07337 |
| Fedders Corporation | -.01938 | -.60223 | 1.21191 |
| Fibreboard Corporation | -.00799 | -.36864 | .74836 |
| General Host Corporation | .01580 | .53834 | -.14751 |
| General Instruments | .03522 | 1.02373 | -1.11738 |
| Grumman Corporation | .00648 | .23011 | .21083 |
| Gulf & Western Industries, Inc. | .06136 | 3.73140 | -.31505 |
| Insilco Corporation | .01399 | .59004 | .92812 |
| Institutional Investors | .01772 | .28376 | 2.39534 |
| LTV Corporation | .00265 | .12644 | -.92339 |
| McCulloch Oil | .12804 | 3.56986 | -.68870 |
| M G M | .08219 | 2.41582 | -1.22242 |
| Mohawk Data Sciences | .06609 | .78245 | -.31356 |
| National Industries | .04833 | 1.33687 | -.62996 |
| Pan Am | .00734 | .15891 | 2.11993 |
| Pioneer Texas Corporation | -.00612 | -.11278 | -1.38813 |
| Pittston Co. | .05211 | 3.03199 | 1.43579 |
| Ramada Inns Incorporated | .05822 | 1.65934 | .28474 |
| Rapid American Corporation | -.05893 | -1.41540 | .57315 |
| Roblin Industries, Inc. | -.04952 | -1.22394 | .91637 |
| Rusco Industries, Inc. | .00210 | .03234 | -.50589 |
| Sanders Assoc. Inc. | .00763 | .13802 | -1.24811 |
| Texstar Corporation | -.02627 | -.63294 | 1.1110 |
| UAL | .03053 | 1.94774 | 1.68036 |
| United Brands Co. | -.01974 | -.76626 | -.68667 |
| Western Union Corporation | -.01225 | -.53510 | -.62382 |
| White Motor Corporation | -.00475 | -.11106 | -.70738 |
| Wickes Corporation | .02474 | 1.00600 | 2.53127 |
| Zapata Corporation | .04693 | 1.88841 | -.90420 |
| Mean | .01904 | 4.19079 | 3.45829 |

TABLE B-7

Period 1 - Market Model
Day T+1

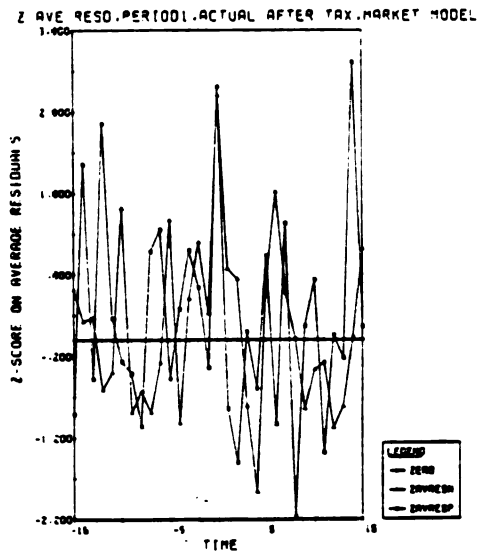
| Firm | Firm Residual | Standard Residual-T | Cumulative Standard Residual |
|---|---|---|---|
| Allegheny Airlines (U.S. Air) | -.00283 | -.08291 | -.52706 |
| Allegheny Ludlum | -.00849 | -.50524 | 2.48764 |
| American Medicorp | .04050 | 1.06089 | 1.01103 |
| Athlone Industries, Inc. | .01244 | .85701 | 4.05591 |
| Bay Colony Property | .14242 | 2.29761 | .02813 |
| Chase Manhattan MTG | -.05067 | -1.18894 | -.58065 |
| Chelsea Inds. Inc. | -.00470 | -.14578 | 6.55682 |
| Columbia Pictures Inc. | -.01315 | -.21996 | 3.18772 |
| Condec Corporation | -.00908 | -.34442 | -1.18107 |
| Cooper Labs Inc. | -.03692 | -1.04702 | .84178 |
| Dillingham Corporation | .00930 | .34150 | -1.48262 |
| Fairchild Industries, Inc. | .02681 | 1.17399 | 3.35811 |
| Fedders Corporation | -.03108 | -.97548 | .97532 |
| Fibreboard Corporation | .02001 | .92503 | .97271 |
| General Host Corporation | -.00366 | -.12502 | -.17784 |
| General Instruments | -.00476 | -.13861 | -1.15100 |
| Grumman Corporation | -.01037 | -.36818 | .12153 |
| Gulf & Western Industries, Inc. | .00291 | .17699 | -.27212 |
| Insilco Corporation | -.01893 | -.80262 | .73345 |
| Institutional Investors | -.00920 | -.14754 | 2.35956 |
| LTV Corporation | -.02314 | -1.10070 | -1.19035 |
| McCulloch Oil | .11525 | 3.21471 | .09097 |
| M G M | -.00661 | -.19494 | -1.26970 |
| Mohawk Data Sciences | -.04607 | -.54584 | -.44795 |
| National Industries | -.01394 | -.38655 | -.72371 |
| Pan Am | .02374 | .51326 | 2.24440 |
| Pioneer Texas Corporation | .01354 | .24918 | -1.32770 |
| Pittston Co. | -.02120 | -1.22836 | 1.13786 |
| Ramada Inns Incorporated | .02171 | .61861 | .43478 |
| Rapid American Corporation | -.07191 | -1.73519 | .15231 |
| Roblin Industries, Inc. | -.00729 | -.18009 | .87269 |
| Rusco Industries, Inc. | -.09924 | -1.52580 | -.87596 |
| Sanders Assoc. Inc. | .05198 | .94041 | -1.02003 |
| Texstar Corporation | .00227 | .05486 | 1.12431 |
| UAL | -.02392 | -1.52395 | 1.31075 |
| United Brands Co. | .01281 | .49738 | -.56603 |
| Western Union Corporation | -.01644 | -.72116 | -.79873 |
| White Motor Corporation | -.04070 | -.96012 | -.94024 |
| Wickes Corporation | .00609 | .24732 | 2.59125 |
| Zapata Corporation | .02866 | 1.15030 | -.62521 |
| Mean | -.00109 | -.29553 | 3.38660 |

TABLE #B-8

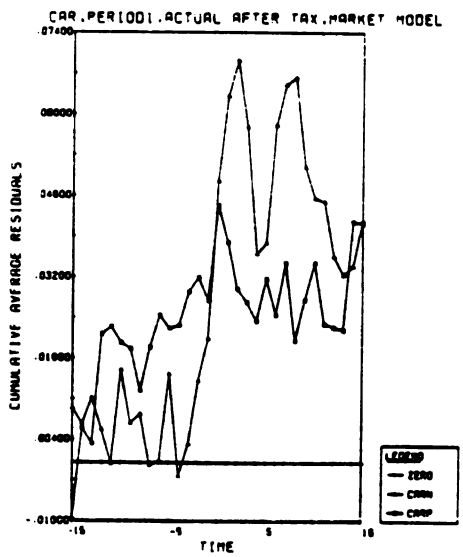
Positive/Negative NPV Firms
Period 1 - After-Tax Discount Rate
Market Model
Actual Exchange

| | Positive NPV Firms (30) | | | | Negative NPV Firms (10) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | -.00974 | -.90915 | -.00974 | -.16654 | .00938 | .61590 | .00938 | .19542 |
| -14 | .01564 | 2.15373 | .00589 | .22799 | -.00276 | .22167 | .00662 | .26576 |
| -13 | -.00265 | -.47699 | .00324 | .14061 | .00452 | .27419 | .01114 | .35276 |
| -12 | .01886 | 2.65418 | .02211 | .62683 | -.00545 | -.60839 | .00569 | .15972 |
| -11 | .00128 | .26247 | .02339 | .67491 | -.00592 | -.39568 | -.00023 | .03417 |
| -10 | -.00277 | -.26491 | .02062 | .62638 | .01620 | 1.61487 | .01597 | .54656 |
| -9 | -.00105 | -.40720 | .01957 | .55179 | -.00919 | -.89163 | .00677 | .26365 |
| -8 | -.00717 | -1.05962 | .01239 | .35767 | .00159 | -.63029 | .00836 | .06366 |
| -7 | .00745 | 1.08584 | .01984 | .55659 | -.00886 | -.89090 | -.00049 | -.21901 |
| -6 | .00544 | 1.35552 | .02529 | .80491 | .00081 | -.27925 | .00031 | -.30761 |
| -5 | -.00218 | -.47636 | .02311 | .71764 | .01496 | 1.46737 | .01528 | .15797 |
| -4 | .00052 | .37859 | .02364 | .78700 | -.01756 | -1.02299 | -.00228 | -.16661 |
| -3 | .00574 | 1.09804 | .02938 | .98815 | .00555 | .50474 | .00327 | -.00646 |
| -2 | .00248 | .64222 | .03187 | 1.10580 | .01083 | 1.19780 | .01410 | .37359 |
| -1 | -.00402 | -.34186 | .02785 | 1.04317 | .00721 | .32155 | .02132 | .47561 |
| 0 | .01635 | 3.10698 | .04421 | 1.61234 | .02711 | 3.00013 | .04844 | 1.42754 |
| 1 | -.00632 | -.84143 | .03788 | 1.45820 | .01459 | .86634 | .06303 | 1.70243 |
| 2 | -.00804 | -1.50389 | .02984 | 1.18270 | .00615 | .74554 | .06919 | 1.93898 |
| 3 | -.00228 | .10323 | .02756 | 1.20161 | -.01149 | -.81258 | .05769 | 1.68116 |
| 4 | -.00324 | -.59688 | .02431 | 1.09227 | -.02181 | -1.86325 | .03588 | 1.08996 |
| 5 | .00727 | 1.02890 | .03159 | 1.28075 | .00190 | .72596 | .03778 | 1.32030 |
| 6 | -.00622 | -1.03100 | .02536 | 1.09188 | .02024 | 1.80989 | .05803 | 1.89457 |
| 7 | .00893 | 1.42914 | .03430 | 1.35369 | .00696 | .57105 | .06500 | 2.07576 |
| 8 | -.01337 | -2.16635 | .02092 | .95683 | .00123 | .01887 | .06623 | 2.08175 |
| 9 | .00707 | .17248 | .02800 | .98843 | -.01542 | -.84763 | .05081 | 1.81280 |
| 10 | .00631 | .73604 | .03431 | 1.12327 | -.00538 | -.36490 | .04543 | 1.69702 |
| 11 | -.01040 | -1.38471 | .02390 | .86960 | -.00060 | -.27163 | .04482 | 1.61083 |
| 12 | -.00062 | .05896 | .02328 | .88040 | -.00938 | -1.08250 | .03544 | 1.26736 |
| 13 | -.00048 | -.22221 | .02280 | .83969 | -.00321 | -.81724 | .03223 | 1.00805 |
| 14 | .01859 | 3.40899 | .04140 | 1.46419 | .00150 | .04213 | .03374 | 1.02142 |
| 15 | -.00028 | .16560 | .04112 | 1.49453 | .00787 | 1.11545 | .04161 | 1.37535 |

Graph #B-4




Graph #B-5




Graph #B-6

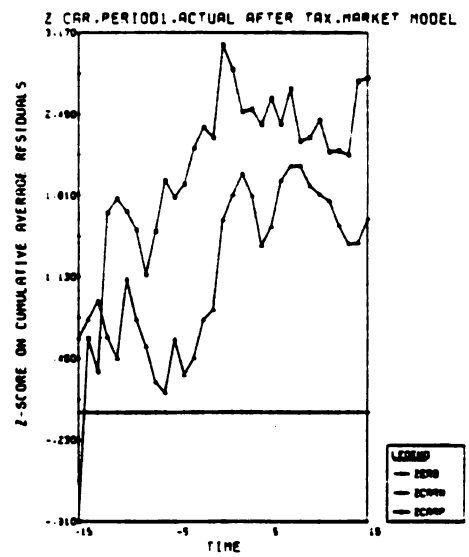
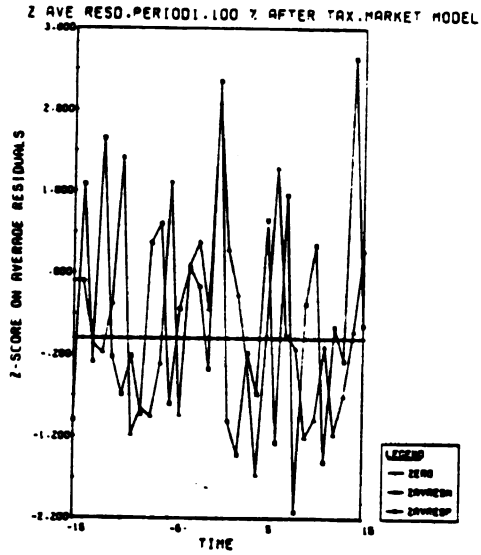


TABLE #B-9

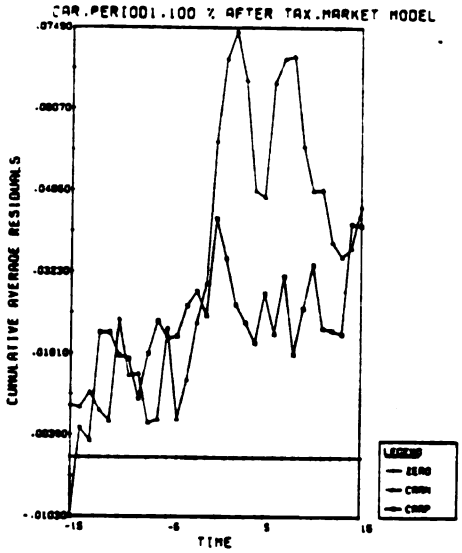
**Positive/Negative NPV Firms**
**Period 1 - After-tax Discount Rate**
**Market Model**
**100% Exchange**

| | Positive NPV Firms (29) | | | | Negative NPV Firms (11) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | -.01027 | -.99611 | -.01027 | -.18559 | .00903 | .76316 | .00903 | .21273 |
| -14 | .01536 | 1.88770 | .00508 | .16612 | -.00635 | .70309 | .00268 | .42544 |
| -13 | -.00219 | -.28392 | .00289 | .11322 | .00266 | -.06529 | .01134 | .40562 |
| -12 | .01884 | 2.45060 | .02174 | .52794 | -.00316 | -.17564 | .00818 | .35245 |
| -11 | .00000 | -.22475 | .02174 | .52794 | -.00187 | .42112 | .00628 | .47985 |
| -10 | -.00399 | -.68580 | .01774 | .40016 | .01771 | 2.21576 | .02400 | 1.15022 |
| -9 | -.00054 | -.21442 | .01719 | .36021 | -.00975 | -1.17445 | .01420 | .79492 |
| -8 | -.00700 | -.92246 | .01019 | .18833 | -.00034 | -.65309 | .01455 | .53683 |
| -7 | .00787 | 1.16790 | .01807 | .40594 | -.00651 | -.98253 | .00804 | .24866 |
| -6 | .00570 | 1.40453 | .02377 | .66763 | .00055 | -.36620 | .00659 | .15542 |
| -5 | -.00310 | -.79992 | .02067 | .51859 | .01585 | 1.91123 | .02244 | .73362 |
| -4 | .00048 | .36127 | .02115 | .53590 | -.01580 | -.93676 | .00664 | .45023 |
| -3 | .00525 | .86467 | .02641 | .74701 | .00684 | .85065 | .01349 | .71967 |
| -2 | .00251 | .63169 | .02892 | .86471 | .01001 | 1.17698 | .02349 | 1.07574 |
| -1 | -.00423 | -.37711 | .02469 | .79445 | .00077 | .35433 | .02427 | 1.18294 |
| 0 | .01688 | 3.14846 | .04157 | 1.38107 | .02473 | 2.87440 | .04900 | 2.05404 |
| 1 | -.00697 | -1.01443 | .03460 | 1.19206 | .01439 | 1.08355 | .06340 | 2.36185 |
| 2 | -.00802 | -1.41928 | .02658 | .92762 | .00461 | .53173 | .07421 | 2.54271 |
| 3 | -.00311 | -.17358 | .02347 | .89528 | -.00847 | -.32243 | .06574 | 2.44517 |
| 4 | -.00354 | -.67609 | .01992 | .76931 | -.01933 | -1.66449 | .04640 | 1.94161 |
| 5 | .00862 | 1.45246 | .02855 | 1.03993 | -.00115 | .03301 | .04524 | 1.95160 |
| 6 | -.00704 | -1.27119 | .02150 | .80308 | .01999 | 2.08703 | .06524 | 2.58298 |
| 7 | .01006 | 1.75732 | .03156 | 1.13051 | .00417 | .05126 | .06941 | 2.59651 |
| 8 | -.01360 | -2.11752 | .01796 | .73597 | .00051 | -.12142 | .06992 | 2.56178 |
| 9 | .00798 | .42147 | .02594 | .91450 | -.01577 | -1.20766 | .05415 | 2.19643 |
| 10 | .00759 | 1.14441 | .03354 | 1.02773 | -.00774 | -.95056 | .04644 | 1.89073 |
| 11 | -.01103 | -1.50807 | .02251 | .74674 | .00016 | -.09712 | .04660 | 1.86735 |
| 12 | -.00041 | .14575 | .02210 | .77390 | -.00913 | -1.17140 | .03746 | 1.51296 |
| 13 | -.00062 | -.27209 | .02148 | .72320 | -.00255 | -.70439 | .03491 | 1.29966 |
| 14 | .01915 | 3.43796 | .04064 | 1.36377 | .00157 | .08776 | .03649 | 1.32642 |
| 15 | -.00031 | .16115 | .04032 | 1.39380 | .00720 | 1.07597 | .04369 | 1.65175 |

Graph #B-7




Graph #B-8




Graph #B-9

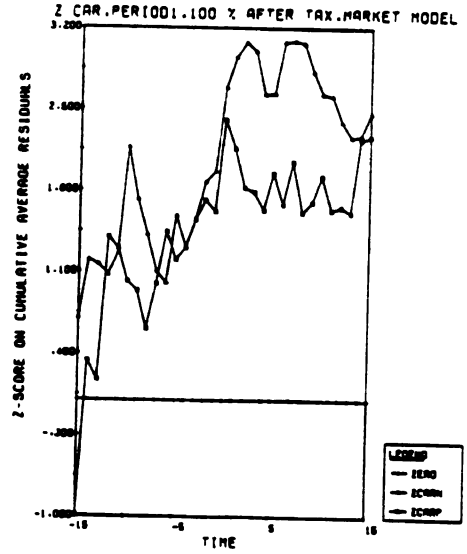


TABLE #B-10

**Positive/Negative NPV Firms**

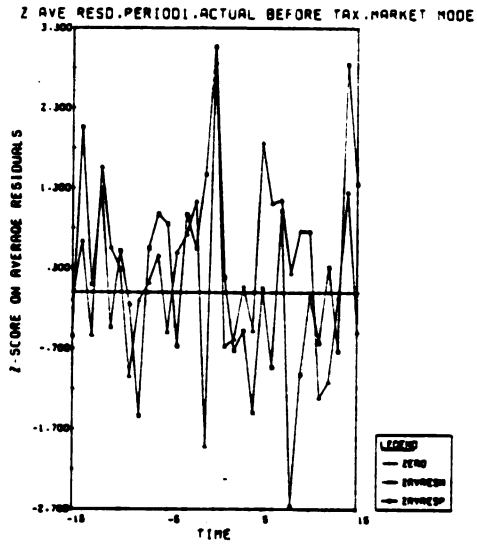
**Period 1 - Before-Tax Discount Rate**

**Market Model**

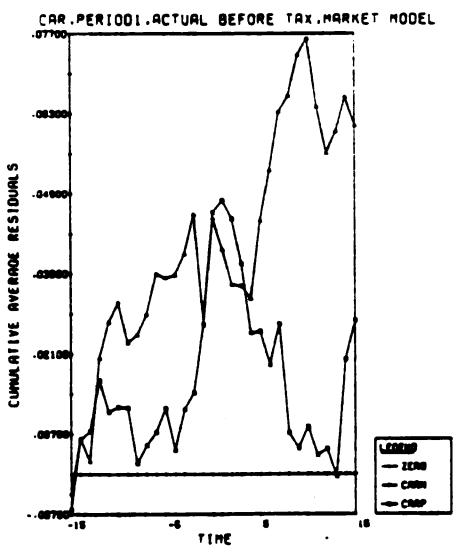
**Actual Exchange**

| | Positive NPV Firms (23) | | | | Negative NPV Firms (17) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | -.00610 | -.54624 | -.00610 | -.11428 | -.00342 | -.09999 | -.00342 | -.02433 |
| -14 | .01209 | 2.05983 | .00598 | .31667 | .00961 | .63516 | .00619 | .13023 |
| -13 | .00147 | .09652 | .00746 | .33686 | -.00401 | -.53562 | .00217 | -.00011 |
| -12 | .00880 | 1.28500 | .01635 | .60571 | .01806 | 1.56460 | .02024 | .38064 |
| -11 | -.00552 | -.43664 | .01082 | .51435 | .00625 | .55308 | .02650 | .51523 |
| -10 | .00087 | .51459 | .01169 | .62202 | .00346 | .28807 | .02996 | .58534 |
| -9 | -.00018 | -.15181 | .01151 | .59025 | -.00702 | -1.04820 | .02294 | .33025 |
| -8 | -.00963 | -1.53708 | .00188 | .26867 | .00131 | -.10317 | .02425 | .30514 |
| -7 | .00318 | .54998 | .00506 | .38373 | .00362 | .11945 | .02787 | .33421 |
| -6 | .00224 | .97404 | .00731 | .58752 | .00705 | .45356 | .03493 | .44459 |
| -5 | .00418 | .85214 | .01149 | .76581 | -.00069 | -.49856 | .03423 | .32326 |
| -4 | -.00733 | -.66869 | .00416 | .62590 | .00052 | .49613 | .03475 | .44400 |
| -3 | .00717 | .96992 | .01133 | .82883 | .00369 | .71760 | .03845 | .61863 |
| -2 | .00287 | .55133 | .01420 | .94418 | .00687 | 1.13053 | .04533 | .89375 |
| -1 | .01186 | 1.47040 | .02606 | 1.25181 | -.01889 | -1.91784 | .02643 | .42703 |
| 0 | .01964 | 3.06432 | .04571 | 1.89292 | .01824 | 2.86409 | .04467 | 1.12402 |
| 1 | .00212 | .18865 | .04783 | 1.93239 | -.00545 | -.67276 | .03922 | .66030 |
| 2 | -.00326 | -.72308 | .04456 | 1.78111 | -.00615 | -.58493 | .03307 | .81795 |
| 3 | -.00782 | -.47999 | .03674 | 1.68069 | -.00021 | .07222 | .03285 | .83553 |
| 4 | -.01207 | -1.49824 | .02467 | 1.36723 | -.00222 | -.47926 | .03063 | .71890 |
| 5 | .00026 | .05104 | .02494 | 1.37791 | .01361 | 1.86423 | .04424 | 1.17257 |
| 6 | -.00503 | -.93600 | .01910 | 1.18208 | .00881 | 1.10723 | .05305 | 1.44202 |
| 7 | .00714 | 1.02046 | .02625 | 1.39558 | .01019 | 1.14952 | .06324 | 1.72176 |
| 8 | -.01899 | -2.66279 | .00725 | .83848 | .00293 | .23389 | .06607 | 1.77868 |
| 9 | -.00276 | -1.02243 | .00449 | .62457 | .00714 | .76828 | .07322 | 1.96564 |
| 10 | .00378 | -.05498 | .00827 | .61306 | .00285 | .76186 | .07607 | 2.15105 |
| 11 | -.00496 | -.62866 | .00331 | .48153 | -.01199 | -1.31657 | .06407 | 1.83065 |
| 12 | .00108 | .31475 | .00440 | .54738 | -.00808 | -1.11802 | .05599 | 1.55858 |
| 13 | -.00482 | -.73467 | -.00042 | .39368 | .00379 | -.06744 | .05978 | 1.54217 |
| 14 | .02045 | 2.84517 | .02002 | .98894 | .00603 | 1.25150 | .06581 | 1.84672 |
| 15 | .00677 | 1.35167 | .02679 | 1.27173 | -.00502 | -.49870 | .06079 | 1.72585 |

Graph #B-10




Graph #B-11




Graph #B-12

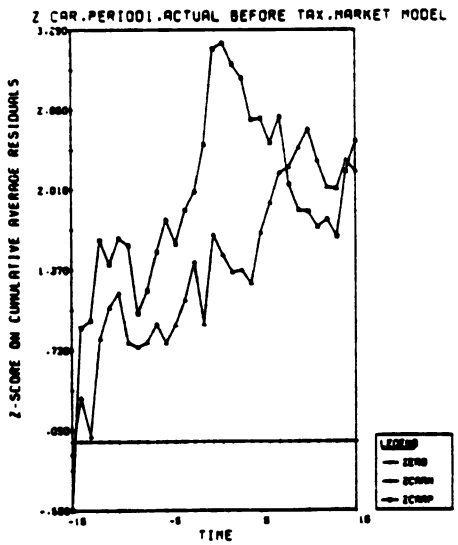
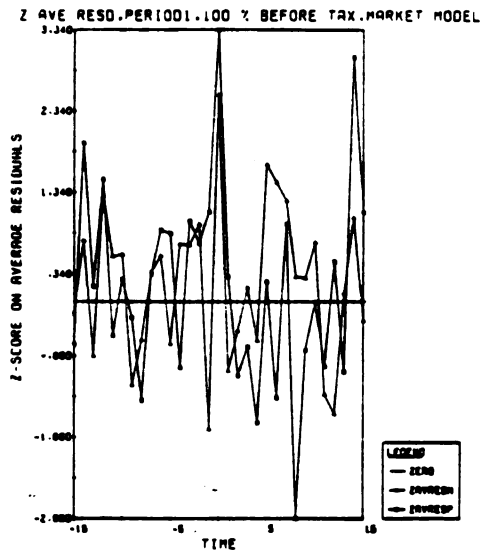


TABLE #B-11

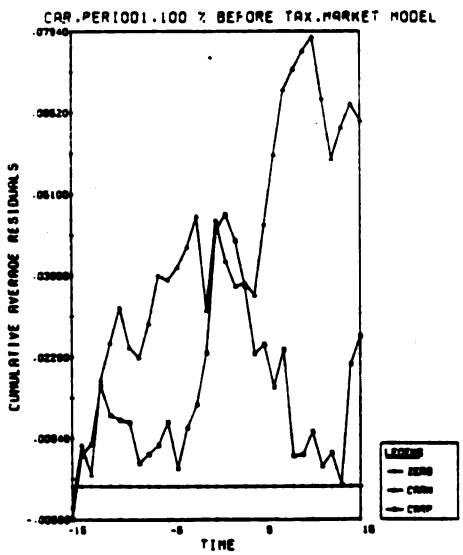
**Positive/Negative NPV Firms**
**Period 1 - Before-Tax Discount Rate**
**Market Model**
**100% Exchange**

| | Positive NPV Firms (24) | | | | Negative NPV Firms (16) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | -.00572 | -.51790 | -.00572 | -.10607 | -.00381 | -.12370 | -.00381 | -.09102 |
| -14 | .01106 | 1.54259 | .00533 | .29185 | .01100 | .74482 | .00719 | .15560 |
| -13 | .00207 | .18610 | .00740 | .32997 | -.00525 | -.66431 | .00194 | -.01083 |
| -12 | .01022 | 1.49788 | .01763 | .93675 | .01662 | 1.31890 | .01856 | .32000 |
| -11 | -.00520 | -.41442 | .01243 | .55187 | .00650 | .52416 | .02507 | .47902 |
| -10 | -.00080 | .27407 | .01162 | .60801 | .00613 | .57824 | .03121 | .60406 |
| -9 | -.00050 | -.19443 | .01112 | .56819 | -.00697 | -1.02435 | .02424 | .34716 |
| -8 | -.00714 | -1.20851 | .00402 | .32066 | -.00179 | -.46912 | .02244 | .22943 |
| -7 | .00164 | .34075 | .00566 | .39046 | .00596 | .56520 | .02841 | .32103 |
| -6 | .00160 | .87670 | .00726 | .57002 | .00832 | .56162 | .03673 | .46191 |
| -5 | .00402 | .83666 | .01129 | .74142 | -.00077 | -.11717 | .03596 | .33216 |
| -4 | -.00814 | -.61673 | .00314 | .57537 | .00222 | .70261 | .03818 | .50843 |
| -3 | .00714 | .98740 | .01029 | .77760 | .00352 | .69327 | .04171 | .66233 |
| -2 | .00401 | .71670 | .01431 | .92439 | .00541 | .94856 | .04712 | .92026 |
| -1 | .00895 | 1.10261 | .02326 | 1.15022 | -.01644 | -1.56432 | .03065 | .52787 |
| 0 | .02125 | 3.33737 | .04451 | 1.83376 | .01574 | 2.53879 | .04639 | 1.16471 |
| 1 | .00293 | .31053 | .04745 | 1.89736 | -.00715 | -.84760 | .03924 | .95210 |
| 2 | -.00456 | -.90851 | .04299 | 1.71128 | -.00436 | -.35718 | .03466 | .86250 |
| 3 | -.00806 | -.54932 | .03493 | 1.59878 | .00062 | .17173 | .03549 | .90555 |
| 4 | -.01166 | -1.46332 | .02314 | 1.29497 | -.00218 | -.47364 | .03330 | .78677 |
| 5 | .00165 | .24593 | .02479 | 1.34534 | .01238 | 1.66160 | .04568 | 1.20859 |
| 6 | -.00744 | -1.17625 | .01734 | 1.10443 | .01214 | 1.45969 | .05781 | 1.57474 |
| 7 | .00654 | .95626 | .02389 | 1.30029 | .01129 | 1.23721 | .06910 | 1.86509 |
| 8 | -.01858 | -2.65957 | .00530 | .75557 | .00357 | .30561 | .07267 | 1.96180 |
| 9 | .00026 | -.59270 | .00557 | .63416 | .00321 | .29199 | .07589 | 2.03504 |
| 10 | .00396 | -.00634 | .00954 | .63287 | .00252 | .72720 | .07841 | 2.21746 |
| 11 | -.00602 | -.79292 | .00351 | .47047 | -.01084 | -1.13971 | .06757 | 1.93157 |
| 12 | .00235 | .49149 | .00586 | .57113 | -.01055 | -1.37701 | .05701 | 1.58615 |
| 13 | -.00562 | -.88918 | .00024 | .39516 | .00552 | .16191 | .06254 | 1.61174 |
| 14 | .02113 | 3.00091 | .02136 | 1.00979 | .00411 | 1.02591 | .06664 | 1.88906 |
| 15 | .00486 | 1.09543 | .02624 | 1.23415 | -.00290 | -.23301 | .06374 | 1.91061 |

Graph #B-13




Graph #B-14




Graph #B-15

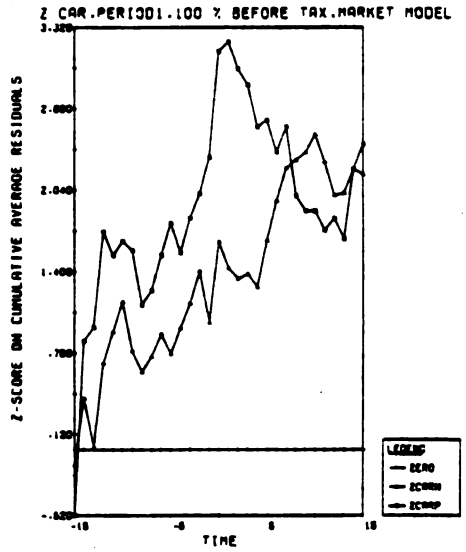


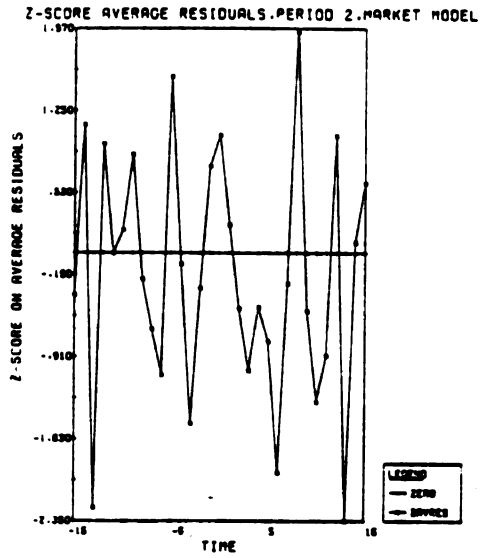
TABLE B-12

Period 2 - Market Model

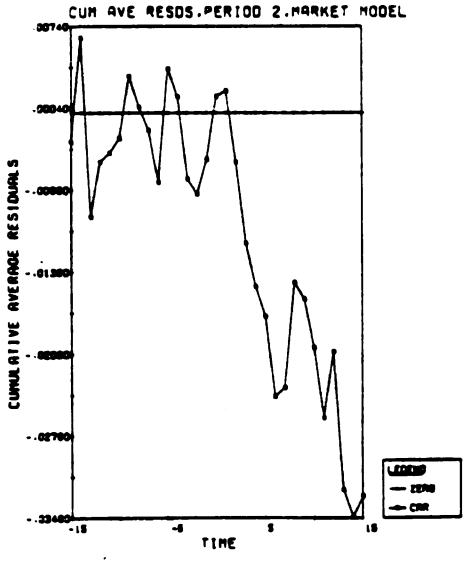
Residuals

| Day | Average Residuals | Standard Average Residuals | Standard Cumulative Residuals |
|---|---|---|---|
| -15 | -.00248 | -.36964 | -.36964 |
| -14 | .00888 | 1.12614 | .42666 |
| -13 | -.01528 | -2.23386 | -.86306 |
| -12 | .00469 | .95669 | -.38471 |
| -11 | .00076 | -.00678 | -.38774 |
| -10 | .00124 | .20003 | -.30608 |
| - 9 | .00531 | .86060 | .01919 |
| - 8 | -.00260 | -.23285 | -.06313 |
| - 7 | -.00200 | -.67006 | -.28648 |
| - 6 | -.00445 | -1.07142 | -.62530 |
| - 5 | .00971 | 1.54261 | -.16018 |
| - 4 | -.00241 | -.09716 | -.18823 |
| - 3 | -.00700 | -1.49776 | -.60363 |
| - 2 | -.00130 | -.30866 | -.68613 |
| - 1 | .00299 | .75854 | -.49027 |
| 0 | .00536 | 1.03126 | -.23246 |
| 1 | .00050 | .24579 | -.17285 |
| 2 | -.00611 | -.48811 | -.28790 |
| 3 | -.00693 | -1.03227 | -.52472 |
| 4 | -.00373 | -.47697 | -.63137 |
| 5 | -.00254 | -.77310 | -.80008 |
| 6 | -.00681 | -1.92731 | -1.21098 |
| 7 | .00076 | -.26941 | -1.26716 |
| 8 | .00893 | 1.93832 | -.87150 |
| 9 | -.00142 | -.50820 | -.97314 |
| 10 | -.00414 | -1.31015 | -1.23009 |
| 11 | -.00597 | -.89995 | -1.40328 |
| 12 | .00564 | 1.02658 | -1.20927 |
| 13 | -.01174 | -2.34748 | -1.64519 |
| 14 | -.00234 | .09436 | -1.62796 |
| 15 | .00182 | .61010 | -1.51838 |

Graph #B-16




Graph #B-17




Graph #B-18

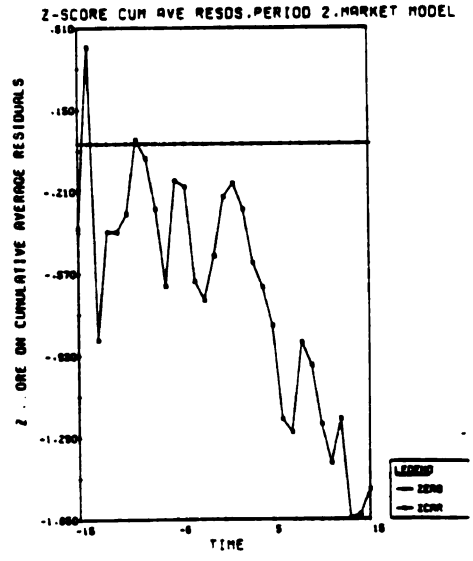


TABLE B-13

Period 2 - Market Model
Day T-1

| Firm | Firm Residual | Standard Residual-T | Cumulative Standard Residual |
|---|---|---|---|
| Allegheny Airlines (U.S. Air) | -.04198 | -1.24650 | -1.96594 |
| Allegheny Ludlum | .01559 | .91138 | .00414 |
| American Medicorp | -.06329 | -1.55796 | -.42107 |
| Athlone Industries, Inc. | .00565 | .39559 | .30286 |
| Bay Colony Property | .04391 | .85975 | -.77742 |
| Chase Manhattan MTG | .00134 | .03237 | .83395 |
| Chelsea Inds. Inc. | .04331 | 1.21511 | -.00878 |
| Columbia Pictures Inc. | -.06085 | -1.01613 | -.13482 |
| Condec Corporation | .00985 | .39951 | 2.73208 |
| Contin Investment Trust | .01285 | .36419 | -4.29589 |
| Cooper Labs Inc. | -.01153 | -.33009 | -1.66820 |
| Dillingham Corporation | -.05045 | -1.74011 | -.17187 |
| Fairchild Industries, Inc. | .03012 | 1.27996 | -.96434 |
| Fedders Corporation | .00585 | -.16496 | .12648 |
| Fibreboard Corporation | -.03209 | -1.44363 | .66929 |
| General Host Inc. | .00412 | .13894 | -1.27793 |
| General Instruments | .02026 | .59982 | 1.15609 |
| Gulf Western Inds. Inc. | -.01159 | -.70461 | 1.26895 |
| Insilco Corporation | .01688 | .73025 | .77910 |
| Institutional Investors | -.02811 | -.46821 | -.71609 |
| LVT Corporation | -.00057 | -.02745 | -.59526 |
| McCulloch Oil | -.01727 | -.41037 | .00187 |
| M G M | -.00028 | -.00792 | -.58885 |
| Mohawk Data Sciences | -.02879 | -.36314 | 1.55700 |
| National Industries | .08475 | 2.36677 | .20065 |
| Pan Am | -.08645 | -1.92956 | -.81824 |
| Pioneer Texas Corporation | .01602 | .30513 | -.34476 |
| Ramada Inns Incorporated | -.04082 | -1.21045 | -1.16509 |
| Roblin Industries, Inc. | .12745 | 2.62789 | 1.29985 |
| Rusco Industries, Inc. | .06257 | .99704 | .09301 |
| Sanders Assoc. Inc. | -.01236 | -.21401 | .86493 |
| Texstar Corporation | .01424 | .34067 | 1.66988 |
| UAL | .01225 | .77597 | .75081 |
| United Brands Co. | .06297 | 2.44281 | -.76847 |
| Western Union Corporation | -.02778 | -1.22305 | .06545 |
| Wickes Corporation | -.00608 | -.25126 | -1.93453 |
| Zapata Corporation | .05268 | 2.15584 | 1.49080 |
| Mean | .00299 | .75854 | -.49027 |

TABLE B-14

Period 2 - Market Model
Day $T_o$

| Firm | Firm Residual | Standard Residual-T | Cumulative Standard Residual |
|---|---|---|---|
| Allegheny Airlines (U.S. Air) | -.00431 | -.12815 | -1.99798 |
| Allegheny Ludlum | .00436 | .25503 | .06790 |
| American Medicorp | .01487 | .36588 | -.32960 |
| Athlone Industries, Inc. | -.00479 | -.33611 | .21883 |
| Bay Colony Property | -.03843 | -.75483 | -.96613 |
| Chase Manhattan MTG. | -.05490 | -1.31799 | .51545 |
| Chelsea Inds. Inc. | .00942 | .26451 | .05734 |
| Columbia Pictures Inc. | -.00495 | -.08269 | -.15550 |
| Condec Corporation | -.00234 | -.09495 | 2.70834 |
| Contin Investment Trust | .24255 | 6.86471 | -2.57971 |
| Cooper Labs Inc. | .02684 | .76865 | -1.47603 |
| Dillingham Corporation | -.02767 | -.96289 | -.41260 |
| Fairchild Industries, Inc. | .00533 | .22740 | -.90749 |
| Fedders Corporation | -.01066 | -.30083 | -.20169 |
| Fibreboard Corporation | .00826 | .37288 | .76251 |
| General Host Inc. | .01698 | .57049 | -1.13531 |
| General Instruments | -.01518 | -.44836 | 1.04399 |
| Gulf Western Inds. Inc. | -.00340 | -.20696 | 1.21721 |
| Insilco Corporation | .00262 | .11346 | .80747 |
| Institutional Investors | -.00174 | -.02922 | -.72340 |
| LVT Corporation | .01712 | .82467 | -.38909 |
| McCulloch Oil | -.03247 | -.75339 | -.18647 |
| M G M | -.03658 | -1.03135 | -.84669 |
| Mohawk Data Sciences | -.03113 | -.39272 | 1.45881 |
| National Industries | -.03010 | -.84392 | -.01032 |
| Pan Am | .00311 | .06950 | -.80087 |
| Pioneer Texas Corporation | -.00501 | -.09553 | -.36864 |
| Ramada Inns Incorporated | .03399 | 1.00849 | -.91296 |
| Roblin Industries, Inc. | .15541 | 3.19719 | 2.09915 |
| Rusco Industries, Inc. | -.00459 | -.07322 | .07471 |
| Sanders Assoc. Inc. | -.03335 | -.57781 | .72048 |
| Texstar Corporation | .00893 | .21298 | 1.72313 |
| UAL | .00263 | -.16758 | .70891 |
| United Brands Co. | -.02855 | -1.11820 | -1.04802 |
| Western Union Corporation | .00125 | .05499 | .07919 |
| Wickes Corporation | .02262 | .93427 | -1.70096 |
| Zapata Corporation | -.02230 | -.09425 | 1.46720 |
| Mean | .00536 | 1.03126 | -.23246 |

TABLE B-15

Period 2 - Market Model
Day T+1

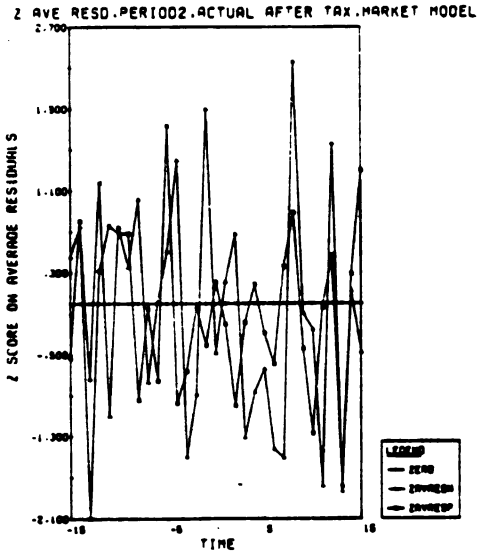
| Firm | Firm Residual | Standard Residual-T | Cumulative Standard Residual |
|---|---|---|---|
| Allegheny Airlines (U.S. Air) | -.02165 | -.64320 | -2.15398 |
| Allegheny Ludlum | -.00464 | -.27167 | .00201 |
| American Medicorp | .00985 | .24265 | -.27075 |
| Athlone Industries, Inc. | -.00761 | -.53274 | .08962 |
| Bay Colony Property | .02940 | .57582 | -.82647 |
| Chase Manhattan MTG | .05843 | 1.40257 | .85563 |
| Chelsea Inds. Inc. | .01581 | .44414 | .16506 |
| Columbia Pictures Inc. | -.03229 | -.53918 | -.28627 |
| Condec Corporation | -.00378 | -.15337 | 2.67114 |
| Contin Investment Trust | .06369 | 1.80289 | -2.14244 |
| Cooper Labs Inc. | -.02770 | -.79308 | -1.66839 |
| Dillingham Corporation | -.00958 | -.33285 | -.49333 |
| Fairchild Industries, Inc. | .00612 | .26071 | -.84426 |
| Fedders Corporation | -.05839 | -1.63697 | -.59871 |
| Fibreboard Corporation | .00983 | .44285 | .86992 |
| General Host Inc. | .02220 | .74424 | -.95480 |
| General Instruments | .00309 | .09145 | 1.06618 |
| Gulf Western Inds. Inc. | .01399 | .84666 | 1.42256 |
| Insilco Corporation | .00124 | .05366 | .82049 |
| Institutional Investors | -.10572 | -1.76609 | -1.15174 |
| LVT Corporation | -.01684 | -.80819 | -.58510 |
| McCulloch Oil | -.00463 | -.10975 | -.21309 |
| M G M | .04009 | 1.13197 | -.57214 |
| Mohawk Data Sciences | -.00164 | -.02076 | 1.45378 |
| National Industries | .04959 | 1.38005 | .32438 |
| Pan Am | .00881 | .19636 | -.75324 |
| Pioneer Texas Corporation | .00796 | .15194 | -.33179 |
| Ramada Inns Incorporated | .06488 | 1.92312 | -.44654 |
| Roblin Industries, Inc. | -.08876 | -1.82961 | 1.65540 |
| Rusco Industries, Inc. | .00371 | .05899 | .08901 |
| Sanders Assoc. Inc. | .01685 | .29167 | .79122 |
| Texstar Corporation | .01833 | -.43464 | 1.61771 |
| UAL | -.02275 | -1.44927 | .35741 |
| United Brands Co. | -.01928 | -.75711 | -1.23165 |
| Western Union Corporation | .01183 | .52158 | .20570 |
| Wickes Corporation | .01824 | .74869 | -1.51938 |
| Zapata Corporation | .00651 | .26658 | 1.53190 |
| Mean | .00050 | .24579 | -.17785 |

TABLE #B-16

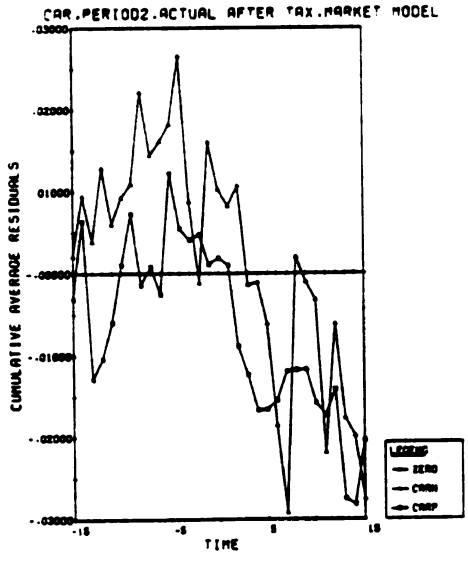
Positive/Negative NPV Firms
Period 2 - After-Tax Discount Rate
Market Model
Actual Exchange

| | Positive NPV Firms (25) | | | | Negative NPV Firms (11) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | -.00306 | -.53692 | -.00308 | -.10774 | .00209 | .45025 | .00209 | .13621 |
| -14 | .00946 | .80409 | .00637 | .19361 | .00730 | .75187 | .00939 | .36367 |
| -13 | -.01927 | -2.09889 | -.01290 | -.36757 | -.00554 | -.74045 | .00385 | .13966 |
| -12 | .00248 | .31460 | -.01041 | -.30445 | .00900 | 1.17581 | .01285 | .49538 |
| -11 | .00443 | .75903 | -.00598 | -.15213 | -.00688 | -1.10005 | .00597 | .16258 |
| -10 | .00703 | .68486 | .00104 | -.01470 | .00327 | .74611 | .00924 | .38830 |
| -9 | .00621 | .68556 | .00726 | .12287 | .00164 | .34840 | .01089 | .49371 |
| -8 | -.00869 | -.94318 | -.00143 | -.06046 | .01122 | 1.01516 | .02212 | .80082 |
| -7 | .00223 | -.05062 | .00080 | -.07656 | -.00771 | -.76769 | .01441 | .56857 |
| -6 | -.00337 | -.75489 | -.00257 | -.22804 | .00168 | .01568 | .01609 | .57332 |
| -5 | .01476 | 1.72994 | .01221 | .11910 | .00209 | .50321 | .01818 | .72556 |
| -4 | -.00675 | -.97375 | .00546 | -.07629 | .00836 | 1.39752 | .02654 | 1.14835 |
| -3 | -.00135 | -.66272 | .00410 | -.20929 | -.01782 | -1.49889 | .00872 | .69489 |
| -2 | .00064 | -.03567 | .00475 | -.21645 | -.00992 | -.89124 | -.00120 | .42526 |
| -1 | -.00365 | -.40826 | .00109 | -.29837 | .01721 | 1.89723 | .01601 | .99923 |
| 0 | .00077 | .20715 | .00186 | -.25880 | -.00574 | -.48376 | .01026 | .85288 |
| 1 | -.00090 | -.19846 | .00096 | -.29663 | -.00205 | .20821 | .00820 | .91587 |
| 2 | -.00982 | -.99792 | -.00886 | -.49686 | .00249 | .67696 | .01069 | 1.12067 |
| 3 | -.00350 | -.18793 | -.01236 | -.53466 | -.01212 | -1.91142 | -.00142 | .72393 |
| 4 | -.00430 | .16692 | -.01667 | -.49709 | .00034 | -.86573 | -.00108 | .46202 |
| 5 | .00008 | -.28930 | -.01659 | -.52515 | -.00505 | -.63985 | -.00613 | .26844 |
| 6 | .00109 | -.59426 | -.01549 | -.67441 | -.01244 | -1.42419 | -.01858 | -.16241 |
| 7 | .00355 | .35625 | -.01194 | -.60291 | -.01060 | -1.50957 | -.02919 | -.61910 |
| 8 | .00016 | .06523 | -.01177 | -.42527 | .03119 | 2.36014 | .00199 | .09490 |
| 9 | .00007 | -.44180 | -.01170 | -.51393 | -.00307 | -.09149 | -.00107 | .06722 |
| 10 | -.00407 | -1.26056 | -.01576 | -.76515 | -.00213 | -.25503 | -.00320 | -.00993 |
| 11 | -.00154 | -.04421 | -.01732 | -.77703 | -.01869 | -1.78228 | -.02190 | -.54912 |
| 12 | .00316 | .46753 | -.01413 | -.68320 | .01574 | 1.55404 | -.00615 | -.07897 |
| 13 | -.01334 | -1.78414 | -.02748 | -1.34124 | -.01149 | -1.83222 | -.01764 | -.63327 |
| 14 | -.00071 | .26649 | -.02819 | -.98374 | -.00215 | .12571 | -.01980 | -.59524 |
| 15 | .00780 | 1.29654 | -.02039 | -.72317 | -.00773 | -.47960 | -.02753 | -.74034 |

Graph #B-19




Graph #B-20




Graph #B-21

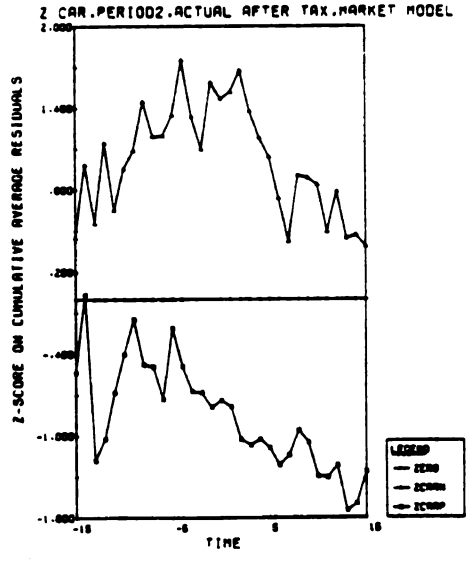
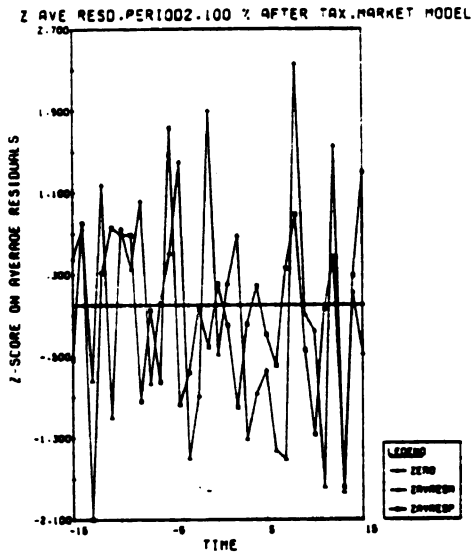


TABLE #B-17

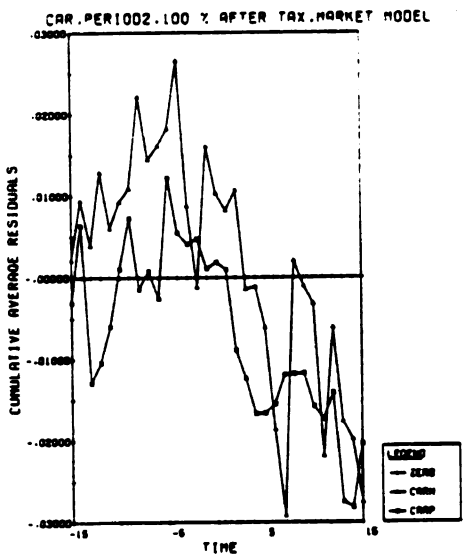
Positive/Negative NPV Firms
Period 2 - After-Tax Discount Rate
Market Model
100% Exchange

| | Positive NPV Firms(25) | | | | Negative NPV Firms(11) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | -.00308 | -.53692 | -.00308 | -.10774 | .00209 | .45025 | .00209 | .13621 |
| -14 | .00946 | .80409 | .00637 | .05361 | .00730 | .75187 | .00939 | .36367 |
| -13 | -.01927 | -2.09883 | -.01290 | -.36757 | -.00554 | -.74045 | .00385 | .13966 |
| -12 | .00248 | .31450 | -.01041 | -.30445 | .00900 | 1.17581 | .01285 | .49538 |
| -11 | .00443 | .75903 | -.00598 | -.15213 | -.00688 | -1.10005 | .00597 | .16258 |
| -10 | .00703 | .68486 | .00104 | -.01470 | .00327 | .74611 | .00924 | .38830 |
| -9 | .00621 | .68556 | .00726 | .12287 | .00164 | .34840 | .01089 | .49371 |
| -8 | -.00869 | -.94318 | -.00143 | -.06640 | .01122 | 1.01516 | .02212 | .80082 |
| -7 | .00223 | -.05062 | .00080 | -.07656 | -.00771 | -.76769 | .01441 | .56857 |
| -6 | -.00337 | -.75489 | -.00257 | -.22804 | .00168 | .01568 | .01609 | .57332 |
| -5 | .01478 | 1.72994 | .01221 | .11910 | .00209 | .50321 | .01818 | .72556 |
| -4 | -.00675 | -.97375 | .00546 | -.07629 | .00836 | 1.39752 | .02654 | 1.14835 |
| -3 | -.00135 | -.66272 | .00410 | -.20929 | -.01782 | -1.49889 | .00872 | .69489 |
| -2 | .00064 | -.03567 | .00475 | -.21645 | -.00992 | -.89124 | -.00120 | .42526 |
| -1 | -.00365 | -.40826 | .00109 | -.29837 | .01721 | 1.89723 | .01601 | .99923 |
| 0 | .00077 | .20715 | .00186 | -.25680 | -.00574 | -.48376 | .01026 | .85288 |
| 1 | -.00090 | -.19846 | .00096 | -.29663 | -.00205 | .20821 | .00820 | .91587 |
| 2 | -.00982 | -.99792 | -.00886 | -.49689 | .00249 | .67696 | .01069 | 1.12067 |
| 3 | -.00350 | -.18793 | -.01236 | -.53460 | -.01212 | -1.31142 | -.00142 | .72393 |
| 4 | -.00430 | .18692 | -.01667 | -.49709 | .00034 | -.86573 | -.00108 | .46202 |
| 5 | .00008 | -.28930 | -.01659 | -.55515 | -.00505 | -.63985 | -.00613 | .26844 |
| 6 | .00109 | -.59426 | -.01549 | -.67440 | -.01244 | -1.42419 | -.01858 | -.16241 |
| 7 | .00355 | .35625 | -.01194 | -.60291 | -.01060 | -1.50957 | -.02919 | -.61910 |
| 8 | .00016 | .88523 | -.01177 | -.42527 | .03119 | 2.36014 | .00199 | .09490 |
| 9 | .00007 | -.44180 | -.01170 | -.51393 | -.00307 | -.09149 | -.00107 | .06722 |
| 10 | -.00407 | -1.26686 | -.01578 | -.76815 | -.00213 | -.25503 | -.00320 | -.00993 |
| 11 | -.00154 | -.04421 | -.01732 | -.77703 | -.01869 | -1.78228 | -.02190 | -.54912 |
| 12 | .00318 | .46753 | -.01413 | -.68320 | .01574 | 1.55404 | -.00615 | -.07897 |
| 13 | -.01334 | -1.78414 | -.02748 | -1.04124 | -.01149 | -1.83222 | -.01764 | -.63327 |
| 14 | -.00071 | .28649 | -.02819 | -.98374 | -.00215 | .12571 | -.01980 | -.59524 |
| 15 | .00780 | 1.29850 | -.02039 | -.72317 | -.00773 | -.47960 | -.02753 | -.74034 |

Graph #B-22




Graph #B-23




Graph #B-24

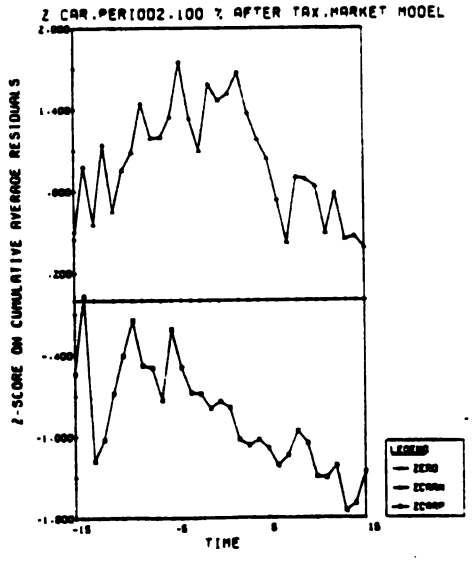
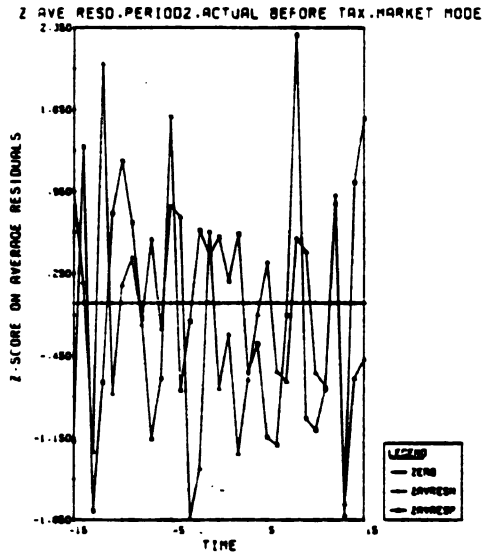


TABLE #B-18

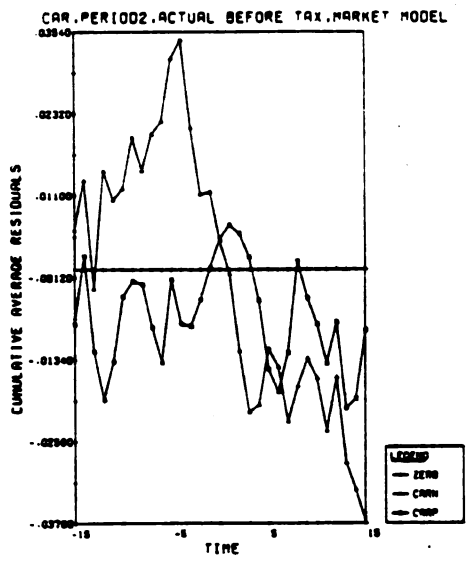
Positive/Negative NPV Firms
Period 2 - Before-Tax Discount Rate
Market Model
Actual Exchange

| | Positive NPV Firms (19) | | | | Negative NPV Firms (17) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | -.00807 | -1.1761 | -.00807 | -.27120 | .00583 | .95663 | .00583 | .23280 |
| -14 | .01058 | 1.3232 | .00201 | .03569 | .00736 | .17042 | .01320 | .27427 |
| -13 | -.01416 | -1.7731 | -.01216 | -.37245 | -.01608 | -1.26633 | -.00288 | -.03389 |
| -12 | -.00720 | -.6734 | -.01937 | -.52747 | .01753 | 2.03915 | .01465 | .46234 |
| -11 | .00569 | .7644 | -.01368 | -.35149 | -.00430 | -.77261 | .01035 | .27432 |
| -10 | .00967 | 1.2114 | -.00400 | -.07263 | .00164 | .14997 | .01200 | .31081 |
| -9 | .00229 | .6044 | -.00171 | .00495 | .00764 | .38784 | .01964 | .40520 |
| -8 | -.00052 | -.1314 | -.00223 | .05471 | -.00493 | -.18826 | .01470 | .35938 |
| -7 | -.00638 | -1.1766 | -.00861 | -.21158 | .00543 | .54409 | .02013 | .49179 |
| -6 | -.00518 | -.6422 | -.01379 | -.35949 | .00191 | -.22351 | .02205 | .43740 |
| -5 | .01232 | 1.5679 | -.00147 | .00602 | .00933 | .82390 | .03138 | .63790 |
| -4 | -.00057 | -.7466 | -.00804 | -.16570 | .00282 | .73205 | .03420 | .81605 |
| -3 | -.00036 | -.1574 | -.00840 | -.20196 | -.01312 | -1.84288 | .02107 | .36757 |
| -2 | .00396 | .0177 | -.00443 | -.05977 | -.00990 | -1.41321 | .01117 | .02366 |
| -1 | .00480 | .4029 | .00036 | .03296 | .00038 | .60501 | .01155 | .17089 |
| 0 | .00422 | .5605 | .00459 | .16201 | -.00731 | -.73050 | .00424 | -.00687 |
| 1 | .00201 | .1830 | .00661 | .20414 | -.00491 | -.26668 | -.00066 | -.07177 |
| 2 | -.00124 | -.1580 | .00536 | .13951 | -.01143 | -1.28732 | -.01210 | -.38504 |
| 3 | -.00344 | -.5526 | .00187 | .02363 | -.00910 | -.65600 | -.02120 | -.54468 |
| 4 | -.00644 | -.3465 | -.00457 | -.12260 | .00109 | -.10124 | -.02011 | -.56932 |
| 5 | -.01027 | -1.1445 | -.01485 | -.34065 | .00933 | .34445 | -.01177 | -.48549 |
| 6 | -.00335 | -1.2095 | -.01820 | -.41907 | -.00269 | -.58756 | -.01446 | -.62848 |
| 7 | .00584 | -.1652 | -.01235 | -.44331 | -.00817 | -.67097 | -.02264 | -.79176 |
| 8 | .01354 | 2.2912 | .00118 | .06411 | .00528 | .54969 | -.01735 | -.65799 |
| 9 | -.00541 | -.9660 | -.00422 | -.14267 | .00416 | .43310 | -.01319 | -.55260 |
| 10 | -.00390 | -1.0628 | -.00812 | -.39214 | -.00300 | -.59663 | -.01619 | -.69779 |
| 11 | -.00586 | -.7367 | -.01399 | -.56173 | -.00781 | -.70841 | -.02400 | -.87018 |
| 12 | .00618 | .8472 | -.00781 | -.36662 | .00797 | .92100 | -.01603 | -.64605 |
| 13 | -.01282 | -1.8164 | -.02063 | -.77533 | -.01273 | -1.71447 | -.02876 | -1.06328 |
| 14 | .00144 | 1.0319 | -.01919 | -.54776 | -.00405 | -.64241 | -.03282 | -1.21961 |
| 15 | .01015 | 1.5773 | -.00904 | -.19467 | -.00487 | -.47868 | -.03770 | -1.33610 |

Graph #B-25




Graph #B-26




Graph #B-27

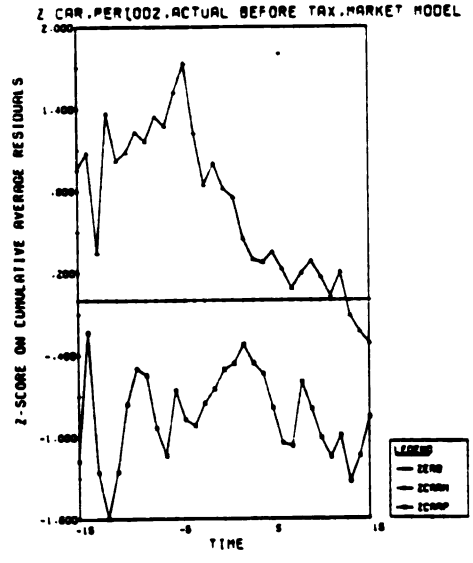
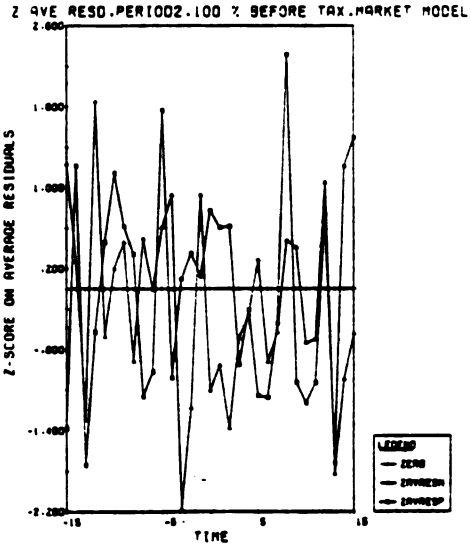


TABLE #B-19

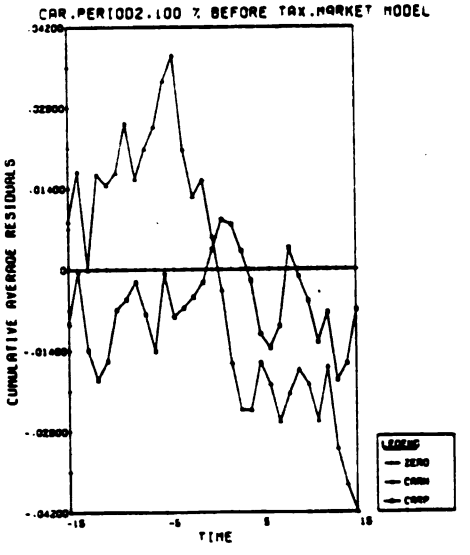
Positive/Negative NPV Firms
Period 2 - Before-Tax Discount Rate
Market Model
100% Exchange

| | Positive NPV Firms (20) | | | | Negative NPV Firms (16) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | -.00934 | -1.36949 | -.00934 | -.30726 | .00829 | 1.23332 | .00829 | .30937 |
| -14 | .00896 | 1.21756 | -.00038 | -.03406 | .00660 | .26725 | .01489 | .37640 |
| -13 | -.01356 | -1.74033 | -.01394 | -.42455 | -.01697 | -1.25174 | -.00007 | .35238 |
| -12 | -.00511 | -.42756 | -.01906 | -.52046 | .01647 | 1.64611 | .01639 | .51548 |
| -11 | .00323 | .45810 | -.01582 | -.41770 | -.00185 | -.47550 | .01453 | .39615 |
| -10 | .00887 | 1.13965 | -.00694 | -.16200 | .00214 | .26054 | .01667 | .44649 |
| -9 | .00178 | .61492 | -.00516 | -.02404 | .00861 | .45832 | .02529 | .56146 |
| -8 | .00305 | .34122 | -.00210 | .05251 | -.00966 | -.71875 | .01560 | .36117 |
| -7 | -.00561 | -1.06850 | -.00772 | -.18721 | .00521 | .49480 | .02082 | .50525 |
| -6 | -.00639 | -.62154 | -.01412 | -.37153 | .00387 | -.01209 | .02469 | .50225 |
| -5 | .01332 | 1.76235 | -.00079 | .02366 | .00786 | .60930 | .03256 | .65509 |
| -4 | -.00740 | -.88075 | -.00819 | -.17374 | .00445 | .92629 | .03703 | .81744 |
| -3 | .00155 | .09700 | -.00664 | -.15197 | -.01631 | -2.17967 | .02072 | .34069 |
| -2 | .00187 | .35093 | -.00477 | -.07323 | -.00814 | -1.17594 | .01257 | .04571 |
| -1 | .00252 | .12301 | -.00225 | -.04563 | .00295 | .92522 | .01552 | .27765 |
| 0 | .00571 | .77100 | .00346 | .12736 | -.00989 | -1.00426 | .00563 | .02588 |
| 1 | .00515 | .60697 | .00862 | .26354 | -.00427 | -.75405 | -.00363 | -.16326 |
| 2 | -.00084 | .61652 | .00777 | .40231 | -.01256 | -1.37763 | -.01621 | -.50883 |
| 3 | -.00460 | -.74662 | .00317 | .23435 | -.00805 | -.48529 | -.02427 | -.63056 |
| 4 | -.00511 | -.20671 | -.00194 | .18797 | -.00010 | -.29304 | -.02437 | -.59404 |
| 5 | -.00929 | -1.05433 | -.01124 | -.04857 | .00627 | .28660 | -.01809 | -.62215 |
| 6 | -.00240 | -1.07572 | -.01364 | -.28992 | -.00383 | -.72100 | -.01993 | -.80301 |
| 7 | .00377 | -.33828 | -.00987 | -.36282 | -.00645 | -.42613 | -.02639 | -.91040 |
| 8 | .01346 | 2.31437 | .00361 | .15343 | .00484 | .47891 | -.02154 | -.79102 |
| 9 | -.00487 | -.92557 | -.00125 | -.05423 | .00408 | .46670 | -.01745 | -.68900 |
| 10 | -.00426 | -1.12807 | -.00552 | -.30732 | -.00250 | -.53363 | -.01996 | -.82291 |
| 11 | -.00715 | -.92796 | -.01268 | -.51553 | -.00631 | -.49552 | -.02627 | -.94724 |
| 12 | .00519 | .73640 | -.00749 | -.35031 | .00932 | 1.04964 | -.01695 | -.58391 |
| 13 | -.01176 | -1.71776 | -.01925 | -.73571 | -.01404 | -1.82886 | -.03100 | -1.14267 |
| 14 | .00292 | 1.21024 | -.01633 | -.46416 | -.00624 | -.89073 | -.03724 | -1.36011 |
| 15 | .00929 | 1.45146 | -.00703 | -.12955 | -.00474 | -.44204 | -.04196 | -1.47506 |

Graph #B-28




Graph #B-29




Graph #B-30

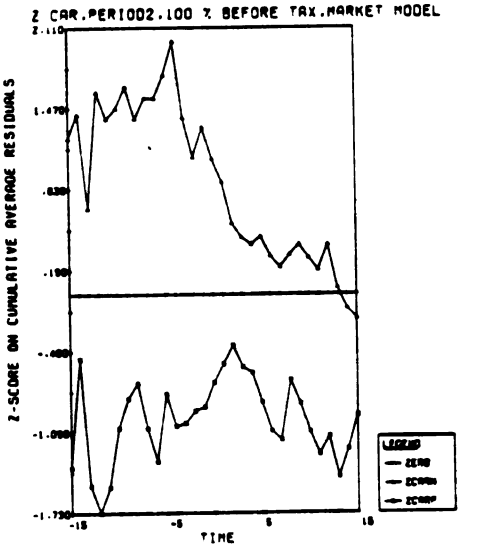
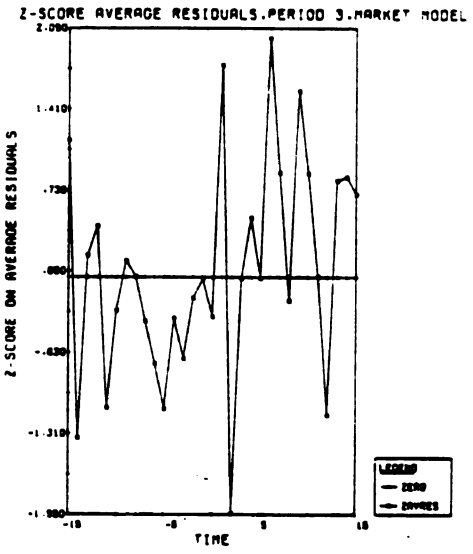


Table #B-20

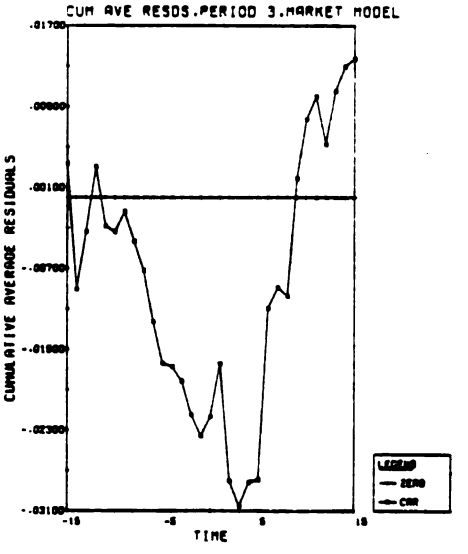
Period 3 - Market Model
Residuals

| Day | Average Residuals | Standard Average Residuals | Standard Cumulative Residuals |
|---|---|---|---|
| -15 | .00335 | 1.14438 | 1.14438 |
| | -.01241 | -1.34840 | .19091 |
| | .00569 | .18169 | .29581 |
| | .00642 | .42964 | .51063 |
| | -.00588 | -1.09531 | .02079 |
| -10 | -.00058 | -.27917 | -.09317 |
| | .00200 | .13535 | -.04201 |
| | -.00295 | .00525 | -.04015 |
| | -.00285 | -.36951 | -.16333 |
| | -.00505 | -.72286 | -.39191 |
| -5 | -.00409 | -1.10537 | -.72519 |
| | -.00034 | -.34200 | -.82392 |
| | -.00141 | -.68385 | -1.01359 |
| | -.00334 | -.17311 | -1.05986 |
| | -.00211 | -.01425 | -1.06354 |
| 0 | .00194 | -.33186 | -1.14650 |
| | .00526 | 1.77831 | -.71520 |
| | -.01163 | -1.98241 | -1.18246 |
| | -.00255 | -.01205 | -1.18522 |
| | .00241 | .49899 | -1.07364 |
| 5 | .00029 | -.01212 | -1.07629 |
| | .01695 | 2.00732 | -.64833 |
| | .00203 | .87483 | -.46591 |
| | -.00086 | -.19707 | -.50614 |
| | .01163 | 1.56068 | -.19400 |
| 10 | .00584 | .86775 | -.02382 |
| | .00226 | .00692 | -.02249 |
| | -.4478 | -1.15641 | -.24103 |
| | .00528 | .80925 | -.09075 |
| | .00245 | .84193 | .06296 |
| 15 | .00075 | .69399 | .18760 |

Graph #B-31




Graph #B-32




Graph #B-33

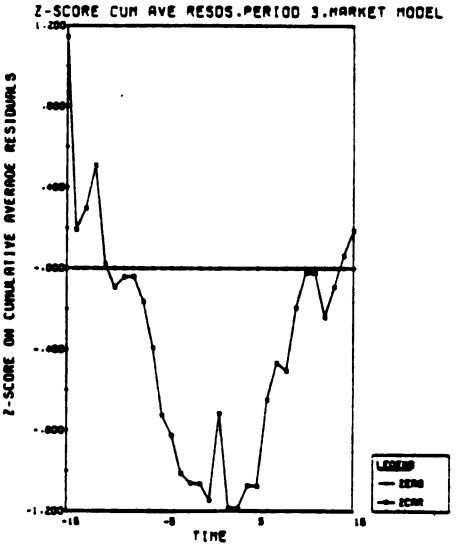


Table #B-21

Period 3 - Market Model
Day T-1

| Firm | Residual | Standard Residual | Cumulative Standard Residual |
|---|---|---|---|
| Allegheny Airlines Inc. | -.00796 | -.25052 | .26872 |
| Allegheny Ludlum Industries, Inc. | -.01677 | -.9875 | -2.3859 |
| American Medicorp. | -.01247 | -.30789 | -2.06411 |
| Athlone Industries, Inc. | .00901 | .63002 | .65865 |
| Bay Colony Property | -.03371 | -.65351 | -.59864 |
| Chase Manhattan Mortgage & Realty Co. | .00237 | .05663 | -1.03232 |
| Chelsea Industries, Inc. | .01228 | .34818 | 1.65917 |
| Columbia Pictures Industries, Inc. | .00570 | .08660 | -1.84115 |
| Condec Corporation | .01651 | .6605 | -2.82438 |
| Cooper Labs, Incorporated | -.01813 | -.54862 | -1.45852 |
| Dillingham Corporation | -.01848 | -.59762 | -2.98308 |
| Fairchild Industries, Inc. | .00626 | .00993 | 1.66523 |
| Fedders Corporation | .09741 | 2.63438 | -.57997 |
| Fibreboard Corporation | -.00994 | -.44711 | 1.66717 |
| General Instruments | -.01756 | -.54027 | 4.11605 |
| Grumman Corporation | .00473 | .15437 | -.93511 |
| Gulf & Western Industries, Inc. | .03865 | 2.31299 | .08465 |
| Insilco Corporation | -.01663 | -.71402 | .03237 |
| Institutional Investors | -.00902 | -.15031 | -.04085 |
| LTV Corporation | .01696 | .83163 | -.29666 |
| McCulloch Oil Corporation | .03626 | .84996 | .47881 |
| MGM | .01227 | .34398 | -.13214 |
| Mohawk Data Sciences Corporation | -.02518 | -.33017 | -1.32646 |
| National Industries | -.04093 | -1.12411 | 1.06713 |
| Pan Am | -.03214 | -.84904 | .12702 |
| Pioneer Texas Corporation | .02082 | .40278 | .06062 |
| Ramada Inns | -.00873 | -.27069 | 1.84038 |
| Rapid American Corporation | -.00624 | -.15095 | -.90913 |
| Roblin Industries Inc. | -.09641 | -1.85723 | -.14201 |
| Rusco Industries Inc. | -.00406 | -.06785 | .93486 |
| Sanders Assoc Inc. | .01063 | .18324 | 1.62329 |
| Texstar Corporation | -.03099 | -.72096 | -1.42742 |
| UAL | .00282 | .17542 | 1.15664 |
| United Brands Co. | -.03914 | -1.54079 | -.15775 |
| Western Union Co. | .01794 | .77978 | -4.32693 |
| White Motor Corporation | .06447 | 1.70124 | -1.25863 |
| Wickes Corporation | -.00289 | -.12008 | 1.00575 |
| Zapata Corporation | -.00787 | -.32005 | 1.70642 |
| Mean | -.00211 | -.01425 | -1.06354 |

Table #B-22

Period 3 - Market Model
Day $T_o$

| Firm | Residuals | Standard Residual | Cumulative Standard Residual |
|---|---|---|---|
| Allegheny Airlines Inc. | .01178 | .37014 | .36126 |
| Allegheny Ludlum Industries, Inc. | .03128 | 1.8520 | -1.9229 |
| American Medicorp. | .04136 | 1.00831 | -1.81203 |
| Athlone Industries, Inc. | -.02410 | -1.68499 | .23740 |
| Bay Colony Property | .05317 | 1.02923 | -.34133 |
| Chase Manhattan Mortgage & Realty Co. | -.00062 | -.01474 | -1.03232 |
| Chelsea Industries, Inc. | .02157 | .61241 | 1.81228 |
| Columbia Pictures Industries, Inc. | -.02386 | -.40493 | -1.94238 |
| Condec Corporation | .02134 | .85276 | -2.61119 |
| Cooper Labs, Incorporated | .00776 | .23485 | -1.39980 |
| Dillingham Corporation | -.08512 | -2.75573 | -3.67201 |
| Fairchild Industries, Inc. | .00021 | .00993 | 1.66522 |
| Fedders Corporation | .00477 | -.03119 | -.12886 |
| Fibreboard Corporation | -.06338 | -2.83551 | .95829 |
| General Instruments | .01376 | .42367 | 4.22197 |
| Grumman Corporation | -.03838 | -1.2534 | -1.24846 |
| Gulf & Western Industries, Inc. | -.01966 | -1.17557 | -.20924 |
| Insilco Corporation | .00089 | .03879 | .04207 |
| Institutional Investors | .07427 | 1.23841 | .26875 |
| LTV Corporation | -.00363 | -.17826 | -.34123 |
| McCulloch Oil Corporation | -.05992 | -1.40665 | .12715 |
| MGM | .08655 | 2.44379 | .47880 |
| Mohawk Data Sciences Corporation | -.00369 | -.04856 | -1.33860 |
| National Industries | .03032 | .83386 | 1.27560 |
| Pan Am | .00768 | .20279 | .47229 |
| Pioneer Texas Corporation | -.04793 | -.92792 | -.17135 |
| Ramada Inns | .00147 | .04556 | 1.84038 |
| Rapid American Corporation | .00388 | .09385 | -.88567 |
| Roblin Industries Inc. | .12139 | 2.32426 | .43905 |
| Rusco Industries Inc. | -.00142 | -.02377 | .92892 |
| Sanders Assoc Inc. | -.01293 | -.22299 | 1.56754 |
| Texstar Corporation | -.02093 | -.48485 | -1.54863 |
| UAL | -.01334 | -.83130 | .94882 |
| United Brands Co. | .00499 | .19812 | -.10802 |
| Western Union Co. | -.01982 | -.86221 | -4.54248 |
| White Motor Corporation | -.00562 | -.14902 | -1.29588 |
| Wickes Corporation | -.03899 | -1.62201 | .60024 |
| Zapata Corporation | .02821 | 1.14586 | 1.99288 |
| Mean | .00194 | -.33186 | -1.14650 |

Table #B-23

Period 3 - Market Model
Day T + 1

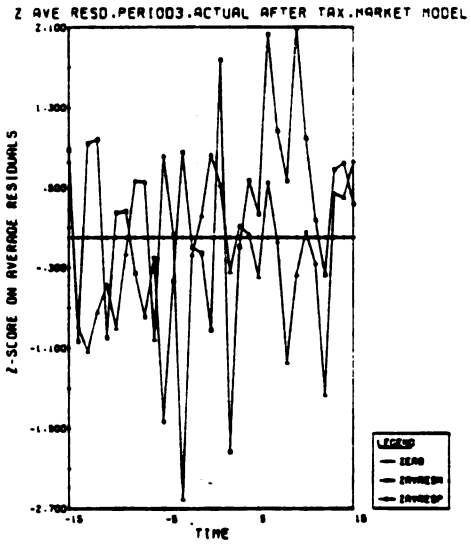
| Firm | Residual | Residual | Cumulative Standard Residual |
|---|---|---|---|
| Allegheny Airlines Inc. | .01286 | .40396 | .45923 |
| Allegheny Ludlum Industries, Inc. | .00207 | .12294 | -1.89308 |
| American Medicorp. | .00644 | .15714 | -1.77392 |
| Athlone Industries, Inc. | .03059 | 2.13882 | .75614 |
| Bay Colony Property | .00063 | .01227 | -.33835 |
| Chase Manhattan Mortgage & Realty Co. | -.00351 | -.08364 | -1.05261 |
| Chelsea Industries, Inc. | .00507 | .14345 | 1.84707 |
| Columbia Pictures Industries, Inc. | -.04646 | -.78850 | -2.13362 |
| Condec Corporation | -.03281 | -1.31302 | -2.92964 |
| Cooper Labs, Incorporated | -.00584 | -.17657 | -1.35698 |
| Dillingham Corporation | .08817 | 2.80311 | -2.99215 |
| Fairchild Industries, Inc. | -.02213 | -1.03972 | 1.41306 |
| Fedders Corporation | -.04556 | -1.23249 | -.91111 |
| Fibreboard Corporation | .00201 | .0905 | .98024 |
| General Instruments | .00803 | .24730 | 4.28194 |
| Grumman Corporation | .00499 | .16195 | -1.20918 |
| Gulf & Western Industries, Inc. | .01486 | .88904 | .00638 |
| Insilco Corporation | .05389 | 2.32816 | .60673 |
| Institutional Investors | -.10194 | -1.68401 | -.13968 |
| LTV Corporation | .00198 | .09696 | -.31771 |
| McCulloch Oil Corporation | -.06438 | -1.49895 | -.23640 |
| MGM | .02466 | .69559 | .64751 |
| Mohawk Data Sciences Corporation | -.00789 | -.10327 | -1.36365 |
| National Industries | -.07054 | -1.93805 | .80555 |
| Pan Am | .04625 | 1.21455 | .47743 |
| Pioneer Texas Corporation | -.02896 | -.5604 | -.30727 |
| Ramada Inns | .06721 | 2.08622 | 2.34636 |
| Rapid American Corporation | .00011 | .00275 | -.88500 |
| Roblin Industries Inc. | -.06889 | -1.32609 | .11742 |
| Rusco Industries Inc. | .06638 | 1.11055 | 1.19827 |
| Sanders Assoc Inc. | .00834 | .14399 | 1.60247 |
| Texstar Corporation | .09400 | 2.20478 | -1.01389 |
| UAL | .00481 | .29977 | 1.02152 |
| United Brands Co. | .00401 | .15770 | -.06977 |
| Western Union Co. | .05078 | 2.20576 | -4.00750 |
| White Motor Corporation | .06645 | 1.74458 | -.87276 |
| Wickes Corporation | .01878 | .78107 | .78968 |
| Zapata Corporation | .00364 | .14785 | 2.02874 |
| Mean | .00526 | 1.77831 | -.71520 |

TABLE #B-24

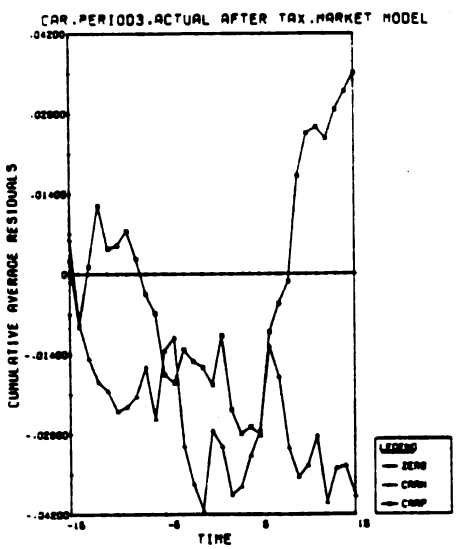
**Positive/Negative NPV Firms**
**Period 3 - After-Tax Discount Rate**
**Market Model**
**Actual Exchange**

| | Positive NPV Firms (27) | | | | Negative NPV Firms (11) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | .00224 | .87376 | .00224 | .16872 | .00604 | .7[illegible]06 | .00604 | .22933 |
| -14 | -.01147 | -1.03387 | -.00923 | -.03091 | -.01476 | -.[illegible]442 | -.00865 | -.03283 |
| -13 | .01049 | .93996 | .00126 | .15059 | -.00610 | -1.13495 | -.01476 | -.38218 |
| -12 | .01071 | .98474 | .01198 | .34074 | -.00410 | -.74424 | -.01886 | -.60734 |
| -11 | -.00762 | -.99868 | .00435 | .14789 | -.00155 | -.47115 | -.02045 | -.74989 |
| -10 | .00065 | .24767 | .00500 | .19572 | -.00359 | -.90691 | -.02404 | -1.02424 |
| -9 | .00247 | .26577 | .00747 | .24704 | .00085 | -.16481 | -.02319 | -1.07410 |
| -8 | -.00488 | -.35560 | .00258 | .17037 | .00179 | .56990 | -.02140 | -.90260 |
| -7 | -.00610 | -.79180 | -.00351 | .02548 | .00512 | .55372 | -.01627 | -.73506 |
| -6 | -.00338 | -.20695 | -.00690 | -.01448 | -.00913 | -1.01928 | -.02540 | -1.04345 |
| -5 | -.01065 | -1.83199 | -.01756 | -.36824 | .01201 | .81569 | -.01339 | -.79568 |
| -4 | -.00141 | -.43471 | -.01897 | -.45218 | .00226 | .04546 | -.01110 | -.76294 |
| -3 | .00574 | .85241 | -.01323 | -.28758 | -.01896 | -2.60651 | -.03008 | -1.57144 |
| -2 | -.00199 | -.09543 | -.01523 | -.30601 | -.00664 | -.17221 | -.03673 | -1.62359 |
| -1 | -.00108 | -.15542 | -.01631 | -.33602 | -.00462 | .21700 | -.04136 | -1.55794 |
| 0 | -.00298 | -.92201 | -.01930 | -.51406 | .01402 | .82770 | -.02732 | -1.30753 |
| 1 | .00854 | 1.77466 | -.01075 | -.17137 | -.00280 | .52487 | -.03014 | -1.14674 |
| 2 | -.01294 | -2.13166 | -.02370 | -.58300 | -.00643 | -.34491 | -.03857 | -1.25309 |
| 3 | -.00419 | -.08949 | -.02789 | -.60028 | .00146 | .11781 | -.03710 | -1.21745 |
| 4 | .00118 | .57157 | -.02671 | -.48991 | .00542 | .03197 | -.03168 | -1.20777 |
| 5 | -.00138 | .23763 | -.02809 | -.44402 | .00441 | -.39484 | -.02726 | -1.32725 |
| 6 | .01790 | 2.02931 | -.01019 | -.05216 | .01463 | .55156 | -.01263 | -1.16035 |
| 7 | .00502 | 1.06578 | -.00517 | .15363 | -.00526 | -.04376 | -.01792 | -1.17366 |
| 8 | .00384 | .56258 | -.00133 | .26227 | -.01242 | -1.24770 | -.03035 | -1.55107 |
| 9 | .01846 | 2.08955 | .01713 | .66576 | -.00515 | -.37295 | -.03550 | -1.66396 |
| 10 | .00739 | .99183 | .02453 | .85729 | .00203 | .05893 | -.03346 | -1.64607 |
| 11 | .00109 | .17536 | .02563 | .89115 | .00513 | -.26187 | -.02933 | -1.72529 |
| 12 | -.00199 | -.37071 | .02364 | .81956 | -.01161 | -1.56657 | -.03995 | -2.19963 |
| 13 | .00501 | .67931 | .02866 | .95074 | .00583 | .43983 | -.03401 | -2.06676 |
| 14 | .00324 | .74402 | .03190 | 1.09456 | .00056 | .39791 | -.03350 | -1.94636 |
| 15 | .00321 | .33841 | .03512 | 1.15991 | -.00526 | .77966 | -.03879 | -1.71656 |

Graph #B-34




Graph #B-35




Graph #B-36

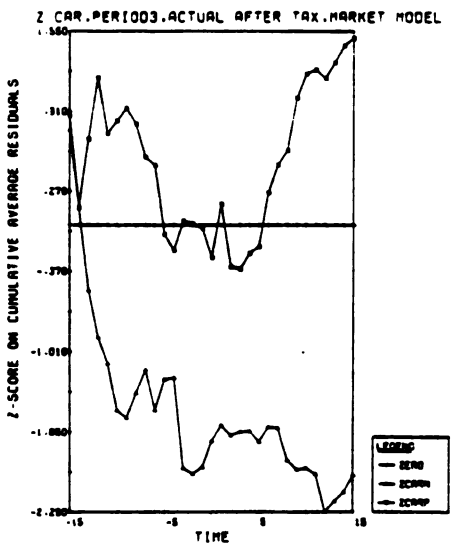
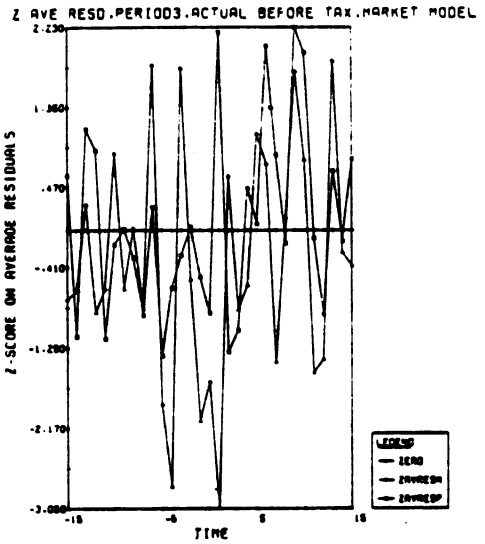


TABLE #B-25

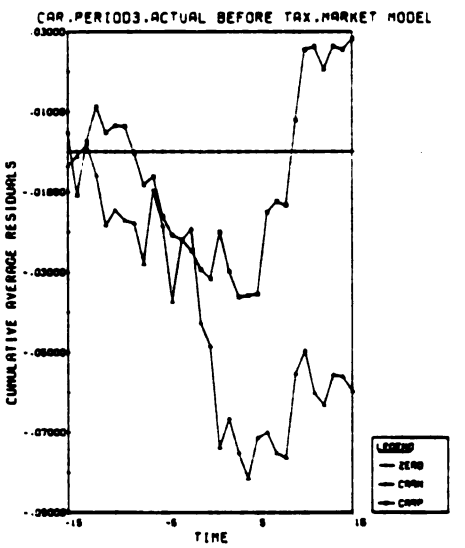
Positive/Negative NPV Firms
Period 3 - Before Tax Discount Rate
Market Model
Actual Exchange

| | Positive NPV Firms (21) | | | | Negative NPV Firms (17) | | | |
|---|---|---|---|---|---|---|---|---|
| Day | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals | Average Residuals | Z score on Average Residuals | Cumulative Average Residuals | Standard Cumulative Residuals |
| -15 | .00465 | .59884 | .00465 | .13112 | -.00349 | -.75901 | -.00349 | -.18470 |
| -14 | -.01549 | -1.16503 | -.01084 | -.12396 | .00230 | -.67117 | -.00118 | -.34804 |
| -13 | .01347 | 1.11099 | .00262 | .11928 | .00311 | .26077 | .00193 | -.27971 |
| -12 | .00870 | .87538 | .01133 | .31095 | -.00778 | -.90035 | -.00585 | -.49881 |
| -11 | -.00655 | -1.18973 | .00478 | .05046 | -.01248 | -.64424 | -.01833 | -.65559 |
| -10 | .00178 | .15811 | .00657 | .01584 | .00371 | .84211 | -.01461 | -.45066 |
| -9 | -.00020 | .01385 | .00636 | .01887 | -.00252 | -.64347 | -.01713 | -.60725 |
| -8 | -.00688 | -.30503 | -.00051 | -.04809 | -.00066 | .02069 | -.01780 | -.60222 |
| -7 | -.00765 | -.93095 | -.00817 | -.25192 | -.01017 | -.86593 | -.02797 | -.81295 |
| -6 | .00198 | .25223 | -.00618 | -.19669 | .01843 | 1.81557 | -.00954 | -.37112 |
| -5 | -.00993 | -1.37408 | -.01611 | -.49756 | -.00893 | -1.91095 | -.01848 | -.83616 |
| -4 | -.00463 | -.63250 | -.02075 | -.63605 | -.01884 | -2.80631 | -.03732 | -1.51957 |
| -3 | -.00113 | -.27513 | -.02189 | -.69629 | .01527 | 1.77679 | -.02205 | -1.08670 |
| -2 | -.00274 | .03853 | -.02464 | -.68785 | .00282 | -.53946 | -.01922 | -1.21798 |
| -1 | -.00469 | -.50988 | -.02934 | -.79949 | -.02348 | -2.06932 | -.04270 | -1.72642 |
| 0 | -.00228 | -.90784 | -.03162 | -.99827 | -.00573 | -1.65835 | -.04843 | -2.12999 |
| 1 | .01164 | 2.17299 | -.01997 | -.52248 | -.02535 | -3.04615 | -.07379 | -2.87129 |
| 2 | -.00986 | -1.33128 | -.02984 | -.81397 | .00728 | .59221 | -.06650 | -2.72717 |
| 3 | -.00643 | -1.09337 | -.03627 | -1.05337 | -.00852 | -.86914 | -.07505 | -2.93868 |
| 4 | .00048 | .45814 | -.03579 | -.95306 | -.00644 | -.61169 | -.08150 | -3.06510 |
| 5 | .00034 | .07269 | -.03544 | -.93714 | .01016 | 1.05784 | -.07133 | -2.82767 |
| 6 | .02034 | 2.02188 | -.01510 | -.49444 | .00136 | .72552 | -.06997 | -2.65111 |
| 7 | .00275 | .82740 | -.01235 | -.31328 | -.00523 | -1.44539 | -.07520 | -3.00286 |
| 8 | -.00102 | -.14293 | -.01337 | -.34457 | -.00106 | .14061 | -.07528 | -2.98864 |
| 9 | .02127 | 2.22943 | .00789 | .14356 | .02093 | 1.74215 | -.05535 | -2.54468 |
| 10 | .01758 | 1.95061 | .02548 | .57066 | .00572 | .76939 | -.04963 | -2.35744 |
| 11 | .00086 | -.08410 | .02635 | .55224 | -.01066 | -1.56093 | -.06029 | -2.73730 |
| 12 | -.00577 | -.91930 | .02057 | .35096 | -.00297 | -1.41197 | -.06321 | -3.08091 |
| 13 | .00582 | .64919 | .02639 | .49310 | .00757 | 1.85687 | -.05563 | -2.62903 |
| 14 | -.00091 | -.11822 | .02548 | .46721 | -.00046 | -.24159 | -.05612 | -2.58782 |
| 15 | .00282 | .77922 | .02830 | .63783 | -.00362 | -.38866 | -.05974 | -2.78245 |

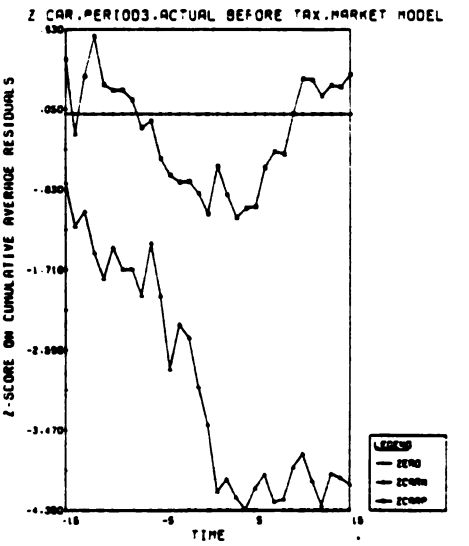
Graph #B-37



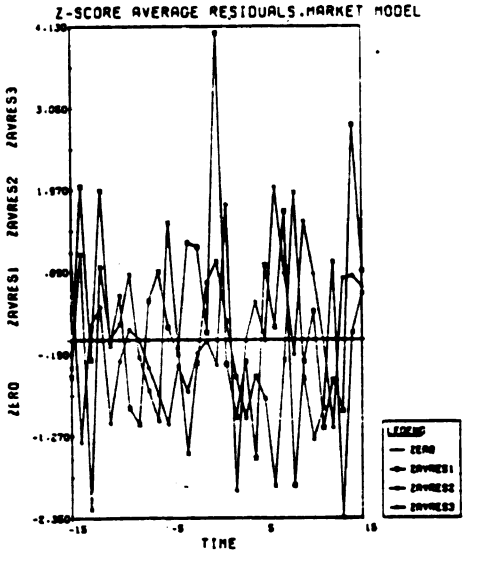

Graph #B-38



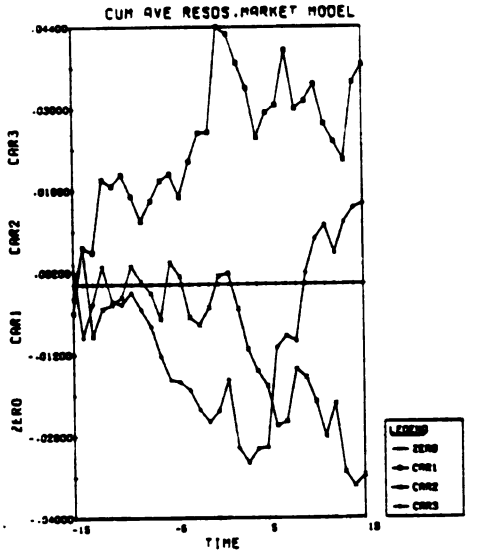

Graph #B-39



Graph #B-40




Graph #B-41




Graph #B-42

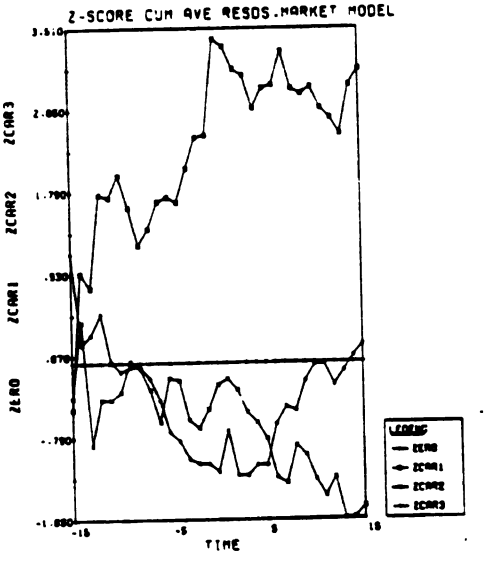


TABLE B-26

Period 1
Spearman Rank Order Correlations
Market Model Residuals

| | After-tax Discount Rate | | Before-tax Discount Rate | |
|---|---|---|---|---|
| | Spearman | Probability | Spearman | Probability |
| 100% Exchange | | | | |
| t - 1 | .0820 | .308 | .3846 | .008 |
| t 0 | -.2026 | .105 | -.0705 | .333 |
| t + 1 | -.1462 | .185 | .0983 | .274 |
| Average | -.2197 | .087 | .0398 | .404 |
| Actual Exchange | | | | |
| t - 1 | .0274 | .434 | .4936 | .001 |
| t 0 | -.2002 | .108 | -.0989 | .272 |
| t + 1 | -.1272 | .218 | -.0178 | .457 |
| Average | -.2747 | .073 | .0336 | .419 |

TABLE B-27

Period 2
Spearman Rank Order Correlations
Market Model Residuals

| | After-tax Discount Rate | | Before-tax Discount Rate | |
|---|---|---|---|---|
| | Spearman | Probability | Spearman | Probability |
| 100% Exchange | | | | |
| t - 1 | -.2777 | .051 | .0100 | .477 |
| t 0 | .0806 | .321 | .1624 | .172 |
| t + 1 | .0432 | .402 | .1320 | .222 |
| Average | -.1104 | .261 | .1598 | .176 |
| Actual Exchange | | | | |
| t - 1 | -.2582 | .065 | .0782 | .326 |
| t 0 | .0342 | .422 | .1851 | .140 |
| t + 1 | .0471 | .393 | .0636 | .357 |
| Average | -.0865 | .308 | .1640 | .170 |

TABLE B-28

Period 3
Spearman Rank Order Correlations
Market Model Residuals
Actual Exchange

| | Spearman | Probability |
|---|---|---|
| After-tax Discount Rate | | |
| t - 1 | -.1668 | .159 |
| t 0 | -.1721 | .151 |
| t + 1 | .1616 | .167 |
| Average | -.1049 | .266 |
| Before-tax Discount Rate | | |
| t - 1 | -.1679 | .157 |
| t 0 | .0758 | .326 |
| t + 1 | .1036 | .268 |
| Average | .0848 | .307 |

TABLE B-29
Spearman Rank Order Correlations
Aggregated Correlations
Actual Exchange Results
Market Model Residuals

| | Spearman | Probability |
|---|---|---|
| After-tax Discount Rate | | |
| t - 1 | -.3132 | .034 |
| t 0 | -.2647 | .063 |
| t + 1 | .0667 | .352 |
| Average | -.2773 | .054 |
| Before-tax Discount Rate | | |
| t - 1 | .0751 | .335 |
| t 0 | .1076 | .270 |
| t + 1 | .1711 | .163 |
| Average | .1280 | .232 |

TABLE B-30

Spearman Rank Order Correlations
Aggregated 16-Day CAR's
Actual Exchange Results
Market Model Residuals

| | After-tax Discount Rate | | Before-tax Discount Rate | |
|---|---|---|---|---|
| | Spearman | Probability | Spearman | Probability |
| Period 1 | -.2867 | .037 | -.3523 | .013 |
| Period 2 | .1014 | .279 | .0903 | .301 |
| Period 3 | .1778 | .143 | .1505 | .184 |
| Average | .0258 | .442 | -.1014 | .282 |

TABLE B-31

Period 1
Pearson Product Moment Correlations
Market Model Residuals

| | After-tax Discount Rate | | Before-tax Discount Rate | |
|---|---|---|---|---|
| | Pearson's | Probability | Pearson's | Probability |
| 100% Exchange | | | | |
| t - 1 | -.0295 | .428 | .1554 | .169 |
| t 0 | -.0082 | .480 | .0416 | .399 |
| t + 1 | -.3127 | .022 | -.1798 | .133 |
| Average | -.1617 | .159 | -.0055 | |
| Actual Exchange | | | | |
| t - 1 | -.0684 | .337 | .2847 | .037 |
| t 0 | -.1233 | .224 | .0013 | .497 |
| t + 1 | -.3491 | .014 | -.1336 | .206 |
| Average | -.2495 | .060 | .0404 | .402 |

TABLE B-32

Period 2
Pearson Product Moment Correlations
Market Model Residuals

| | After-tax Discount Rate | | Before-tax Discount Rate | |
|---|---|---|---|---|
| | Pearson's | Probability | Pearson's | Probability |
| 100% Exchange | | | | |
| t - 1 | -.0034 | .492 | .0232 | .447 |
| t 0 | -.0621 | .360 | -.2087 | .111 |
| t + 1 | .2906 | .043 | .2767 | .051 |
| Average | .1638 | .166 | .3702 | .012 |
| Actual Exchange | | | | |
| t - 1 | .0237 | .445 | .0390 | .411 |
| t 0 | .1780 | .149 | -.0808 | .320 |
| t + 1 | .1951 | .127 | .2170 | .102 |
| Average | .1758 | .149 | .5048 | .001 |

TABLE B-33

Period 3
Pearson Product Moment Correlations
Actual Exchange Results
Market Model Residuals

| | Pearson's | Probability |
|---|---|---|
| After-tax Discount Rate | | |
| t - 1 | -.1757 | .146 |
| t 0 | .0021 | .495 |
| t + 1 | .1016 | .272 |
| Average | .3285 | .021 |
| Before-tax Discount Rate | | |
| t - 1 | -.1502 | .184 |
| t 0 | .1225 | .232 |
| t + 1 | -.0210 | .450 |
| Average | .0594 | .360 |

TABLE B-34

Pearson Product Moment Correlations
Aggregated Correlations
Actual Exchange Results
Market Model Residuals

| | Pearson's | Probability |
|---|---|---|
| After-tax Discount Rate | | |
| t - 1 | -.0529 | .381 |
| t 0 | -.0467 | .395 |
| t + 1 | -.0620 | .362 |
| Average | -.0886 | .306 |
| Before-tax Discount Rate | | |
| t - 1 | .0534 | .380 |
| t 0 | .1030 | .278 |
| t + 1 | .0935 | .297 |
| Average | .1229 | .241 |

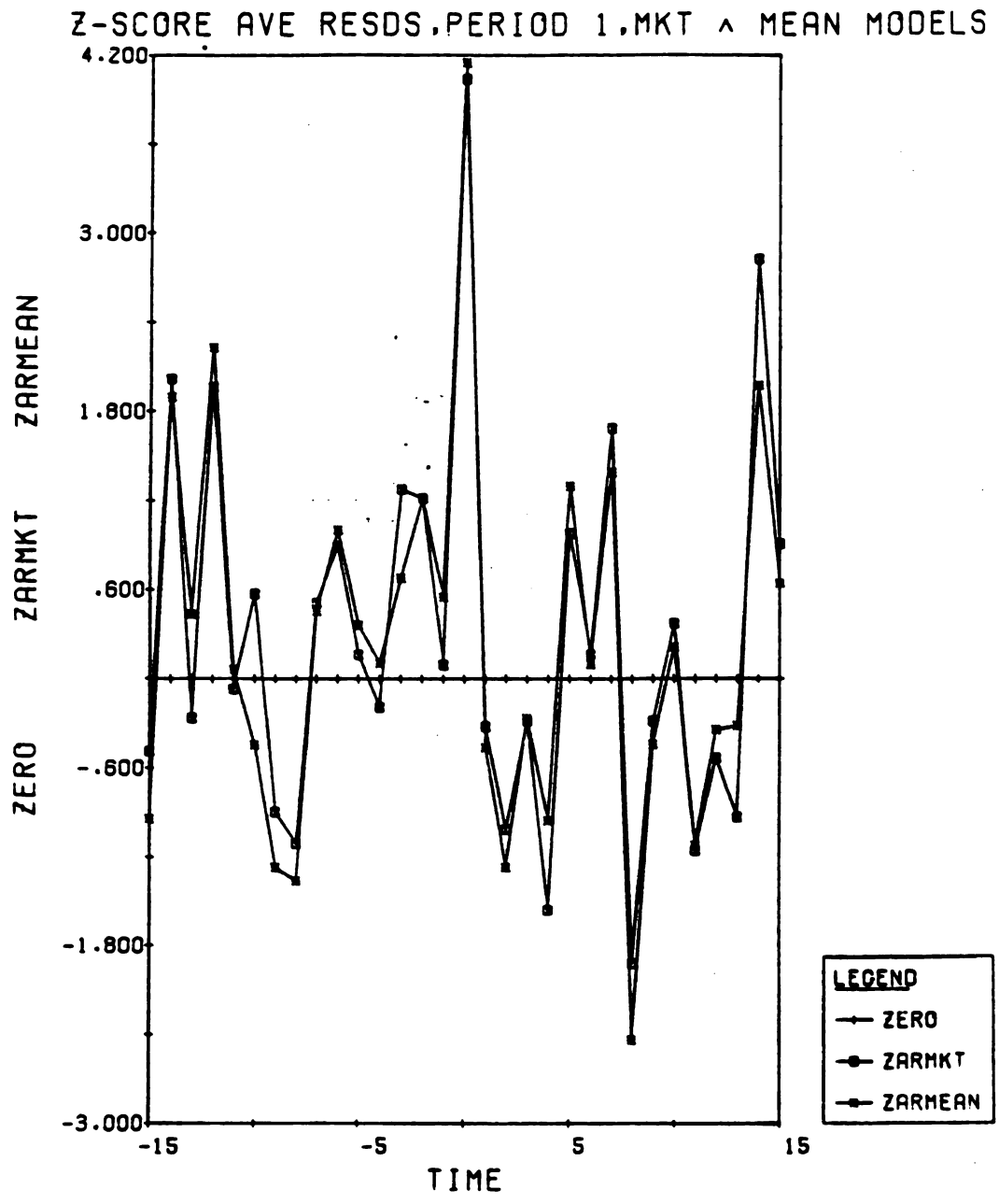
TABLE B-35

Pearson Product Moment Correlations
Aggregated 16 Day CARS
Market Model Residuals

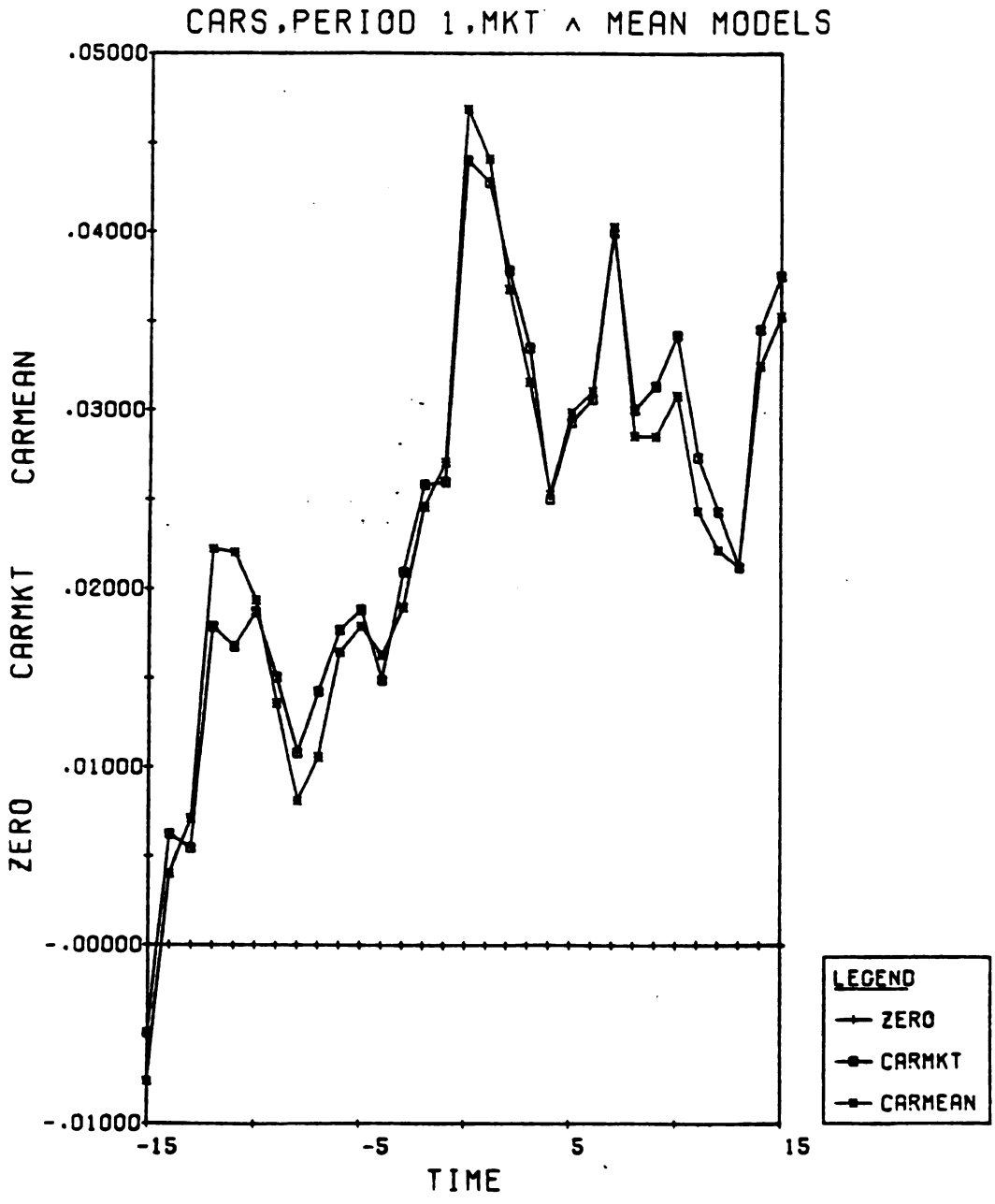
| | After-tax Discount Rate | | Before-tax Discount Rate | |
|---|---|---|---|---|
| | Pearson's | Probability | Pearson's | Probability |
| Period 1 | -.2122 | .094 | -.2671 | .048 |
| Period 2 | .0590 | .366 | -.0551 | .375 |
| Period 3 | -.0121 | .471 | .0232 | .445 |
| Average | -.0758 | .333 | -.1010 | .280 |

# APPENDIX C

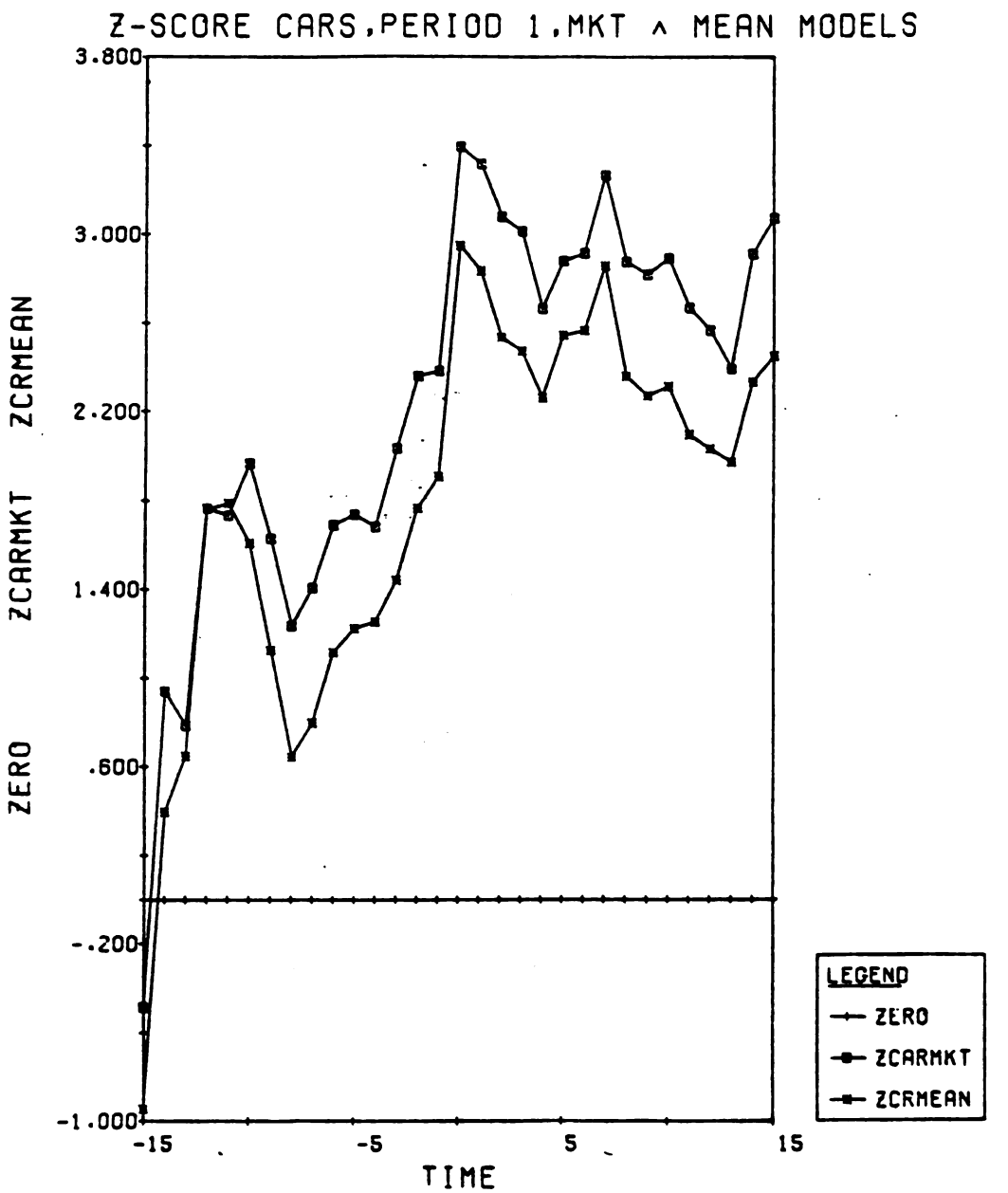
GRAPH #C-1


Z-SCORE AVE RESDS.PERIOD 1.MKT ∧ MEAN MODELS
4.200
3.000
1.800
.600
-.600
-1.800
-3.000
ZERO
ZARMKT
ZARMEAN
-15
-5
5
15
TIME
LEGEND
ZERO
ZARMKT
ZARMEAN

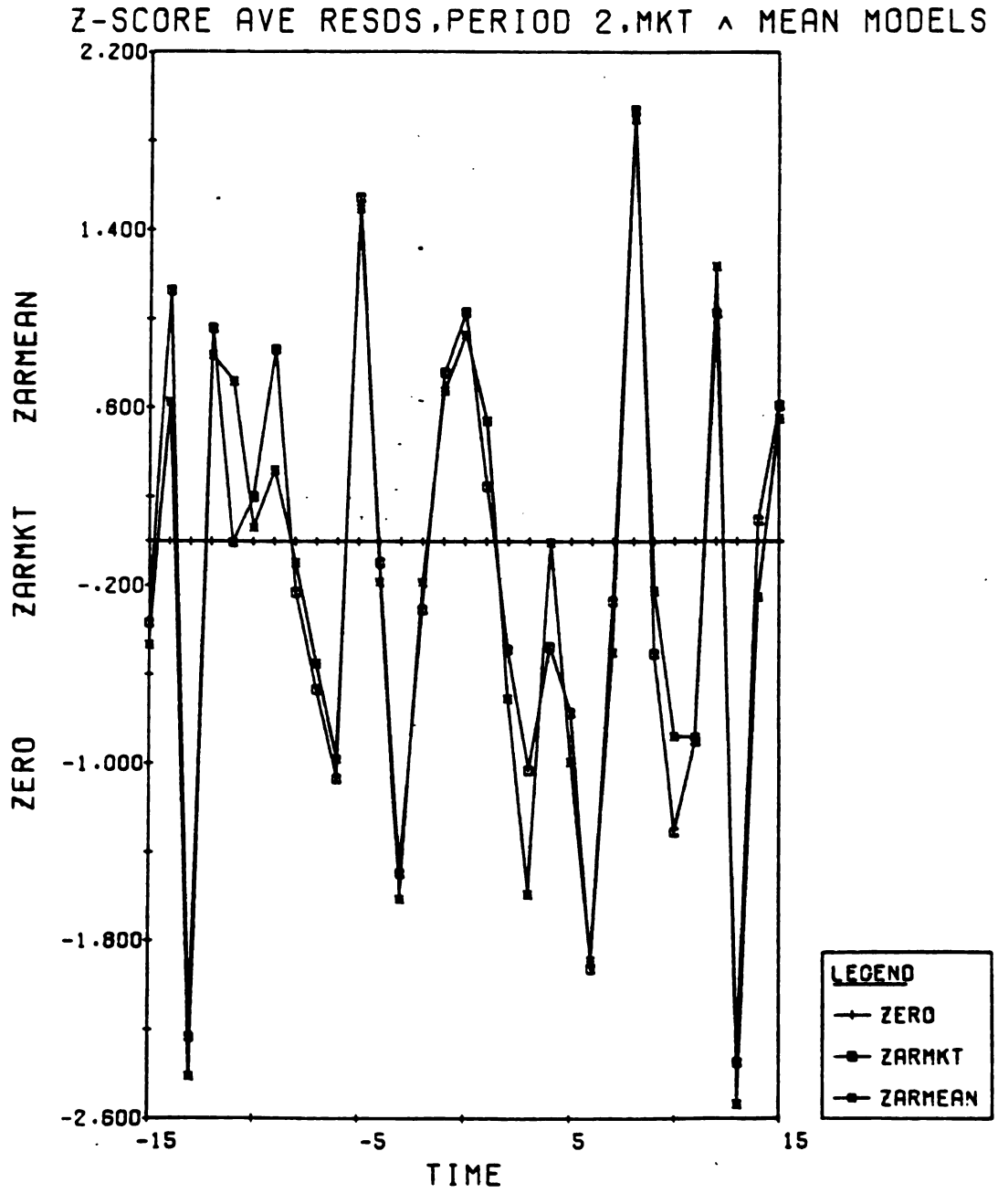
GRAPH #C-2


CARS,PERIOD 1,MKT ∧ MEAN MODELS
.05000
.04000
.03000
.02000
.01000
-.00000
-.01000
ZERO
CARMKT
CARMEAN
-15
-5
5
15
TIME
LEGEND
ZERO
CARMKT
CARMEAN

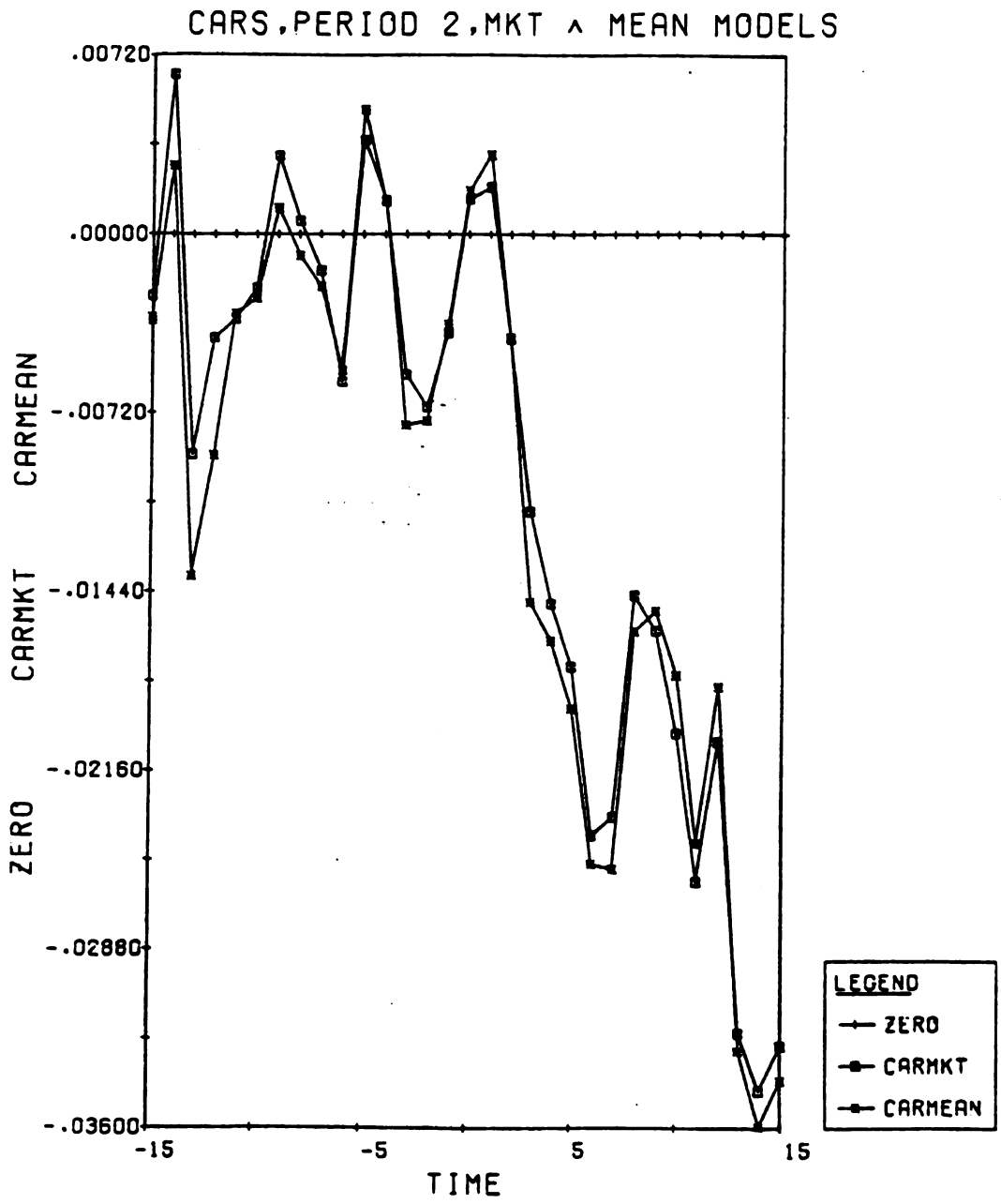
GRAPH #C-3


Z-SCORE CARS,PERIOD 1,MKT ∧ MEAN MODELS
3.800
3.000
2.200
1.400
.600
-.200
-1.000
ZERO ZCARMKT ZCRMEAN
-15
-5
5
15
TIME
LEGEND
ZERO
ZCARMKT
ZCRMEAN

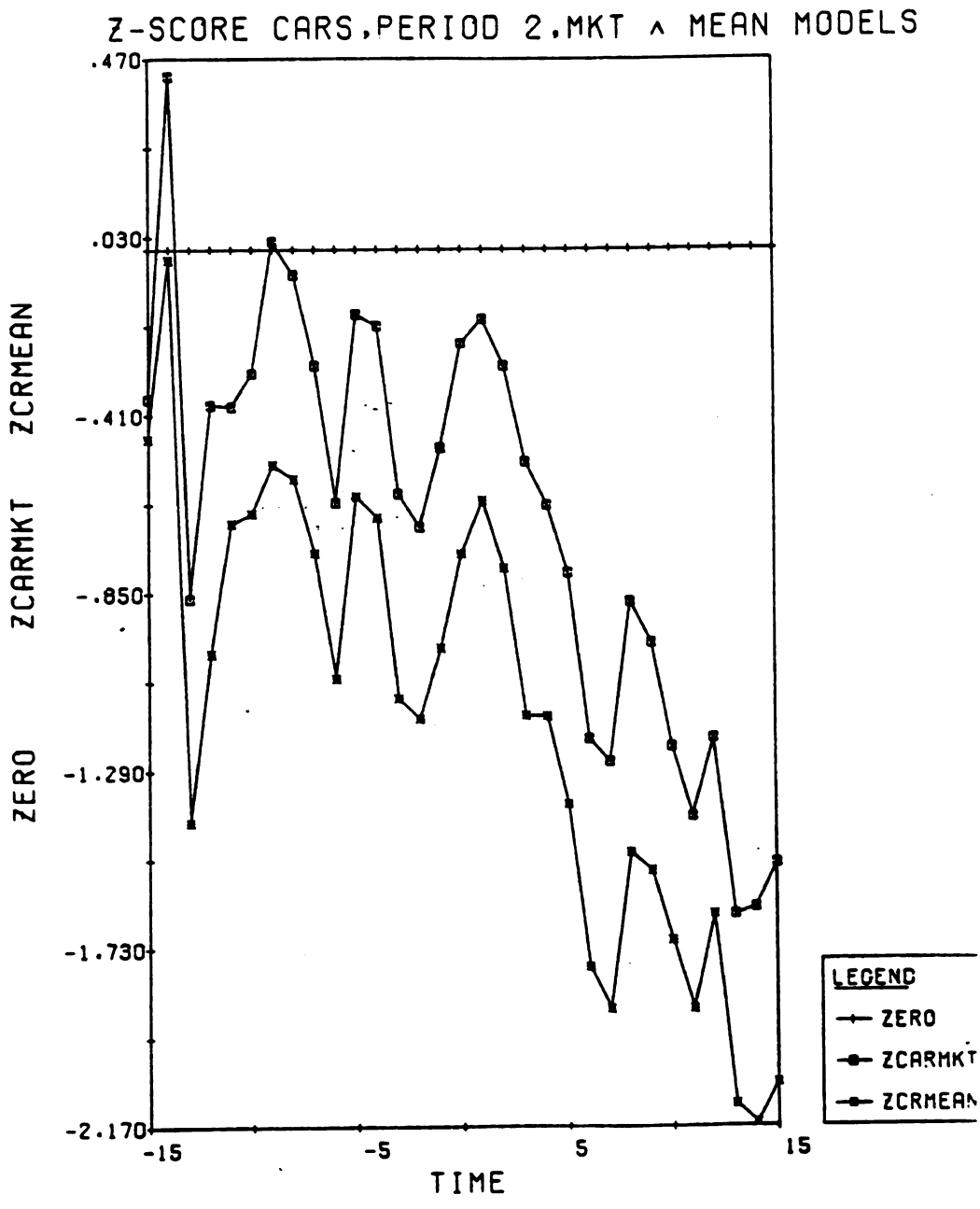
GRAPH # C-4


Z-SCORE AVE RESDS,PERIOD 2,MKT ∧ MEAN MODELS
2.200
1.400
.600
-.200
-1.000
-1.800
-2.600
ZERO ZARMKT ZARMEAN
-15
-5
5
15
TIME
LEGEND
ZERO
ZARMKT
ZARMEAN

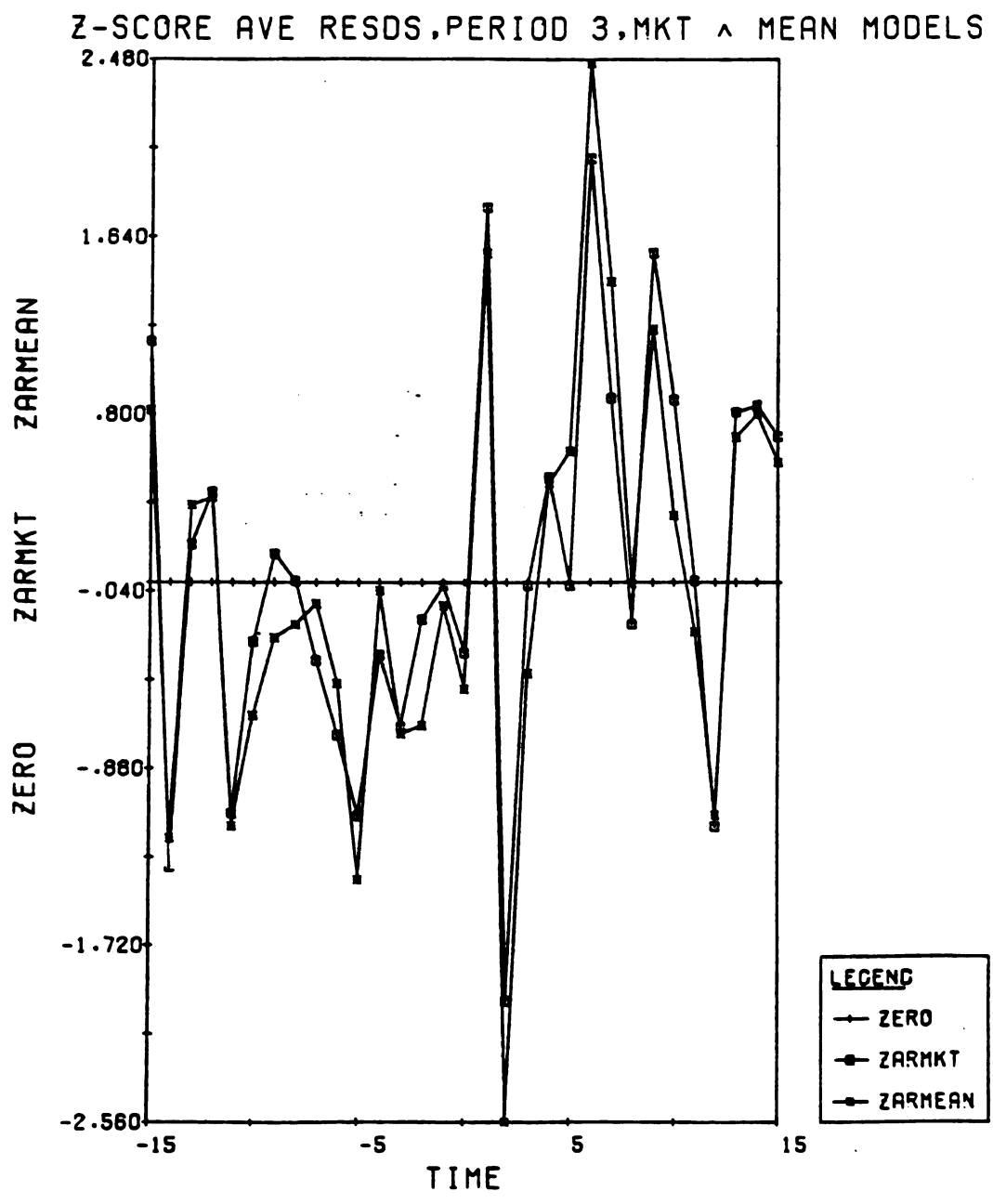
GRAPH #C-5


CARS,PERIOD 2,MKT ∧ MEAN MODELS
.00720
.00000
-.00720
-.01440
-.02160
-.02880
-.03600
ZERO
CARMKT
CARMEAN
-15
-5
5
15
TIME
LEGEND
ZERO
CARMKT
CARMEAN

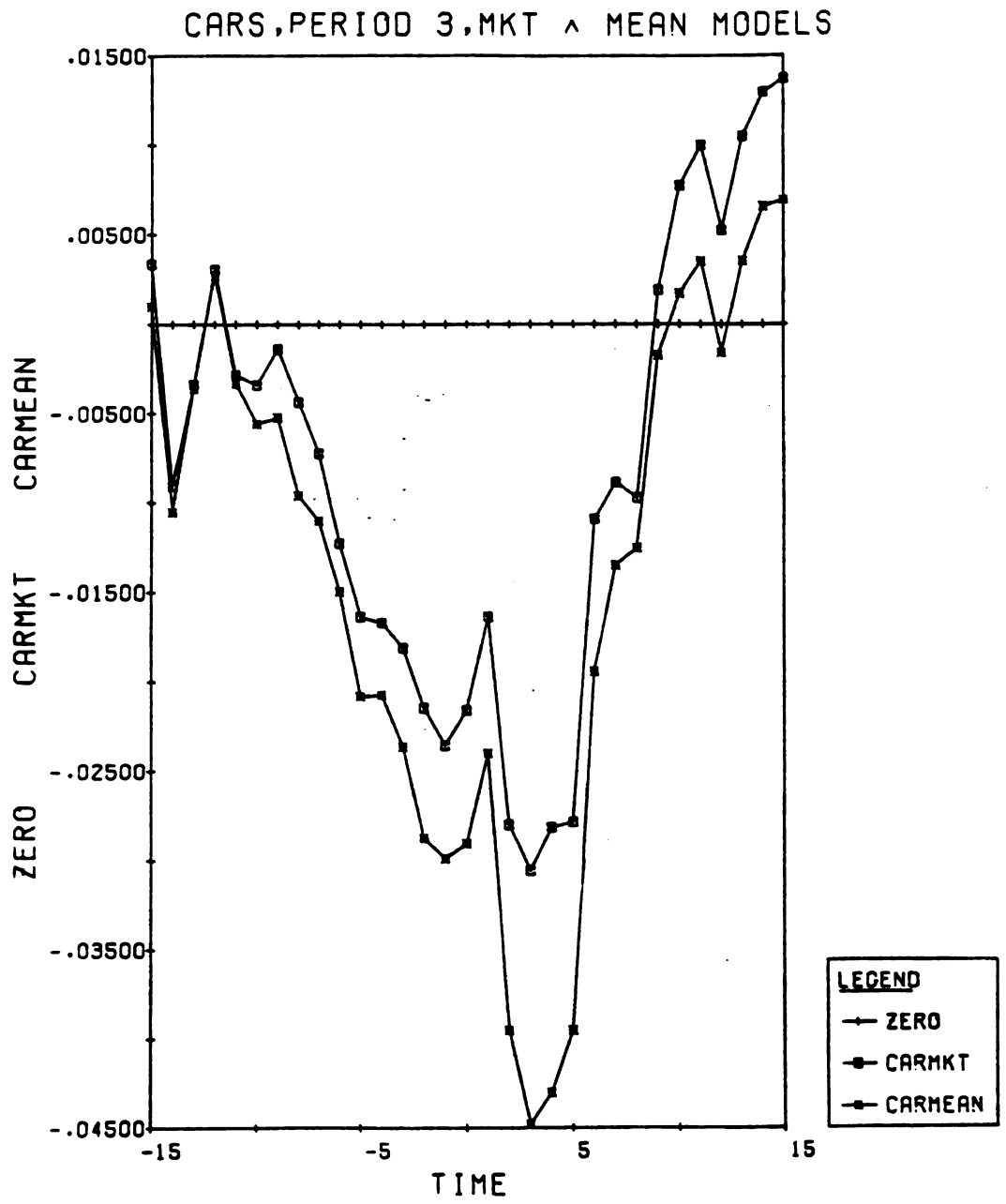
GRAPH # C-6


Z-SCORE CARS,PERIOD 2,MKT ∧ MEAN MODELS
.470
.030
-.410
-.850
-1.290
-1.730
-2.170
ZERO ZCARMKT ZCRMEAN
-15
-5
5
15
TIME
LEGEND
ZERO
ZCARMKT
ZCRMEAN

GRAPH #C-7


Z-SCORE AVE RESDS,PERIOD 3,MKT ∧ MEAN MODELS
2.480
1.640
.800
-.040
-.880
-1.720
-2.560
ZERO ZARMKT ZARMEAN
-15
-5
5
15
TIME
LEGEND
ZERO
ZARMKT
ZARMEAN

GRAPH #C-8


CARS,PERIOD 3,MKT ∧ MEAN MODELS
.01500
.00500
-.00500
-.01500
-.02500
-.03500
-.04500
ZERO
CARMKT
CARMEAN
-15
-5
5
15
TIME
LEGEND
ZERO
CARMKT
CARMEAN

GRAPH #C-9

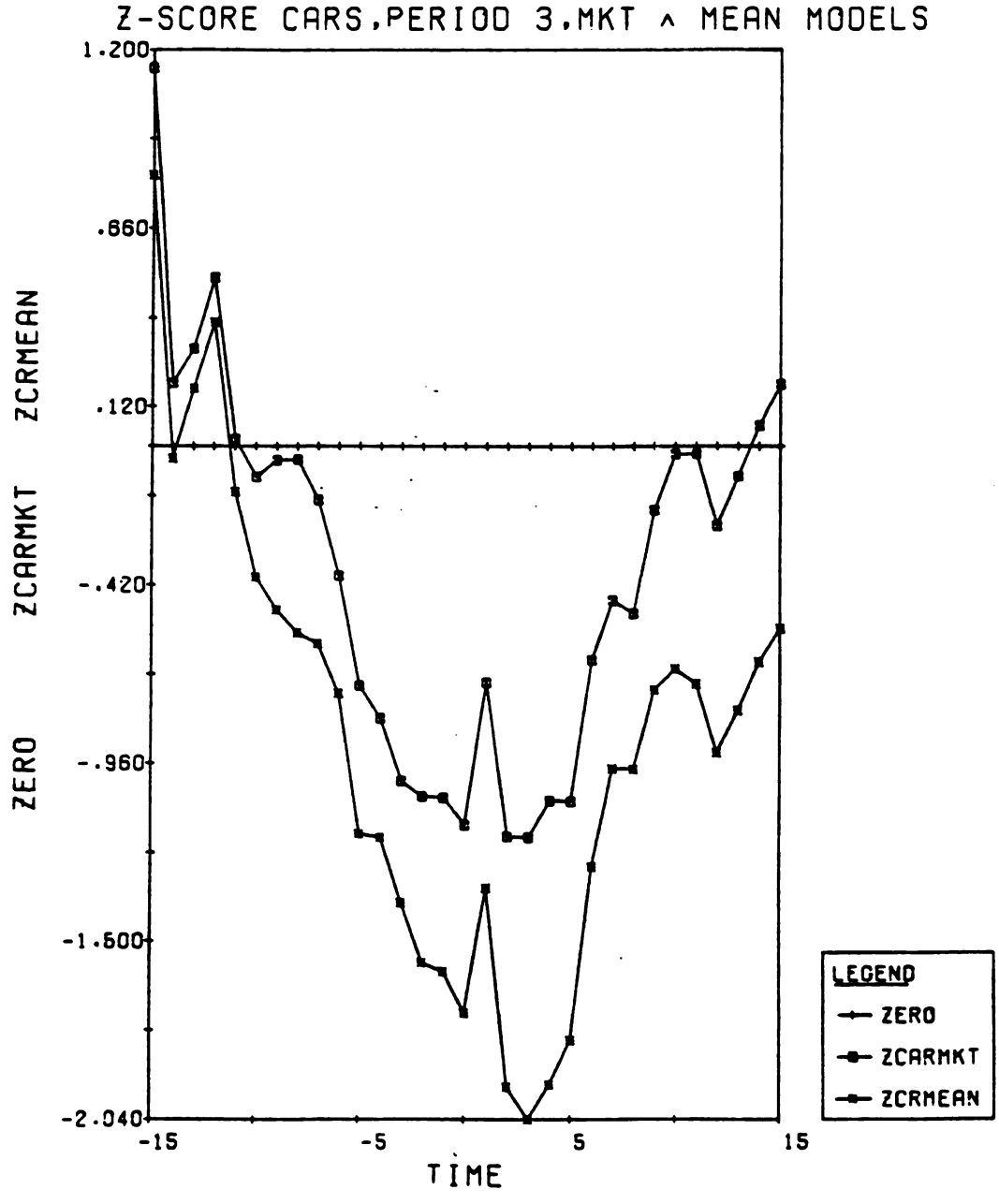

Z-SCORE CARS,PERIOD 3,MKT ∧ MEAN MODELS
1.200
.660
.120
-.420
-.960
-1.500
-2.040
ZERO
ZCARMKT
ZCRMEAN
-15
-5
5
15
TIME
LEGEND
ZERO
ZCARMKT
ZCRMEAN

Table #D-1

NPV/Mkt Actual Exchange
After-Tax Discount Rate
Period 1

| Firm | After-tax NPV (millions $) | Average Market Value (millions $) | Ratio (%) |
|---|---|---|---|
| Allegheny Airlines Inc. | 3.5833 | 32.2284 | 11.1186 |
| Allegheny Ludlum Industries Inc. | -6.1608 | 216.5985 | -3.1780 |
| American Medicorp. | .8737 | 42.0464 | 2.0779 |
| Athlone Industries, Inc. | -.0047 | 47.8733 | -.0099 |
| Bay Colony Property | -1.7762 | 6.8816 | -25.8114 |
| Chase Manhattan Mortgage & Realty Co. | 6.5575 | 10.9935 | 59.649 |
| Chelsea Industries, Inc. | .4085 | 16.2506 | 2.5136 |
| Columbia Pictures Industries, Inc. | .9095 | 41.1628 | 2.21 |
| Condec Corporation | -1.3286 | 20.6042 | -6.448 |
| Cooper Labs, Incorporated | .6947 | 62.9536 | 1.1 |
| Dillingham Corporation | 2.7429 | 90.3901 | 3.0346 |
| Fairchild Industries, Inc. | -3.1118 | 60.0232 | -5.1843 |
| Fedders Corporation | .4495 | 110.97 | .405 |
| Fibreboard Corporation | 1.4404 | 50.0425 | 2.8784 |
| General Host Corporation | 3.6054 | 14.0184 | 25.7189 |
| General Instruments | .4276 | 52.5862 | .8131 |
| Grumman Corporation | 3.791 | 79.1268 | 4.791 |
| Gulf & Western Industries, Inc. | -16.0599 | 643.3942 | -2.4961 |
| Insilco Corporation | 1.1707 | 76.6605 | 1.527 |
| Institutional Investors | -2.8443 | 16.0961 | -17.67 |
| LTV Corporation | 1.4991 | 135.0457 | 1.11 |
| McCulloch Oil Corporation | 1.6997 | 79.2602 | 2.1444 |
| MGM | .3639 | 65.8377 | .5527 |
| Mohawk Data Sciences Corporation | 1.8592 | 19.8355 | 9.3732 |
| National Industries | -3.3089 | 25.2835 | -13.0872 |
| Pan Am | 53.4283 | 291.8610 | 18.306 |
| Pioneer Texas Corporation | .01892 | 12.1836 | .1553 |
| Pittston Company | 2.7179 | 685.7742 | .396 |
| Ramada Inns | 1.9498 | 87.7485 | 2.222 |
| Rapid American Corporation | 8.9749 | 56.7451 | 15.816 |
| Roblin Industries Inc. | .8484 | 3.4468 | 24.613 |
| Rusco Industries Inc. | .3753 | 11.0617 | 3.393 |
| Sanders Assoc Inc. | 1.3496 | 12.9159 | 10.449 |
| Texstar Corporation | -.079 | 11.0635 | -.714 |
| UAL | 5.8875 | 486.1462 | 1.211 |
| United Brands Co. | 6.4495 | 133.7683 | 4.821 |
| Western Union Co. | -2.6536 | 252.9024 | -1.049 |
| White Motor Corporation | 1.3479 | 47.7156 | 2.8249 |
| Wickes Corporation | 1.7348 | 149.7414 | 1.1585 |
| Zapata Corporation | -1.0897 | 77.877 | -1.399 |

Table #D-2

NPV/Mkt 100% Exchange
After-Tax Discount Rate
Period 1

| Firm | After-tax NPV (millions $) | Average Market Value (millions $) | Ratio (%) |
|---|---|---|---|
| Allegheny Airlines Inc. | 6.4004 | 32.2284 | 19.8596 |
| Allegheny Ludlum Industries, Inc. | -7.1619 | 216.5985 | -3.6944 |
| American Medicorp. | 2.9 | 42.0464 | 6.897 |
| Athlone Industries, Inc. | -.0176 | 47.8733 | -.0367 |
| Bay Colony Property | -2.5299 | 6.8816 | -36.7647 |
| Chase Manhattan Mortgage & Realty Co. | 18.3446 | 10.9935 | 166.868 |
| Chelsea Industries, Inc. | 1.2205 | 16.2506 | 7.51 |
| Columbia Pictures Industries, Inc. | 1.4882 | 41.1628 | 3.615 |
| Condec Corporation | -1.7653 | 20.6042 | -8.568 |
| Cooper Labs, Incorporated | 1.2235 | 62.9536 | 1.9435 |
| Dillingham Corporation | 4.7727 | 90.3901 | 5.28 |
| Fairchild Industries, Inc. | -4.3499 | 60.0232 | -7.2471 |
| Fedders Corporation | 2.6777 | 110.970 | 2.413 |
| Fibreboard Corporation | 1.8574 | 50.0425 | 3.7116 |
| General Host Corporation | 4.9645 | 14.0184 | 35.4145 |
| General Instruments | .6722 | 52.5862 | 1.2782 |
| Grumman Corporation | 7.4748 | 79.1268 | 9.447 |
| Gulf & Western Industries, Inc. | -27.6204 | 643.3942 | -4.2929 |
| Insilco Corporation | 1.5609 | 76.6605 | 2.036 |
| Institutional Investors | -3.8963 | 16.0961 | -24.407 |
| LTV Corporation | 4.2113 | 135.0457 | 3.118 |
| McCulloch Oil Corporation | 2.2571 | 79.2602 | 2.8478 |
| MGM | 1.0691 | 65.8377 | 1.6239 |
| Mohawk Data Sciences Corporation | 2.3935 | 19.8355 | 12.067 |
| National Industries | -4.4702 | 25.2835 | -17.6804 |
| Pan Am | 71.591 | 291.8610 | 24.529 |
| Pioneer Texas Corporation | .1294 | 12.1836 | 1.0625 |
| Pittston Company | 4.1761 | 685.7742 | .609 |
| Ramada Inns | 2.3625 | 87.7485 | 2.6924 |
| Rapid American Corporation | 17.8743 | 56.7451 | 31.499 |
| Roblin Industries Inc. | .8543 | 3.4468 | 24.787 |
| Rusco Industries Inc. | .5736 | 11.0617 | 5.185 |
| Sanders Assoc Inc. | 2.4543 | 12.9159 | 19.002 |
| Texstar Corporation | -.5524 | 11.0635 | -4.9927 |
| UAL | 6.9308 | 486.1462 | 1.4257 |
| United Brands Co. | 3.7426 | 133.7683 | 2.798 |
| Western Union Co. | -3.433 | 252.9024 | -1.357 |
| White Motor Corporation | 1.3137 | 47.7156 | 2.3639 |
| Wickes Corporation | 2.45 | 149.7414 | 1.636 |
| Zapata Corporation | -1.7878 | 77.877 | -2.296 |

Table #D-3

NPV/Mkt Actual Exchange
Before-Tax Discount Rate
Period 1

| Firm | Before-tax NPV (millions $) | Average Market Value (millions $) | Ratio (%) |
|---|---|---|---|
| Allegheny Airlines Inc. | 4.0192 | 32.2284 | 12.4710 |
| Allegheny Ludlum Industries, Inc. | 4.085 | 216.5985 | 1.8860 |
| American Medicorp. | .3725 | 42.0464 | .8859 |
| Athlone Industries, Inc. | .8777 | 47.8733 | 1.8334 |
| Bay Colony Property | 1.524 | 6.8876 | 22.1460 |
| Chase Manhattan Mortgage & Realty Co. | 6.6059 | 10.9935 | 60.0891 |
| Chelsea Industries, Inc. | .0806 | 16.2506 | 4.9598 |
| Columbia Pictures Industries, Inc. | -1.5345 | 41.1628 | -3.7279 |
| Condec Corporation | -1.0047 | 20.6042 | -4.8762 |
| Cooper Labs, Incorporated | .0128 | 62.9536 | .0203 |
| Dillingham Corporation | 1.08 | 90.3901 | 1.1948 |
| Fairchild Industries, Inc. | -1.7485 | 60.0232 | -2.913 |
| Fedders Corporation | -.769 | 110.970 | -.6930 |
| Fibreboard Corporation | 1.0085 | 50.0425 | 2.0153 |
| General Host Corporation | .9707 | 14.0184 | 6.9245 |
| General Instruments | -.6998 | 52.5862 | -1.3308 |
| Grumman Corporation | 2.318 | 79.1268 | 2.9295 |
| Gulf & Western Industries, Inc. | -6.0369 | 643.3942 | -.9383 |
| Insilco Corporation | .3218 | 76.6605 | .4198 |
| Institutional Investors | -.1221 | 16.0961 | -.7586 |
| LTV Corporation | 5.9964 | 135.0457 | 4.4403 |
| McCulloch Oil Corporation | .0941 | 79.2602 | .1187 |
| MGM | -.1634 | 65.8377 | -.2482 |
| Mohawk Data Sciences Corporation | -.8569 | 19.855 | -4.3158 |
| National Industries | -.3862 | 25.2835 | 1.5275 |
| Pan Am | 40.115 | 291.861 | 13.7445 |
| Pioneer Texas Corporation | .0755 | 12.1836 | .6197 |
| Pittston Company | 1.0157 | 685.7742 | .1481 |
| Ramada Inns | -.585 | 87.7485 | .6667 |
| Rapid American Corporation | 19.7714 | 56.7451 | 34.8425 |
| Roblin Industries Inc. | .3571 | 3.4468 | 10.3603 |
| Rusco Industries, Inc. | .1417 | 11.0617 | 1.2810 |
| Sanders Assoc Inc. | -1.2101 | 12.9159 | -9.3691 |
| Texstar Corporation | -.0688 | 11.0635 | -6.88 |
| UAL | -1.4585 | 486.1462 | -.300 |
| United Brands Co. | -4.2367 | 133.7683 | -3.1672 |
| Western Union Co. | -6.4378 | 252.9024 | -2.5456 |
| White Motor Corporation | .9459 | 47.7156 | 1.9824 |
| Wickes Corporation | .6467 | 149.7414 | .4319 |
| Zapata Corporation | 1.0420 | 77.877 | 1.338 |

Table #D-4

NPV/Mkt 100% Exchange
Before-Tax Discount Rate
Period 1

| Firm | Before-tax NPV (millions $) | Average Market Value (millions $) | Ratio (%) |
|---|---|---|---|
| Allegheny Airlines Inc. | 7.8333 | 32.2284 | 24.3056 |
| Allegheny Ludlum Industries, Inc. | 4.7488 | 216.5985 | 2.1924 |
| American Medicorp. | .9865 | 42.0464 | 2.3462 |
| Athlone Industries, Inc. | 2.9789 | 47.8733 | 6.2224 |
| Bay Colony Property | 2.1707 | 6.8816 | 31.5435 |
| Chase Manhattan Mortgage & Realty Co. | 20.1987 | 10.9935 | 183.7331 |
| Chelsea Industries, Inc. | .2412 | 16.2506 | 1.4842 |
| Columbia Pictures Industries, Inc. | -2.3202 | 41.1628 | -5.6366 |
| Condec Corporation | -1.2525 | 20.6042 | -6.0788 |
| Cooper Labs, Incorporated | -.0348 | 62.9536 | -.0553 |
| Dillingham Corporation | 1.8793 | 90.3901 | 2.0791 |
| Fairchild Industries, Inc. | -2.4442 | 60.0232 | -4.0721 |
| Fedders Corporation | -1.1331 | 110.970 | -1.0211 |
| Fibreboard Corporation | 1.3108 | 50.0425 | 2.6194 |
| General Host Corporation | 1.3323 | 14.0184 | 9.5039 |
| General Instruments | -.9039 | 52.5862 | -1.7189 |
| Grumman Corporation | 4.5705 | 79.1268 | 5.7762 |
| Gulf & Western Industries, Inc. | -10.0854 | 643.3942 | -1.5675 |
| Insilco Corporation | .4291 | 76.6605 | .5597 |
| Institutional Investors | -.1672 | 16.0961 | -1.0388 |
| LTV Corporation | 16.7274 | 135.0457 | 12.3865 |
| McCulloch Oil Corporation | .1258 | 79.2602 | .1587 |
| MGM | -.480 | 65.8377 | -.7291 |
| Mohawk Data Sciences Corporation | -.8107 | 19.855 | -4.0831 |
| National Industries | -2.4324 | 25.2835 | 9.6207 |
| Pan Am | 56.73 | 291.861 | 19.4373 |
| Pioneer Texas Corporation | 1.0354 | 12.1836 | 8.4983 |
| Pittston Company | 1.5451 | 685.7742 | .2253 |
| Ramada Inns | .7085 | 87.7485 | .8074 |
| Rapid American Corporation | 38.9147 | 56.7451 | 68.5781 |
| Roblin Industries Inc. | .3596 | 3.4468 | 10.4328 |
| Rusco Industries Inc. | .2164 | 11.0617 | 1.9563 |
| Sanders Assoc Inc. | -.3773 | 12.9159 | -2.9212 |
| Texstar Corporation | -.4805 | 11.0635 | -4.3431 |
| UAL | -1.748 | 486.1462 | -.3596 |
| United Brands Co. | -2.688 | 133.7683 | -2.0094 |
| Western Union Co. | -8.3322 | 252.9024 | -3.2946 |
| White Motor Corporation | 1.0549 | 47.7156 | 2.2109 |
| Wickes Corporation | .9134 | 149.7414 | .6100 |
| Zapata Corporation | 1.7091 | 77.877 | 2.1946 |

Table #D-5

NPV/Mkt Actual Exchange
After Tax Discount Rate
Period 2

| Firm | After-tax NPV (millions $) | Average Market Value (millions $) | Ratio (%) |
|---|---|---|---|
| Allegheny Airlines Inc. | 3.5833 | 32.0778 | 11.1718 |
| Allegheny Ludlum | -6.1608 | 189.3105 | -3.2543 |
| American Medicorp | .8737 | 47.9655 | 1.8215 |
| Athlone Industries, Inc. | -.0047 | 48.9204 | -.0096 |
| Bay Colony Property | -1.7762 | 10.1728 | -17.4607 |
| Chase Manhattan Mortgage & Realty Co. | 6.5575 | 10.8713 | 60.3194 |
| Chelsea Industries, Inc. | .4085 | 20.0625 | 2.036 |
| Columbia Pictures Industries, Inc. | .9095 | 56.3458 | 1.61 |
| Condec Corporation | -1.3286 | 27.0515 | -4.9113 |
| Continental Investment Trust | -8.7826 | 88.1856 | -9.959 |
| Cooper Labs, Incorporated | .6947 | 57.68 | 1.204 |
| Dillingham Corporation | 2.7429 | 84.0246 | 3.264 |
| Fairchild Industries, Inc. | -3.1118 | 71.1472 | -4.3737 |
| Fedders Corporation | .4495 | 137.0479 | .3280 |
| Fibreboard Corporation | 1.4404 | 53.9784 | 2.6685 |
| General Host Corporation | 3.6054 | 10.1421 | 35.549 |
| General Instruments | .4276 | 69.9952 | .6109 |
| Gulf & Western Industries, Inc. | -16.0599 | 663.7245 | -2.4197 |
| Insilco Corporation | 1.1707 | 76.1634 | 1.5371 |
| Institutional Investors | -2.8443 | 9.5665 | -29.732 |
| LTV Corporation | 1.4991 | 130.0564 | 1.1527 |
| McCulloch Oil Corporation | 1.6997 | 93.7843 | 1.8123 |
| MGM | .3639 | 76.934 | .473 |
| Mohawk Data Sciences Corporation | 1.8592 | 43.3865 | 4.285 |
| National Industries | -3.3089 | 26.4803 | -12.4957 |
| Pan Am | 53.4283 | 247.0045 | 21.63 |
| Pioneer Texas Corporation | .0189 | 12.0692 | .1568 |
| Ramada Inns | 1.9498 | 88.3753 | 2.2062 |
| Roblin Industries Inc. | .8484 | 2.5379 | 33.428 |
| Rusco Industries Inc. | .3753 | 8.1119 | 4.627 |
| Sanders Assoc Inc. | 1.3496 | 20.3454 | 6.634 |
| Texstar Corporation | -.079 | 9.7991 | -.8062 |
| UAL | 5.8875 | 447.8138 | 1.3147 |
| United Brands Co. | 6.4495 | 109.4213 | 5.894 |
| Western Union Co. | -2.6536 | 318.7575 | -.8325 |
| Wickes Corporation | 1.7348 | 118.4132 | 1.465 |
| Zapata Corporation | -1.0897 | 80.246 | -1.358 |

Table #D-6

NPV/Mkt 100% Exchange
After Tax Discount Rate
Period 2

| Firm | After-tax NPV (millions $) | Average Market Value (millions $) | Ratio (%) |
|---|---|---|---|
| Allegheny Airlines Inc. | 6.4004 | 32.0778 | 19.9529 |
| Allegheny Ludlum | -7.1619 | 189.3105 | -3.7832 |
| American Medicorp | 2.9 | 47.9655 | 6.046 |
| Athlone Industries, Inc. | -.0176 | 48.9204 | -.0360 |
| Bay Colony Property | -2.53 | 10.1728 | -24.87 |
| Chase Manhattan Mortgage & Realty Co. | 18.3446 | 10.8713 | 168.743 |
| Chelsea Industries, Inc. | 1.2205 | 20.0625 | 6.0837 |
| Columbia Pictures Industries, Inc. | 1.4882 | 56.3458 | 2.63 |
| Condec Corporation | -1.7653 | 27.0515 | -6.526 |
| Continental Investment Trust | -9.3 | 88.1856 | -10.546 |
| Cooper Labs, Incorporated | 1.2235 | 57.68 | 2.121 |
| Dillingham Corporation | 4.7727 | 84.0246 | 5.68 |
| Fairchild Industries, Inc. | -4.3499 | 71.1472 | -6.1140 |
| Fedders Corporation | 2.6777 | 137.0479 | 1.9539 |
| Fibreboard Corporation | 1.8574 | 53.9784 | 3.441 |
| General Host Corporation | 4.9645 | 10.1421 | 48.95 |
| General Instruments | .6722 | 69.9952 | .9603 |
| Gulf & Western Industries, Inc. | -27.6204 | 663.7245 | -4.1614 |
| Insilco Corporation | 1.5609 | 76.1634 | 2.0494 |
| Institutional Investors | -3.8963 | 9.5665 | -40.728 |
| LTV Corporation | 4.2113 | 130.0564 | 3.2381 |
| McCulloch Oil Corporation | 2.2571 | 93.7843 | 2.4067 |
| MGM | 1.0691 | 76.934 | 1.3897 |
| Mohawk Data Sciences Corporation | 2.3935 | 43.3865 | 5.5166 |
| National Industries | -4.4702 | 26.4803 | -16.8814 |
| Pan Am | 71.591 | 247.0045 | 28.984 |
| Pioneer Texas Corporation | .1294 | 12.0692 | 1.0726 |
| Ramada Inns | 2.3625 | 88.3753 | 2.6733 |
| Roblin Industries Inc. | .8543 | 2.5379 | 33.664 |
| Rusco Industries Inc. | .5736 | 8.1119 | 7.071 |
| Sanders Assoc Inc. | 2.4543 | 20.3454 | 12.063 |
| Texstar Corporation | -.5524 | 9.7991 | -5.6369 |
| UAL | 6.9308 | 447.8138 | 1.5477 |
| United Brands Co. | 3.7426 | 109.4213 | 3.42 |
| Western Union Co. | -3.433 | 318.7575 | -1.077 |
| Wickes Corporation | 2.45 | 118.4132 | 2.069 |
| Zapata Corporation | -1.7878 | 80.246 | -2.228 |

Table #D-7

NPV/Mkt - Actual Exchange
Before Tax Discount Rate
Period 2

| Firm | Before-tax NPV (millions $) | Average Market Value (millions $) | Ratio (%) |
|---|---|---|---|
| Allegheny Airlines Inc. | 4.0192 | 32.0778 | 12.5295 |
| Allegheny Ludlum | 4.085 | 189.3105 | 2.1578 |
| American Medicorp | .3725 | 47.9655 | .7766 |
| Athlone Industries, Inc. | .8777 | 48.9204 | 1.7941 |
| Bay Colony Property | 1.524 | 10.1728 | 14.9811 |
| Chase Manhattan Mortgage & Realty Co. | 6.6059 | 10.8713 | 60.7646 |
| Chelsea Industries, Inc. | .0806 | 20.0625 | .4017 |
| Columbia Pictures Industries, Inc. | -1.5345 | 56.3458 | -2.7234 |
| Condec Corporation | -1.0047 | 27.0515 | -3.7140 |
| Continental Investment Trust | -7.6252 | 88.1856 | -8.6467 |
| Cooper Labs, Incorporated | .0128 | 57.68 | .0222 |
| Dillingham Corporation | 1.08 | 84.0246 | 1.2853 |
| Fairchild Industries, Inc. | -1.7485 | 71.1472 | -2.4576 |
| Fedders Corporation | .769 | 137.0479 | .5611 |
| Fibreboard Corporation | 1.0085 | 53.9784 | 1.8683 |
| General Host Corporation | .9707 | 10.1421 | -9.5710 |
| General Instruments | -.6998 | 69.9952 | -.9998 |
| Gulf & Western Industries, Inc. | -6.0369 | 663.7245 | -.9095 |
| Insilco Corporation | .3218 | 76.1634 | .4225 |
| Institutional Investors | -.1221 | 9.5665 | 1.2763 |
| LTV Corporation | 5.9964 | 130.0564 | -.46106 |
| McCulloch Oil Corporation | .0941 | 93.7843 | .1003 |
| MGM | -.1634 | 76.934 | -.2124 |
| Mohawk Data Sciences Corporation | -.8569 | 43.3865 | -1.9750 |
| National Industries | -.3862 | 26.4803 | 1.4584 |
| Pan Am | 40.115 | 247.0045 | 16.2406 |
| Pioneer Texas Corporation | .0755 | 12.0692 | .6255 |
| Ramada Inns | -.585 | 88.3753 | .6619 |
| Roblin Industries Inc. | .3571 | 2.5379 | 14.0707 |
| Rusco Industries Inc. | .1417 | 8.1119 | 1.7468 |
| Sanders Assoc Inc. | -1.2101 | 20.3454 | -5.9478 |
| Texstar Corporation | -.0688 | 9.7991 | -.7021 |
| UAL | -1.4585 | 447.8138 | -.3257 |
| United Brands Co. | -4.2367 | 109.4213 | -3.8719 |
| Western Union Co. | -6.4378 | 318.7575 | -2.0196 |
| Wickes Corporation | .6467 | 118.4132 | .5461 |
| Zapata Corporation | 1.0420 | 80.246 | 1.2985 |

Table #D-8

NPV/Mkt - 100% Exchange
Before Tax Discount Rate
Period 2

| Firm | Before-tax NPV (millions $) | Average Market Value (millions $) | Ratio (%) |
|---|---|---|---|
| Allegheny Airlines Inc. | 7.8333 | 32.0778 | 24.4197 |
| Allegheny Ludlum | 4.7488 | 189.3105 | 2.5085 |
| American Medicorp | .9865 | 47.9655 | 2.0567 |
| Athlone Industries, Inc. | 2.9789 | 48.9204 | 6.0893 |
| Bay Colony Property | 2.1707 | 10.1728 | 21.3383 |
| Chase Manhattan Mortgage & Realty Co. | 20.1987 | 10.8713 | 185.7984 |
| Chelsea Industries, Inc. | .2412 | 20.0625 | 1.2022 |
| Columbia Pictures Industries, Inc. | -2.3202 | 56.3458 | -4.1178 |
| Condec Corporation | -1.2525 | 27.0515 | -4.6301 |
| Continental Investment Trust | -8.0744 | 88.1856 | -9.1561 |
| Cooper Labs, Incorporated | -.0348 | 57.68 | -.0603 |
| Dillingham Corporation | 1.8793 | 84.0246 | 2.2366 |
| Fairchild Industries, Inc. | -2.4442 | 71.1472 | -3.4354 |
| Fedders Corporation | -1.1331 | 137.0479 | .8268 |
| Fibreboard Corporation | 1.3108 | 53.9784 | 2.4284 |
| General Host Corporation | 1.3323 | 10.1421 | 13.1363 |
| General Instruments | -.9039 | 69.9952 | 1.2914 |
| Gulf & Western Industries, Inc. | -10.0854 | 663.7245 | -1.5195 |
| Insilco Corporation | .4291 | 76.1634 | .5634 |
| Institutional Investors | -.1672 | 9.5665 | 1.7478 |
| LTV Corporation | 16.7274 | 130.0564 | 12.8616 |
| McCulloch Oil Corporation | .1258 | 93.7843 | .1341 |
| MGM | -.480 | 76.934 | -.6239 |
| Mohawk Data Sciences Corporation | -.8107 | 43.3865 | -1.8685 |
| National Industries | -2.4324 | 26.4803 | -9.1857 |
| Pan Am | 56.73 | 247.0045 | 22.9672 |
| Pioneer Texas Corporation | 1.0354 | 12.0692 | 8.5789 |
| Ramada Inns | .7085 | 88.3753 | .8017 |
| Roblin Industries Inc. | .3596 | 2.5379 | 14.1692 |
| Rusco Industries Inc. | .2164 | 8.1119 | 8.0717 |
| Sanders Assoc Inc. | -.3773 | 20.3454 | -1.8545 |
| Texstar Corporation | -.4805 | 9.7991 | -4.9035 |
| UAL | -1.748 | 447.8138 | -.3903 |
| United Brands Co. | -2.688 | 109.4213 | -2.4566 |
| Western Union Co. | -8.3322 | 318.7575 | -2.6139 |
| Wickes Corporation | .9134 | 118.4132 | .7714 |
| Zapata Corporation | 1.7091 | 80.246 | 2.1298 |

Table #D-9

NPV/Mkt - Actual Exchange
After-tax Discount Rate
Period 3

| Firm | After-tax NPV (millions $) | Average Market Value (millions $) | Ratio (%) |
|---|---|---|---|
| Allegheny Airlines Inc. | 3.5833 | 29.8188 | 12.0170 |
| Allegheny Ludlum Industries, Inc. | -6.1608 | 169.034 | -3.6447 |
| American Medicorp. | .8737 | 43.6738 | 2.0 |
| Athlone Industries, Inc. | -.0047 | 50.1396 | -.0094 |
| Bay Colony Property | -1.7762 | 8.976 | -19.7888 |
| Chase Manhattan Mortgage & Realty Co. | 6.5575 | 9.8941 | 66.277 |
| Chelsea Industries, Inc. | .4085 | 20.7981 | 1.964 |
| Columbia Pictures Industries, Inc. | .9095 | 54.9962 | 1.65 |
| Condec Corporation | -1.3286 | 22.8724 | -5.8087 |
| Cooper Labs, Incorporated | .6947 | 53.8896 | 1.289 |
| Dillingham Corporation | 2.7429 | 72.5667 | 3.78 |
| Fairchild Industries, Inc. | -3.1118 | 82.3871 | -3.777 |
| Fedders Corporation | .4495 | 91.2728 | .4924 |
| Fibreboard Corporation | 1.4404 | 49.8818 | 2.8877 |
| General Host, Inc. | 3.6054 | 10.3545 | 34.819 |
| General Instruments | .4276 | 90.9938 | .4699 |
| Grumman Corporation | 3.7910 | 70.4877 | 5.378 |
| Gulf & Western Industries, Inc. | -16.0599 | 651.7655 | -2.4641 |
| Insilco Corporation | 1.1707 | 72.1548 | 1.6225 |
| Institutional Investors | -2.8443 | 10.6295 | -26.758 |
| LTV Corporation | 1.4991 | 131.3869 | 1.141 |
| McCulloch Oil Corporation | 1.6997 | 81.3351 | 2.0897 |
| MGM | .3639 | 75.3065 | .4832 |
| Mohawk Data Sciences Corporation | 1.8592 | 35.1224 | 5.2936 |
| National Industries | -3.3089 | 27.1681 | -12.1793 |
| Pan Am | 53.4283 | 223.7819 | 23.875 |
| Pioneer Texas Corporation | .0189 | 13.5564 | .1396 |
| Ramada Inns | 1.9498 | 85.8682 | 2.2707 |
| Rapid American Corporation | 8.9749 | 44.7678 | 20.048 |
| Roblin Industries Inc. | .8484 | 2.3522 | 36.067 |
| Rusco Industries Inc. | .3753 | 8.2212 | 4.565 |
| Sanders Assoc Inc. | 1.3496 | 24.3459 | 5.544 |
| Texstar Corporation | -.079 | 8.1396 | -.9706 |
| UAL | 5.8875 | 451.5097 | 1.304 |
| United Brands Co. | 6.4495 | 97.1079 | 6.642 |
| Western Union Co. | -2.6536 | 232.7272 | -1.14 |
| White Motor Corporation | 1.3479 | 76.0175 | 1.7732 |
| Wickes Corporation | 1.7348 | 134.1854 | 1.293 |
| Zapata Corporation | -1.0897 | 84.6259 | -1.288 |

Table #D-10

NPV/Mkt - Actual Exchange
Before-tax Discount Rate
Period 3

| Firm | Before-tax NPV (millions $) | Average Market Value (millions $) | Ratio (%) |
|---|---|---|---|
| Allegheny Airlines Inc. | 4.0192 | 29.8188 | 13.4787 |
| Allegheny Ludlum Industries, Inc. | 4.085 | 169.034 | 2.4167 |
| American Medicorp. | .3725 | 43.6738 | .8529 |
| Athlone Industries, Inc. | .8777 | 50.1396 | 1.7505 |
| Bay Colony Property | 1.524 | 8.976 | 1.6978 |
| Chase Manhattan Mortgage & Realty Co. | 6.6059 | 9.8941 | 66.76605 |
| Chelsea Industries, Inc. | .0806 | 20.7981 | .3875 |
| Columbia Pictures Industries, Inc. | -1.5345 | 54.9962 | -2.7902 |
| Condec Corporation | -1.0047 | 22.8724 | -4.3926 |
| Cooper Labs, Incorporated | .0128 | 53.8896 | .0237 |
| Dillingham Corporation | 1.08 | 72.5667 | 1.4883 |
| Fairchild Industries, Inc. | -1.7485 | 82.3871 | -2.1223 |
| Fedders Corporation | -.769 | 91.2728 | -.8425 |
| Fibreboard Corporation | 1.0085 | 49.8818 | 2.0218 |
| General Host, Inc. | .9707 | 10.3545 | 9.3746 |
| General Instruments | -.6998 | 90.9938 | -.7691 |
| Grumman Corporation | 2.318 | 70.4877 | 3.2885 |
| Gulf & Western Industries, Inc. | -6.0369 | 651.7655 | -.9262 |
| Insilco Corporation | .3218 | 72.1548 | .4460 |
| Institutional Investors | -.1221 | 10.6295 | -1.1487 |
| LTV Corporation | 5.9964 | 131.3869 | 4.5639 |
| McCulloch Oil Corporation | .0941 | 81.3351 | .1157 |
| MGM | -.1634 | 75.3065 | -.2170 |
| Mohawk Data Sciences Corporation | -.8569 | 35.1224 | -2.4397 |
| National Industries | .3862 | 27.1681 | 1.4215 |
| Pan Am | 40.115 | 223.7819 | 17.9259 |
| Pioneer Texas Corporation | .0755 | 13.5564 | .5569 |
| Ramada Inns | -.585 | 85.8682 | -.6813 |
| Rapid American Corporation | 19.7714 | 44.7678 | 44.1643 |
| Roblin Industries Inc. | .3571 | 2.3522 | 15.1815 |
| Rusco Industries Inc. | .1417 | 8.2212 | 1.7236 |
| Sanders Assoc Inc. | -1.2101 | 24.3459 | -4.9704 |
| Texstar Corporation | -.0688 | 8.1396 | -.8452 |
| UAL | -1.4585 | 451.5097 | -.3230 |
| United Brands Co. | -4.2367 | 97.1079 | -4.3629 |
| Western Union Co. | -6.4378 | 232.7272 | -2.7662 |
| White Motor Corporation | .9459 | 76.0175 | 1.2443 |
| Wickes Corporation | .6467 | 134.1854 | .4819 |
| Zapata Corporation | 1.0420 | 84.6259 | 1.2313 |

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