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# Returns To Canadian Straight Preferred Stocks (1957-1980)

Andre Thibeault

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# RETURNS TO CANADIAN STRAIGHT PREFERRED STOCKS (1957-1980)

by

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Submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy

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## ABSTRACT


1. Research problem

The general aim of this research is to provide investors and academics with a better understanding of TSE traded straight preferred stocks as an investment vehicle. More specifically, the thesis describes the major market characteristics of preferred stocks traded on the TSE over the period 1957-1980; it examines the overall risk-return characteristics for these stocks and it analyzes the effect of preferred stock features and the taxation of preferred income on the risk-return characteristics of preferred stocks.

2. Research methodology

This research required three stages. Stage I involved the identification of the information necessary to answer specific research questions. Stage II consisted of data collected from raw sources and the construction of a large computerized data bank for 373 issues of TSE straight preferred stocks traded over the period 1957-1980. The data bank contains information about the terms of each issue, their trading characteristics and market indexes. Stage III was dedicated to the speci-

fic methodologies used to answer each research question. The issuers of preferred stocks were compared to other firms. An analysis of the distribution of the returns for these stocks and the estimation of their risk characteristics was performed. Some statistical tests were used to look at the effect of the terms and marketability of each issue on its risk-return relationship. Residual analysis was used to verify the impact of tax changes on preferred stock returns.

## 3. Results and conclusions

This study shows: (1) that the issuers of TSE traded straight preferred stocks are large firms with higher leverage than firms in general; (2) that those stocks had higher yields than long-term bonds at the beginning of the period under study and lower yields at the end of the period; (3) that their risk-return characteristics place these stocks between bonds and common stocks; (4) that the CAPM is useful in explaining the risk of TSE traded straight preferred stocks; (5) that liquidation preferences, partial retirement plans and the strictness of dividend payments reduce the risk and the returns for preferred stocks and (6) that changes in the Canadian taxation system have had an impact on the prices and returns of preferred stocks.

## 4. Implications

While this study provides researchers with a large data bank on preferred stocks, it also gives investors a better understanding of these stocks. This research describes the market for preferred stocks, their risk-return characteristics and the sensitivity of these stocks to tax changes.

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To my parents: Thérèze Villemure Thibeault and Jean-Lionel Thibeault, my wife: Jeanne D'Arc Laliberté and my children: Marie-Chantal, Thomas, Antoinette and Julien.

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# CHAPTER 1

## INTRODUCTION

This research deals with TSE traded straight preferred stocks over the period 1957-1980. Its aim is to give a detailed analysis of the risk and the return characteristics of these stocks. The applications of such a study to investors are of major importance. Knowledge of historical returns permits a comparison of TSE traded straight preferred stock returns with the returns on other securities. An understanding of the risk associated with these preferred stocks is pertinent information in the creation of portfolios. Finally, knowledge of the issuers of these preferred stocks, of the effect of covenants on the risk-return tradeoff of these stocks and the impact of income tax on their returns are important factors affecting the investor's assessment of the quality[1] of these stocks.

This chapter is divided into two sections. The first section deals with the need for the research. The second section reviews previous

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1 Most textbooks use the word quality to cover all possible definitions of risk, while systematic risk, marketability, interest rate risk, default risk, etc. may be considered as more specific aspects of risk.

studies related to preferred stocks and more precisely to preferred stocks as an investment vehicle.

## 1.1 The need for this research

Portfolio managers and investors can find a very large choice of financial and non-financial assets offered on the market. Among the financial assets those that can be considered as the most important relative to the quantities offered on the market, are bonds, common stocks and preferred stocks.

Common stocks have received the greatest attention by researchers. Fisher and Lorie (1964, 1968, 1970) have provided researchers and people in the investment community with a detailed description of historical returns for common stocks traded on the New-York Stock Exchange. Since their studies, many researchers have assessed the risk associated with these stocks using a measure of the systematic risk called beta.

Regarding bonds, Hickman (1957) published a detailed historical survey of yields and returns for U.S. bonds of various classes of risk.

No such detailed historical survey is available for preferred stocks. A possible reason for this lack of interest could be the common textbook statement questioning the "raison d'être" of preferred stocks.[1]

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1 See for example: Weston, J.F. and Brigham, E.F. Managerial Finance, Sixth Edition, The Dryden Press, Hinsdale, Illinois, 1978, p. 523.

Without advancing any reasons for the existence of preferred stocks, one determinant factor that should raise the need for more research on these stocks is their importance in the financial markets.

Table 1.1 shows that preferred stocks accounted for 23% of gross issues of securities in Canada over the period 1957-1980. Common stocks accounted for 20% and bonds for 57% over the same period.

The amount of gross issues is used as a proxy for the size of the market for these securities. It is believed that, over the long run, it should reflect the relative importance of each market. However, the importance of common stocks and of preferred stocks to a lesser extent relative to bonds, is understated since the absence of a maturity date for most of these stocks as opposed to bonds does not require their refinancing.

However, the gross issues of preferred stocks vary widely over time: from 4% of all issues in 1958 to 52% of all issues in 1978. The peak was reached at a time when a huge amount of term preferred shares were issued. These shares had a specific maturity and they carried a tax benefit attached to the dividends. In reality, they were bonds disguised as preferred shares.

Thus, the importance of preferred stocks in the Canadian financial markets is a sufficient reason to believe that investors are interested in these stocks. However, the question that has to be answered next is: what

TABLE 1.1: Gross New Issues of Corporations in Canada: 1957-1980

| YEAR | (Million of Canadian dollars - par value) | | |
|---|---|---|---|
| | Corporate bonds | Common stocks | Preferred stocks |
| 1980 | 3,026 | 2,639 | 2,654 |
| 1979 | 2,562 | 2,860 | 1,613 |
| 1978 | 4,469 | 1,083 | 5,987 |
| 1977 | 4,399 | 747 | 2,522 |
| 1976 | 2,286 | 606 | 745 |
| 1975 | 3,232 | 556 | 754 |
| 1974 | 2,427 | 318 | 510 |
| 1973 | 2,134 | 529 | 126 |
| 1972 | 2,220 | 486 | 236 |
| 1971 | 2,401 | 230 | 147 |
| 1970 | 1,653 | 251 | 131 |
| 1969 | 1,009 | 852 | 163 |
| 1968 | 1,039 | 446 | 147 |
| 1967 | 1,266 | 269 | 221 |
| 1966 | 1,027 | 389 | 238 |
| 1965 | 1,363 | 293 | 255 |
| 1964 | 1,059 | 409 | 115 |
| 1963 | 753 | 249 | 165 |
| 1962 | 647 | 259 | 92 |
| 1961 | 637 | 412 | 62 |
| 1960 | 634 | 185 | 57 |
| 1959 | 432 | 349 | 99 |
| 1958 | 794 | 287 | 45 |
| 1957 | 802 | 428 | 132 |

Note 1: Source: Bank of Canada Review.

are investors interested in knowing about preferred stocks?

Investors have two major tasks to perform. One is to select securities to be included in their portfolio and the other is to do the performance measurement of securities and portfolios. To perform these tasks, investors should at least compare the returns on their securities and their portfolios with some benchmarks, as for example a market index, taking into account the risk associated with each alternative. Thus, they should be interested in the risk-return characteristics of securities with which they are dealing. However, the description of the risk-return characteristics for securities varies widely depending on the security considered and the point of view adopted. For example in the case of common stocks, academics usually try to link the return on a security or a portfolio to its systematic risk called beta. Some reporting agencies[1] are more interested in the price earnings ratio of the stock, its dividend yield, its industrial classification, etc. and all other information that can help characterize the common stock issue. In the case of bond issues, Van Horne (1978) suggests that rating agencies such as "Moody's" and "Standard and Poor" use some characteristics of the issuer as well as some terms of the issue in order to rate a bond issue. He points out that: "For corporate debt, higher ratings generally are associated with: (1) lower debt ratios, (2) higher return-on-asset ratios, (3) lower relative variation in earnings over time, (4) larger companies, (5) higher interest

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1 See for example "The Financial Post" and many bulletins published by brokerage firms.

coverage ratios and (6) the lack of subordination."[1]

In the case of preferred stocks, some rating agencies, such as the "Dominion Bond Rating Service" in Canada, provide investors with a rating similar to bonds for the major preferred stock issues. While no studies were found relating ratings of preferred stock issues to specific characteristics, the "Dominion Bond Rating Service"'s description[2] of each category of preferred stock issues show that this rating is mainly based on the protection of the dividends and of the par value and on some characteristics of the issuer of a preferred stock issue.

Given the various types of information used to characterize the risk-return characteristics of a security, a detailed description of the risk-return characteristics of preferred stocks should cover their past record of returns, a comparison of their returns with other securities, mainly common stocks and bonds, an estimation of their systematic risk, a description of the issuers of these shares, a characterization of the major terms for preferred stock issues and some market related factors such as marketability and taxes. While no exhaustive list of factors to consider in the pricing of securities can be constructed, those considered in this research cover most of the factors used in the finance literature.

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1 Van Horne, James C., Financial Market Rates and Flows, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1978, p. 152.

2 See Hatch, James E., Investment Management in Canada, Prentice-Hall Canada Inc., Scarborough, Ontario, 1983, p. 218.

## 1.2 Literature Review

As with common shares, preferred shares legally represent a partial ownership of a firm. However, preferred shares have some special attributes over common shares. Depending on the nature of these preferences preferred stocks can be likened to either common stocks or bonds. Thus, the evaluation of a preferred stock issue as an investment opportunity requires a good knowledge of the peculiarities of preferred stock issues. Preferred stocks are often considered as a hybrid security because they have claims and rights ahead of common stock, but behind all bonds. These claims and rights are related to claims on total assets, total retirement plans, partial retirement plans, claims on earnings, voting rights and conversion. Depending on the mix of these claims and rights, a preferred stock issue could be more closely associated with common stocks or with bonds.

With regard to claims on total assets, in case of liquidation, preferred stockholders can have priority on assets over common stockholders.

Total retirement plans refer to the call feature. Some preferred stocks can be called by the issuers at a predetermined price for a specific time period. The partial retirement plans refer to the sinking fund feature and the purchase fund feature. The preferred stock sinking fund provision typically stipulates a mandatory redemption of a fixed percentage of the issue per year at a price near or at par after an initial deferment period. In the case of the purchase fund, the issuer agrees to

purchase a certain number of the shares each year on the market as long as the stock is trading at or below a stipulated price, usually the issue price or the par value.

The claims on earnings refer to the type of dividends attached to an issue. Preferred stock issues carry three types of dividends. The cumulative dividend feature requires that all past and current preferred dividends be paid before common dividends can be paid. The non-cumulative dividend feature requires only that the current year's preferred dividends must be paid before common dividends can be paid. Finally, issues with the participating dividend feature share with the common stockholders in the firm's earnings paid out to stockholders.

In the case of the voting rights some preferred stock issues may have full voting rights, or contingent voting rights, or no voting right. The contingent voting right often becomes operative if the company has not paid the preferred dividends for a specified period.

Convertibility permits the conversion of preferred stocks into common stocks of the same issuer. Hatch (1983) points out that since the beginning of 1980 the retraction privilege is also very popular for preferred stocks issued in Canada. Such shares can be offered back to the issuer at the investor's option at a specific price on specific dates.

A specific mix of these claims and rights can give a preferred stock issue some characteristics that result in a high degree of similarity

between the preferred stock issue and the common stock of the same company, or between the preferred stock issue and the bonds of the same issuer.

For example, a preferred stock issue without liquidation preference or retirement plans, with a participating dividend, voting rights, and convertibility should behave in a fashion similar to common stocks of the same company. On the other hand, the preferred stock issue with liquidation preference, a call feature, a sinking fund and a cumulative dividend but without any voting right or convertibility should be more closely related to bonds of the same issuer. Thus, the similarity of preferred stocks with common stocks or with bonds depends on the specific mix of the claims and the rights of each issue.

Using seventy-two (72) New-York Stock Exchange listed non-convertible preferred stocks covering the period 1956-1966, Bildersee (1973) compared the returns on these preferred stocks with the returns on bonds and on common stocks. The comparisons made by Bildersee were based on the betas of each type of security and on the estimate of the $R^2$ coefficient for the market model. When he compared the preferred stocks with the common stocks of the same company, he found an average beta of 0.198 for the preferred stocks and an average beta of 0.999 for the common stocks. In order to classify preferred stocks relative to their similarity with common stocks, Bildersee used the lowest beta from a random sample of common stocks (0.152) as the benchmark to be used to classify preferred stocks. He found that for twenty-six (26) issues of preferred stock,

their betas were higher than 0.152. Bildersee qualified these issues as Low Quality Preferreds (LQP). The forty-six (46) preferred stocks remaining were qualified as High Quality Preferreds (HQP). Using a common stock index in the market model, he found an average beta of 0.07 and a $R^2$ of 0.002 for the HQP, while the LQP's average beta was 0.423 and the $R^2$, 0.13. He concluded that the LQP behave more like common stocks than the HQP because of the better explanatory power of the market model.

Bildersee duplicated the same tests using a bond index. He found an average beta of 0.820 for preferred stocks and an average beta of -1.228 for associated common stocks. Among the betas for the preferred stocks, fourteen (14) betas were negative. When Bildersee analysed these results, he noticed that thirteen (13) of the negative betas were associated with LQP. Then, he repeated the estimation of the market model with the bond index for both groups (LQP and HQP) and found a $R^2$ of 0.131 for the HQP and a $R^2$ of 0.016 for the LQP. He concluded that HQP may be associated more closely with bonds than with common stocks.

Then Bildersee used a weighted index taking into account common stocks, preferred stocks and bonds. His results were similar to those observed in the tests done with the common stock index and the bond index.

Finally, he tried to improve the explanatory power of the market model by using a multiple regression approach with the common stock index and the bond index simultaneously. He found that the portion of the total variance explained for the common stocks was not improved by the addition

of the bond index. However, the variance explained for the preferred stocks showed some improvement using both indexes in comparison with the use of any single index taken alone.

Bildersee concluded that some preferred stocks (LQP) may be more closely associated with common stocks, while other preferred stocks (HQP), may be more closely associated with bonds.

Without trying to characterize preferred stocks as bonds or as common stocks, Sorensen and Hawkins (1981) also used a multiple regression approach to explain the yield at the time of issue for new issues of preferred stocks. In their study, they tried to find which characteristics of preferred stocks can explain the differences in the yields of these preferred stocks. Using a sample of two hundred and twenty-six (226) new issues of preferred stocks issued between January 1975 and January 1981, they regressed different characteristics of these new issues on their yield to first call[1] (YIELDTOC) at the time of their sale.

The independent variables with their expected signs were the following:

(+) RATES = The average dividend yield for Aa utility preferred stocks as reported by Moody's for the week during and the week preceding the sale.

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1 The yield to first call is the yield that would be achieved by the preferred stock issue if it was called on the first call date at the call price corresponding to this call date.

(+) VOLATIL = The absolute change in the level of RATES over the week previous to the sale

(+) SUPPLY = A measure of acceleration or deceleration of the supply of new preferred stock defined as the new issue supply in the month of the sale relative to the average monthly new issue supply for the past three months.

(-) RATINGS = Zero - one dummy variable for Moody's credit ratings: RATINGS = 1 when the Moody's credit ratings were Aa, A, Baa, and Ba, RATINGS = 0 for lower ratings.

(-) SPHI, (+) SPLO = Zero - one dummy variable representing cases where the Standard and Poor's rating differed from Moody's rating: SPHI = 1 when the S & P rating was better, SPLO = 1 when Moody's rating was better, and the omitted class equal ratings.

(-) LNSIZE = The natural log of the dollar volume of the new issue.

(-) VOTE = Zero - one dummy variable: VOTE = 1 where preferred stockholders have voting rights equal to those of common stockholders, VOTE = 0 for conditional voting.

(+) CAPITAL = The percentage of outstanding preferred stock to the total amount authorized.

(+) NONREF = Zero - one dummy variable for nonrefundable issues representing cases in which the issuer cannot call the issue during the deferment period in order to refund at a lower dividend rate. The omitted class are issues which are noncallable, meaning the issuer cannot for any reason call the stock prior to termination of the defer-

ment period.[1]

NEGOT = Zero - one dummy variable representing issues sold by negotiation, with those sold by competitive bids are part of the omitted class.

SFUND = Zero - one dummy variable representing issues with mandatory sinking funds, with nonsinking fund issues omitted.

NAIC[2] = Zero - one dummy variable representing issues sold after the NAIC ruling, with pre-NAIC omitted.

(-) SFNAIC = An interaction variable equal to SFUND X NAIC.

For the most part, the regression coefficients were statistically significant with the expected sign. Sorensen and Hawkins dropped the variables CAPITAL and VOTE because they considered these variables as not statistically significant. However, if a level of confidence of 95% is required, the variables SUPPLY, SPLO and NAIC should also be considered statistically non-significant. As expected, the variable RATES was highly significant. YIELDTOC increased for issues which had lower rates, were non-refundable, smaller in size, sold during periods of volatile rates and

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1 While Sorensen and Hawkins define the variable NONREF that way, they probably mean a value of one for refundable issues and zero for noncallable stocks.

2 Sorensen and Hawkins noted that the demand for preferred stocks with sinking fund provisions increased dramatically in the United States in 1979 when the National Association of Insurance Commissioners (NAIC) adopted a rule permitting insurance companies to carry sinking fund issues at book value, whereas other preferred stock issues must be carried at market value. However, Sorensen and Hawkins do not specify any expected sign for NAIC, or for NEGOT or SEUND.

sold during months of relatively large issues of preferred stocks. The variable SPHI had the expected sign and the variables NEGOT, SFUND and NAIC which had no expected signs had the following signs: negative for NEGOT and NAIC and positive for SFUND.

To understand the impact of the sinking fund feature on YIELDTOC, the NAIC ruling should be taken into account with the joint impact of SFUND and NAIC which is estimated by SFNAIC. The sinking fund feature in itself had a positive impact on YIELDTOC. It was noted by Sorensen and Hawkins that the sinking fund provision for a preferred stock issue may have a market implication differing from that of the sinking fund feature of a corporate bond. While the sinking fund provision for a bond lowers the required rate of return because it enhances marketability and reduces the perception of default risk of the bond, the sinking fund provision for preferred stock cause investors to bear the risk that the preferred stock could be called by the issuer at a lower price than the market price. Thus, sinking fund provisions would increase the required rate of return for preferred stocks in a period where the investors expect lower interest rates. Sorensen and Hawkins argued that this might be the case for the period of their study. They pointed out that the anticipation of lower interest rates increases the risk of a call at a lower price than the market price. The risk of the call offsets the higher marketability and the lower perceived default risk associated with the sinking fund provision.

To further investigate the impact of the sinking fund feature on.

YIELDTOC, Sorensen and Hawkins added two other variables to their regression equation. These were SFDEF, the deferment period during which the sinking fund call cannot be initiated, and SFREDEM, the percent of the issue per year which must be retired at par at the end of the SFDEF. The authors expected a negative coefficient for SFDEF and a positive coefficient for SFREDEM, because increasing SFDEF and decreasing SFREDEM lowered the sinking fund call risk imposed on the investors. They added these two new variables to those found significant in the previous regression and they ran the new regression for sinking fund issues. SFDEF was found to be non-significant and SFREDEM was significant with the expected sign. With a coefficient of 0.119 for SFREDEM, Sorensen and Hawkins concluded that the issuers who increased their sinking fund redemption rate by 1 percent per year incurred an average increase of twelve (12) basis points for their yield.

While the articles by Bildersee and Sorensen and Hawkins are the only articles found that deal explicitly with preferred stocks from an investor's point of view, some other articles dealing with the use of preferred stocks as a financing device can help investors to better understand the types of companies that issue preferred stocks.

While the works of Donaldson (1962), Fisher and Wilt (1968), Elsaid (1969), Pinches (1970) and Sprecher (1971) form a small body of knowledge about the use of preferred stocks as a financing device in the United States, the only study found regarding the use of these stocks as a financing device in Canada is the one of Bishara in 1976. Bishara found

that the use of preferred stocks as a financing device diminished from the 1930's to the 1950's and in the 1960's increased in popularity. He also showed that corporations with assets ranging from $250 million to $500 million had the largest increase in the use of preferred stocks as a financing device. When he considered the industrial classification of preferred stock issuers, Bishara found that utilities and extractive industries were the major issuers of these stocks. The two major reasons given for the use of such a financing device were to facilitate acquisitions or to modify the capital structure. With regard to contractual features, Bishara found that all preferred stock issues studied in his research had preference as to dividends as well as to assets. They had a par-value and carried a cumulative dividend feature. Fifty-two percent (52%) had contingent voting rights and eighty percent (80%) were callable. Twenty-five percent (25%) had a purchase fund and only eighteen percent (18%) carried a sinking fund provision. With such contractual features, Bishara concluded that the great majority of preferred stocks issued in Canada between 1950 and 1969 were of the creditorship rather than the proprietorship type.

While Bishara's study discusses who the Canadian issuers of preferred stocks are and the profile of the typical Canadian issue of preferred stock over the period 1950-1970, no Canadian studies deal directly with preferred stocks as an investment vehicle.

In addition Bishara (1976) provides a good description of the issuers of preferred stocks over the period 1950-1970; however no other

studies have updated his findings. With regard to a direct consideration of preferred stocks as an investment vehicle, no Canadian studies were found and the two U.S. studies discussed in this chapter addressed very specific questions and did not describe the general risk-return characteristics of preferred stocks. The articles discussed in this chapter represent a thorough review of the literature related to preferred stocks as an investment vehicle. However the small number of articles cited reflects the lack of research about preferred stocks and the need to better understand preferred stocks as an investment vehicle.

This research is further warranted by the importance of preferred stocks in the Canadian financial markets and the lack of Canadian studies to answer basic questions of interest to investors. More precisely, this research attempts to improve the investors' knowledge of preferred stocks by looking at the major market characteristics of these stocks, their overall risk-return characteristics and the effect of issue characteristics and tax treatment on their risk-return characteristics.

# CHAPTER 2

## RESEARCH QUESTIONS AND THE DATA BANK

This chapter is divided in two sections. The first section presents research questions and an overview of the methodology and data used to answer these questions. The second section describes the creation of the data bank used throughout the research.

### 2.1 Research questions

Because all the information required by an investor to assess a security is reflected in its risk-return characteristics as defined in its broadest sense, the research questions addressed in this study deal with specific ways to describe the risk-return characteristics of preferred stocks. As discussed in the first chapter, this study uses the past record of preferred stock returns to compare the returns on these stocks with common stock returns and bond returns, to estimate their systematic risk, to describe the issuers of these shares, to characterize the major terms of preferred stock issues, and to look at the effect on returns of some market related factors such as marketability and taxes. All of these considerations are to be linked to the risk-return characterization of preferred stock issues. The first research question is:

(1) What are the major characteristics of preferred stocks?

This general research question can be split into three sub-questions.

(1.1) What was the distribution of issues over time?

(1.2) Who issued these stocks and when were they issued?

(1.3) What terms constitute a typical issue of preferred stock and how have the typical terms changed over time?

The first global research question should help the investor to form a global picture of TSE traded straight preferred stocks. This may be useful in his evaluation of the quality of these stocks. It gives investors the contractual characteristics of preferred stocks.

Question (1.1) concerning the time of issue for preferred stocks is important to investors because it allows them to identify important variations in the issue pattern of these stocks. Once these important variations are spotted, the economic environment prevailing at the time of issue can be analyzed to find the reasons for the variations. This helps investors assess the sensitivity of the supply of new preferred stocks to specific events or economic conditions. In order to achieve this description of time of issue for preferred stocks, data on the date of issue and the amount issued for preferred stocks must be collected.

Question (1.2) attempts to give investors information about the major characteristics of issuers of preferred stocks. With such information, investors interested in fundamental analysis will gain basic

information about the business risk and the financial risk of issuers of preferred stocks. Such information is important in the assessment of the quality of investment opportunities. At a minimum, information about the business sector of issuers of preferred stocks is required. Also, to characterize these issuers, their financial statements at the time of issue are necessary.

The characterization of a typical issue of preferred stock, dealt with in question (1.3), gives investors a more complete picture of preferred stocks. Knowledge of the terms or covenants of a preferred stock issue enables investors to identify the risks specific to an issue. The rights are mainly related to liquidation preferences, dividend payments, voting rights and convertibility. A potential call, total or partial, on terms which penalize the preferred stockholders and therefore, also constitutes an investment risk. To characterize preferred stock issues, data on the terms or covenants of each issue must be collected.

The second global research question concentrates on the estimation of the overall risk-return trade-off for preferred stocks. Its aim is to give to investors precise estimates of the risk and the return of these stocks to help investors assess preferred stocks relative to other investment opportunities. The global research question and the more specific sub-questions are:

(2) What are the risk-return characteristics of preferred stocks?

(2.1) What have been the actual returns for these stocks?

(2.1.1) How does the return for these stocks compare with returns for other securities?

(2.1.2) What is the distribution of monthly returns for individual preferred stock issues?

(2.1.3) What is the effect of different holding periods on the return of these stocks?

(2.1.4) How do yields for preferred stocks compare with yields on bonds?

(2.2) What are the risk characteristics of preferred stocks?

(2.2.1) How is the variance of the returns for preferred stocks affected by the size of portfolios of these stocks?

(2.2.2) What is the risk associated with these stocks as estimated with the CAPM?

Knowledge of the risk-return characteristics of preferred stocks is critical in the evaluation of investment opportunities. Investors are mainly interested in the future or the ex-ante risk-return relationship of securities. It is extremely difficult to collect this kind of information. Researchers have usually used realized or ex-post risk and return as estimates of ex-ante risk and expected returns. This does not mean that the estimated risk-return trade-off for a security always corresponds to its ex-ante risk-return trade-off. However, it is commonly accepted[1] that estimations based on ex-post data over extended periods of time and for many securities are a reasonable approximation of the ex-ante relationship. Thus, question (2) uses the ex-post risk and return characteristics of TSE traded straight preferred stocks in order to estimate their ex-ante risk-return trade-off.

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1 See for example: Hatch, J.E., Investment Management in Canada, Prentice-Hall, Scarborough, 1983, p. 358.

The answer to question (2.1.1) comparing the returns on preferred stocks to the return on other securities should help investors to rank preferred stocks relative to other investment opportunities. To make this comparison, returns on indexes for each kind of security will be compared. The index for preferred stocks will have to be constructed.

By answering question (2.1.2) about the pattern of the returns for individual preferred stock issues, investors will be provided with the distributions of historical returns for preferred stocks and with various statistics which may be useful in the assessment of the riskiness of these stocks.

Question (2.1.3) looks at historical returns for preferred stocks for different holding periods. Because investors do not all have the same investment horizon, the answer to this third specific research question will give investors insight into the behavior of preferred stock returns over different holding periods.

Because preferred stocks are generally fixed income securities, they can be compared to bonds with regards to their yields. Question (2.1.4) compares yields on bonds with yields on preferred stocks. This should help investors to rank these two major fixed income securities with regard to their yields which are often associated with promised returns[1].

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[1] See for example Van Horne, James. C., Financial Market Rates and Flows, Prentice-Hall Inc., Englewood Cliffs, New Jersey, 1978, p. 136.

Given the similarity of the terms of bond issues and of preferred stock issues, in some cases investors could base their investment decisions on the yield differential between these two securities.

To answer these last four questions (2.1.1, 2.1.2, 2.1.3, 2.1.4), data must be collected about share prices and dividend payments in order to calculate returns and yields for preferred stocks. Information on bond prices and interest payments must also be gathered to calculate yields for bonds.

Because the CAPM concludes that beta is the relevant measure of risk for a security, the assessment of the risk of preferred stocks is achieved with beta, the measure of the systematic risk. When assessing the risk of a preferred stock issue with its beta, investors need to know how relevant such a measure of risk is for preferred stocks. While question (2.1.1.) looks at the portfolio diversification effect for preferred stocks, question (2.2.2) is concerned with the measurement of the systematic risk for individual issues as well as portfolios of preferred stocks. The explanatory power of CAPM for describing preferred stock returns also needs to be investigated. Beta is commonly used to assess the risk of common stocks. However an investigation of its use with preferred stocks should enable investors to compare both types of securities. From a theoretical point of view, no study has been done to evaluate the potential diversification for preferred stocks.

In addition to the data required to answer question (2.1) related to

the historical returns of preferred stocks, questions dealing with the risk associated with these securities require the estimation of their systematic risk, beta. The "market model" will be used to estimate beta. In order to estimate beta with the "market model" a market index is needed. The construction of a global market index requires data on the behavior of financial markets in general, including the returns on the bond market, the returns on the common stock market and the importance of these markets in the economy.

In addition to this overall description of the risk and the return characteristics of preferred stocks, research question number three (3) assesses the effects of issue characteristics, the marketability of an issue and of specific events such as tax changes on the return of preferred stocks. While research question number two (2) gives investors an opportunity to compare preferred stocks with other investment vehicles, the third research question offers a more specific understanding of the different returns and risk observed for preferred stocks.

(3) How do marketability, covenants and taxes affect the returns and the risk of preferred stocks?

(3.1) How do marketability and covenants affect the returns and the risk of preferred stocks?

(3.2) How do taxes influence the returns for these stocks?

Question (3.1) and question (3.2) are treated separately because different statistical procedures are applied in answering them. Through question 3.1, the investor can find out if the marketability or the mix of

covenants of an issue have an important effect on the pricing of a preferred stock issue. The answer to question 3.1 will also try to isolate any covenant or mix of covenants than can be identified with a specific risk-return trade-off. While question (1.3) presents the various covenants of preferred stocks, question (3.1) tries to find out if these covenants affect the level of returns.

Some investors are affected by taxes while others are not, and because no record of preferred stockholders is available, it is not possible at first glance to evaluate the sensitivity of these stocks to income tax treatment. Question (3.2) analyzes the sensitivity of preferred stocks to income taxes by looking at the behavior of their returns when important tax changes occur. This tax sensitivity of preferred stocks should be important to investors because it may affect substantially their after-tax returns.

To answer the third global research question, information collected for question one (1) about the terms of TSE traded straight preferred stocks and for question two (2) regarding the returns and the risk of these stocks can also be utilized. Additional data is required to assess the marketability of these stocks.

The research questions covered in this study should provide investors with a broad knowledge of preferred stocks as an investment vehicle. It should outline the major characteristics of preferred stocks and provide an analysis of their risk-return trade-off and the effects of

marketability, covenants and taxes on their returns.

## 2.2 The Data

The creation of a data bank on preferred stocks is one of the major tasks of this research. At the time this study started, no detailed data bank was available for preferred stocks. The "Financial Research Institute" (FRI) of Montreal and Toronto had little information on preferred stocks. The information available in September 1980 was monthly prices, dividend payments and monthly returns for some of the preferred stocks traded on the Toronto Stock Exchange (TSE). This data bank covered the period 1973-1980. Also, a few investment dealers[1] had their own data banks. However, none of the data banks at that time covered a long enough period of time to permit an extensive study of preferred stocks as an investment vehicle.

In the creation of a data bank, two major approaches can be considered: one is to register all the population as Statistic's Canada does with its census. In terms of information, this is the best but the most costly approach. The other approach is to select a sample which reflects the characteristics of the population. One principle to recognize is the cost-benefit analysis: the value of more information must be compared to the costs required to collect additional information. The second approach

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1 Greenshield Inc. published many reports about preferred stocks and Wood Gundy Ltd. had a data bank including some preferred stocks.

was selected for this research because it was more feasible.

The goal considered in the creation of this data bank was to achieve the largest coverage of preferred stocks given limited sources. This led to the choice of all TSE straight preferred stocks traded over the period January 1957 - September 1980 for the data bank. This specific focus raises the following questions:

- Why straight preferred stocks?
- Why traded straight preferred stocks?
- Why TSE traded straight preferred stocks?
- Why the period 1957-1980?

Why straight preferred stocks? Straight preferred stocks are defined as all preferred stocks except convertible preferred stocks and term preferred stocks. Straight preferred stocks were selected because they are the most common type of preferred stocks. Convertible preferred stocks were rejected because their analysis could require a different approach because convertible preferred stocks can be considered as an option which could be analyzed with some form of the option pricing model. Valuation of options is complex and behond the scope of this research. Term preferred stocks were also discarded because they are a temporary phenomenon. Thus, this research concentrates on the most common preferred stocks for which data is available over a long enough period of time.

Why traded straight preferred stocks? This research looks at preferred stocks from the investor's point of view. Such a perspective leads to the selection of securities that can be traded. Also, to calculate returns for these stocks, prices resulting from transactions are more reliable than quotes.

Why TSE traded straight preferred stocks? The ideal research design should collect information about securities traded on all Canadian markets. However from a practical point of view, private markets do not publicly disclose information about their activities, therefore it is very difficult to have sufficient information to conduct a detailed study on these markets. On the other hand, even if all public market places disclosed information on their activities, it would not be feasible given the resources available for this research to collect information on all these market places at the same time. The Toronto Stock Exchange (TSE) was selected as the market place for the collection of the required information. The TSE was chosen from among the other exchanges because it is considered to be the national exchange in Canada. Moreover, major Canadian data banks[1] on common stocks use the TSE as their source of information and most textbooks[2] dealing with the Canadian financial system recognize the TSE as either the major stock exchange in Canada, or at

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1 The Laval Tape of Université Laval, and the University of British Columbia's tape use the TSE as their source of information.

2 Bond and Shearer in the Economics of the Canadian Financial System, considered the TSE as the major stock exchange in Canada; Hatch, James E. in Investment Management in Canada, points out that the TSE is by far the largest stock exchange in Canada; Edwin H. Neave in Canada's Financial System considers both the TSE and the Vancouver Stock Exchange as national stock exchanges.

least one of the major stock exchanges in Canada. In 1981, the TSE ranked first in terms of the volume of shares traded with $25,094 million, followed by the Vancouver Stock Exchange with $3,859 million and by the Montreal Stock Exchange with $3,328 million.[1]

Why the period 1957-1980? This research covers the longest time period for which data is available at reasonable cost. As compared to the study of Bildersee (1973) which covered a 10 year time period and to the study of Sorensen and Hawkins (1981) where a 6 year time period was used, the 23 year time period used in the actual research covers a wide spectrum of different economic periods. Looking at the time series presented in Hatch, White and Mackinlay[2], the 23 year time period considered here covered periods of high and low inflation as well as periods of booming and depressed stock market activities. The decision to start the analysis in 1957 was based on two major reasons: (1) the first one was the poor quality of the records available for the years before 1957 at the time the study was started in 1980 and (2) the additional costs that would have been incurred in the coverage of a longer time period than 1957-1980.

While the objective of this research is to study the risk and the return characteristics of preferred stocks, the first task to be performed is the creation of a file of monthly returns for these stocks. Monthly

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1 Source: The Toronto Stock Exchange Fact Book, 1982, The Toronto Stock Exchange, 1982.

2 Hatch, J.E., White, R.W., Mackinlay, A.C., "Stocks, Bonds, Bills and Inflation, 1950-1980: The Canadian Experience", Working Paper Series no 83-01, Research and Publications Division, School of Business Administration, The University of Western Ontario, London, Canada. January 1983. Table 1.

returns are considered instead of daily returns in order to cover a long time period. The data needed to compute the returns are a series of prices and dividend payments for these stocks. However, for the analysis of these returns, other information is required. First, because preferred stock issues may have different characteristics which can affect the behavior of their returns, these characteristics should be identified for each issue of preferred stock. Second, the study also requires information to assess the marketability of these stocks. The volume of transactions and the number of shares outstanding are commonly used measures of marketability.

The characteristics of preferred stock issues that may affect returns are outlined in the prospectuses for each issue. These characteristics are often called covenants. From discussions with the Ontario Securities Commission, la Commission des Valeurs Mobilières du Québec, and one of the largest Canadian underwriters, Wood Gundy Ltd., it was clear that the collection of prospectuses for TSE straight preferred stocks traded over the period 1957-1980 was not feasible. However, this information was available, most of the time, through one of the many publications of the Financial Post Corporation Services. From a detailed survey of all TSE straight preferred stocks[1] issues traded over the period 1957-1980, the following covenants were identified:

- claim on earnings: (1) straight dividends

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1 Throughout the remainder of this thesis, the term preferred stocks refer to TSE traded straight preferred stocks unless otherwise stated.

(2) cumulative dividends

(3) participative dividends

- claim on assets: (1) liquidation preferences

(2) no liquidation preference

- maturity provisions: (1) call feature

(2) sinking fund

(3) purchase fund

- voting rights: (1) non-voting

(2) contingent voting right

The master file contains all the basic information about each issue of preferred stocks. It includes the following information about the trading activity and the intrinsic characteristics of the preferred stocks:

- the monthly closing prices
- the dividend payments
- the ex-dividend date
- the number of preferred shares outstanding each month
- the monthly volume of transactions
- the nature of dividends
- the existence of liquidation preferences
- the existence of a sinking fund feature
- the existence of a purchase fund feature
- the existence of a call feature
- the series of call prices and call dates for each callable stock

- the nature of the voting right
- the par value
- the amount of shares issued
- the issue date
- the annual dividend
- the name of the issue
- the security number given to this stock

The construction of the data bank required: (1) the search for the information, (2) the raw data collection, (3) the set-up of the computer files, and (4) numerous revisions and checks. Details of the data collection and the set-up of the computer files are presented in Appendix 1.

The data was put on four different records. Different records were used to collect information on different aspects of the stocks.

Series

The data record "SERIES" contains the information relative to the transactions of the preferred stocks. Table 2.1 gives the information recorded on "SERIES" and the name of the variables used. The primary source for this information was the "TSE Review".

Dividend

Information about dividend payments is required in order to compute the returns. The dividend payments recorded in the "TSE Review" do not

TABLE 2.1

INFORMATION RECORDED ON "SERIES"

| Information | Variable |
|---|---|
| The security number | SECNB |
| The period number (1 is for January 1957 and 285 for September 1980) | PERIOD |
| The month | SERIE1 |
| The number of preferred shares outstanding during that month for the issue considered | SERIE2 |
| The volume of transactions for that month | SERIE3 |
| The closing price for that month | SERIE4 |
| The return for that month | SERIE7 |

TABLE 2.2

INFORMATION RECORDED ON "DIVIDEND"

| Information | Variable |
|---|---|
| The ex-dividend date | SERIE6 |
| The period number (1 is for January 1957 and 285 for September 1980) | PERIOD |
| The actual dividend payment | SERIE5 |
| The security number | SECNB |

take into account the ex-dividend date. Thus, in order to circumvent this problem, the "Record of Dividends" published by the Financial Post Corporation Services was used. The data record named "DIVIDEND" has the information given in Table 2.2.

Securities

The information required to identify each issue and to describe the covenants of each of these issues is recorded on the file "SECURITIES" which is described in Table 2.3. The information required for each issue was collected from the following sources:

(1) From "The Financial Post Corporation Services":

- The "Record of New Issues";
- The "Survey of Industrials";
- The "Survey of Utilities";
- The yellow cards that report detailed information, such as history of the firm, a past record of financial information, market data, etc., for major Canadian companies.

(2) From the "Moody's Industrial Manual".

Call

Because the call feature can include more than one call price and more than one call date, this information was recorded in a different data

TABLE 2.3

INFORMATION RECORDED ON "SECURITIES"

| Information | Variable |
|---|---|
| The name of the issue | SECNA |
| The number of shares issued | SHISS |
| The issue date | ISDAT |
| The par value | ISSPR |
| The annual dividend | DIV |
| The kind of dividend (straight = 0, cumulative = 1, participating = 2) | DIVTP |
| The kind of sinking fund (sinking fund = 1, purchase fund = 0) | SINKN |
| The voting right (non-voting = 0, voting under conditions = 1) | VOTE |
| The priority relative to assets (no priority = 0, priority = 1) | ASSPR |
| The call feature (no call feature = 0, callable = 1) | CAL |
| The number of different call prices and call dates for an issue | NCAL |
| The security number | SECNB |

TABLE 2.4

INFORMATION RECORDED ON "CALL"

| Information | Variable |
|---|---|
| The call prices | CP |
| The call dates | CD |
| The security number of callable issues | SECNB |

record. This fourth record, "CALL", is an extension of the record "SECURITIES". To collect the information required in "CALL", the same sources of information as those for "SECURITIES" were used. Table 2.4 defined the variables listed in "CALL".

Each of these data records was checked many times in order to detect errors. For the data records "DIVIDEND", "SECURITIES", and "CALL" two persons checked the data at the time of the recording. The record "SERIES" was checked by verifying any abrupt changes in time series. Also, to help detect errors, the rate of change for each variable was used to pick up abnormal entries. The data record "SECURITIES" gives the names of all the TSE traded straight preferred stocks analyzed in this research and a complete listing of these stocks is given in Appendix 1.

The record "SERIES" has 35,768 observations for each of its seven variables, the record "DIVIDEND" has 12,709 observations for its four variables, the record "SECURITIES" has 373 observations for its twelve variables and finally the record "CALL" has 1,049 observations for its three variables. The data bank thus contains a total of 308,835 observations.

This data bank is one of the major products of this research. It should enable researchers to study preferred stocks more deeply than it was possible before the creation of this data bank.

# CHAPTER 3

## THE MAJOR MARKET RELATED CHARACTERISTICS FOR TSE TRADED STRAIGHT PREFERRED STOCKS

This chapter offers an overview of the market for TSE traded straight preferred stocks during the period 1957-1980. Three major issues will be discussed: (1) the distribution of the time of issue for the preferred stocks considered in this study, (2) key characteristics of the issuers of these stocks and (3) the characteristics of a typical issue of TSE traded straight preferred stock and the changes in these characteristics over time.

While this information may seem irrelevant in an efficient market where prices reflect all the information available at a specific point in time, investors interested in fundamental analysis need such information. Hatch (1983) suggests five steps for a fundamental analysis: (1) analysis of the economy; (2) forecast of interest rates and the stock market; (3) analysis of the industry; (4) analysis of the firm; and (5) forecast of firm earnings and dividends.

Knowledge of the time of issue for preferred stocks should help investors to associate the activity in the primary market for preferred stocks with some economic variables of their choice. Knowledge of charac-

teristics of stock issuers should help investors to assess the quality of a security in terms of risk and expected benefits. Finally, knowledge of the main terms of preferred stocks should help investors to better assess the risk and the expected benefits associated with a preferred stock issue.

## 3.1 Distribution of the time of issue for TSE traded straight preferred stocks

The examination of the timing of issues of preferred stocks should help investors detect any peculiar concentration of preferred stocks in a specific time period. Such concentrations should help uncover any specific economic conditions that stimulate the use of preferred stocks as a financing device. Knowledge of the economic conditions that might stimulate the market for these stocks is the first step of the fundamental analysis suggested by Hatch (1983). However, because this research is not dealing directly with the use of preferred stocks as a financing device, no detailed models are considered here. The breakdown of the timing of issues by decades is used to highlight any concentration of issues over time that could be associated with major economic conditions.

Table 3.1 shows that 83% of the straight preferred stock issues traded on the TSE during the period 1957 to 1980 were issued between 1949 and 1981. For each decade during the 1950-1980 time period, the number of straight preferred stocks issued was almost the same, ranging from 92 issues to 94 issues. Of the remaining stocks, 13% were issued in the 1940-49 decade, and 4% prior to 1940. However, because this research is

TABLE 3.1: Distribution of Time of Issue for TSE Traded straight Preferred Stocks

| Years | Number of issues | Percentage of all issues | Average value of these issues |
|---|---|---|---|
| 1900-1909 | 1 | 0 | N.A. |
| 1910-1919 | 0 | 0 | N.A. |
| 1920-1929 | 5 | 2 | 4,700,100 |
| 1930-1939 | 7 | 2 | 47,880,644[1] |
| 1940-1949 | 44 | 13 | 6,621,868 |
| 1950-1959 | 94 | 28 | 6,553,061 |
| 1960-1969 | 92 | 27 | 9,207,746 |
| 1970-1980 | 94 | 28 | 23,629,162 |
| | | 100 | |

based on the preferred stocks traded on the TSE during the period 1957-1980, comparisons with the decades including the years before 1957 are biased. This bias is due to the fact that to be considered the preferred stocks issued before 1957 need to be still traded in 1957. Thus, all the preferred stocks no more traded in 1957 are not taken into account.

Even though the rate of inflation and interest rates were low during the period 1950-1970 relative to the period 1970-1980[2], the number of issues was stable over these three decades. This suggests that general

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1 Only three of these issues had the value of the issue available. They were $291,000, $6,000,000, $137,350,928.

2 Source: Hatch, J.E., White, R.W., MacKinlay, A.C., "Stocks, Bonds, Bills and Inflation 1950-1980: The Canadian Experience". Working Paper Series, no 83-01, Research and Publication Division, School of Business Administration, The University of Western Ontario, London, Canada, January 1983.

economic conditions, such as inflation and the level of interest rates, do not influence in a major way the number of preferred stock issues. However, average values of these issues show a rapid growth of the preferred stocks market over the last three decades. It should be noted that more sophisticated models about the use of preferred stocks as a financing device could likely uncover specific short-term economic conditions that lead to more activity in the primary market for these stocks. However, this chapter is dedicated to a global description of the major market characteristics of preferred stocks rather than specific tests. The reason for such an approach is to give investors a general knowledge of the market for these stocks. Following chapters focus on the measurement of risk and return for these stocks and the effect of various factors on the risk-return trade-off for these stocks.

## 3.2 Characteristics of the issuers of TSE traded straight preferred stocks

When researchers try to characterize the issuers of preferred stocks, they often refer to their industrial sector and/or to some specific characteristics of these issuers. The study of Fisher and Wilt (1968) about the use of non-convertible preferred stocks as a financing instrument during the period 1950-1965 in the United States and the Canadian study of Bishara (1976) about preferred stock financing in major Canadian corporations during the 1960's conclude that utilities are the major users of these stocks as a financing device. Utilities use preferred stocks to increase leverage. However, no specific conclusions are reached with regard to the size of issuers of preferred stocks.

TABLE 3.2(a): Absolute Frequency Distribution of TSE Traded Straight Preferred Stock Issues by Industrial Sectors[1] and by Years

| Industrial Sectors | Years of issue | | | | |
|---|---|---|---|---|---|
| | Pre-1940 | 1940-1949 | 1950-1959 | 1960-1969 | 1970-1980 |
| 1. Metals and Minerals | 2 | 1 | 1 | 1 | 3 |
| 2. Gold | 0 | 0 | 0 | 0 | 0 |
| 3. Oil and Gas | 1 | 2 | 9 | 5 | 4 |
| 4. Paper and Forest Products | 0 | 0 | 9 | 8 | 1 |
| 5. Consumer Products | 2 | 12 | 20 | 19 | 1 |
| 6. Industrial Products | 1 | 11 | 18 | 18 | 9 |
| 7. Real Estate and Construction | 0 | 0 | 1 | 5 | 5 |
| 8. Transportation | 1 | 0 | 0 | 8 | 6 |
| 9. Pipelines | 0 | 0 | 1 | 4 | 8 |
| 10. Utilities | 3 | 12 | 23 | 14 | 26 |
| 11. Communications and Medias | 0 | 0 | 1 | 2 | 0 |
| 12. Merchandising | 1 | 4 | 10 | 11 | 9 |
| 13. Financial Services | 2 | 2 | 8 | 11 | 20 |
| 14. Management Companies | 0 | 0 | 3 | 8 | 6 |
| TOTAL | 13 | 44 | 104 | 114 | 98 |

[1] As defined in the TSE 300 Composite Index

TABLE 3.2(b): Relative Frequency Distribution of TSE Traded Straight Preferred Stock Issues by Industrial Sectors[1] and by Years[2]

| Industrial Sectors | Years of issue | | | | |
|---|---|---|---|---|---|
| | Pre-1940 | 1940-1949 | 1950-1959 | 1960-1969 | 1970-1980 |
| | % | % | % | % | % |
| 1. Metals and Minerals | 15.4 | 2.3 | 1.0 | 0.9 | 3.1 |
| 2. Gold | 0 | 0 | 0 | 0 | 0 |
| 3. Oil and Gas | 7.7 | 4.5 | 8.7 | 4.4 | 4.1 |
| 4. Paper and Forest Products | 0 | 0 | 8.7 | 7.0 | 1.0 |
| 5. Consumer Products | 15.4 | 27.3 | 19.2 | 16.7 | 1.0 |
| 6. Industrial Products | 7.7 | 25.0 | 17.3 | 15.8 | 9.2 |
| 7. Real Estate and Construction | 0 | 0 | 1.0 | 4.4 | 5.1 |
| 8. Transportation | 7.7 | 0 | 0 | 7.0 | 6.1 |
| 9. Pipelines | 0 | 0 | 1.0 | 3.5 | 8.2 |
| 10. Utilities | 23.1 | 27.3 | 22.1 | 12.3 | 26.5 |
| 11. Communications and Medias | 0 | 0 | 1.0 | 1.8 | 0 |
| 12. Merchandising | 7.7 | 9.1 | 9.6 | 9.6 | 9.2 |
| 13. Financial Services | 15.4 | 4.5 | 7.7 | 9.6 | 20.4 |
| 14. Management Companies | 0 | 0 | 2.9 | 7.0 | 6.1 |
| TOTAL | 100 % | 100 % | 100 % | 100 % | 100 % |

1 As defined in the TSE 300 Composite Index
2 All figures are in percent.

TABLE 3.2(c): Absolute Frequency Distribution of the total dollar value of TSE Traded Straight Preferred Stock Issues by Industrial Sectors[1] and by Years (in million)[2]

| Industrial Sectors | Years of issue | | | | |
|---|---|---|---|---|---|
| | Pre-1940 | 1940-1949 | 1950-1959 | 1960-1969 | 1970-1980 |
| 1. Metals and Minerals | 17 | 15 | 60 | 25 | 225 |
| 2. Gold | 0 | 0 | 0 | 0 | 0 |
| 3. Oil and Gas | 0 | 9 | 27 | 22 | 65 |
| 4. Paper and Forest Products | 0 | 0 | 73 | 184 | 38 |
| 5. Consumer Products | 3 | 40 | 92 | 76 | 25 |
| 6. Industrial Products | 0 | 102 | 53 | 50 | 345 |
| 7. Real Estate and Construction | 0 | 0 | 2 | 12 | 65 |
| 8. Transportation | 137 | 0 | 0 | 171 | 46 |
| 9. Pipelines | 0 | 0 | 15 | 91 | 288 |
| 10. Utilities | 5 | 70 | 159 | 105 | 572 |
| 11. Communications and Medias | 0 | 0 | 3 | 19 | 0 |
| 12. Merchandising | 0.3 | 3 | 31 | 7 | 55 |
| 13. Financial Services | 5 | 4 | 35 | 48 | 319 |
| 14. Management Companies | 0 | 0 | 9 | 84 | 40 |

1 As defined in the TSE 300 Composite Index
2 Based on the number of issues for which the dollar value of the issue was available.

A study of issuers of preferred stocks can be conducted for its own sake. However, the reason for the characterization of issuers of preferred stock in this research is to provide investors with pieces of information that should help them assess the quality of preferred stocks. In line with the findings of other researchers, the size, leverage and industrial sectors of preferred stock issuers are considered.

To illustrate how preferred stock issuers concentrate in specific industries over time, Table 3.2 (a) shows the absolute frequency distribution of these issues by industrial sectors for specific time periods, Table 3.2 (b) shows the relative frequency distribution of the same issues by industrial sectors for the same time periods and Table 3.2 (c) presents the dollar value of these issues using the same format.

Here again because of the bias due to the selection of the preferred stocks traded during the period 1957-1980, no trend analysis can be performed over the periods prior 1957. Thus, it leaves the 60's and the 70's to characterize the issuers of preferred stocks.

Table 3.2 (a) and Table 3.2 (b) show that Consumer Products, Industrial Products and Utilities were three sectors the most active in the market with regard to their number of new issues of preferred stocks over the period 1960-1969. However, Table 3.2 (c) shows that, over the same time period, in terms of total dollar value of preferred stock issues, Paper and Forest Products ranks first with $184 million followed by Transportation with $171 million and Utilities with $105 million. For

the period 1970-1980, Utilities ranks first in terms of number of new issues and in terms of total dollar value of issues. Utilities and Financial Services rank far above all the other sectors in term of number of issues. Concerning the total dollar value of issues, Utilities with $572 million is followed by Industrial Products with $345 million, Financial Services with $319 million, Pipelines with $288 million and Metal and Minerals with $225 million.

The reasons that could be advanced for such use of preferred stocks by Pipelines, Utilities and Financial Services are their larger importance in the economy and their well-known attitude toward a high use of leverage. For example, banks operate with assets about 30 times their equity, and pipelines and utilities, because of their regulatory environment, can pass on to customers the higher cost of preferred shares relative to bonds. These assertions confirm the expected trend shown in the studies of Fischer and Wilt (1968) and Bishara (1976), where Utilities and Financial Services have been increasing their use of preferred stocks as a financing device.

To compare the concentration of preferred stock issues in each sector relative to the global importance of these sectors in the economy, the relative frequency distribution of the number of preferred stocks issued during the period 1970-1980 for each sector and the relative frequency distribution of the total dollar value of these issues are compared with the TSE 300 weight for each of these sectors. These weights reflect the importance of each industrial sector in relation to the stock

market in general. They are based on the relative value of the shares outstanding for each sector. The percentage of the stocks selected for each sector in relation to the total number of stocks (300) has a ratio similar to that associated with the value of the shares outstanding for that sector in relation to the market in general. Thus, the TSE 300 weights are good proxies for the relative importance of each industrial sector[1].

To compare the concentration of straight preferred stocks in these fourteen industrial sectors with their share of issues in the market, the percentage of straight preferred stock issues belonging to one sector in relation to the total number of issues and in relation to the total dollar value of all issues are compared with the TSE 300 weight for that industrial sector. The industrial sector of each issue of TSE traded straight preferred stock was determined by looking at the description of the activities of the issuer at the time of issue. If this ratio was equal to one, then the concentration of preferred stock in this specific industrial sector was the same as the market in general. A ratio greater than one indicated a larger concentration of preferred stocks relative to the market in general, and a ratio of less than one showed a smaller concentration of preferred stocks within that sector relative to the market in general.

Table 3.3 (a) and Table 3.3 (b) show that (1) Metals and Minerals,

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1 This fact was also confirmed by Mr. Glen Smith. Mr. Smith is in charge of the TSE 300 Composite Index at the Toronto Stock Exchange.

TABLE 3.3(a): Comparison of the relative number of Straight Preferred Stock Issued over the period 1970-1980 with the TSE 300 Weights

| Sectors[1] | % of all issues | TSE 300 weight[2] | % of all issue/TSE 300 weight |
|---|---|---|---|
| | % | % | |
| 1. Metals and Minerals | 3.1 | 16.8 | 0.19 |
| 2. Gold | 0 | 2.2 | - |
| 3. Oil and Gas | 4.1 | 18.3 | 0.22 |
| 4. Paper and Forest Products | 1.0 | 3.4 | 0.29 |
| 5. Consumer Products | 1.0 | 6.2 | 0.16 |
| 6. Industrial Products | 9.2 | 9.6 | 0.96 |
| 7. Real Estate and Construction | 5.1 | 1.2 | 4.25 |
| 8. Transportation | 6.1 | 4.3 | 1.42 |
| 9. Pipelines | 8.2 | 3.8 | 2.16 |
| 10. Utilities | 26.5 | 9.5 | 2.79 |
| 11. Communications and Medias | 0 | 2.1 | - |
| 12. Merchandising | 9.2 | 3.9 | 2.36 |
| 13. Financial Services | 20.4 | 15.4 | 1.33 |
| 14. Management Companies | 6.1 | 3.3 | 1.85 |
| TOTAL | 100.0 | 100 | |

1 The sectors are defined as those of the TSE 300 Composite Index.
2 Average weight over the period 1977-1980.

TABLE 3.3(b): Comparison of the relative dollar value of Straight Preferred Stock Issued over the period 1970-1980 with the TSE 300 Weights

| Sectors[1] | % of all issues | TSE 300 weight[2] | % of all issue/TSE 300 weight |
|---|---|---|---|
| | % | % | |
| 1. Metals and Minerals | 10.8 | 16.8 | 0.64 |
| 2. Gold | 0 | 2.2 | - |
| 3. Oil and Gas | 3.1 | 18.3 | 0.17 |
| 4. Paper and Forest Products | 1.8 | 3.4 | 0.53 |
| 5. Consumer Products | 1.2 | 6.2 | 0.19 |
| 6. Industrial Products | 16.6 | 9.6 | 1.73 |
| 7. Real Estate and Construction | 3.1 | 1.2 | 2.58 |
| 8. Transportation | 2.2 | 4.3 | 0.51 |
| 9. Pipelines | 13.8 | 3.8 | 3.63 |
| 10. Utilities | 27.5 | 9.5 | 2.90 |
| 11. Communications and Medias | 0 | 2.1 | - |
| 12. Merchandising | 2.6 | 3.9 | 0.67 |
| 13. Financial Services | 15.4 | 15.4 | 1.00 |
| 14. Management Companies | 1.9 | 3.3 | 0.58 |
| TOTAL | 100.0 | 100.0 | |

1 The sectors are defined as those of the TSE 300 Composite Index.
2 Average weight over the period 1977-1980.

(3) Oil and Gas, (4) Paper and Forest Products and (5) Consumer Products use straight preferred stocks less than the market in general. In contrast, the following industrial sectors use straight preferred stocks more than their share in the stock market: (7) Real Estate and Construction, (9) Pipeline, (10) Utilities and (13) Financial Services. However, in the case of (6) Industrial Products, (8) Transportation, (12) Merchandizing and (4) Management Companies, Table 3.3 (a) and Table 3.3 (b) present conflicting results.

The characterization of preferred stock issuers is important because it enables investors to evaluate the effect of some qualitative variables on the risk and the return of these stocks. For example, the higher level of leverage found in utilities and in financial institutions may not be reflected in a higher risk given the protection of their regulatory environment. Utilities and financial services are usually large companies with little risk of bankruptcy as governments would likely intervene if they were in financial difficulty.

Given the findings related to the industrial sectors where preferred stock issuers concentrate, it should be expected that preferred stock issuers are more leveraged than firms in general which is consistent with the findings of Fischer and Wilt (1968) and Bishara (1976). Also because utilities and financial institutions are mainly large firms, the asset size of preferred stock issuers is expected to be large.

A comparison of preferred stock issuers was made with all the

Canadian companies registered on Compustat. The Compustat is biased toward large firms because these firms make their financial statements widely available. Compustat uses as its major sources of information: (1) 10-K annual (2) Company reports, (3) Company contacts, (4) Interactive Data Services Inc., (5) National Association of Securities Dealers Automated Quotations, (6) Civil Aeronautics Board, (7) Dow Jones News Service, (8) The Wall Street Journal's "Digest of Earnings Reports" and (9) Standard and Poor's Publications.

At the time this comparison was undertaken, the information on Compustat was available at Université Laval for the period 1961 to 1979. Average asset size, the average sales and the average debt to assets ratios were calculated for each of the years available. These averages used all the Canadian companies registered on Compustat for each year. The number of firms used for these averages varied from 168 to 268.

The same information was collected for each preferred stock issuer at the time of issue for the years 1961 to 1979. The sources used to collect this information were: Compustat, "The Financial Post Survey of Industrials" and "Moody's Industrial Manual". While the information based on the balance sheet was consistent, the information based on the income statement was not consistent enough to enable the comparison of sales between preferred stock issuers and the market in general as approximated with Compustat data. Sometimes "The Financial Post Survey of Industrial" and "Moody's Industrial Manual" report only total revenue or net sales or

gross income or net income making consistent comparisons impossible. Therefore, the comparison between preferred stock issuers and the market in general was made using total assets and long-term debt to assets ratios. Total assets is a straightforward figure. However, long-term debt needs to be defined. This research relied on the Compustat definition of long-term debt. It represents long-term debt as obligations due after a period greater than one year.

Long-term debt includes:

1. Purchase obligations and payments to officers (when listed as long-term liabilities)
2. Notes payable, due within one year and to be refunded by long-term debt, when carried as non-current liability
3. Long-term lease obligations (capitalized lease obligations)
4. Industrial Revenue Bond
5. Advances to finance construction
6. Loans on insurance policies
7. Indebtedness to Affiliates
8. Bonds, mortgages, and similar debt
9. All obligations that require interest payments
10. Publishing companies' royalty contracts payable
11. Timber contracts for forestry and paper
12. Extractive industries' advances for exploration and development

Long-term debt excludes:

1. Subsidiary preferred stock (included in Minority Interest)

2. The current portion of long-term debt (included in Current Liabilities)
3. Accounts payable due after one year (included in Other Liabilities)
4. Accrued interest on long-term debt (included in Other Liabilities)
5. Customers' deposits on bottles, kegs, and cases (included in Other Liabilities)
6. Production payments and advances for exploration and development

The same definition of long-term debt was used to collect the information for preferred stock issuers.

Table 3.4 presents the ratio of the average debt to assets ratio for the preferred stock issuers to the average debt to assets ratio for the companies reported by Compustat and the ratio of average asset size for the preferred stock issuers to the average asset size for the sample of Compustat companies. Appendix 2 gives for each year and for both the preferred stock issuers and the Compustat sample, the average asset size and the average long-term debt. While the average asset size of the Compustat sample grew steadily from $119 million in 1961 to $886 million in 1978, the average asset size of TSE traded straight preferred stock issuers ranged from $47 million in 1971 to $1,337 million in 1976. Appendix 2 also shows that for the last decade, 1970-1980, the issuers of straight preferred stocks increased dramatically in size relative to the Compustat sample as did their level of debt usage. This fact is consistent with the conclusion of part 3.1 that utilities and financial services, which are known to be large and highly leveraged firms, were the two most active

sectors using TSE traded straight preferred stocks over the period 1970-1980.

Table 3.4 shows that the asset size of issuers of preferred stock is on average 1.37 times larger than the average asset size of Compustat firms. However for eight of the eighteen years studied, the ratio of average asset size for preferred stock issuers to the average asset size for Compustat companies was below one. Therefore, it is not possible to conclude as to any consistent difference in asset size between preferred stock issuers and the market in general. However, for the period 1970-1978, most of these ratios are larger than one which is consistent with the concentration of utilities and financial services as users of preferred stocks over that period. In the case of the long-term debt to assets ratio, preferred stock issuers show a ratio 1.45 times higher than the market in general. Table 3.4 shows that in 88% of the years considered, preferred stock issuers report higher long-term debt to assets ratios than those of the market in general. And for the years 1962 and 1967, both groups were almost the same with regard to leverage.

It appears that the typical issuers of preferred stocks over the last decade are utility and financial services companies characterized by a large asset base and a high level of debt. Such characterization should be important to investors in their assessment of risk for preferred stocks because these types of companies in Canada are considered as low risk investments regardless of their highly leveraged financial structure.

TABLE 3.4: Comparison of TSE Traded Straight Preferred Stock Issuers at the Time of the Issue with Canadian Companies Listed on Compustat.

| Years | Average Asset size for preferred stock issuers/ Average asset size for Compustat firms | Average debt to assets for preferred stock issuers/ Average debt to assets for Compustat firms |
|---|---|---|
| 1961 | 0.48 | 2.09 |
| 1962 | 0.44 | 0.93 |
| 1963 | 1.03 | 1.51 |
| 1964 | 0.44 | 1.33 |
| 1965 | 2.05 | 1.30 |
| 1966 | 1.50 | 1.77 |
| 1967 | 2.46 | 0.93 |
| 1968 | 0.84 | 1.54 |
| 1969 | 0.95 | 2.08 |
| 1970 | 0.21 | 0.75 |
| 1971 | 1.68 | 0.53 |
| 1972 | 0.62 | 1.97 |
| 1973 | 3.30 | 1.55 |
| 1974 | 2.04 | 1.94 |
| 1975 | 1.95 | 1.45 |
| 1976 | 2.52 | 1.37 |
| 1977 | 1.39 | 1.59 |
| 1978 | 0.71 | 1.51 |
| Average | 1.37 | 1.45 |

## 3.3 Characteristics of a typical issue of TSE traded straight preferred stock

While common stocks are most of the time very simple contracts giving to common stockholders voting rights and the right to share in the residual earnings of the firm, preferred stocks like bonds carry a wide variety of contractual features. These features specify dividend payments, voting rights, the maturity of the investment and rights in case of liquidation. Knowledge of these features should help investors assess the risk of a preferred stock issue.

Hatch (1983) notes four different factors to be considered for the pricing of preferred shares. These are: the tax environment, the calculation of the rates of return, the risk, and marketability. The tax environment affects the pricing of preferred stocks mainly through the taxation of dividends. This topic is fully discussed in Chapter 5. The rate of return earned on a preferred stock may be affected by such covenants as sinking fund, purchase fund and the call feature. Total risk can be split into default risk, interest rate risk and call risk. While the default risk is mainly related to the characteristics of the issuers of preferred stocks which was discussed in the preceding section, interest rate risk is directly a function of the maturity of a preferred stock issue. As for bonds, the longer the maturity is the more variable is the price with respect to changes in interest rates.

The call risk relates to the possibility that the stock is called at a price lower than the prevailing market price. Finally, marketability is an important characteristic to consider because it measures the pos-

sibility to sell a stock rapidly without incurring losses. Marketability can be measured by the total value of an issue, the number of shares outstanding and the trading activity of the stocks.

All these factors affecting the pricing of preferred stocks can be split into two groups. One group contains the contractual features of a preferred stock issue; it refers to the covenants or the terms of an issue. The second group refers to some characteristics related to the market for these stocks and includes their effective maturity[1] and their marketability.

A detailed survey of all TSE straight preferred stock issues traded over the period 1957-1980 through various publications of "The Financial Post Corporation Services" resulted in data on the following list of covenants for each stock in the sample:

- claim on earnings:
  - (1) Straight dividends
  - (2) Cumulative dividends
  - (3) Participating dividends
- claim on assets:
  - (1) Liquidation preferences
  - (2) Maturity provisions:
    - Call features
    - Sinking fund
    - Purchase fund
- voting rights:
  - (1) Non-voting
  - (2) Contingent voting rights

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1 However, the effective maturity results from specific contractual features.

Regarding claim on earnings, for the straight dividends feature and the cumulative dividends feature dividends must be paid before any dividend payments to common stockholders. In the case of the cumulative dividends feature, the issuer of this issue must pay all dividends in arrears as well as the current dividend, before any payments to common stockholders can be made. However, in the case of straight dividends feature, if no preferred dividends are declared, the preferred dividends for that period are lost. With the participating dividends feature, the preferred stocks have a claim on the residual earnings of the firm. In such a case, preferred stockholders have no priority relative to common stockholders regarding the earnings of the firm.

In the case of claim on assets, liquidation preferences refer to the priority of preferred stockholders over common stockholders in case of liquidation. Call features give to the issuer of the stock the right to retire partially or entirely the issue at a specific price over a predetermined time period. The sinking fund provision typically stipulates a mandatory redemption of a fixed percentage of the issue per year at a price near par after an initial deferment period. With a purchase fund, the issuer agrees to purchase a certain number of the shares each year on the market as long as the stock is at or below a stipulated price, usually the issue price or the par value.

The case of voting rights is straightforward. The stock is non-voting or with contingent voting rights. The contingent voting rights are generally linked to the omission of dividend payments over a certain

period of time.

While an analysis of the effect of these covenants on the return of preferred stocks is presented in chapter 5, this section presents some descriptive statistics for the covenants found in preferred stock issues.

Table 3.6 gives the distribution of each of these covenants for the preferred stocks over the period 1975-1980. It shows that the typical preferred stock issue is callable with a cumulative dividend, asset preference and a contingent voting right, but does not have a purchase or a sinking fund.

The sources of information used to complete Table 3.6 were: (1) the cards from the Financial Post Corporation Services, (2) the "Survey of Industrials" (1957 to 1980) from the Financial Post Corporation Services, (3) "Moody's Industrial Manual" and (4) "TSE Review".

When the information regarding a particular covenant was not available from the sources used here, it was assumed that this feature was absent. This assumption seems reasonable since reporting agencies such as "The Financial Post Corporation Services" and "Moody's" would likely report the presence of any covenant that differed from the simpliest form of a preferred stock issue which is asset preference, no sinking fund or purchase fund, no call feature, straight dividends and no voting right. For example, eleven issues had no information pertaining to their type of dividend and were assumed to be straight dividend issues. Regarding the

TABLE 3.5: The Distribution of Covenants among the 373 TSE Straight Preferred Stock Issues Traded over the Period 1957-1980

| Covenant | | Number of issues | Percentage |
|---|---|---|---|
| Call feature | Callable issues | 324 | 87% |
| | Non callable issues | 49 | 13% |
| Partial retirement | Sinking fund | 55 | 15% |
| | Purchase fund | 140 | 37% |
| | No partial retirement | 178 | 48% |
| Asset Preference | With asset preference | 324 | 87% |
| | Without asset preference | 49 | 13% |
| Dividend | Straight dividend | 35 | 9% |
| | Cumulative dividend | 326 | 88% |
| | Participating dividend | 12 | 3% |
| Voting right | No voting right | 95 | 26% |
| | Contingent voting right | 278 | 74% |

call feature, thirty-one (31) issues were assumed to be non-callable. As for the partial retirement plans, one hundred and seventy-eight (178) issues had no partial retirement feature. In the case of the contingent voting rights, the fifty-six (56) issues lacking information regarding the voting rights were assumed to be non-voting. However, in the case of

asset preference, because this feature is characteristic of preferred shares, it was assumed that the absence of an asset preference would be extremely unusual. When no information was available about asset preference, the issue was assumed to have the asset preference feature. This occured in 13% of the 373 cases considered.

As the type of issuer changed over time, the type of security issued might also have changed. Table 3.6 looks at the use of each type of covenant over the past 50 years. This table shows that the cumulative dividend, the purchase fund and the call feature increased in popularity from the 30's to the 70's, while the presence of contingent voting rights and the asset preference remained similar over time.

While it is unclear how these contractual features might impact on the pricing of preferred stocks, the expected maturity of these stocks has a direct effect on their price sensitivity with regard to changes in interest rates. This is known as interest rate risk. This risk increases as the expected maturity increases. The straight preferred stocks considered in this research do not have an explicit maturity date. However, their sinking fund, purchase fund and call feature can result in a limited but unknown maturity. The date at which a specific number of shares will be redeemed through a sinking fund or a purchase fund agreement or the date at which the total issue is called becomes the effective maturity date or term for an issue.

TABLE 3.6: The Distribution of TSE Traded Straight Preferred Stock Covenants by the Time of Issue[1]

| Covenants | 1930-39 | 1940-49 | 1950-59 | 1960-69 | 1970-80 |
|---|---|---|---|---|---|
| Straight dividend | 28.6% | 5.1% | 6.1% | 4.9% | 7.8% |
| Cumulative dividend | 71.4% | 94.9% | 89.9% | 89.0% | 90.6% |
| Participating dividend | 0.0% | 0.0% | 4.9% | 6.1% | 1.6% |
| Purchase fund | 0.0% | 14.6% | 21.4% | 51.8% | 47.7% |
| Sinking fund | 14.3% | 19.5% | 25.0% | 8.2% | 10.6% |
| Contingent voting | 71.4% | 85.4% | 77.4% | 74.1% | 68.2% |
| Asset preference | 100.0% | 80.5% | 83.3% | 89.4% | 88.7% |
| Call feature | 60.0% | 89.7% | 97.4% | 98.7% | 93.2% |
| Number of issues | 7 | 44 | 94 | 92 | 94 |

[1] Each figure is the relative percentage of each feature for each covenant, based on the issues for which the issue date was available.

Because it is not possible to measure the expected term for a preferred stock issue, the realized term for the preferred stocks considered in this study were used as a proxy for the expected term. Table 3.7 shows two measurements of maturity for preferred stocks. The first measurement of maturity is the number of months between the date of issue or the first trading month if the issue date was not available, and the last month the preferred stock was traded on the Toronto Stock Exchange. For this first

measurement, all the TSE traded straight preferred stocks were assumed to mature in September 1980, which is the last month considered in this study. This assumption understates the true average maturity. In order to have a better estimate of the average maturity for these stocks, only the stocks for which the issue date was available and which were not traded during the last 12 months prior to September 1980 were retained for the calculation of the average maturity. With this procedure, 162 stocks were retained and their average maturity was 145 months compared to the previously estimated 159 months as the average maturity for all preferred stocks. While the first measure is biased because it assumes a shorter maturity for the stocks still traded after September 1980, the second measure is also biased because some stocks with long maturity still traded in 1979-1980 are excluded from the sample.

Keeping in mind that these estimates of the maturity of TSE traded straight preferred stocks understate the true maturity of the stocks, it is possible to conclude that preferred stocks are a long-term investment vehicle with an average maturity exceeding 13 years.

Table 3.7 also shows some statistics on the value of preferred stock issues at the time of issue, the number of shares outstanding each month and the number of shares traded each month as proxies for marketability.[1]

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[1] When looking at trading activity, some researchers use the number of shares traded while other researchers use the value of the shares traded. This distinction is important in the case of common stocks, because they vary widely in prices, it is less relevant however in the case of preferred stocks where the prices are more homogeneous. Here, the number of shares outstanding and the number of shares traded are used as a proxy for trading activity. This is consistent with the research of Fisher (1959), Fowler, Rorke and Jog (1980) and many others.

TABLE 3.7: Some Basic Descriptive Statistics for the Distribution of the Major Market Characteristics for TSE Traded Straight Preferred Stocks

| Characteristic | Mean | Median | Standard Deviation |
|---|---|---|---|
| Value of issues | $13,598,529 | $6,000,000 | $19,883,919 |
| Maturity for all issues (in months) | 159 | 140 | 124 |
| Maturity for the 162 issues not traded during the last 12 months of the data bank | 145 | 120 | 111 |
| Number of shares outstanding each month | 474,835 | 131,277 | 1,534,768 |
| Number of shares traded each month | 4,296 | 610 | 43,524 |

Table 3.7 shows an average dollar value for these straight preferred stock issues of $13,598,529 with a standard deviation of $19,883,919. This suggests a very wide distribution for the dollar value of these issues. The maximum value of $150 million of these issues and the minimum value of $41,470, both found in Appendix 3, show the wide range for the dollar value of these issues.

The preferred stocks considered in this research show an average number of shares outstanding each month of 474,835 shares. However, no information is available about the total or the average number of shares outstanding each month for the average TSE stocks, hence, it is not pos-

sible to compare trading activity of the TSE traded straight preferred stocks with the market in general using shares outstanding. As for the number of shares traded each month, it is possible to compare the TSE traded straight preferred stock with the TSE 300 Composite index. However, this information is not available for years prior to 1977. In January 1977, the stocks included in the TSE 300 had an average trading volume of 65,123 shares, while the average trading volume for TSE traded straight preferred stocks was 4,830 shares for the same month. In September 1980, statistics were 300,882 shares for the stocks included in the TSE 300 and 7,776 shares for the TSE traded straight preferred stocks. This illustrates the low trading activity for the preferred stocks considered here. Moreover, the important difference between the mean and the median for both of these measures shows that while some stocks have a considerable trading activity, most of the stocks have a very low marketability.

The major characteristics of the TSE straight preferred stocks traded during the period 1957-1980 can be summarized by describing a typical issue of these stocks. It is an issue of about $5 million dollars offered by a utility company during the last 30 years. This issue, with an average maturity exceeding 13 years, is not traded very actively. This preferred stock issue is callable with asset preference, a cumulative dividend, a contingent voting right and a partial retirement plan.

# CHAPTER 4

## A DESCRIPTION OF THE RISK AND RETURNS FOR TSE TRADED STRAIGHT PREFERRED STOCKS

This chapter is divided into two major sections. The first section consists of a description of the return on TSE straight preferred stocks traded during the period 1957-1980. It addresses research questions (2.1.1) How does the return for preferred stocks compare with other securities? (2.1.2) What characterizes monthly returns for individual preferred stock issues? (2.1.3) What is the effect of different holding periods on the return of these stocks? (2.1.4) How do yields for these preferred stocks compare with yields on bonds?

The second section focuses on an assessment of the risk of these stocks. It answers research questions (2.2.1) How is the variance of returns affected by the size of portfolios of preferred stocks? (2.2.2) What is the risk associated with these stocks as estimated with the CAPM?

### 4.1 The returns on TSE traded straight preferred stocks over the period 1957-1980

The theory of finance characterizes investment opportunities in terms of their risk-return trade-off. The realized return is commonly

calculated as in equation (1) which considers the capital gain or loss over a certain period of time and the dividends paid over the same period of time.

$$R_{i,t} = \frac{P_{i,t} - P_{i,t-1} + D_{i,t}}{P_{i,t-1}} \qquad (1)$$

where $R_{i,t}$ = the return on security i from time t-1 to time t

$P_{i,t}$ = the price of security i at time t

$P_{i,t-1}$ = the price of security i at time t-1

$D_{i,t}$ = the dividend payment(s) for security i from time t-1 to time t.

Because preferred stocks are part of a market including many kinds of securities, investors should be interested in a comparison of the return on these stocks with the return on other securities. This is the aim of the first specific research question dealing with the return of TSE traded straight preferred stocks.

As it was the case in Fisher and Lorie's study (1978) dealing with common stock returns and the study of Hatch, White and Mackinlay (1983) comparing returns on different Canadian securities, the comparison of preferred stock returns with other securities returns will be performed with indexes, one for each type of security. While the index for TSE traded straight preferred stocks gives a very general picture for the return on these stocks, it does illustrate the range of returns on the

various issues making up this average value. This variance in returns is important to investors because it can be assumed that most individuals do not hold the preferred stock index but only some of the stocks included in this index. The second specific research question about the return on TSE traded straight preferred stocks is concerned with the distribution of monthly returns for individual issues of these stocks.

The definition of return in equation (1) refers to a certain time period. The investor is primarily interested in the return for the time period over which he will hold the stock, the holding period. Because the desired holding period is not the same for most investors, the third specific research question investigates how actual returns vary across different holding periods.

Equation (1) is used to calculate realized returns. However, investors appraise the desirability of holding preferred stocks as an investment on the basis of their expected returns. Many studies have argued that actual returns measured over a long period of time represent an unbiased estimate of expected returns[1]. However, the dividend yield can also be considered as an estimate of ex-ante yield. This yield is a reasonable measure of the investor's expected return since the price of the stock should reflect all the information available and since the dividend is fixed. Thus, the last specific research question dealing with the return of TSE traded straight preferred stocks looks at the annual

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1 See for example Hatch (1983), op. cit., p. 358.

yield for these stocks.

### 4.1.1 The returns on preferred stocks, common stocks, bonds and treasury bills over the period 1957-1980

A comparison of the return of different types of securities is commonly performed with indexes, one for each type of security. Also, the types of securities to be considered can vary widely. Here, treasury bills, bonds and common stocks are compared to TSE traded straight preferred stocks. More specifically, the securities considered are treasury bills as a proxy for the risk free rate, the McLeod Young Weir (MYW) 20 Corporate Value Index for bonds, all TSE traded straight preferred stocks and the TSE 300 Composite Index adjusted for dividends for common stocks.

Returns on treasury bills were obtained from Statistics Canada's "Government of Canada 91-Day Treasury Bill Tender (Monthly Average)". This information is available from CANSIM. These yields are reported on an annual basis. They are based on the average yield at Thursday tender following the last Wednesday of the month. These measures are yields to maturity (91-day). Because of the short maturity for the treasury bills, there should be only small differences between their yield to maturity (91-day) and their actual monthly returns. This fact added to the direct availability of these yields led to their choice for the study.

The MYW 20 Corporate Value Index is an index which takes into account the reinvestment of coupon income. This index includes both

interest and capital gains. McLeod Young Weir Limited[1] does not give any information about the selection of these bonds aside from the use of 10 Canadian utility bonds and 10 Canadian industrial bonds. The monthly return on these bonds is calculated as in equation (2).

$$RMYW_t = \frac{MYW_t - MYW_{t-1}}{MYW_{t-1}} \qquad (2)$$

where $RMYW_t$ = the monthly return on the MYW 20 Corporate Value Index at time t

$MYW_t$ = the MYW 20 Corporate Value Index at time t

$MYW_{t-1}$ = the MYW 20 Corporate Value Index at time t-1

The preferred stocks considered are all TSE traded straight preferred stocks recorded in the data bank created for this research. The statistics presented in Table 4.1 (a) are based on the average of the monthly returns for each stock. This monthly return is calculated as in equation (3).

$$RPFD_t = \frac{PFD_t + D_t - PFD_{t-1}}{PFD_{t-1}} \qquad (3)$$

where $RPFD_t$ = the rate of return for month t

$PFD_t$ = the price of the stock at the end of month t

$PFD_{t-1}$ = the price of the stock at the end of month t-1

$D_t$ = the dividend paid in month t

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1 McLeod Young Weir Limited, Yield, Price and Value Indices, McLeod Young Weir Limited, February 23, 1983.

The return on common stocks is based on the TSE 300 Composite Index adjusted for dividends. The information required to construct this index is available in the monthly "TSE Review". Equation (4) is used to calculate the monthly return on common stocks. It takes into account that the "TSE Review" reports the TSE 300 on a monthly basis and the dividend yield on this index, on a yearly basis. Therefore, the monthly dividend return is calculated as the twelfth root of the yearly dividend.

$$RTSE_t = \frac{TSE_t - TSE_{t-1}}{TSE_{t-1}} + \left[\sqrt[12]{(1+ DIV)} - 1\right] \qquad (4)$$

where $RTSE_t$ = the rate of return for the TSE 300 Composite Index adjusted for dividends for month t

$TSE_t$ = the TSE 300 Composite Index for month t

$TSE_{t-1}$ = the TSE 300 Composite Index for month t-1

DIV = the dividend yield for the whole year including month t

Table 4.1 (a) presents the comparison of the monthly returns on these security indexes. Because the rates of return on treasury bills are reported on an annual basis, they are divided by 12 to permit comparison with other groups of securities. More detailed statistics on the return associated with these securities are presented in Appendix 5.

It is commonly acknowledged in the literature of finance that a ranking of securities in terms of risk places common stocks first, that is to say as having the greatest amount of risk, followed by preferred stocks, then bonds and finally treasury bills.

According to finance theory, the expected returns should follow the same ranking. The means of the ex-post returns presented in Table 4.1 (a) follow the expected pattern with the exception of the relative ranking of the treasury bills and bonds. However, the excess of the return of treasury bills over bonds is very small, only 0.07%.

The standard deviations of returns show that common stocks present the highest variability followed by preferred stocks, bonds and treasury bills.

The two other measures of dispersion are presented in Table 4.1 (a): skewness and kurtosis. Skewness and kurtosis reflect the departure of the distribution of returns from the normal distribution. These two measures are useful to describe the shape of the distribution of returns. As discussed later, the shape of the distribution of returns has some impact on the assessment of the risks of securities and on the estimation of the systematic risk.

The measure of skewness is essentially a measure of asymmetry. Because this measure is related to the tails of the distribution, it is very important in the description of phenomenons with extreme behavior. Skewness (SK) is estimated in the following manner:

$$SK = \frac{\sum_{i=1}^{n} [(x_i - \bar{x})/s]^3}{n} \qquad (5)$$

TABLE 4.1(a): Statistics for the Monthly Returns on Some Major Canadian Securities over the Period 1957-1980

| Security | Mean[1] | Standard deviation[1] | Skewness | Kurtosis |
|---|---|---|---|---|
| Treasury bills | 0.47 | 0.22 | 1.056 | 0.912 |
| Bonds | 0.40 | 1.58 | .230 | 4.245 |
| Preferred stocks | 0.56 | 1.64 | 1.235 | 7.276 |
| Common Stocks | 0.88 | 4.32 | - .438 | 1.494 |

1) Figures in percent per month

where $x_i$ = the i th observation
$n$ = the number of observations
$s$ = the standard deviation for the variable $x_i$

The measure of skewness (SK) has a value of zero when the distribution is a completely symmetric bell-shaped curve. A positive value indicates that the observations are clustered to the left of the mean with most of the extreme values to the right. A negative value indicates clustering to the right. Figure 4.1 illustrates the shapes of distributions corresponding to different SK values.

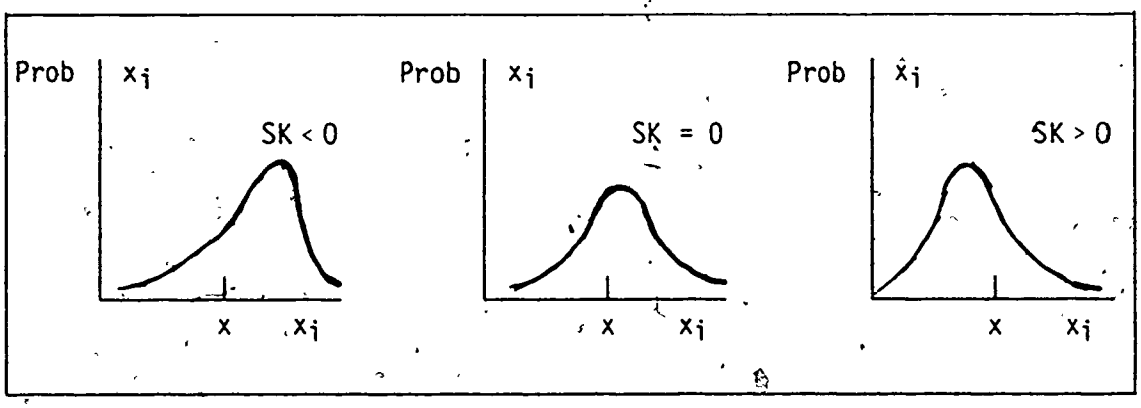


FIGURE 4.1: EXAMPLES OF SKEWNESS (SK)

Appendix 6 presents a table for testing skewness. Positive statistically significant skewness at a 95% level of confidence is found if the measure of skewness, for a sample of 250 observations, exceeds 0.251. A sample is considered to have negative statistical significance at a 95% level of confidence if the measure is less than -0.251. If the measures of skewness presented in Table 4.1 (a) are compared to the above critical values, only the returns on bonds do not exhibit significant skewness. While common stocks show a statistically significant negative measure of skewness the measure is very close to the critical value presented in

Appendix 6. Thus, the level of skewness for common stocks could be disregarded.

The other type of security to exhibit statistically significant positive skewness is preferred stocks.

Kurtosis (k) is a measure of the relative peakedness or flatness of the curve defined by the distribution of observations. K can be estimated with the following formula:

$$K = \frac{\sum_{i=1}^{n} [(x_i - \bar{x})/s]^4}{n} - 3 \qquad (6)$$

If kurtosis is equal to zero, then the distribution of observations is normal. If kurtosis is positive, the distribution of observations is more peaked than the normal distribution. On the other hand, if kurtosis is negative, the distribution is flatter than the normal distribution. Figure 4.2 illustrates the shapes of the distributions for various values of K.

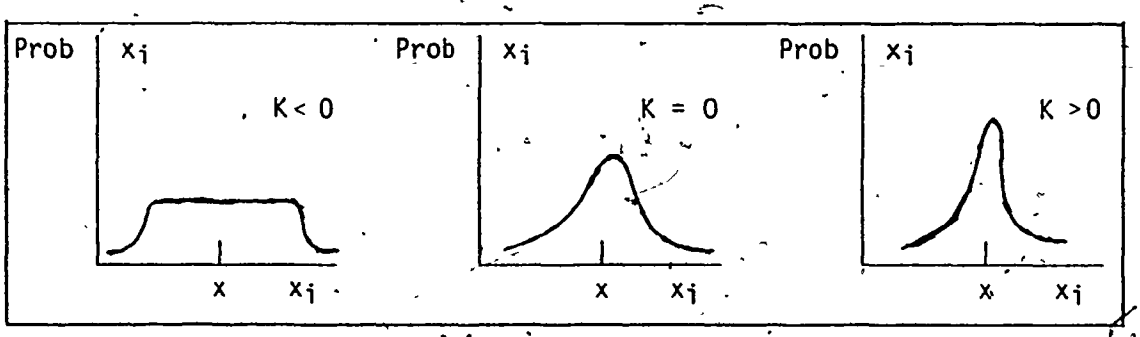


FIGURE 4.2: EXAMPLES OF KURTOSIS (K)

Appendix 6 presents a table for testing kurtosis. The values found in this table are centered around 3 instead of 0 for the normal distribution. In order to use this table with the measurement of kurtosis as calculated by SAS (Statistical Analysis System) and by SPSS (Statistical Package for the Social Sciences), the constant 3 must be subtracted from the values found in this table. This subtraction adjusts the values so that they define the normal distribution associated with a measure of kurtosis equal to zero.

With 250 observations, for a 95% level of confidence, statistically significant positive kurtosis will be found if the measurement of kurtosis centered on zero for the normal distribution exceeds 0.52. For all types of securities considered in Table 4.1 (a), the measurement of kurtosis is positive and statistically significant. This means that the distributions of returns on these securities are more peaked than the normal distribution.

The studies of Kendall (1953), Mandelbrot (1963), Cootner (1964) and Fama (1965) examined the observable departures of the returns on common stocks from the normal distribution. Their findings showed that the distribution of returns for common stocks could be described by a stable Paretian distribution where the tail ends of the distribution contain a larger quantity of returns than the tail ends of a normal distribution. Fama (1976) points out that daily returns are definitely leptokurtic[1],

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1 Leptokurtic distributions are characterized by positive kurtosis.

while monthly returns are closer to the normal distribution but "are still slightly leptokurtic relative to normal distributions".[1]

The consideration of possible departures from the normal distribution has received considerable attention in the literature of finance because the estimation of the systematic risk, beta, through regression models requires a normal distribution for returns.

Kmenta discusses the effects of non-normality for the variables used in regression analysis:

> "To sum up, when the assumption of normality of the disturbance is dropped, the least squares of the regression coefficients retain most of their desirable properties and the formulas for the variances of these estimators remain unchanged. The confidence intervals and the tests of significance for $\alpha$ and $\beta$ do, however, depend crucially on the assumption of normality. Without the assumption of normality the least squares estimators are not normally distributed in small samples; strictly speaking, therefore, the confidence limits and the tests described in Section 7-4 no longer apply. Fortunately if the distribution of the disturbance is not very radically different from normal, the quoted confidence limits and tests of significance are not too badly affected and can be used as reasonable approximation."[2]

Thus, the possible departures from the normal distribution for the distribution of returns should be minimized if betas are to be estimated with ex-post returns.

While many researchers have observed significant departures from the

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1 FAMA, E.F., Foundations of Finance, Basic Books Inc., New York, 1976, p. 33.

2 Kmenta, Jan, Elements of Econometrics, Macmillan Publishing Co. Inc., New York, 1971, p. 248.

TABLE 4.1(b): Statistics for the Logarithmic Form of the Monthly Returns on Some Major Canadian Securities over the Period 1957-1980

| Security | Mean[1] | Standard deviation[1] | Skewness | Kurtosis |
|---|---|---|---|---|
| Treasury bills | 0.47 | 0.22 | 1.050 | 0.893 |
| Bonds | 0.39 | 1.57 | 0.088 | 4.073 |
| Preferred stocks | 0.55 | 1.62 | 1.056 | 6.437 |
| Common Stocks | 0.78 | 4.33 | -0.655 | 1.875 |

1) Figures in percent per month

normal distribution for series of returns, mainly for common stock returns, few suggestions have been made to explain these departures.

In the case of skewness, Fama (1965) and more recently Fung and Yallup (1983) have suggested a lognormal distribution for common stock returns. This suggestion is based on the fact that returns present a lower bound which is -100% while there is no limit on positive returns. If returns are lognormally distributed, then the logarithm of the returns should be normally distributed.

Table 4.1 (b) shows statistics for the logarithmic form of the returns presented in Table 4.1 (a). The level of skewness is not significantly affected for the indexes considered. Treasury bills and preferred stocks still exhibit statistically significant positive skewness. In the case of treasury bills, the positive skewness is probably due to the absence of negative nominal returns[1] which truncates the left part of the distribution of returns. As discussed earlier, this series consists of yields to maturity which cannot take negative values. In the case of preferred stocks, Fung and Yallup (1983) also suggest that both skewness and kurtosis could be the result of an unstable distribution over time.

Compared to other types of securities, preferred stocks present the highest level of kurtosis which indicates that the distribution of returns is more peaked than the normal distribution.

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1 No rational investor would accept to pay a higher price than the nominal value for treasury bills.

Looking at Appendix 7, the plot of the average monthly returns for TSE traded straight preferred stocks over time does not seem to present any specific cluster of returns.

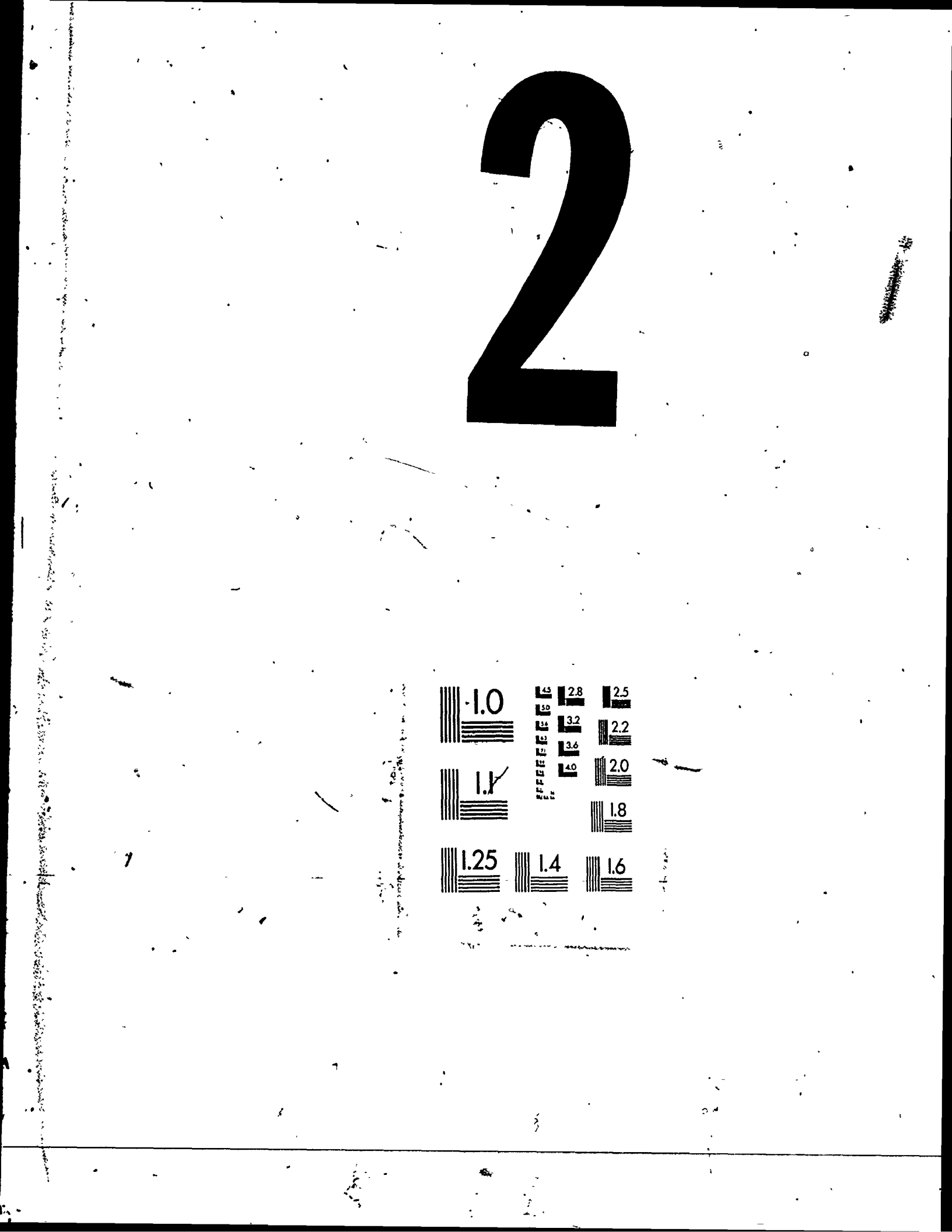
However, the information recorded in Table 4.2 shows that the average return for the period January 1962 to December 1966 is statistically significantly different from the other averages, all of these being considered as coming from the same population.

While the mean of returns is stable for most of the sub-periods considered, the variance is very unstable. Using a Bartlett's Test for homogeneity of variances, all the variances for the sub-periods presented in Table 4.2 belong to different populations except for the periods January 1972 to December 1976 and January 1977 to September 1980 which can be related to the same population.

TABLE 4.2: The distribution of monthly returns for an equally weighted index of TSE traded straight preferred stocks over different time periods.

| Time period | Average return [1] | Standard deviation of returns [1] |
|---|---|---|
| January 1957 - December 1961 | 0.59 | 1.25 |
| January 1962 - December 1966 | 0.25 | 0.98 |
| January 1967 - December 1971 | 0.58 | 1.67 |
| January 1972 - December 1976 | 0.66 | 2.04 |
| January 1977 - September 1980 | 0.80 | 2.13 |
| January 1957 - September 1980 | 0.56 | 1.64 |

[1] Figure in percent.


2
1.0
1.1
1.25
1.4
1.6
2.8
3.2
3.6
4.0
2.5
2.2
2.0
1.8

Thus, the high level of skewness and kurtosis for the returns of TSE traded straight preferred stocks can be at least partially attributed to an unstable distribution of returns. Each of the sub-periods considered could be made of different normal distributions.

While Table 4.1(a) shows that preferred stocks fall between bonds and common stocks with regard to their average returns and their standard deviation of returns, Table 4.1(a) does not indicate how preferred stock returns move relative to bond returns and common stock returns. Therefore, to enhance the comparison of the returns for these types of securities, Table 4.3 presents the correlation matrix for the monthly returns of the securities considered in Table 4.1(a).

The correlation matrix for the returns on the securities considered here shows that TSE traded straight preferred stocks are about as closely related to bonds as to common stocks.

While Bildersee (1973) found that some preferred stocks were similar to bonds and other preferred stocks more closely associated to common stocks, he did not try to find any specific reason for these associations.

Hatch (1983) points out that the mix of covenants included in a preferred stock issue can differentiate preferred stocks from bonds. This point is illustrated by the changes occuring in the coefficients of the correlation matrix when the participating preferred stocks are dropped from the sample of preferred stocks. Because the participating dividend

TABLE 4.3: Correlation matrix for the monthly returns of different securities

| | Treasury bills | Bonds | Preferred stocks | Common stocks |
|---|---|---|---|---|
| Treasury bills | 1 | | | |
| Bonds | -0.03 | 1 | | |
| Preferred stocks | -0.08 | 0.57 | 1 | |
| Common stocks | 0.04 | 0.27 | 0.54 | 1 |

feature could be more closely associated with common stocks, the new sample of preferred stocks excluding participating preferred stocks should be less closely associated with common stocks and more closely associated with bonds than the results presented in Table 4.3 which include both participating and nonparticipating preferred stocks. Without the participating preferred stocks, the preferred stocks show a correlation coefficient of 0.51 with common stocks and of 0.58 with bonds. While the changes in the correlation coefficients are not large, they are in the expected direction. Chapter 5 of this thesis deals with the effect of the covenants on the risk-return trade-off of TSE traded straight preferred stocks.

Table 4.4 shows that over different shorter time periods than those considered in Table 4.3, preferred stocks and sometimes more closely associated to common stocks, and sometimes more closely related to bonds. However, the correlation coefficients for preferred stocks and common

stocks, and for preferred stocks and bonds do not differ very much between each sub-period except for the period January 1977 - September 1980. This last period was characterized by rapid increases in interest rates which should have a strong influence on preferred stock returns and bond returns.

A comparison of the returns for a preferred stock index, a common stock index, a bond index and a treasury bill index tells investors that preferred stocks rank between bonds and common stocks with regard to their returns and that their distribution of returns presents more departures from the normal distribution than any other security. Thus, the return on a portfolio of preferred stocks would be equivalent to the return on a mix of bonds and common stocks. This is an interesting finding for investors since they can achieve the same return by trading preferred stocks on the TSE as with a combination of common stocks and bonds. To trade in only one market may produce some savings in transaction costs as well as in the time required to follow each market.

Moreover, because positive skewness can be positively priced by investors[1], preferred stocks could dominate the mix of common stocks and bonds if a preferred stock portfolio had the same mean and the same variance as a common stock and bond portfolio, but in addition a small chance of a very large return. Thus, the preferred stock portfolio adds to the basic mean-variance characteristics something similar to a

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1 See: Kraus, Litzenberger (1976), Friend, Westerfield (1980), Reilly (1979).

lottery. However, because skewness is not reflected in the standard mean-variance analysis, the expected skewness on preferred stock returns cannot be detected by drawing efficient frontiers on a two-dimensional graph.

TABLE 4.4: The correlation coefficients for the monthly returns of preferred stocks and bonds, and of preferred stocks and common stocks over different time periods.

| Time period | Correlation coefficient of preferred stocks and bonds | Correlation coefficient of preferred stocks and common stocks |
|---|---|---|
| January 1957 - December 1961 | 0.43 | 0.36 |
| January 1962 - December 1966 | 0.41 | 0.53 |
| January 1967 - December 1971 | 0.50 | 0.61 |
| January 1972 - December 1976 | 0.62 | 0.67 |
| January 1977 - September 1980 | 0.69 | 0.40 |

### 4.1.2 The distribution of monthly returns for individual issues of TSE traded straight preferred stocks

Because most investors do not hold all the issues in the preferred stock index, it is important to examine the distribution of returns for preferred stock. To know the distribution of the returns for individual preferred stock issues will help investors assess the impact of these stocks on the risk of their portfolios. However, to determine precisely the effect of a specific preferred stock issue on a particular portfolio,

the relationship between these two sets of securities must be established. Also, departures from normality for the returns of TSE traded straight preferred stocks may affect the investors' selection of preferred stocks for a portfolio. The stocks with returns most concentrated around the mean present less potential variations in returns than those with positive skewness which give rise to a small possibility of very large returns.

A characterization of the distribution of returns for individual TSE traded straight preferred stocks is undertaken with monthly returns.

When looking at the distribution of returns for individual issues of TSE straight preferred stock the same statistics as those used for a comparison of the indexes are used. Table 4.5 shows the distributions of the mean, the standard deviation, the skewness and the kurtosis for the returns of all TSE traded straight preferred stock issues. While the average of the mean returns is close to the average of the returns for the preferred stock indexes, the distribution of these mean returns shows a wider dispersion. The standard deviation, the skewness and the kurtosis for the returns of each of the individual issues of straight preferred stocks also show wide variations. These last three measures depict distributions with a few issues with very high values for these measures. This is supported by the significant positive difference between the averages of these measures and their medians.

Scholes and William (1977), Fowler, Rorke and Jog (1980) consider

TABLE 4.5: Statistics about the Average, the Standard Deviation, the Skewness and the Kurtosis for the Monthly Returns of all TSE Traded Straight Preferred Stock Issues

| | | | Statistics | |
|---|---|---|---|---|
| | Average return[1] | Standard deviation[1] | Skewness | Kurtosis |
| Average | 0.58 | 5.30 | 0.472 | 5.204 |
| Minimum | -11.11 | 0.17 | -6.391 | -1.875 |
| 25% quantile | 0.34 | 3.26 | -0.184 | -0.981 |
| Median | 0.51 | 4.21 | 0.263 | 2.530 |
| 75% quantile | 0.79 | 5.80 | 0.749 | 4.749 |
| Maximum | 10.17 | 33.33 | 11.750 | 152.145 |

1 Figures in percent

discontinuities in trading as an important phenomenon affecting the pricing mechanism. They see these discontinuities as the result of a market imperfection leading to non-instantaneous adjustment of stock prices to new information. These varying lags in the adjustment of stock prices may result in unstable distribution of returns. Fung and Yallup (1983) explain these distortions in the pricing mechanism in the following way:

> "In the presence of market imperfections, such as transaction costs and other barriers to trade, market participants will tend to accumulate information prior to trading. Given that any series of transactions will represent the actions of many different market participants, possibly with unequal access to information; each transaction will represent varying amounts

> of impounded information. Furthermore there is no immediately obvious relationship between trading volume and the amount of information impounded in market prices. Therefore with market imperfections prices no longer fully reflect all information available at the time they are recorded. Moreover if stock prices are collected at a particular time during a day which is not coincidental with the latest information arrival, stock returns are not calculated over non-homogeneous intervals. Therefore stock returns observed over regular time intervals may in fact be non-synchronous in the information sense."[1]

This non-synchronous trading can lead to unstable distributions that exhibit skewness and kurtosis when they are lumped together. Fung and Yallup suggest that the distribution of stock returns over a long interval is a mixture of normal distributions with varying parameters. Thus, the distribution observed over long intervals should exhibit an unstable mean and/or an unstable variance. In the case of an unstable mean, Fung and Yallup point out that the resulting global distribution for the returns should be plutokurtic[2]. In the case of an unstable variance, the resulting global distribution should be leptokurtic[3]. As shown in the preceding section, the returns for the preferred stock index were characterized by an unstable variance and a leptokurtic distribution. This is consistent with the point raised by Fung and Yallup. Thus, one reason for the high level of kurtosis for some of these stocks could be an

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1 Fung, W.K.H., Yallup, P.J., "Empirical properties of stock return distribution in the U.K. Market with applications to Beta estimation and the small firm effect", proceedings of the European Finance Association Meeting, Paris, September 1983, p. 894.

2 Plutokurtic means flatter than the normal distribution.

3. Leptokurtic means more peaked than the normal distribution.

unstable distribution with regard to the variance. Fung and Yallup show that unstable means and variances substantially increases kurtosis. While Fung and Yallup are very precise on the effect of unstable parameters on the level of kurtosis, they only conclude that, when going from a short interval to a long interval there is little change in the skewness parameter. However, when they adjust for the discontinuities in trading due to weekends and holiday periods, both skewness and kurtosis are reduced.

While Fung and Yallup point out that there is no obvious relationship between trading volume and the amount of information impounded in market prices, they conclude that stocks that suffer from thin trading are more subject to errors in the measurement of returns than the stocks that are actively traded.

While the study of Fung and Yallup deals with daily returns, this research considers monthly returns. This longer interval to compute returns increases the problems of non-synchronous trading. These problems are related to the low trading activity for some preferred stock issues. The first problem is related to the timing of the last trade for a month. While it is assumed that the closing price for each month, which is used to compute the return, reflected the trading activity on the last day of the month, there is no information to verify that the last trade effectively took place on the last day of that month. The price reported in the "TSE Review" is the last trade of the month whenever it took place. This raises the possibility of calculating preferred stock returns over non-

homogeneous intervals. Because of a lack of information regarding the specific last trading date, no corrections could be made to correct this potential bias.

The second problem is related to the discontinuities in the trading activity for some stocks due to the absence of trading during a month or during many months. Because these discontinuities can be associated with the accumulation of information for a stock which does not have a high potential trading activity, the discontinuities can result in a distribution of returns with significant skewness and kurtosis. To minimize the effect of this source of potential skewness and kurtosis, the measurements of skewness and of kurtosis were recalculated for stocks that had a continuous series of returns.

In the case of the measurements of skewness, the preferred stock issues with less than 25 consecutive months of transactions were dropped from the sample used to calculate the measurement of skewness. The rule of 25 consecutive months of transactions is dictated by the smallest sample size for which critical values for tests of statistical significance are available for skewness. A table of the level of significance for the measure of skewness is presented in Appendix 6. For preferred stocks with 25 or more consecutive months of transactions, the longest series of consecutive months of transactions is selected to calculate measurements of skewness and to perform the statistical test regarding the significance of the level of skewness. With this procedure, 241 issues were selected, of which 102 issues, or 42.3% of the sample, had a level of

skewness significant at a 95% level of confidence. Among these 102 issues, 63 issues had positive skewness and 39 issues had negative skewness. This indicates a bias toward positive skewness.

In the case of measurements of kurtosis, the preferred stock issues with less than 50 consecutive months of transactions were dropped from the sample used to test the statistical significance of kurtosis. Here again, the rule of 50 consecutive months of transactions is dictated by the availability of critical values to test statistical significance for kurtosis. A table for the level of significance of the measurement of kurtosis is presented in Appendix 6. For the preferred stock issues with more than 49 consecutive months of transactions, the longest series of consecutive months of transactions is selected to calculate the measure of kurtosis and to perform the statistical test regarding the significance of the level of kurtosis. Among the 151 issues selected with this procedure, 97 issues present significant positive kurtosis at a 95% level of confidence. This represents 64.2% of the sample. This means that these issues have a distribution of returns more peaked than the normal distribution which is consistent with the findings of Fama (1965) for common stocks issues in the United States.

The 60 issues presenting statistical significance for both skewness and kurtosis measurements account for 36.7% of the sample.

Statistics on the measurements of skewness for stocks with at least 25 consecutive trading months and on the measurements of kurtosis for

stocks with at least 50 consecutive trading months during a period with consecutive trading activities, are presented in Table 4.6. If Table 4.6 is compared to Table 4.5, a substantial decrease in both the average measurements of skewness and of kurtosis can be found. The decrease in the average of these measurements is due to a rejection of the stocks with the highest level of skewness and kurtosis. Thus, a lack of continuous trading activity appears to increase the level of skewness and kurtosis, which is consistent with Fung's and Yallup's findings.

To test for the effect of thin trading on the level of skewness and kurtosis, the average number of shares outstanding and the average number of shares traded each month are used as a proxy for the trading activity of the issues[1]. Table 4.7 and Table 4.8 show measures of skewness and kurtosis for preferred stocks with different levels of shares outstanding and shares traded. Table 4.7 leads to the conclusion that the number of shares outstanding is not related to the level of skewness or to the level of kurtosis. While Table 4.8 also leads to the conclusion that the level of trading activity does not affect the level of skewness, the level of kurtosis is reduced when the average number of shares traded increases. Thus discontinuous trading activity seems to be the major source of skewness and kurtosis, as shown by the comparison of Table 4.5 and Table 4.6.

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1 These proxies for marketability are discussed in Chapter 3.

TABLE 4.6: Statistics for the Measurement of Skewness Based on Continuous Series of at least 25 Returns and for the Measurement of Kurtosis Based on Continuous Series of at least 50 Returns

| | Statistics | |
|---|---|---|
| | Skewness | Kurtosis |
| Average | 0.214 | 4.095 |
| Minimum | -6.637 | -0.503 |
| 25% quantile | -0.249 | 1.074 |
| Median | 0.156 | 2.358 |
| 75% quantile | 0.583 | 4.752 |
| Maximum | 5.234 | 48.586 |

TABLE 4.7 The Number of Shares Outstanding and the Level of Skewness and Kurtosis

| Average number of shares out-, standing each month | From 1 to 46512.7 the 25% quantile | From 46512.77 to 149789 the median | From 149789 to 444869 the 75% quantile | Over 444869 the 75% quantile |
|---|---|---|---|---|
| Average level of skewness for these stocks | 0.540 | 0.518 | 0.347 | 0.503 |
| Average level of kurtosis for these stocks | 5.772 | 7.666 | 3.197 | 4.199 |

TABLE 4.8 Trading Activity and the Level of Skewness and Kurtosis

| Average number of shares traded each month | From 1 to 438.175 the 25% quantile | From 438.176 to 1089.9 the median | From 1089.9 to 3455.53 the 75% quantile | Over 3455.53 the 75% quantile |
|---|---|---|---|---|
| Average level of skewness for these stocks | 0.662 | 0.363 | 0.490 | 0.405 |
| Average level of kurtosis for these stocks | 7.006 | 5.546 | 5.512 | 2.951 |

In summary, the monthly returns of individual TSE traded straight preferred stock issues exhibit wide variations in both their average returns and their standard deviations of returns. Some of these issues have a significant level of skewness and/or kurtosis for which an unstable distribution of returns and discontinuous trading activity are potential causes.

Thus, when considering an investment in preferred stocks, investors should be aware that, while the preferred stock index falls between common stocks and bonds with regard to their returns, individual issues present very wide variations. Also, issues with discontinuous or infrequent trading activity carry the potential for large positive returns. Under such circumstances, a portfolio selection model, as the one suggested by Reilly (1979), which includes skewness would be particularly helpful in selecting preferred stocks.

### 4.1.3 The return characteristics of TSE traded straight preferred stocks over different holding periods

The holding period is an important factor to be considered in calculating returns. The length of the holding period may affect the distribution of returns because, the longer the holding period, the more likely it is that any extreme return will average out. Thus, because different investors may face very different holding periods, the distributions of returns for various holding periods are considered here.

The returns for TSE traded straight preferred stocks are calculated

| | | FROM THE BEGINNING OF... | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 |
| | 1959 | 5.76 | | | | | | | | | | | | | |
| T | 1960 | 3.78 | 1.94 | | | | | | | | | | | | |
| O | 1961 | 6.00 | 6.18 | 10.60 | | | | | | | | | | | |
| | 1962 | 5.74 | 5.75 | 7.74 | 5.03 | | | | | | | | | | |
| | 1963 | 6.29 | 6.44 | 8.00 | 6.74 | 8.58 | | | | | | | | | |
| T | 1964 | 6.38 | 6.52 | 7.70 | 6.75 | 7.69 | 6.82 | | | | | | | | |
| H | 1965 | 6.29 | 6.39 | 7.39 | 6.51 | 7.03 | 6.28 | 5.79 | | | | | | | |
| E | 1966 | 4.44 | 4.91 | 5.42 | 4.42 | 4.28 | 2.90 | 1.03 | -3.51 | | | | | | |
| | 1967 | 5.04 | 4.40 | 5.41 | 4.57 | 4.50 | 3.50 | 2.43 | 0.81 | 5.42 | | | | | |
| | 1968 | 4.60 | 4.48 | 4.26 | 4.00 | 3.85 | 2.93 | 1.98 | 0.77 | 3.03 | 0.76 | | | | |
| E | 1969 | 4.43 | 4.31 | 4.58 | 3.42 | 3.70 | 2.91 | 2.15 | 1.27 | 2.92 | 1.74 | 2.99 | | | |
| N | 1970 | 3.99 | 3.84 | 4.04 | 3.33 | 2.78 | 2.38 | 1.66 | 0.87 | 2.00 | 0.91 | 1.03 | -0.60 | | |
| D | 1971 | 5.10 | 5.05 | 5.34 | 4.83 | 4.82 | 3.87 | 4.02 | 3.73 | 5.25 | 5.23 | 6.80 | 8.88 | 19.38 | |
| | 1972 | 5.84 | 5.88 | 6.22 | 5.84 | 5.93 | 5.64 | 4.87 | 5.46 | 7.04 | 7.38 | 9.13 | 11.33 | 17.88 | 16.43 |
| | 1973 | 5.97 | 5.96 | 6.32 | 5.97 | 6.06 | 5.81 | 5.71 | 5.05 | 7.09 | 7.38 | 8.78 | 10.33 | 14.29 | 11.85 |
| O | 1974 | 5.22 | 5.19 | 5.40 | 5.04 | 5.05 | 4.74 | 4.53 | 4.40 | 4.82 | 5.45 | 6.28 | 6.97 | 9.01 | 5.77 |
| F | 1975 | 5.47 | 5.46 | 5.70 | 5.33 | 5.39 | 5.13 | 4.98 | 4.91 | 5.89 | 5.28 | 6.73 | 7.40 | 9.11 | 6.69 |
| . | 1976 | 5.85 | 5.86 | 6.12 | 5.82 | 5.86 | 5.69 | 5.59 | 5.58 | 6.54 | 6.67 | 6.59 | 8.13 | 9.68 | 7.84 |
| . | 1977 | 6.69 | 6.74 | 7.04 | 6.82 | 6.95 | 6.80 | 6.83 | 6.92 | 7.93 | 8.19 | 9.06 | 8.73 | 11.48 | 1.02 |
| . | 1978 | 7.07 | 7.14 | 7.44 | 7.26 | 7.41 | 7.33 | 7.33 | 7.50 | 8.47 | 8.76 | 9.60 | 10.39 | 10.48 | 10.83 |
| | 1979 | 7.17 | 7.25 | 7.54 | 7.37 | 7.51 | 7.45 | 7.49 | 7.58 | 8.53 | 8.80 | 9.57 | 10.27 | 11.56 | 9.39 |

TABLE 4.9: Matrix for Yearly Holding Period Returns

| | | FROM THE BEGINNING OF... | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
| TO THE END OF | 1973 | 7.45 | | | | | | |
| | 1974 | 0.83 | -5.37 | | | | | |
| | 1975 | 3.63 | 1.78 | 9.72 | | | | |
| | 1976 | 5.79 | 5.26 | 11.14 | 12.60 | | | |
| | 1977 | 9.02 | 9.43 | 14.95 | 17.67 | 22.97 | | |
| | 1978 | 9.93 | 10.44 | 14.84 | 16.62 | 18.69 | 14.63 | |
| | 1979 | 9.82 | 10.23 | 13.67 | 14.71 | 15.44 | 11.93 | 9.33 |

TABLE 4.9: Matrix for Yearly Holding Period Returns

TABLE 4.10: Statistics for yearly holding period returns

| Holding period in years | Average return 1 | Standard deviation of return 1 | Number of returns |
|---|---|---|---|
| 1 | 7.46 | 7.15 | 21 |
| 2 | 7.34 | 5.92 | 20 |
| 3 | 7.24 | 4.99 | 19 |
| 4 | 6.92 | 3.88 | 18 |
| 5 | 6.68 | 3.18 | 17 |
| 6 | 5.87 | 2.80 | 16 |
| 7 | 6.38 | 2.68 | 15 |
| 8 | 5.60 | 2.33 | 14 |
| 9 | 6.28 | 2.51 | 13 |
| 10 | 6.13 | 2.12 | 12 |
| 11 | 6.10 | 1.85 | 11 |
| 12 | 6.12 | 1.54 | 10 |
| 13 | 6.25 | 1.18 | 9 |
| 14 | 6.26 | 0.86 | 8 |
| 15 | 6.35 | 0.90 | 7 |
| 16 | 6.41 | 0.97 | 6 |
| 17 | 6.63 | 0.91 | 5 |
| 18 | 6.85 | 0.74 | 4 |

1 Figures in percent.
2 The average return is the arithmetic average of all returns with the same holding period.

for a series of yearly holding periods of one to twenty-three years. As in the study done by Lorie and Fisher (1968) for U.S. common stocks, this research uses the average return for all the TSE traded straight preferred stocks.

Table 4.9 shows the 23 by 23 matrix for one to twenty-three year holding period returns and Table 4.10 presents the average return and the standard deviation of returns for the holding periods that have sufficient observations to compute these statistics with some confidence.

The one year holding period returns show a maximum of 22.97% in 1977 and a minimum of -5.37% in 1974. The 1974 lowest annual preferred stock return corresponds to the lowest annual return for common stocks (-28.79%)[1] for the same time period. In the case of preferred stocks' one year holding period returns only three returns among the twenty three annual returns are negative. These are the already mentioned -5.37% in 1974, -3.51% in 1966 and -0.60% in 1970. Over the same period of time, common stocks show six one year negative returns[2] in 1960, 1962, 1966, 1970, 1973 and 1974. Thus, preferred stocks present less risk than common stocks. This is also reflected in the highest annual return of 48.61% for common stocks over the period 1958-1980 compared to 22.97% for preferred stocks.

For the holding period returns exceeding one year, Table 4.9 presents these returns on a yearly basis to permit comparisons between

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1 Source: Hatch, J.E., White, R.W., Mackinlay, A.C., op. cit. Table 1.
2 Source: Hatch, J.E., White, R.W., Mackinlay, A.C., op. cit. Table 1.

different holding period returns. The negative returns found for the one year holding period returns disappear when the two year holding period returns are considered. This is due to the averaging process taking place when longer and longer holding periods are considered. For example, the -5.37% one year holding period return in 1974 is more than offset by the 9.72% one year holding period return in 1975, resulting in a 1.78% two year holding period return for 1974-1975.[1]

The averaging process is also illustrated by the lowest return of 0.81% and the highest return of 18.69% for the two year holding period. Thus, in general the longer the holding period, the narrower is the range between the lowest and the highest returns.

As shown in Table 4.10, the average holding period returns do not present large deviations. All these returns are close to their mean (6.5%). However, the standard deviations decrease as the holding periods increase. This is due to the fact that for longer holding periods large deviations from the mean will cancel each other out. Also, because long-term rates of return are the geometric average of short-term rates of return, this averaging process reduces the impact of the large short-term deviations from the mean in the calculation of the standard deviation for the longer holding periods.

The answer to this third specific research question shows investors

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1 Due to the rounding of returns to produce Table 4.9 exact equality cannot be found for the two year holding period return and the geometric mean of the one year holding period returns.

that while their holding period preferences do not impact on returns, the length of the holding period exhibits most of the time an inverse relation with the variability of the returns.

### 4.1.4 The distribution of yields for TSE traded straight preferred stocks

Yield is the promised return to the investor. It is commonly called dividend yield and is the dividend divided by the stock price paid by the investor. If the investor keeps the preferred stock indefinitely, the promised return becomes the realized return, assuming that the dividend payments are made as promised. Thus, the yield can be one of the major factors used by the investors in assessing the characteristics of a preferred stock issue.

The average dividend yield for TSE traded straight preferred stocks was estimated by averaging the dividend yield of each issue traded during that month. The dividend yield of each issue was calculated by dividing the promised annual dividend by the closing price for that month. Thus, the dividend yield series (YI) presented in Appendix 4 is the monthly average of annual promised returns, for TSE traded straight preferred stocks.

Over the period January 1967 to September 1980, the dividend yield for the preferred stocks considered here ranged from 5.8% in February 1964 to 10.0% in September 1980. The average yield over the whole time period was 7.73% with a standard deviation of 1.1%. Because of the similarity of

bonds and preferred stocks, the yields of both types of security are compared in Appendix 4.

The average bond yield over the period January 1957 to October 1980 was 7.8% with a standard deviation of 2.2%. The average yield for the bonds was based on the McLeod Young Weir (MYW) Yield Index for 20 Corporate Bonds[1]. This index is an average of the yield to maturity for 20 selected corporate bonds. McLeod Young Weir Limited does not report the bonds selected or the selection procedure used.

As shown in Appendix 4, the difference between the average TSE traded straight preferred stock yield and the MYW bond yield index adjusts slowly from a negative value of about -2% at the beginning of 1957 to a positive value of almost 4% in September 1980. As shown in Figure 4.3, the adjustment takes place very slowly, though there is a sharp increase in the yield differentials in 1977. The slow increase in the yield differential between bonds and preferred stocks may be due to an increasing interest on the part of investors in preferred stocks. This increasing interest may be explained by a change in the tax treatment of dividends relative to interest payments and/or by a reduction in the perceived risk associated with these stocks.

To conclude this section dealing with the return of TSE traded straight preferred stocks, it is interesting to note that while the corre-

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1 Source: Yield, Price and Value Indices, McLeod Young Weir Limited, February 1983.

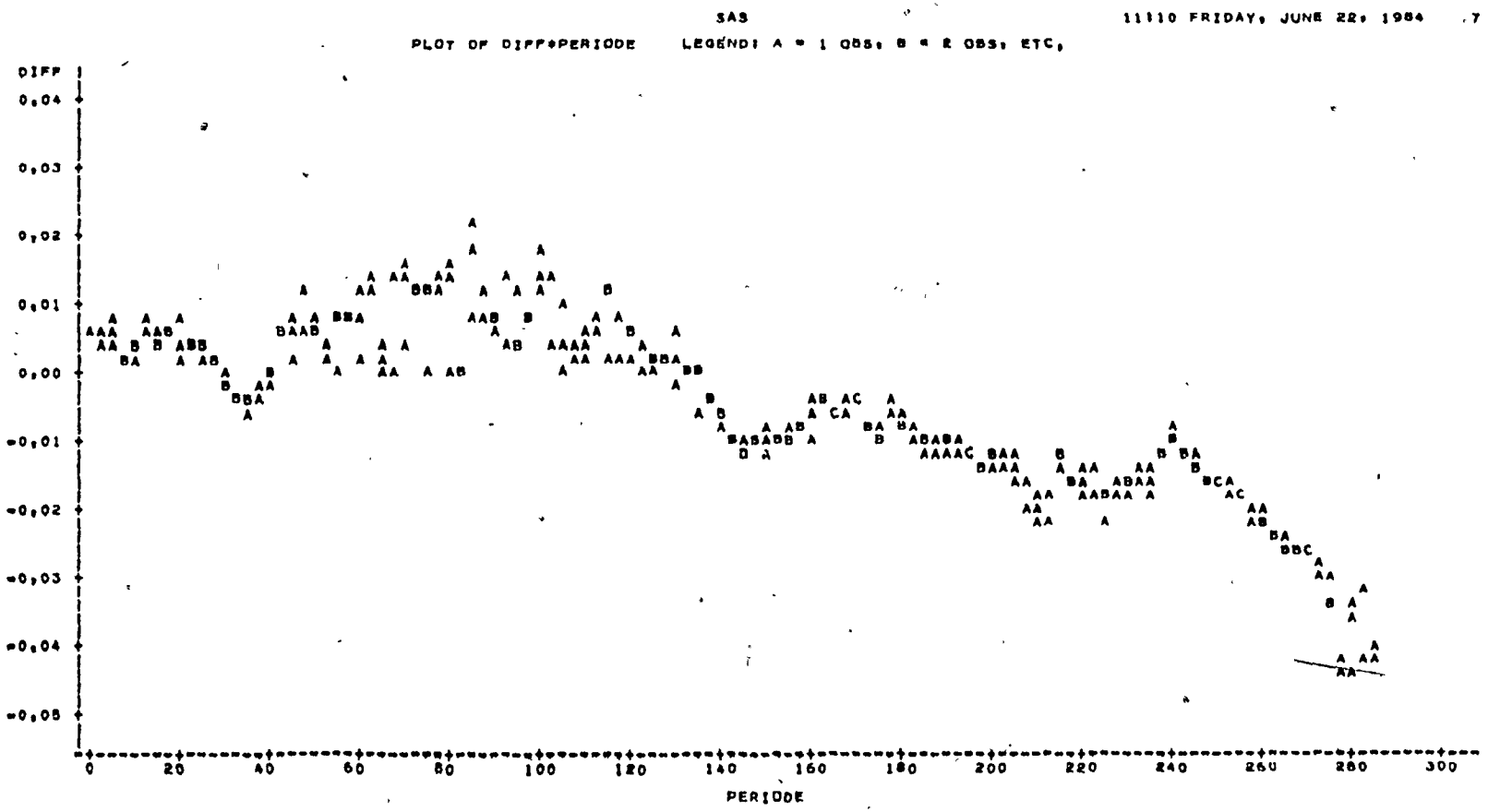


FIGURE: 4.3 The difference between preferred stock yields and bond yields

lation coefficient between the yield on preferred stocks and the yield on bonds is 0.90, the correlation coefficient drops to 0.57 when the realized returns for both types of security are considered. This is probably the result of a higher sensitivity of preferred stocks to the risk associated with a specific issuer. Bonds, on the other hand, are mainly sensitive to changes in the general level of interest rates.

## 4.2 The risk characteristics of TSE traded straight preferred stocks over the period 1957-1980

When discussing investment opportunities, risk is an important factor to take into account. Investors may think of risk in terms of default risk, marketability, the quality of the management of the firm and more generally the economic conditions affecting the firm. However, risk is commonly defined by researchers as the uncertainty about future returns. The Capital Asset Pricing Model, based on the work of Markowitz (1952) followed by Treynor (1961) and Sharpe (1963, 1964), has developed a global measure of risk, called systematic risk or beta. This measure reflects the non-diversifiable risk for a security or a portfolio. CAPM is based on the possibility of reducing the total variations of returns of a portfolio through diversification and suggests that the ideal measure of risk should capture the way the security or the portfolio relates to a global market index. Since the criticism of Roll (1977), it is commonly accepted that no such market index is available. Beta, therefore, has to be considered a relative measure of risk with respect to the market index chosen.

While betas are widely used to characterize the risk associated with common stocks, the use of betas to characterize the risk of fixed income securities such as preferred stocks or bonds is less common. When the CAPM was used to assess the risk of bonds, it was found by Percival (1974) that beta had only a modest effect on bond returns. Also, Roberts (1981) shows that betas for individual Canadian bonds are not stable over time.

While the use of the CAPM for bonds raises concerns because it does not deal explicitly with the effect of interest rate risk, a stronger case can be made for applying the CAPM to preferred stocks. In Table 4.4, preferred stock returns were found to be, most of the time, more closely related to common stock returns.

While Bildersee (1973) made an attempt at the classification of 72 preferred stock issues on the basis of their betas, no studies have used beta on a large scale basis to assess the risk of preferred stocks. To provide investors with a similar measure of risk as the one they use for common stocks[1], this research looks at the following aspects of the utilization of the CAPM and beta to measure the risk of straight preferred stocks. The two main points raised are:

(1) the portfolio effect for these stocks,
(2) the estimation of beta for TSE traded straight preferred stocks.

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1 Beta estimates are available namely through several security houses, including Value Line Investment Survey and Merrill Lynch.

### 4.2.1 The portfolio effect for TSE traded straight preferred stocks

The first step in the estimation of the risk for TSE traded straight preferred stocks is to look at the portfolio effect on the risk of these types of stocks. The technique used to test the effect of the diversification on the variance of portfolios is a graphic analysis where the variances of portfolios of increasing size are plotted. Fama (1976) used a series of 10 portfolios of increasing size and he plotted the average variance for the returns of each of the series of 10 portfolios. The securities included in the portfolios were selected on a random basis. Fama (1976) showed that for portfolios ranging in size from one common stock to twenty common stocks, the variance of the returns decreased. This is a result of the portfolio diversification effect. However, with more than twenty stocks, there is no additional reduction in the variance of returns. Using common stocks traded on the TSE, Lusztig, Schwab and Charest (1983) show that there is almost no improvement in terms of diversification in portfolios of more than 20 stocks. However, when considering portfolios ranging in size from one stock to twenty stocks, the variance for the returns of these portfolios declines from 64% to 21%.

Table 4.11 shows statistics for groups of 10 portfolios of different sizes made up of TSE traded straight preferred stocks. The returns for these portfolios were computed for the 60 months from October 1975 to September 1980. As shown in Table 4.11, the variance of the returns is reduced as the size of the portfolios increases. Compared to common stocks, the portfolio effect is the same for portfolios of preferred

TABLE 4.11: Averages for the Statistics of 10 Randomly Selected Portfolios of Different Size

| Portfolio | Average of mean of returns[1] | Average of variance[1] of returns |
|---|---|---|
| 1 Stock | 0.80 | 15.07 |
| 5 Stocks | 0.85 | 7.78 |
| 10 Stocks | 0.87 | 5.81 |
| 20 Stocks | 0.91 | 4.88 |
| 30 Stocks | 0.87 | 4.29 |
| 40 Stocks | 0.87 | 4.33 |
| 50 Stocks | 0.88 | 4.29 |

[1] Figures in percent

stocks, since the variance is reduced by 68% when considering portfolios of one preferred stock with portfolios of twenty preferred stocks. As with common stocks, where the marginal contribution of the portfolio effect decreases as the size of the portfolios increases beyond twenty stocks, the diversification effect for portfolios of preferred stocks continues up to a portfolio size of 30 stocks.

While it was found by Reilly and Joehnk (1976) that bonds were much more affected by market related risk than by company - specific risk, which suggests a small potential for diversification within a bond portfolio, this research shows that preferred stocks have at least as much

potential for diversification as common stocks. However, it was discussed that bond betas are suspect. This is a very important finding for investors who hold a diversified portfolio of preferred stocks. Thus, the management of a preferred stock portfolio should be more similar to the management of a common stock portfolio than to a bond portfolio.

### 4.2.2 The estimation of the risk of TSE traded straight preferred stocks with the use of the CAPM

The second specific research question (2.2.2) dealing with the risk of TSE traded straight preferred stocks examines the use of the CAPM to assess the risk of these stocks. Roll (1977) demonstrates that no real tests of the CAPM can be made and that the interpretation of the results is ambiguous because it is not possible to build a market index taking into account all kinds of assets. Notwithstanding the criticism of Roll (1977), beta is still extensively used as a measure of risk.[1] However, in order to improve the interpretation of the CAPM some researchers have suggested the use of a broader index than the commonly used common stock indexes such as the TSE 300 for Canadian studies.

Friend and Westerfield (1980) used a global index where, for 1973, corporate equities accounted for 60% of the index, bonds other than the U.S. Government's for 30% and long-term marketable U.S. Government issues, for 10%. They pointed out that these weights were obtained from the annual Federal Reserve Board Flow of Funds and that they vary from year to

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1 See for example, Hatch, J.E., op. cit., pp. 488-489.

year. They noted that such weights were difficult to estimate "because of the problems associated with the treatment of government debt, financial intermediation and non-marketable assets"[1].

In Canada, Lusztig, Schwab and Charest (1983) used a global market index for the estimation of the systematic risk of various securities. Their index was made up as follows: treasury bills accounted for 3% of the index, mortgages for 25%, Government of Canada bonds for 17%, Provincial Government bonds for 12%, corporate bonds for 8% and the TSE 300 Composite Index for 35%. If all the different types of debt are consolidated, the weight is 65% debt and 35% common stocks. With the use of this index, they showed an average beta for corporate bonds of 0.48 and of 2.20 for the TSE 300 index. However no explanation was given by these authors for the specific weights they used in their global index.

This research also uses a global index for the estimation of the systematic risk, the beta of TSE traded straight preferred stocks. This index takes into account the three most important types of securities used in the financing of Canadian corporations: bonds, preferred stocks, and common stocks. To assess the proportions of these securities in the market, the average gross value of issues of each type of security over the period 1957-1980 to total value of gross issues over that period is used. Table 1.1 shows these time series. This method gives weights of 57% to bonds, 23% to preferred stocks and 20% to common stocks. The

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1 Friend, I. and Westerfield, R., "Co-Skewness and Capital Asset Pricing", Journal of Finance, Vol. 35, September 1980, p. 899.

procedure suggested by Friend and Westerfield (1980) was not used because the flow of funds published by Statistics Canada does not differentiate between preferred stocks and common stocks. However, over the period 1962 to 1982, bonds accounted for 67% of all financing and stocks accounted for 33% which is close to the weights of stocks and bonds for the global index used in this research.

The monthly return for bonds was estimated using the McLeod Young Weir 20 Corporate Value Index. The TSE 300 index adjusted for dividends as explained in chapter 3, was used to estimate monthly returns for common stocks. In the case of preferred stocks, the data collected for the TSE straight preferred stocks traded over the period 1957-1980 was used. The return on this index is the sum of the returns available for each stock weighted by the value of the shares outstanding for this stock over the total value of the shares outstanding for all the available stocks of that month. The returns on a value weighted index are preferred to the returns on an equally weighted index because the latter gives too much weight to securities which represent but a small part of the market. When a stock was not traded in a specific month, this stock was not included in the index and its value was not included in the estimation of the index for the market as a whole for that month.

Table 4.12 presents statistics for the returns of all the indexes, including statistics for the monthly average returns for TSE traded straight preferred stocks, equally weighted. As shown in this table, the market weighted index for preferred stocks does not differ significantly

from the equally weighted index. The correlation coefficient for these indexes, as presented in Table 4.13, is 0.86.

In order to test the performance of the new global index, the market model is estimated by regressing each individual index against this new global index. The equation estimated is equation (7) known as the Sharpe-Model.

$$R_{jt} = \alpha_j + \beta_j R_{mt} \qquad (7)$$

where $R_{jt}$ = the return for index j at time t

$R_{mt}$ = the return for the global index m at time t

$\alpha_j$ = the intercept to be estimated for index j

$\beta_j$ = the beta to be estimated for index j

The estimates of the market model for the three indexes considered and their $R^2$s are presented in Table 4.14. These estimates are calculated over the 60 month period from October 1975 to September 1980. All the betas are statistically significant and their estimates rank according to common beliefs about the relative riskiness of the three security types.

Because previous research has demonstrated[1] that betas estimated for individual stocks are not stable over time and because it was shown

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1 See for example: Levy R., "On the Short Term Stationnarity of Beta Coefficients", Financial Analyst Journal, November-December 1971, pp. 55-62.

earlier that TSE traded straight preferred stocks show a decreasing pattern of variance for their returns on portfolios of up to 30 stocks, portfolios of 30 TSE traded straight preferred stocks are used to estimate the systematic risk of these stocks. These portfolios are generated on a random basis. Because the intercept ($\alpha$) in the Sharpe-Model is an estimate of the risk-free rate and because the risk-free rate may have changed over the long time period under study, a different version of that model is used. The equation to be estimated is equation (8).

$$(R_{jt} - R_{ft}) = \alpha_j + \beta_j (R_{mt} - R_{ft}) \qquad (8)$$

The only new variable is $R_{ft}$ which is the monthly average for the "Government of Canada 91-Day Treasury Bill Tender" already discussed at the beginning of this chapter. As equation (8) takes into account the changes in the risk-free rate, the estimate of the intercept should be equal to zero.

TABLE 4.12: Statistics for the Distribution of the Monthly Return for Different Indexes over the Period 1957-1980

| Index | Average returns[1] | Standard deviation of returns[1] | Skewness of returns | Kurtosis of returns |
|---|---|---|---|---|
| McLeod, Young, Weir 20 Corporate Bonds | 0.40 | 1.58 | 0.230 | 4.245 |
| TSE 300 Composite | 0.88 | 4.32 | -0.438 | 1.494 |
| Equally weighted preferred stock index | 0.56 | 1.64 | 1.235 | 7.276 |
| Value weighted preferred stock index | 0.54 | 2.03 | 0.707 | 5.918 |

1 Figure in percent

TABLE 4.13: Correlation Matrix for the Monthly Returns of Different Indexes over the Period 1957-1980

| | MYW 20 corporate bonds | TSE 300 Composite | Equally weighted PFD | Value weighted PFD |
|---|---|---|---|---|
| MYW 20 Corporate Bonds | 1 | .27 | .57 | .56 |
| TSE 300 Composite | - | 1 | .54 | .56 |
| Equally weighted PFD | - | - | 1 | .86 |
| Value Weighted PFD | - | - | - | 1 |

TABLE 4.14: Estimation of the Market Model, $R_{jt} = \alpha_j + \beta_j R_{mt}$, for Different Portfolios against a Global Market Index (57% bonds, 23% preferred stocks, 20% common stocks) over the period October 1975 to September 1980.

| Portfolios | $\alpha$ (t value) | $\beta$ (t value) | Number of observations | $R^2$ |
|---|---|---|---|---|
| Bond index | -0.0009<br>(-0.495) | 0.80<br>(10.174) | 60 | 0.64 |
| Preferred stock index | -0.0008<br>(-0.506) | 0.90<br>(13.255) | 60 | 0.75 |
| Common stock index | 0.003<br>(0.619) | 1.69<br>(7.174) | 60 | 0.47 |

Returns on a portfolio are the arithmetic average of returns on individual securities. If in a given period many securities, included in that portfolio, are not traded, the portfolio's return will be biased in favor of the securities that were traded. Thus, the procedure used to construct portfolios should result in the selection of securities that are traded sufficiently to avoid this possible bias.

Because many of the preferred stocks have missing trading months, a procedure should be designed to avoid any important reduction in the number of stocks in a portfolio for a given month. Therefore, only the stocks which are traded in at least 90% of the months for the period considered are retained for the random selection. Also, as discussed in the first part of this chapter, such a rule should reduce the level of skewness and kurtosis for the stocks selected relative to the whole

population. As shown in Table 4.15, the number of stocks eligible is from 8 for the whole time period (1957-1980) to 78 for the period of October 1975 to September 1980. Two particular time periods do not have a sufficient quantity of stocks meeting the required trading activity. Therefore for the whole time period, a portfolio of only 8 stocks is used and for the period October 1960 to September 1965, the portfolio contains only 22 stocks.

As shown in Table 4.15, aside from the period where the portfolios do not have the required 30 stocks, the intercept is not statistically significantly different from zero at a 95% level of confidence. All the betas are highly statistically significant. The $R^2$ shows a very good explanatory power for this model for TSE traded straight preferred stocks. Appendix 8 presents more detailed statistics for the returns of these portfolios.

If the betas for portfolios are more stable than for individual stocks, the beta is still an interesting measure for the risk of individual stocks. The same model as the one used to estimate $\alpha$ and $\beta$ for portfolios is applied to individual stocks. These regressions were run over the whole period under study. A minimum number of thirty returns were required to estimate the model. This number was chosen because it is the smallest number of observations required to consider the sample as a large sample[1] and because the statistical significance of the estimates of

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1 Mendenhall, W., and Ott, L., Understanding Statistics, Second Edition, Duxbury Press, North Situate, Massachussetts, 1976.

TABLE 4.15: Estimation[1] of the Systematic Risk for a Randomly Selected Portfolio of 30 Preferred Stocks over Different Time Periods

| Time Period | $\hat{\alpha}$ (t value) | $\hat{\beta}$ (t value) | $R^2$ | Number of stocks available for the selection |
|---|---|---|---|---|
| February 1957 to September 1980 | -0.007 (-3.040) | 0.90 (25.241) | 0.62 | 8 |
| October 1975 to September 1980 | 0.0 (0.013) | 1.00 (15.958) | 0.82 | 78 |
| October 1970 to September 1975 | 0,003 (0.717) | 1.06 (15.199) | 0.80 | 68 |
| October 1965 to September 1970 | -0.007 (-1.238) | 0.88 ( 8.999) | 0.58 | 70 |
| October 1960 to September 1965 | -0.010 (-2.633) | 0.73 ( 6.633) | 0.43 | 22 |

1: The model used is: $(R_{jt} - R_{ft}) = \hat{\alpha}_j + \hat{\beta}_j(R_{mt} - R_{ft})$

a regression analysis is affected by the number of observations. Two hundred and seventy-seven (277) TSE traded straight preferred stocks met this requirement. The average beta was 0.88. Variations ranged from -5.53 to 2.54, but only three of these betas were negative. The distribution of these betas showed that 75% of the betas were larger than 0.88 and that 25% were larger than 1.03. The tails of the distribution of betas showed that 5% of the betas are smaller than 0.43 and that 5% of them are larger than 1.37. While the distribution of betas showed a wide range of 8.07 between the highest beta and the lowest beta, ninety percent of them were between 0.44 and 1.38. Thus, the range of 8.07 is mainly due to some outliers.

Looking at the explanatory power of this model, the average $R^2$ of 0.29 is very good compared to the average $R^2$ of 0.20 found for the common stocks traded on the TSE[1] when the returns of these stocks were regressed against the TSE 300 index.

Because of the length of the entire time period under study, the risk of these stocks as measured by the beta may have changed over time. To verify this possibility, the model was estimated for four different periods of 60 months. A period of 60 months was chosen because it is the most commonly used for studies dealing with monthly returns for common stocks. Table 4.16 presents the results of the estimation for the whole time period and for the 60 months sub-sets.

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1 Lusztig, P., Schwab, B., Charest, G., Gestion financière, Édition du Renouveau pédagogique Inc. and Butterworth and Co. (Canada) Ltd., Ottawa, 1983, p. 961.

Aside from the period October 1960 to September 1965 with an average beta of 0.68, the average betas were in the 0.86 to 0.96 range. These sub-periods had smaller differences between the highest beta and the lowest beta than the whole time period and fewer than three negative betas were found for each of these sub-sets.

In the case of the period 1975-1980, it is possible to compare the betas for these preferred stock issues with the betas for the three indexes presented in Table 4.14. The average beta of 0.96 for individual preferred stock issues was close to the beta of 0.90 for the preferred stock index. Also, the betas of preferred stocks were closer to the beta of the bond index than to the beta of the common stock index. While only one beta for the preferred stock sample exceeded the beta of 1.69 for the common stock index, a little less than 25% of the betas for these preferred stocks were lower than the beta of 0.80 for the bond index. Thus, the risk attached to preferred stocks as estimated with beta is closer to the risk of bonds than to the risk of common stocks.

Table 4.15 and Table 4.16 show that the average beta for TSE traded straight preferred stocks increased slightly[1] over the last two decades. This increase in the relative risk of TSE traded straight preferred stocks may be due to increased interest rate risk. Because preferred stocks are long-term fixed income securities, they should be sensitive to changes in interest rates. The trend in the variance of long-term interest rates

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1 -Except for a small decrease of 0.06 from 1970-1975 to 1975-1980 in Table 4.15.

as measured by the McLeod, Young, Weir 20 Corporate Yield Index from the period October 1960 to September 1965 to the period October 1975 to September 1980 supports this hypothesis. The variance went from 0.14% in 1960-1965 to 1.17% in 1975-1980.

It is interesting to note that the TSE traded straight preferred stocks are subject to the portfolio effect in the same manner as common stocks and that the CAPM gives very good results in estimating the risk of these stocks which can be classified between bonds and common stocks with regard to their risk-return tradeoff, but with an average beta closer to bonds than to common stocks.

TABLE 4.16: Averages for the Estimates of the Equation $(R_{jt}-R_{ft}) = \hat{\alpha}_j+\hat{\beta}_j(R_{mt}-R_{ft})$ for Individual TSE Traded Straight Preferred Stock over Different Time Periods

| Time periods | Average $\hat{\alpha}$ | Average $\hat{\beta}$ | Maximum $\hat{\beta}$ | Minimum $\hat{\beta}$ | Number of stocks Selected |
|---|---|---|---|---|---|
| Feb. 1957 - Sept. 1980 | - .005 | 0.88 | 2.54 | -5.53 | 277 |
| Oct. 1975 - Sept. 1980 | - .003 | 0.96 | 1.70 | -1.00 | 166 |
| Oct. 1970 - Sept. 1975 | - .005 | 0.86 | 3.04 | -2.00 | 146 |
| Oct. 1965 - Sept. 1970 | - .008 | 0.86 | 4.58 | -0.03 | 135 |
| Oct. 1960 - Sept. 1965 | - .010 | 0.68 | 4.18 | -0.57 | 78 |

# CHAPTER 5

## THE EFFECT OF ISSUE COVENANTS, MARKETABILITY AND TAX CHANGES ON THE RISK-RETURN CHARACTERISTICS OF TSE TRADED STRAIGHT PREFERRED STOCKS

Chapter 3 described the key investment characteristics of TSE traded straight preferred stocks and Chapter 4 provided a profile of returns and risks for preferred stocks. This Chapter examines the effect of the terms of issue, marketability and tax changes on the risk-return relationship of preferred stocks.

While the Capital Asset Pricing Model (CAPM) assumes that all the relevant risk for a security is captured by its beta, a competing model, Arbitrage Pricing Theory (APT) considers that other factors can influence the risk-return relationship for a security. If investors believe that factors other than beta affect the pricing of securities, they may be interested to know how these factors influence the risk-return relationship for a specific stock. This should help investors better assess the quality of a preferred stock issue.

The analysis of the effects of these factors on the risk and the returns of TSE traded straight preferred stocks uses two approaches: the first approach is a cross-sectional analysis of how the characteristics of

preferred stock issues impact their risk and their returns and the second uses time series analysis to look at the effect of tax changes on returns.

## 5.1 The effect of covenants and marketability on the risk-return characteristics of TSE traded straight preferred stocks

According to CAPM, the market rewards investors only for the systematic risk they are bearing. However, fundamentalists still analyze all of the characteristics of securities to decide whether or not they meet investors' minimum quality requirements. Aside from the financial condition of the issuer, the terms or covenants associated with a security can affect its quality.

While the concept of quality is somewhat vague, it refers generally to the risk characteristics of a security. Thus, this section of the thesis deals with the effects of covenants and marketability on the risk-return trade-off of preferred stocks. Marketability is added to the variables of interest because many authors[1] consider this variable as having an impact on the risk and the returns of securities. Studies[2] dealing with the effect of marketability on bond returns often use the amount of bonds outstanding as a proxy for marketability. This is probably due to the difficulty of directly measuring the trading activity of bonds. However, in the case of preferred stocks considered here, because they are traded on the TSE, the number of shares traded is

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1 See for example Fisher (1959), Hatch (1983).
2 See for example Fisher (1959).

directly available from the "TSE Review". Thus, the proxy for the marketability of a preferred stock issue used in this study is the average number of shares traded each month[1].

However, predicting how covenants and marketability affect the risk-return trade-off of preferred stocks is complex task. If the CAPM is considered as the best model to explain the risk-return characteristics of securities, all the relevant risk is reflected in the systematic risk, or, beta. Thus, the non-diversifiable risk contributed by the securities or marketability would be reflected in the estimate of its beta. The model to be tested would be:

$$\text{Beta} = f(\text{covenants, marketability, etc.})$$

While the CAPM suggests that beta is the sole factor to explain returns, Ross (1976) and Roll and Ross (1979) have developed a more complex model to explain returns. It is called the Arbitrage Pricing Theory (APT). APT uses multiple indexes to explain equilibrium prices. The choice of the appropriate indexes is based on their ability to explain a historical set of returns. For example, Sharpe (1981) suggests that the security's yield, the size of the firm and the security's beta are explanatory variables for historical returns. Thus, an alternate model to the CAPM to describe the effect of covenants and marketability on the risk-return trade-off of preferred stocks would be:

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1 The choice of this proxy as opposed to the value of shares traded was discussed in Chapter 3.

Returns = f (beta, covenants, marketability, etc.)

Because on an "a priori" basis, no particular approach can be said to be superior to another, both of these models will be tested.

As discussed in chapter 1, the following list of covenants was considered after a detailed survey of the descriptions of each issue of TSE traded straight preferred stocks:

- Liquidation preferences
- Call feature
- Sinking funds
- Purchase funds
- Type of dividend
- Voting rights

Table 5.1 classifies these various covenants under different sub-sets. The descriptive statistics for each of these sub-sets were presented in chapter 3. This chapter discusses the expected effect of these covenants on the risk and the return for TSE traded straight preferred stocks. It is assumed that the higher the risk, the higher the return should be. As explained earlier, this is an ex-ante relationship which may not always be observable ex-post.

Claim on total assets

The claim on assets is the right to share in the realized value of the assets of the firm in case of voluntary liquidation or forced liquidation. Liquidation preferences and maturity provisions affect the claim on assets. While liquidation preferences determine where preferred stockholders rank relative to other security-holders, the maturity provisions affect the total claim for all preferred stockholders at specific future dates. The call feature and the partial retirement plans reduce the total claim of preferred stockholders on the assets and on the profits of the firm over time.

With regard to liquidation preferences, most preferred stock issues rank after bond issues but before common stocks. In a case of forced liquidation, the claim on assets of preferred stockholders is the par value of the preferred stock. If the liquidation is done voluntarily, some preferred stock issues allow for a premium over the par value.

However, only 13% of preferred stock issues in this sample rank pari-passu[1] with common stock. In such a case, preferred stockholders have a claim on the residual value of the firm, equally with common stockholders. Their claim is normally limited to the preferred stock par value.

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1 They have the same claim on assets as common stocks.

TABLE 5.1: The Different Sub-Sets of TSE Traded Straight Preferred Stock Issues and their Respective Covenants

| SUB-SETS | COVENANTS |
|---|---|
| Claims on total assets | (1) Liquidation preferences<br>(2) No liquidation preferences |
| Total retirement plan | (1) Call feature<br>(2) No call feature |
| Partial retirement plan | (1) Sinking fund<br>(2) Purchase fund<br>(3) No partial retirement plan |
| Claim on earnings | (1) Straight dividends<br>(2) Cumulative dividends<br>(3) Participating dividends |
| Control | (1) Voting rights<br>(2) No voting right |

It is expected that the stocks without any liquidation preference should exhibit a higher return and a higher risk than those with liquidation preferences, other things remaining constant.

Total retirement plan

Without maturity provisions, preferred stocks have a perpetual life in much the same way as common stocks. Most maturity provisions are under the control of the issuer. These maturity provisions are the call feature, the sinking fund, and the purchase fund. Few preferred stock issues are retractable. Retractable preferred shares are shares which may be redeemed at the option of the holder at a specified price for a given

time period. No retractable straight preferred stock issues were present in the sample considered here. The call feature, sinking fund and purchase fund are covenants related to the retirement of a preferred stock issue that can be found in the sample of stocks used in this study. The call feature can potentially result in full retirement while the sinking fund and the purchase fund are considered partial retirement plans.

As with many bond issues, the preferred stock call option is often deferred for a given time period after the issuance. The call price typically includes a premium in excess of the par value, this premium being reduced as the call date is extended further into the future. The 324 callable preferred stocks considered in this research show an average premium of $2.59 or 4% over their par value. Two hundred and sixteen (216) stocks do not have a deferment period and the number of different call prices and call dates varies between one and twenty-one. One hundred and forty-three (143) of these stocks have more than one call date and call price.

As shown in chapter 4, TSE traded straight preferred stocks rank between bonds and common stocks with respect to their risk and their return. The price for preferred stocks is also determined by the risk associated with the issuer and the interest rates in the market. Both of these determinants could push the price of the preferred stock higher than the call price. If the risk of the issuer decreases, other things constant, the required rate of return for the preferred stock must fall resulting in an increase in share price. Also, because preferred stocks

are fixed income securities, if interest rates fall the dividend yield for preferred stocks must be reduced, other things constant, and this adjustment would result in a higher share price. Under such circumstances, the holders of the stock incur the risk of the call option for their stock being exercised at a lower price than the actual market price. Thus, for the callable preferred stocks that are expected to trade at a price in excess of their call price, the return should be higher than that of non-callable stocks and of callable stocks not expected to trade at a price in excess of their call price.

Partial retirement plans

While the possible effect of the call feature on the prices of preferred stocks can be easily predicted, the impact of sinking fund requirements is more difficult to identify. Because the preferred stock sinking fund typically stipulates a mandatory redemption of a fixed percentage of the issue per year at a price near par after an initial deferment period, the investor's attitude toward a sinking fund provision depends on his expectations about the price of the stock after the deferment period. If the investor expects the price of the stock to remain stable, the sinking fund provision would be positively priced because it will increase the trading activity and therefore stimulate the market for these stocks. If the investor expects the price of the stock to increase above its par value[1], the sinking fund provision would be

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1 The par value is used as a proxy for the price at which the firm will buy back the stock.

negatively priced because it creates the risk of retiring this stock at a lower price than the market price. The case where the investor would be expecting a decrease in the price of the stock is irrelevant to this study, as no rational investor would buy such a stock. Thus, the riskiness decreases when going from stocks with a sinking fund that are expected to trade at a price in excess of their par value, to stocks without any partial retirement plan and finally to stocks with a sinking fund but expected to trade at a price not exceeding their par value. In the case of bonds, Dye and Joehnk (1979) found that the use of sinking funds can lower the cost of debt for firms issuing bonds. However, it was unclear whether this lower yield is due to the shorter duration of sinking fund bonds relative to those without sinking fund, a lower perceived default risk on the sinking fund bonds, or other factors.

While sinking fund provisions are mandatory, purchase fund provisions are less stringent for the issuer. In the case of a purchase fund, the issuer agrees to purchase a certain number of the shares each year on the market as long as the stock is at or below a stipulated price, usually the issue price or the par value. Such a redemption provision should always be positively priced by the investors because it cannot result in a capital loss, and it may stimulate the market for the stock. Therefore, preferred stocks with purchase funds should be considered less risky, all other thing equal, than stocks without purchase funds.

Claim on earnings

Securities can be easily characterized on the basis of their claim on earnings. For example, the interest on bonds is a legal claim on the firm's revenues, while common stocks have a claim on the firm's residual earnings only. The various dividend requirements for preferred stocks should help classify the risk of preferred stocks more closely with the risk of bonds or with the risk of common stocks.

In most instances, dividends for preferred stocks must be paid before any dividend payments to common stockholders. The cumulative dividend feature forces the issuer to pay preferred stockholders all dividends in arrears as well as the current dividend, before any payments to common stockholders can be made. Such a claim on earnings increases the likelihood that preferred dividends will be paid.

Non-cumulative preferred stocks are second with regard to the certainty of the claim. Here, the current year's dividends for preferred stocks must be paid before any amounts to common stockholders. However, if no preferred dividends are declared, the preferred dividends for that period are lost. Because this type of dividend offers preferred stockholders less certainty that a dividend will be paid, such preferred stocks are less comparable to bonds than stocks with a cumulative dividend feature.

The participating dividend feature is the claim on earnings that makes the preferred stock dividends most similar to the common stock dividends. In such a case preferred stocks have a claim on the residual earnings of the firm. While for some preferred stock issues the participating dividend is in addition to a straight dividend, other issues carry only a participating dividend.

Therefore stocks with participating dividends, stocks with straight dividends and stocks with cumulative dividends can generally be classified in a decreasing order of returns and risk.

Voting rights

In the case of the TSE straight preferred stocks traded over the period 1957-1980, most preferred stock issues have a voting right in the event that major changes affecting their priority occur, or if dividends over a certain period of time are omitted. Very few issues have no voting right at all and none have full voting rights. Stocks without any voting right could be considered as being more risky than those with a contingent voting right. In cases where preferred dividend payments are omitted over a certain period of time, preferred stockholders with contingent voting rights could directly influence management of the firm in their favor.

Estimating the impact of preferred stock terms on returns

While these theoretical relationships between the covenants and

their effect on the risk-return tradeoff of preferred stocks are easy to identify, their empirical estimation is much more difficult because of three factors. The first factor is the difficulty of measuring investors' expectations. The second is the absence of a control group of securities exempt of covenants or a sufficient number of securities to represent all possible mixes of covenants. The third factor is the possible effect of different mixes of covenants on the risk-return characteristics of preferred stock issues. By changing the mix of covenants, issuers of preferred stocks may be able to manipulate the risk-return characteristics of these stocks. The observable risk or returns for preferred stock issues that have different features for a particular covenant may be the same because of the offsetting differences in other covenants. The overall mix of covenants determines the issue's risk. Thus, a homogeneous distribution of returns would not allow the effect of a particular covenant on the perceived riskiness and therefore, expected return to be identified.

To solve the first problem, the assumption often made in empirical testing is that investors have perfect foresight. This means, for example, that the stocks that investors expect to increase in price over their par value are the stocks that actually experience price appreciation.

In the case of the second problem, it is not possible to create a control group. However, a procedure based on an analysis of variance will be used to detect which covenant or group of covenants should be included

TABLE 5.2: Average of the Mean Returns and Betas of Individual TSE Straight Preferred Stocks Traded over the Period October 1975 - September 1980

| Sub-Sets | Average monthly mean returns in percent | Average beta | Number of stocks selected |
|---|---|---|---|
| Claims on total assets | | | |
| - Liquidation preferences | 0.86 | 0.95 | 161 |
| - No liquidation preferences | 1.38 | 1.23 | 6 |
| Partial retirement plan | | | |
| - Partial retirement plan | 0.81 | 0.95 | 121 |
| - No partial retirement plan | 1.07 | 1.01 | 46 |
| Total retirement plan | | | |
| - Callable | 0.83 | 0.94 | 155 |
| - Non-callable | 1.49 | 1.23 | 12 |
| Claim on earnings | | | |
| - Cumulative dividends | 0.83 | 0.94 | 157 |
| - Straight dividends | 1.18 | 1.14 | 5 |
| - Participating dividends | 2.19 | 1.33 | 5 |
| Control | | | |
| - Voting rights | 0.91 | 0.94 | 130 |
| - No voting rights | 0.80 | 1.01 | 37 |

in the models to be tested. This procedure also permits a solution to the third problem.

For each of the sub-sets presented in Table 5.1, Table 5.2 gives the average monthly mean returns and the average beta for the stocks carrying the same covenant within each sub-set. Table 5.2 gives a global picture of the effects of each covenant on the level of average returns.

In the case of partial retirement plans, the ideal analysis would lead to the construction of five categories. One would be made up of all preferred stocks with a sinking fund. Two other would take into account that the risk associated with the sinking fund depends on the price of the stock relative to the price the investor would receive if the stock were repurchased. Using the par value as a proxy for the repurchase price, the two categories are (1) the stocks with a sinking fund always trading at a price in excess of their par value and (2) the stocks with a sinking fund always trading at a price equal to or lower than their par value. Another category would include the stocks with a purchase fund and the last category would be made up of all preferred stocks without partial retirement plans. However, because of the absence of stocks always trading at a price in excess of their par value, the stocks with a sinking fund carry only the advantage of an improved marketability as the stocks with a purchase funds. Thus, Table 5.2 pools together the stocks with a sinking fund and the stocks with a purchase fund. It leaves only two categories: one with partial retirement plans and one without partial retirement plans.

A similar problem occurs in the case of the total retirement plan. It was mentioned earlier that a stock with a call feature trading at a price in excess of its call price may carry a higher risk due to the potential call at a price lower than the market price. Here again two groups need to be considered. One contains all the stocks that did not trade at a price in excess of their call price. The other group contains the stocks that traded at a price in excess of their call price. However, no stock was always trading at a price higher than its call price and only 9 stocks had, for at least one month of the 60 month period under study, traded at a price in excess of their call price. This situation led to the construction of only two categories for the consideration of total retirement plan: callable stocks and non-callable stocks.

Table 5.2 shows that preferred stocks without liquidation preferences exhibit a higher risk and higher returns than those with liquidation preferences, as expected. This table also confirms the anticipated higher risk and returns for the stocks without partial retirement plan relative to those with such a covenant. This expected relationship was due to the improved marketability of the stocks with a partial retirement plan relative to those without this feature. Also, with regard to claim on earnings, the anticipated ranking is found: the stocks with participating dividends show the highest risk and returns followed by those with straight dividends and finally, the stocks with cumulative dividends have the lowest risk and the lowest returns.

While the anticipated relationship between the stocks with voting rights and those without voting rights is met with the average beta, the reverse is found for returns. However, the small differences between the average betas and the average returns of both groups may suggest that there is no significant difference in their risk-return characteristics.

In the case of the call feature, the opposite of the expected relationship is found. The non-callable stocks show a higher risk and higher returns than those callable. A closer look at the 12 stocks without the call feature reveals that four of these stocks have a participating dividend feature and four stocks do not carry liquidation preferences. Because some of these stocks are overlapping, this makes five stocks out of twelve stocks having other covenants that were found to cause increased returns and a higher risk than other preferred stocks.

Eliminating these five stocks from the sample of non-callable stocks, however, does not produce the expected ranking but differences in the returns and the average beta of callable stocks and non-callable stocks are smaller. Given a sample size of only seven for the non-callable stocks and the similarity of the returns and the average beta for callable versus non-callable stocks, it is not possible to conclude about the relationship between callable preferred stocks and those that are non-callable.

Because some mixes of covenants could bias the comparisons made on the basis of Table 5.2, paired comparisons were conducted to analyze the

TABLE 5.3: Categories of Covenants Considered in the Analysis of the Effect of Different Mixes of Covenants on their Risk-Returns Characteristics

| Categories | Number of stocks selected |
|---|---|
| Claims on total assets | |
| - Liquidation preferences | 161 |
| - No liquidation preferences | 6 |
| Partial retirement plans | |
| - Purchase funds | 98 |
| - Sinking funds | 23 |
| - No partial retirement plan | 46 |
| Total retirement plan | |
| - Callable | 155 |
| - Callable (Price > Call price) | 9 |
| - Callable (Price ≤ Call price) | 146 |
| - Non-callable | 12 |
| Claim on earnings | |
| - Straight dividends | 5 |
| - Cumulative dividends | 157 |
| - Participating dividends | 5 |
| Control | |
| - Voting rights | 130 |
| - No voting rights | 37 |

impact of liquidation preferences, cumulative dividends, the call feature and partial retirement plans. For each comparison only one of these covenants was allowed to vary. However, sufficient observations were only

available to measure the difference in returns and betas for the stocks with and without a partial retirement plan and for the stocks with and without voting rights. The same relationships, as those presented in Table 5.2, were found for these two sub-sets of preferred stocks.

Table 5.2 shows the average returns and the average beta for broad categories of preferred stocks. It may be interesting to look at the effect of different mixes of covenants. For that purpose, all the possible mixes of categories of covenants presented in Table 5.3 were considered. However, some of these potential mixes were not available due to inadequate sample size.

In order to test the two models discussed earliers in this chapter, equations (5.2) and (5.3) will be estimated with multiple regressions.

$$\text{Average monthly returns of issue i} = f\begin{pmatrix}\text{Covenants and groups of covenants, for issue i}, & \text{Beta of issue i}, & \text{Marketability of issue i}\end{pmatrix} \quad (5.2)$$

$$\text{Beta for issue i} = f\begin{pmatrix}\text{Covenants and groups of covenants, for issue i}, & \text{Marketability of issue i}\end{pmatrix} \quad (5.3)$$

The estimation is performed over the period October 1975 to September 1980. This period was chosen instead of the whole time period covered in this study because this 60 month period has the largest sample size and the most diversified sample of preferred stock issues, as shown in Chapter 3.

The stocks retained in this comparison were required to have at least 30 monthly returns available during this 60 month period. The betas used here are those estimated in Chapter 4 for individual issues of preferred stocks over the period October 1975 to September 1980 and the measure of marketability is the average number of shares traded each month over that same period as discussed earlier.

In a first trial, equations (5.2) and (5.3) were estimated with a regression technique using dummy variables for each of the covenants. The results were poor for all three equations. Many coefficients were not statistically significant at a 95% level and/or some had a sign opposed to that expected. These results may be attributed to the possible cross-product effect between the covenants. The following example illustrates the significance of a potential cross-product effect. If most of the stocks that are callable and trading at a price in excess of their call price also form the major part of the stocks with cumulative dividends, both of these variables would be highly correlated leading to non-significant coefficients and/or to coefficients with the wrong sign. This cross-product effect can also exist for more than two variables.

To account for this cross-product effect, all potential mixes of covenants were included in an analysis of variance. The analysis of variance showed which straight covenants or mixes of covenants can be considered as a specific group. Thus, the consideration of all these variables makes it possible to create a model which incorporates the cross-product effects.

However, because some of these mixes can be a linear combination of other mixes, a procedure needs to be constructed to retain among the covenants and the mixes of covenants those that best explain the dependant variable. The stepwise regression of SAS ("Statistical Analysis System") was used to select the best covenants or mixes of covenants among those selected by the analysis of variance.

While the interpretation of the results for each single covenant can be made by comparing the estimate with the expected relationship, the interpretation of the results for a group of covenants is most of the time not feasible given the complexity of the relationship. However, these mixes of covenants are retained in the regression because they partially control for the cross-product effects.

The covenants and groups of covenants retained for the model based on average returns are:

(1) Liquidation preferences (ASSPR)
(2) Call feature (Price ≤ Call Price) (NEF)
(3) Purchase fund (PURC)
(4) Cumulative dividends (CUM)
(5) Participating dividends (PART)
(6) Voting rights (VOTE)
(7) ASSPR + VOTE
(8) PURC + PART
(9) CUM + VOTE
(10) VOTE + PURC
(11) VOTE + PART
(12) NEF + VOTE
(13) NEF + PURC
(14) ASSPR + NEF + VOTE + PURC + PART

The following covenants or groups of covenants were associated with different average betas:

(1) Liquidation preferences (ASSPR)
(2) Call feature (Price ≤ Call Price) (NEF)
(3) Purchase fund (PURC)
(4) Cumulative dividends (CUM)
(5) Participating dividends (PART)
(6) NEF + VOTE
(7) ASSPR + VOTE
(8) CUM + VOTE
(9) VOTE + PURC
(10) VOTE + PART
(11) PURC + PART
(12) NEF + CUM + PURC + PART
(13) ASSPR + CUM + VOTE + PURC + PART
(14) ASSPR + NEF + VOTE + PURC + PART
(15) ASSPR + NEF + CUM + VOTE + PART
(16) ASSPR + NEF + CUM + VOTE + PURC

Because some mixes of covenants are a linear combination of other mixes, the complete model is not full rank leading to non-unique solutions for the parameters, misleading statistics and biased estimates. In order to avoid this problem and to select only the variables that have good explanatory power, the stepwise procedure of SAS ("statistical Analysis System") was used. In the case of equation (5.2) the following model was selected as the best predictor of returns.

Average monthly returns on issue $i = 0.015 + 0.006\ ASSPR_i$
$(7.54)$[1]
$- 0.008\ CUM_i$
$(13.38)$
$+ 0.002\ (CUM_i + VOTE_i)$
$(7.35)$
$- 0.028\ (PURC_i + PART_i)$
$(27.05)$
$+ 0.021\ PART_i$
$(40.74)$
$- 0.007\ BETA_i$
$(14.57)$
$- 0.0000001\ TRANS_i$[2]
$(8.92)$

$R^2 = 0.42$
$F = 16.63$

This model has an $R^2$ of 0.42 and a global F value of 16.63 and it has only three variables, CUM, PART and TRANS, with the expected sign. The wrong sign for liquidation preferences (ASSPR) could be explained by the fact that the only six issues that do not carry liquidation preferences have other characteristics that influence their returns. The same thing can be said about the two stocks with the combination of a purchase fund and a participating dividend. However, no reasons are suggested for the wrong signs of (CUM + VOTE). In the case of beta, the negative sign can be explained by the fact that the riskiest stocks were the most affected by the upward pattern of interest rates during the period 1975-1980.

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1 Numbers in parentheses are F values.
2 TRANS is the average number of shares traded each month for security i.

The estimation of equation (5.3) where the effect of the covenants and marketability on beta is analyzed gives the following results:

$$\text{Beta of issue } i = 1.137 - 0.246\ NEF_i - 0.000008\ TRANS_i$$
$$(17.16) \qquad (38.79)$$

$R^2 = 0.28$
$F = 31.66$

This second model retains only two variables. The variable NEF has the expected sign since the callable stocks trading below their call price benefit from the call feature. However, the number of shares traded presents the wrong sign.

Overall, Table 5.2 shows that liquidation preferences, partial retirement plans and the strictness of the type of dividends reduce the risk and the returns of a preferred stock issue. However, due to statistical limitations it is not possible to conclude that specific groups of covenants affect in a definite way returns or betas of preferred stocks.

## 5.2 The tax effect

In his discussion of the valuation of preferred shares, Hatch (1983) considers four different factors for the pricing of these shares. They are: the tax considerations, the way rates of return are calculated, risk, and marketability. The last three factors have already been studied leaving the tax considerations to be discussed.

While some investors are certainly concerned with the tax treatment of the income generated by their preferred stock portfolios, others, such as pension funds, are not subject to tax on their income. Because the tax environment is stable for long periods of time, tax changes are an excellent way to test the sensitivity of preferred stock returns to the tax environment.

The anticipated effects of tax changes may be derived from the examination of the major tax changes that took place during the period under study. The Canadian income tax reform culminated in Bill C-259 in June 1971. Before the application of Bill C-259, dividends had a tax credit equal to 20% of their value at the Federal level. Following the application of Bill C-259, dividends received after January 1972 were to be grossed-up by a third and the Federal tax-credit was equal to 20% of the grossed-up dividends. The Provincial dividend tax credit can be calculated by multiplying the Federal dividend tax credit by the Provincial marginal tax rate of the investor. The amendment of March 1977 raised to 50% in 1978 the gross-up for dividends, and it increased to 25% of the grossed-up figure the tax credit. Amoako-Adu (1980) derived the relationships between the combined Federal and Provincial marginal tax rate of an investor in Ontario ($t_p$) and his actual proportion of dividend income paid as tax ($t^*_p$) for the three following periods:

| | |
|---|---|
| Pre-1972 | $t^*p = -0.20 + t_p$ |
| Post-1972 but Pre-1978 | $t^*p = -0.34 + 1.33\ t_p$ |
| Post-1977 | $t^*p = -0.54 + 1.5\ t_p$ |

It should be noted that the dividend tax credits are the approximated combined Federal and Provincial rates, and that the post-1977 equation neglects the exemption of the first $1,000 investment income which should not bias the comparison much.

Using the equations derived by Amoako-Adu, Table 5.4 presents various actual proportions of dividend income paid as tax under the three different tax conditions for various combined Federal and Provincial marginal tax rates. It should be noted that the actual proportion of dividend income paid as tax is in fact the effective tax rate for dividend income.

TABLE 5.4: Effective Tax rates for Dividend Income under Different Tax Conditions

| Marginal tax rate / Tax conditions | 20% | 40% | 60% |
|---|---|---|---|
| Pre-1972 | 0 | 20% | 40% |
| Post-1972 but Pre-1977 | -8.4% | 18.2% | 44.8% |
| Post-1977 | -24% | 6% | 36% |

Table 5.4 shows that the 1971 tax reform does not reduce the effective tax rate for dividend income for all investors. Only those with a marginal combined Federal and Provincial tax rate lower than 45.5% achieved a lower effective tax rate for dividend income[1].

Since the 1971 tax reform did not bring a lower effective dividend tax rate to all investors, it is hard to anticipate the impact of this tax change on the returns of straight preferred stocks. The 1971 reform also introduced the taxation of capital gains. This major modification, introduced simultaneously with the new rules for dividends, may have offset the benefit of a lower effective dividend tax rate for investors with a combined Federal and Provincial tax rate lower than 45.5%.

However, the amendment of 1977 included changes in the taxation of dividends which were favorable to all investors[2]. Also, the change in the taxation of dividends was the only major modification for investment income aside from the exemption of the first $1,000 investment income, which was favorable to all investors.

In order to illustrate the effect of the 1977 tax change on the observable market rate of return for dividend paying stocks, the following example was constructed. It uses the information contained in Table 5.7 for an investor with a marginal tax rate of 40%.

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1 $-0.20 + t_p = -0.34 + 1.33\ t_p$

$t_p = 45.5\%$

2 Because $-0.35 + 1.33\ t_p = -0.54 + 1.5\ t_p$

$t_p = 1.12$

(1) The new information about the tax change is released at time t. The information stipulates that the effective tax rate for dividends will go from 18.2% before time (t) to 6% from time (t) onwards.

(2) There are no other events affecting the stock price which before time (t) is assumed to be constant at $100.

(3) The dividend payment according to the straight preferred stock contract is $10.

(4) The relevant risk-return trade-off for an investor takes into account the after-tax return.

Since the price at which the stock is trading before time (t) is an equilibrium price, it is possible to compute the following required after-tax rate of return for this stock.

$$\frac{\$10\ (1 - .182)}{\$100} = 8.18\%$$

Since the development of the CAPM, it is well known that the risk of a stock can be divided into a systematic risk component which is related to the market in general and a non-systematic risk component which is specific to that stock. Considering the effect of the tax change on the non-systematic risk, it is hardly conceivable that such a tax change would affect the risk specific to most firms, aside from those firms that are doing business directly related to the treatment of income tax. The same

argument can be made for the risk associated with the market in general. However, the effective lower income tax for dividends as compared to interest income may favor the use of preferred stocks relative to bonds which could lead to some changes in the behavior of the participants in the capital markets.

Because the tax change does not modify the risk of this stock, the investor should have the same required after-tax return before time (t) and after time (t). Thus, the new price for the stock should be:

$$\frac{\$10\ (1 - .60)}{\text{Price}} = 8.18\% \qquad \text{Price} = \$114.91$$

It is now possible to compute the return observable in the market, the before-tax return before time (t), at time (t) and after time (t).

Before time t:

$$\frac{\$10}{\$100} = 10\%$$

At time t:

$$\frac{\$10 + 114.91 - 100}{100} = 24.91\%$$

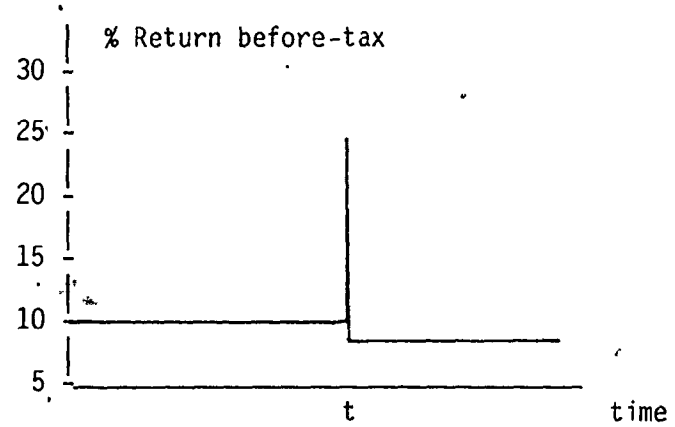
After time (t)

$$\frac{\$10}{\$114.91} = 8.7\%$$

Figure 5.1 shows the impact the tax change would have on the before-tax return for the stock considered here. As shown in Figure 5.1, at the time of the announcement (t) of the tax change, the stock would exhibit an excess return (24.91%). Later the before-tax return would adjust to a lower level to maintain the after-tax return at the required rate of 8.18%.

While no such study is available for Canadian straight preferred stocks, Amoako-Adu (1980) tested the effect of the Canadian tax reform of 1971 and the amendment of 1977 on the returns of common stocks. The methodology used by Amoako-Adu was a residual analysis based on a modified market model. It is based on the well-known residual analysis used by Fama, Fisher, Jensen, and Roll (1969) for their study of the adjustment of stock prices to new information. Since their study, different versions of this technique have been used in market efficiency tests when the effect of similar events on different stocks at different points in time needs to be analyzed. However, Amoako-Adu tested the market response to

FIGURE 5.1 The Effect of the 1977 Tax Change on the Return of a Typical Dividend Paying Stock



information common to all stocks at a specific point in time. For that reason, Amoako-Adu pointed out that caution should be exercised in interpreting the results and that the plot of the cumulative average residuals for all stocks might not be as smooth as those shown by the usual tests based on this technique.

Amoako-Adu concluded that "the stock market anticipated and reacted correctly to the information content of the tax changes"[1]. High dividend payout common stocks showed a slow increase in market returns before both tax change announcements. While Amoako-Adu looked at the adjustment taking place around the announcement date, he was not concerned with the effect of the tax change on the required market rate of return.

The tests to be performed for the effect of these tax changes on the market return for TSE traded straight preferred stocks consider two different effects: the excess returns around the announcement date (t) and the level of the new required before-tax market rate of return. While the effect of the 1977 tax change on the level of the market rate of return is assumed to be a reduction of this rate of return, the effect of the 1971 tax change cannot be anticipated because of the simultaneous effect of the tax on capital gains and of the new tax rate for dividends.

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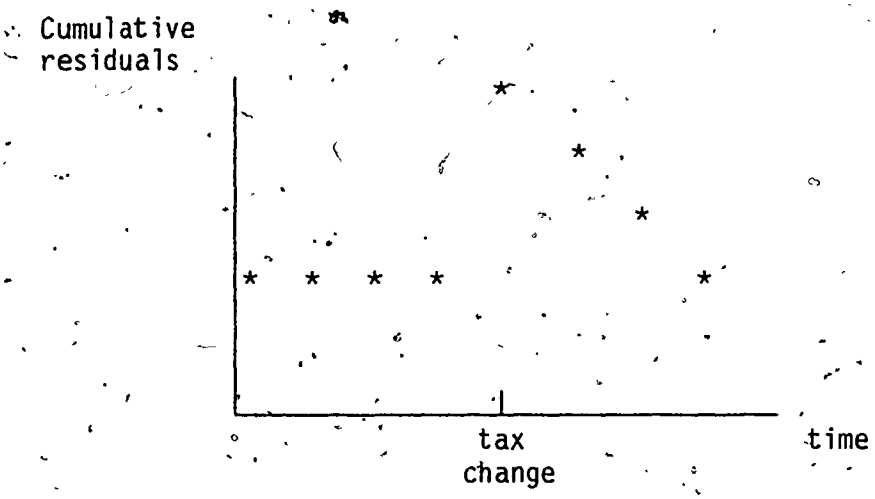
1 Amoako-Adu Ben, "Analysis of the Impact of Recent Canadian Tax Reform on Investors and its Implications for Corporate Dividend Policy", Financial Research Foundation of Canada, Conference, Alton, Canada, October 1980.

Brown and Warner (1980), in their detailed discussion of the various tests dealing with the measurement of security price performance, look at different types of events and at the power of various tests for these events. They consider events affecting a specific stock during a specific time period, such as stock splits or dividends and events affecting a group of stocks at a specific time period, such as when accounting changes affecting a variety of stocks or changes affecting stocks in a specific class of risk occur. None of the above situations were similar to the ones studied in this part of the research. However, they conclude that the tests to be used in such studies should depend on the kind of event considered. Thus, before using any well known technique to test the effect of some specific event on securities' returns, their ability to measure the changes anticipated for the tax changes should be seriously considered.

Before considering the use of the residual analysis to test the impact of the changes in the taxation of dividends for straight preferred stocks, it should be demonstrated that this particular technique is best suited technique to test the phenomenon under study. Residual analysis, as described by Fama et al. (1969), was used to verify the speed of adjustment of stock prices to new information. The information considered was relevant for a specific stock at a specific date, and dealt with events such as dividend announcements and stock splits. The speed of adjustment of stock prices to new information was analyzed through the examination of the returns for the stock considered. The efficient market hypothesis assumes that at the time the information is known, an excess

return can be observed in the market and following this excess return, the return for the stock moves back to its normal level. However, in the case under study, because the anticipated returns after the 1977 tax change are lower than before the tax change, the pattern of cumulative residuals should exhibit an excess return at the time of the tax change and decreasing cumulative residuals after the tax change due to the lower returns. The anticipated pattern for cumulative residual is shown in Figure 5.2.

FIGURE 5.2 The Anticipated Pattern for the Cumulative Residuals for the 1977 Tax Change




Because the new information considered is related to a given stock and because all the stocks are not affected by the new information at the same time, when the residuals are averaged for all stocks, other events that could have affected the different stocks may be considered as random.

The use of tests based on the analysis of the residuals for the effect of the tax changes raises a problem. This problem is related to

the phenomenon under study which is a specific event that affects all the stocks at only one point in time. Because of this unique event affecting all the stocks at the same time there is some risk that another specific event happening around the tax change announcement could also affect the stocks under study in an undefined way. To reduce such a risk, the series of returns for TSE traded straight preferred stock value weighted index was plotted to detect any abnormal returns around the dates for the tax changes, and advice was sought from people in the investment community. Both sources indicated that no other major market event could have affected the stock market for the period considered.

Residual analysis is performed for the same time period as the period used by Amoako-Adu (1980). For the tax changes of 1971, the model was estimated over the period January 1965 to December 1969 and for the tax changes of 1977, the time period considered was January 1973 to April 1976. The equation to be estimated is the standard market model or the Sharpe Model equation (10).

$$R_{jt} = \alpha_j + \beta_j R_{mt} \qquad (10)$$

Where

$\alpha_j$ and $\beta_j$ are to be estimated and:

$R_{jt}$ = the return at time t for the value weighted index of TSE traded straight preferred stocks

$R_{mt}$ = the return at time t for a global market index.

The construction of the return for the value weighted index of TSE traded straight preferred stocks and of the return of the global market index was discussed in detail in the preceding chapter. Here, contrary to the work of Amoako-Adu, the use of the TSE 300 index is rejected because

this index could have been seriously affected by the tax changes considered. The TSE 300 index is mainly composed of dividend paying stocks[1]. Also, what is sought, is the effect of these tax changes on preferred stocks relative to the market in general. The ideal market index would be the most global index and would include some securities less affected than others by these changes. The global index constructed in the preceding chapter meets this condition. Table 5.5 shows the estimates of the parameters of the market model for the two periods considered. More detailed statistics are available in Appendix 11.

With the use of these estimates, the predicted values for the returns on the TSE traded straight preferred stock value weighted index were generated from January 1970 to December 1972 for the 1971 tax change announcement, and from May 1976 to April 1979 for the 1977 tax change announcement. These predicted values were calculated with the two following equations, where equation (11) is for the period January 1970 to December 1972 and equation (12) is for the period May 1976 to April 1979.

$$PV_t = -0.007 + 1,0067\ index_t \qquad (11)$$

$$PV_t = 0.0018 + 0.9611\ index_t \qquad (12)$$

where:

$PV_t$ = the predicted value for the return on the preferred stock value weighted index at time t

$Index_t$ = the realized value for the return on the global index made of 57% of bonds, 23% of preferred stocks and 20% of common stocks.

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1 For example, in September 1980 dividend paying stocks accounted for more than 90% of the stocks included in the TSE 300.

The residuals were calculated by taking the differences between the realized values of the preferred stock value weighted index return and the predicted values for this return. If the event considered had no effect on the return of the index, these residuals should be distributed randomly around their mean, zero. To have a better picture of the adjustment taking place around the date of the event, the residuals were cumulated over time. Here again, if the event considered had no effect on the returns, the positive and the negative residuals should cancel each other out and the cumulative residuals should be distributed around zero. If an abnormal return or a series of abnormal returns were related to the event under study, then the cumulative residuals should have shown this adjustment by a shift in the pattern of the cumulative residuals.

TABLE 5.5: Estimates of the Market Model to be Used in the Residuals Analysis of the Effect of the Tax Changes of 1971 and 1977

| Period Covered | (t-value) | (t-value) | $R^2$ |
|---|---|---|---|
| January 1965 to December 1969 | -0.007 (-0.424) | 1.0067 (8.943) | 0.58 |
| January 1973 to April 1976 | 0.0018 (0.874) | 0.9611 (11.639) | 0.78 |

Figure 5.3 shows the cumulative residuals for the period January 1970 to December 1972. The announcement of the tax reform took place in June 1971, which is period 174 in Figure 5.3. As shown in Figure 5.3, the adjustment took place in period 172 which is April 1971. It is clear from the pattern of the cumulative residuals that the news about Bill C-259 was known in April 1971, two months before its adoption in June 1971.

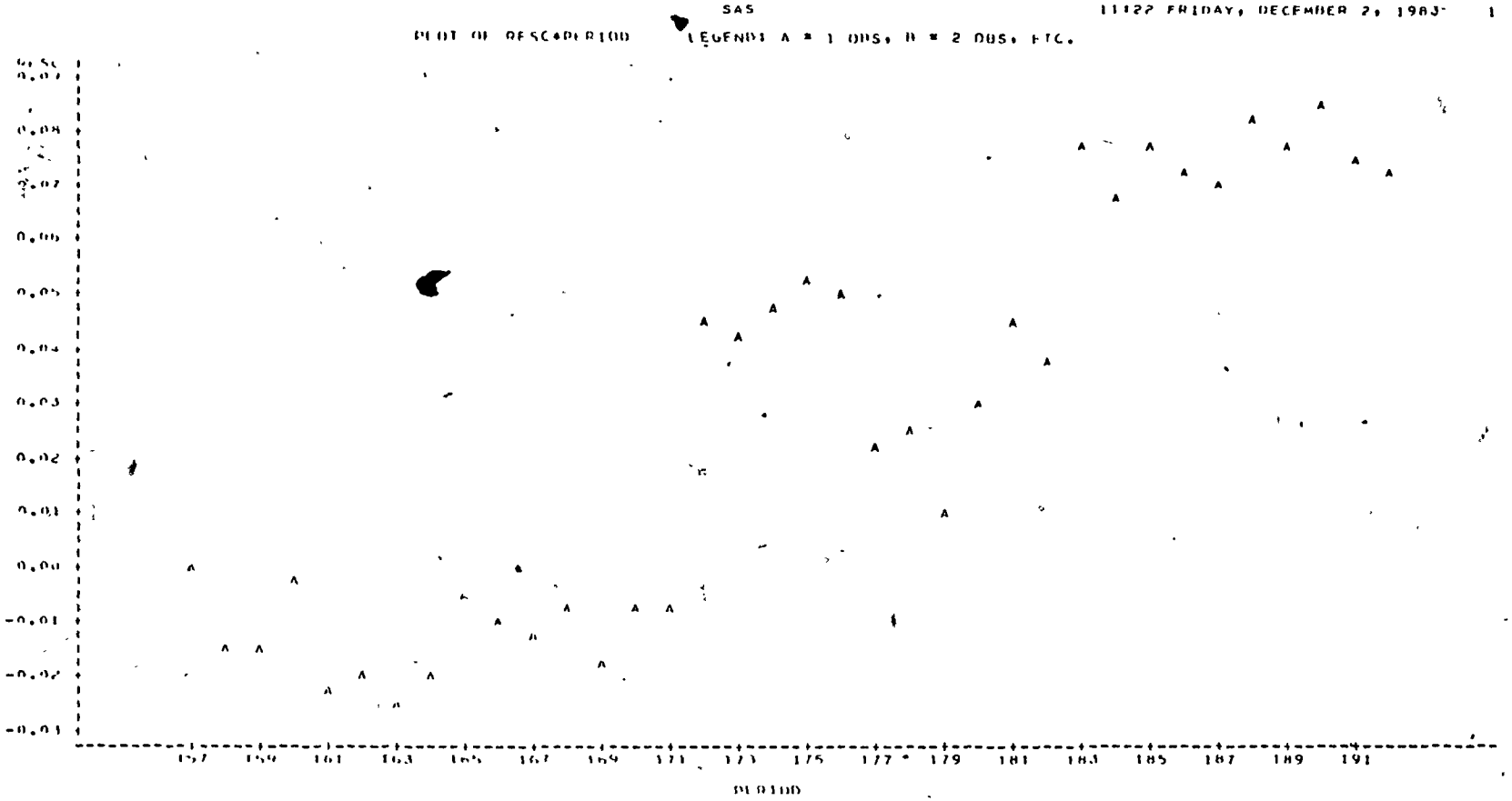


FIGURE 5.3: Cumulative Residuals for the Period January 1970 to December 1972. (Month zero = Period 174)

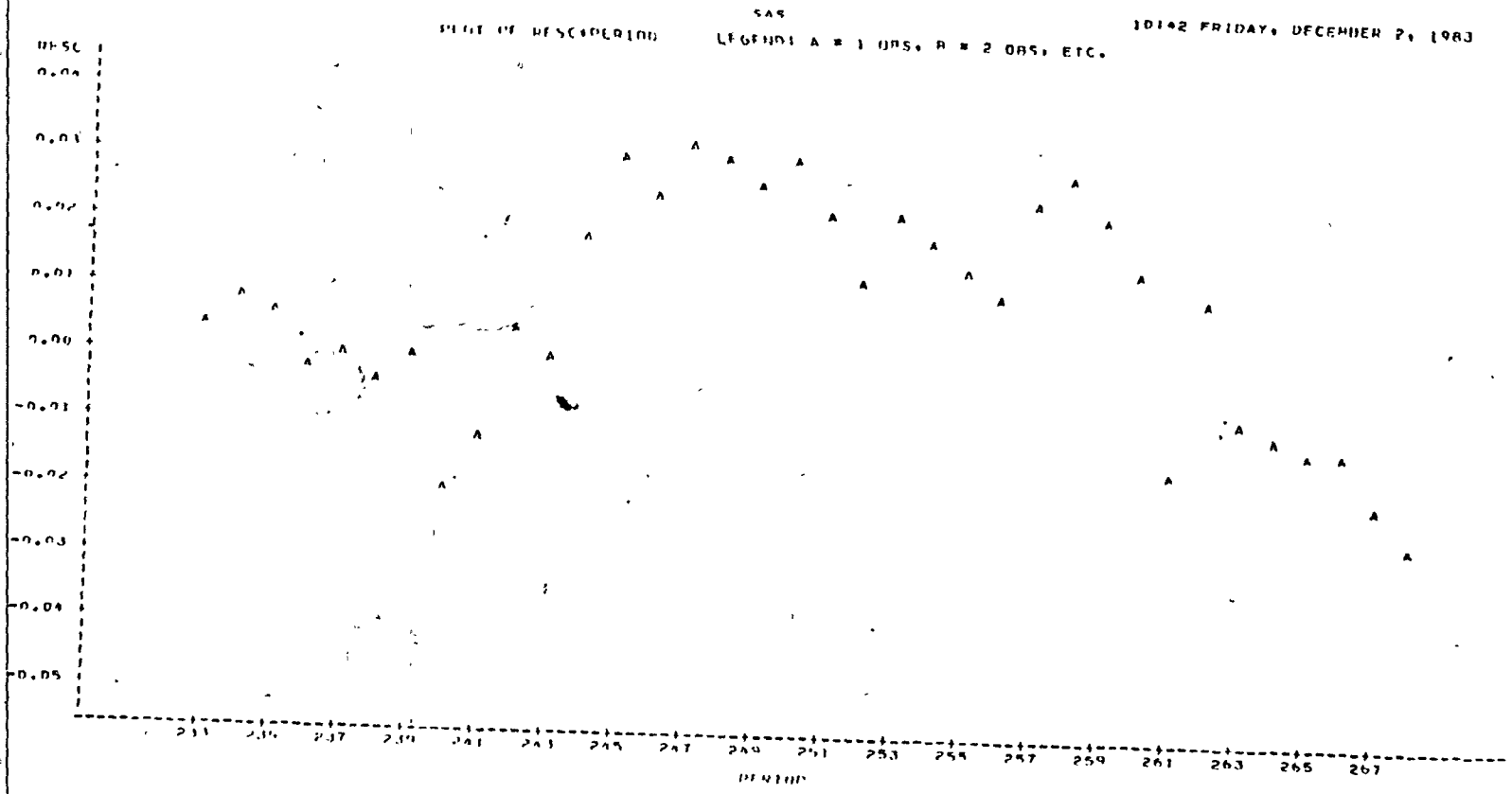


FIGURE 5.4: Cumulative Residuals for the Period May 1976 to March 1979
(Month zero = Period 243)

The adjustment in the cumulative residuals for the announcement of the tax changes of March 1977 is shown in Figure 5.4. March 1977 corresponds to period 243. Here again, the market reaction is clear. An abnormal return is observable for period 244 which is April 1977. From March 1977 to May 1977 the cumulative residuals increased by 3%. The downward trend shown by the cumulative residuals after the tax change is consistent with the anticipated behavior of these cumulative residuals as presented in Figure 5.2.

Thus, for both tax changes, the market for TSE traded straight preferred stocks showed a quick adjustment to the tax change announcements. As pointed out earlier, it was also expected that the 1977 tax change would bring a permanent reduction in the before-tax required rate of return for dividend paying stocks. To test for the possible shift in the level of returns, the average return for the value weighted preferred stock index was compared for a 60 month period before each tax change with a 60 month period after each tax change[1]. As it can be seen from Table 5.6 the average return after the 1977 tax change is lower than the average return before the tax change and the reverse is found for the 1971 tax change.

However, these differences are not statistically significant. Such results could be due to the fact that it is not possible to control for many other events that might have influenced the market during these time periods.

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1. However, in the case of the 1977 tax change only 42 months were available after the tax change.

TABLE 5.6: Average Return for the Preferred Stock Value Weighted Index before and after the Tax Changes

| Tax change | Average return 60 months before the change | Average return 60 months after the change[1] |
|---|---|---|
| 1971 change | 0.34%<br>(2.10)[2] | 0.77%<br>(2.69) |
| 1977 change | 0.68%<br>(2.37) | 0.51%<br>(2.45) |

1 However, in the case of the 1977 tax change only 42 months were available after the tax change.
2 The standard deviation of returns.

Thus, the effect of both tax changes, Bill C-259 and the Federal budget of March 1977 were rapidly discounted by the market. However, neither of these changes led to an observable significant permanent change in the before-tax required rate of return for TSE traded straight preferred stocks.

## 5.3 Summary

In answer to the research question concerning the effect of covenants on the risk-return characteristics of preferred stocks, it was found that liquidation preferences, partial retirement plans and the type of dividends affect the risk and the returns of preferred stocks.

As to the research question dealing with the tax sensitivity of preferred stocks, the conclusion reached is that the returns on these stocks showed an adjustment to the tax changes of 1971 and 1977. In the case of

the 1977 tax change, the pattern of cumulative residuals was as expected with a positive excess return at the time of the tax change and with a declining pattern after the tax change.

# CHAPTER 6

## SUMMARY OF FINDINGS, CONTRIBUTIONS AND IMPLICATIONS, AND AREAS OF FURTHER RESEARCH

The purpose of this research was to provide investors with information on preferred stocks similar to that available for common stocks and bonds and to gather information to facilitate future research on preferred stocks. Because preferred stocks are often considered to have characteristics of common stocks and bonds, this research combines the methodology used by Fama (1965), Fisher and Lorie (1964, 1968) for common stocks and the one used by Fisher (1959) for bonds. This research looks at the market for preferred stocks, their risk-return characteristics and the impact of specific covenants, marketability and tax changes on preferred stock risks and returns.

This chapter is divided into three sections. The first section summarizes the findings of this thesis. The second section discusses both the academic usefulness and the practical implications of the findings and the third section identifies areas where further research is needed.

### 6.1 Summary of the findings

A detailed study of the major market characteristics of TSE straight

preferred stocks traded over the period 1957-1980 shows that most of these stocks were issued during the last three decades with almost the same number of issues for each decade. A breakdown of the number of preferred issues by industrial sector, gives the following distribution: Utilities (20.9%), Industrial Products (15.3%), Consumer Products (14.5%) and Financial Services (11.5%). During the period 1970-1980, the use of preferred stocks concentrated in the services and utilities sectors.

Compared to firms whose shares are traded on the TSE, the issuers of preferred stocks have similar asset size but generally are more levered. Preferred stocks have a long maturity (in excess of 13 years) and like bonds, they carry many covenants. They are traded as common stocks on Canadian stock exchanges, but they have a thin market relative to common stocks.

The average return for preferred stocks is between that of bonds and common stocks. For the period 1957-1980, the average monthly return for preferred stocks was about 0.5%. The distributions of returns for some individual preferred stocks exhibited important departures from normality. Discontinuities in trading were found to be associated with these departures from normality.

The average yield for preferred stocks was 7.73% compared to 7.8% for bonds over the period 1957-1980. However, the differential between bond yields and preferred stock yields varied from -2% in 1957 to almost

+4% in 1980. Such a shift could be attributed to changes in the tax treatment of dividends and to a higher concentration of preferred stock issues among higher quality companies such as utilities and financial services in recent years.

The creation of portfolios of preferred stocks reduced the variance of the returns and thus the risk for preferred stocks. The variance of returns diminished as the portfolios increased in size up to 30 stocks. No further reduction in the variance of returns was achieved with portfolios of more than 30 stocks.

The CAPM was used to assess the risk associated with preferred stocks. To estimate the betas of preferred stocks, a new market index was created which included 57% bonds, 23% preferred stocks and 20% common stocks. Using the returns on this new index as the returns for the overall market, the bond index had a beta of 0.80, the preferred stock index, a beta of 0.90, and the common stock index, a beta of I.69. These betas were consistent with the expected risk of these securities and the explanatory power of the model was excellent with $R^2$s ranging from 0.47 to 0.75.

Because of the importance of the portfolio effect for preferred stocks, the systematic risk for these stocks was estimated with portfolios of 30 stocks randomly selected when sufficient stocks were available. The systematic risk was estimated over the whole time period and over four

different sub-periods of 60 months, starting with the period October 1960 to September 1965 and ending with the period October 1975 to September 1980. Over these four periods, the beta increased from 0.73 for the period October 1960 to September 1965 to 1.00 for the period October 1975 to September 1980. The explanatory power of the CAPM for these portfolios was relatively high as the $R^2$s varied from 0.43 to 0.83. When applied to individual preferred stocks, the CAPM produced an average beta of 0.88 and an average $R^2$ of 0.29. This $R^2$ indicates that the level of explanatory power for preferred stocks is better than for common stocks.

Overall, preferred stocks ranked between common stocks and bonds with regard to their risk and their return. When the risk was estimated using the CAPM, the results were very good for portfolios as well as for individual stocks.

Regarding the relationships between covenants and the risk-return characteristics of preferred stocks, it was found that stocks with liquidation preferences, cumulative dividends and partial retirement plans exhibit lower risks and lower returns than other preferred stocks.

The 1971 and 1977 tax changes led to excess returns around the announcement date of the tax change. In both cases, the market adjusted very rapidly to the new tax environment. In the case of the 1977 tax change, the decreasing pattern of cumulative residuals after the tax change support the anticipated lower before tax rate of returns after the change compare to before this tax change.

## 6.2 Academic contributions and practical implications of the findings

This research can be associated with at least two important academic contributions. First, it has produced a data bank on straight preferred stocks which should be useful to other researchers and second, it has contributed to a further understanding of these stocks as investment vehicles.

The data bank involved is already being used at Laval University in a project aimed at producing a comprehensive data bank of bond and stock information. Also, this research's data bank will hopefully add to the available information about the different types of securities and their issuers. It has already served to produce a value weighted index of preferred stocks which has enabled the derivation of the broader-based market index used in this research. This market index should prove to be a valuable instrument in future studies.

This research should also provide a better insight into the market for straight preferred stocks by showing the pattern of issues over time, by identifying issuers of these stocks and by describing the terms of these issues and how these have changed over time.

Other potentially useful findings highlighted in this study include:

- a comparison of the risk-return characteristics of preferred stocks to those of bonds and common stocks;

- measures of distributional properties of preferred stock returns;

- an analysis of the effects of different holding periods on the returns of preferred stocks;

- risk measures based on the CAPM;

- comparison of preferred stock yields to bond yields;

- an analysis of the effects of covenants, marketability and tax changes on the risk-return tradeoff of preferred stocks.

This research also has some very practical implications for investors. First, this study indicates that TSE traded straight preferred stocks were continually used as a financing device over the last three decades. Large volumes of new issues combined with the long-term nature of preferred stocks have resulted in a growing secondary market.

Second, this research indicates the growing importance of utilities and financial companies as issuers of preferred stock and, as a result, the reduction of the perceived riskiness of these stocks given the strong financial position of these issuers. Thus, the more recent preferred stock issues can be generally viewed as low-risk investments.

Third, investors are provided in this research with a comparison of the mean historical returns of bonds, preferred stocks and common stocks. The correlation level between preferred stock returns and bond returns is similar to that existing between preferred stock returns and common stock returns. This should suggest to investors that preferred stocks are not as sensitive to interest rate risk as bonds.

Fourth, the betas obtained in this research, using a broadly based market index, for a bond index, a preferred stock index and a common stock index suggest that the systematic risk of preferred stocks in general is closer to the systematic risk of bonds than to the systematic risk of common stocks. However, the betas for individual preferred stocks show wide variations. While on average these stocks entail low risk, some can be very risky. Thus, investors should not take for granted that all preferred stocks are low risk investments.

Fifth, this research indicates that preferred stocks present as good a potential for diversification as common stocks do. Typically, the variance of monthly returns on a preferred stock portfolio drops from 15.07% to 4.29% when the portfolio size is increased from one to thirty stocks. Because no significant reduction in the average variance of monthly returns is achieved with a portfolio exceeding thirty stocks, investors can achieve an optimal diversification with about thirty randomly selected preferred stock issues.

Sixth, this research describes the typical mixes of covenants attached to preferred stock issues and gives a more complete explanation than is generally available of the theoretical links existing between such covenants and a stock's risk-return characteristics. This should help an investor discriminate better between preferred stock issues. Most preferred stocks are callable, have asset preference, cumulative dividends and a partial retirement plan. While the call risk involved can be negatively priced, the asset preference strengths the stockholder's position upon liquidation, cumulative dividend features reduce likelihood that dividend payments are not made and partial retirement plans enhance the marketability of preferred stocks.

Seventh and last, this research shows the sensitivity of preferred stock returns to taxation changes. The 1971 and 1977 changes in the taxation of dividend income in particular affected preferred stock returns. The investor needs to consider his tax rate in deciding to include preferred stocks in an investment portfolio.

## 6.3 Areas of further research

The data bank developed in this research should help researchers interested in the analysis of the call policies for preferred stocks, the consequences of including preferred stocks in portfolios made up of bonds and common stocks on the resulting efficient frontier and the effects of the selection of preferred stocks with a high level of positive skewness on the returns of portfolios and on the resulting efficient frontier.

Through an analysis of the call policies for preferred stocks, researchers could likely determine to what extent the call risk impacts a preferred stock yield. This should help investors in their assessment of the risks of a callable preferred stock issue.

Increased knowledge about how the addition of preferred stocks to portfolios combining bonds and common stocks could modify the resulting efficient frontier should enable researchers to assess the importance and "raison d'être" of preferred stocks as an investment vehicle. Should the resulting efficient frontier dominate the one generated with only bonds and common stocks or substantially broaden the choice of efficient portfolios, then preferred stocks would be shown to have an important role as investment vehicles.

Consideration of the effect of the selection of preferred stocks with a high level of positive skewness on the returns of portfolios and the resulting efficient frontier would help determine if positive skewness should be positively priced by investors. Thus, skewness information may give significant or negligible information to the investor.

Another line of potential research concerns less known types of preferred stocks such as convertible preferred stocks and term preferred stocks. Even though convertible preferred stocks represent only one fourth of all TSE traded preferred stocks, they still are an interesting investment vehicle due to the options they carry. While term preferred stocks are not traded on stock exchanges, their existence raises numerous

questions regarding their issuers and their buyers. Consequently, some research about these two types of preferred stocks is warranted.

Overall, the areas of research outlined above should help to better understand the Canadian financial markets. It is expected that substantial knowledge could be derived for the benefit of investors.

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# APPENDIX 1

# THE DATA COLLECTION

## The Set-Up of the Files

(1) "SERIES"

The record "SERIES" was created by recording from the monthly "TSE Review" the number of shares outstanding, the number of shares traded and the closing price for each straight preferred stock traded in a specific month between December 1956 and October 1980.

When this information was recorded on tape, the information had to be placed in chronological order for each issue of preferred stock. However, because of small differences in the names recorded for the same issue, the computer was unable to merge together the relevant series. Thus, a security number (SECNB) was given to each name, and the series for each issue were merged by security number.

While the variable "PERIOD", the period number, was generated by a program, the variable "SERIES", the monthly return, was calculated using information in the records "DIVIDEND" and "SERIES".

(2) "DIVIDEND"

The record "DIVIDEND" was created by recording from the "Financial Post Record of Dividends" the dividend payments and the ex-dividend date for each dividend payment for each of the stocks recorded for the periods on "SERIES".

(3) "SECURITIES" and "CALL"

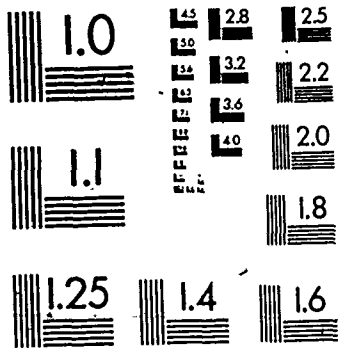
For all the stocks recorded on "SERIES" the information required for "SECURITIES" and "CALL" was collected from the followinng sources:

- "The Financial Post Record of New Issues"
- "The Financial Post Survey of Industrial"
- "The Financial Post Survey of Utilities"
- The yellow cards of the "Financial Post"
- "Moody's Industrial Manual".

| OBS | SECNA | SECNB | ISSPR | ISDAT | DIV | SHISS | ASSPR | SINKN | VOTE | DIVTP | CAL | NCAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ABITIBI-PRICE INC. 7.50 "A" PR | 101 | 50 | 61966 | 3.7500 | 200000 | 1 | 0 | 1 | 1 | 1 | 2 |
| 2 | ABITIBI PAPER , PAPER CO.LTD 4.5 PREF | 102 | 25 | 61954 | 1.1250 | 550000 | . | . | . | 0 | 1 | 1 |
| 3 | ABITIBI PRICE INC 10.00 | 103 | 50 | 61975 | 5.0000 | 760000 | 1 | 1 | 1 | 1 | 1 | 1 |
| 4 | ACKLANDS LTD 6% | 301 | 25 | 41962 | 1.5000 | 40000 | 1 | . | 0 | 1 | 1 | 1 |
| 5 | ACKLANDS 2PRACKX | 302 | 16 | 71968 | 0.9600 | . | . | . | . | . | . | . |
| 6 | ACMES LTD 7.2?A!PR | 401 | 50 | 1041970 | 3.6000 | 334414 | 0 | 0 | 1 | 1 | 1 | 4 |
| 7 | AGF MGMT 8PRAGFX | 501 | 0 | 111965 | 0.0100 | 2000000 | . | . | 0 | 2 | . | . |
| 8 | AGNES=SURPASS SHOE STORES LTD PREF | 601 | 10 | 1709195? | 0.5500 | 4147 | . | . | . | 1 | . | . |
| 9 | ALBERTA GAS TRUNK LINE CO LTD 4.75 % "C" PR | 701 | 100 | 61965 | 4.7500 | 275000 | 1 | 0 | 0 | 1 | 1 | 1 |
| 10 | ALBERTA GAS TRUNK LINE CO.LTD 5.75 PR SER.B | 702 | 100 | 51961 | 5.7500 | 100000 | 0 | . | 0 | . | 1 | 1 |
| 11 | ALBERTA GAS TRUNK LINE CO.LTD 6.25 PR SER.A | 703 | 100 | 51960 | 6.2500 | 180000 | 0 | . | 0 | . | 1 | 1 |
| 12 | NOVA AN ALBERTA CORP 7.60 | 704 | 25 | 111967 | 1.9000 | 3000000 | 1 | 0 | 0 | 1 | 1 | 5 |
| 13 | NOVA AN ALBERTA CORP. 7.75 | 705 | 25 | 21974 | 1.9370 | 1000000 | 1 | 0 | 0 | 1 | 1 | 5 |
| 14 | NOVA CP 975 AGTF | 706 | 25 | 11976 | 2.4375 | . | 1 | 1 | 0 | 1 | 1 | 5 |
| 15 | NOVA AN ALBERTA CORP. 9.76 | 707 | 25 | 61976 | 2.4400 | 2400000 | 1 | 1 | 0 | 1 | 1 | 5 |
| 16 | ALGOMA STEEL CORP LTD 8.00 | 802 | 25 | 31976 | 2.0000 | 2400000 | 1 | 0 | 0 | 1 | 1 | 5 |
| 17 | ALGONQUIN MERCANTILE CORP PR | 901 | 0 | 51969 | 0.0500 | 1000000 | 0 | . | 0 | 2 | . | . |
| 18 | ALGONGR | 902 | 20 | 25111958 | 1.3000 | 25000 | . | . | . | 1 | . | . |
| 19 | ALUMINIUM CO OF CANADA LTD $2.00 1ST PR | 1001 | 25 | 111975 | 2.0000 | 2000000 | 1 | 0 | 1 | 1 | 1 | 5 |
| 20 | ALUMINIUM CO.OF CANADA LTD 1ST PREF | 1002 | 25 | 51946 | 1.0000 | 600000 | 1 | 1 | 1 | 1 | 1 | 1 |
| 21 | ALUMINIUM CO.OF CANADA LTD NEW 2ND PREF | 1003 | 50 | 111955 | 2.2500 | 1200000 | 1 | 1 | 1 | 1 | 1 | 1 |
| 22 | ANGLO CANADIAN TELEPHONE CO $2.65 PR | 1401 | 50 | 61963 | 2.6500 | 320000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 23 | ANGLO CANADIAN TELEPHONE CO $2.90 PR | 1402 | 50 | 61959 | 2.9000 | 125000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 24 | ANGLO CANADIAN TELEPHONE CO $3.15 PR | 1403 | 50 | 121966 | 3.1500 | 180000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 25 | ANGLO CANADIAN TELEPHONE CO 4.50 PR | 1404 | 50 | 61946 | 2.2500 | 125000 | 1 | 0 | 1 | 1 | 1 | 2 |
| 26 | ANGLO AMERICAN CORP OF CANADA LTD PR"B" | 1501 | 0 | . | 0.6000 | 100000 | . | . | 1 | 1 | 1 | 1 |
| 27 | ANGLO-CON PULP AND PAPER MILLS LTD PREF | 1601 | 50 | 81953 | 2.8000 | 160000 | . | . | 1 | 1 | 1 | 1 |
| 28 | ANSHES IMPERIAL LTD 5.25 SERIE C | 1701 | 100 | 51964 | 5.2500 | 38647 | 1 | 0 | 1 | 1 | 1 | 5 |
| 29 | ANTHES IMPERIAL LTD 5.5 SERIERB | 1702 | 100 | 14111958 | 5.5000 | 27500 | 1 | 0 | 1 | 1 | 1 | 4 |
| 30 | ARGUS CORPORATION LTD $2.60 | 1801 | 50 | 91961 | 2.6000 | 200000 | 1 | 0 | 0 | 1 | 1 | 1 |
| 31 | ARGUS CORP LTD CL"B" 2.70 | 1802 | 50 | 91962 | 2.7000 | 300000 | 1 | 0 | . | 1 | 1 | 1 |
| 32 | ARGUS CORP LTD CL"C" PR | 1803 | . | 51962 | 0.3000 | 6770944 | 1 | 1 | 0 | 0 | 0 | . |
| 33 | ARGUS CORPORATION LIMITED $2.50 | 1804 | 50 | 21956 | 2.5000 | 150000 | 1 | 1 | 0 | 1 | 1 | 1 |
| 34 | ASH TEMPLE LTD 6% A | 2001 | 100 | 3112?959 | 6.0000 | 4000 | 0 | 1 | 1 | 1 | 1 | 1 |
| 35 | ASH TEMPLE LTD 6.5% B | 2002 | 10 | 21956 | 0.6500 | 28000 | 0 | 1 | 1 | 1 | 1 | 1 |
| 36 | ATLANTIC SUGAR REFINERS LTD PR 5% | 2301 | 100 | 61945 | 5.0000 | 75000 | 1 | . | 1 | 1 | 1 | 1 |
| 37 | ATLANTIC SUGAR REFINERIES 1.20 | 2302 | 0 | 21951 | 1.2000 | 435000 | 1 | . | 1 | 1 | 1 | 1 |
| 38 | JANNOCK LTD 8.00 | 2303 | 15 | 1071977 | 1.2000 | 1657710 | 1 | 0 | 1 | 1 | 1 | 1 |
| 39 | BRITISH COLUMBIA FOREST PRODUCTS LTD 6.00 | 2401 | 50 | 41966 | 3.0000 | 240000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 40 | B.C. SUGAR REFINERY LTD 5.00 | 2501 | 20 | 91961 | 1.0000 | 800000 | 1 | . | 1 | 1 | 1 | 1 |
| 41 | B.C. TELEPHONE CO 10.16 | 2601 | 25 | 91975 | 2.5400 | 1200000 | 1 | . | 1 | 1 | 1 | 6 |
| 42 | B.C. TELEPHONE CO. 4.50 PR | 2603 | 100 | 91954 | 4.5000 | 50000 | 1 | . | 1 | 1 | 1 | 1 |
| 43 | BC TEL 565PRCIV | 2604 | 100 | 61956 | 4.7500 | 75000 | 1 | . | 1 | 1 | 1 | 1 |
| 44 | B.C. TELEPHONE CO. 4.84 PR | 2605 | 25 | 31965 | 1.2100 | 800000 | 1 | . | 1 | 1 | 1 | 1 |
| 45 | B.C. TELEPHONE CO. 4.375 PR | 2606 | 100 | 41955 | 4.3750 | 60000 | 1 | . | 1 | 1 | 1 | 1 |
| 46 | B.C. TELEPHONE CO. 5.15 PR | 2607 | 100 | 31963 | 5.1500 | 120000 | 1 | . | 1 | 1 | 1 | 1 |
| 47 | B.C. TELEPHONE 5.75 PR | 2608 | 100 | 111957 | 5.7500 | 100000 | 1 | . | 1 | 1 | 1 | 1 |
| 48 | B.C. TELEPHONE CO. 4.75 PR | 2609 | 100 | 1948 | 4.7500 | 75000 | 1 | . | 1 | 1 | 1 | 1 |
| 49 | B.C. TELEPHONE CO. 6.80 | 2610 | 25 | 31964 | 1.7000 | 400000 | 1 | . | 1 | 1 | 1 | 1 |
| 50 | B.C. TELEPHONE CO. 6.00 PR | 2611 | 100 | 1927 | 6.0000 | 45000 | 1 | . | 1 | 1 | 1 | 1 |
| 51 | B.C. TELEPHONE CO 7.04 | 2612 | 25 | 61972 | 1.7600 | 800000 | 1 | . | 1 | 1 | 1 | 4 |
| 52 | B.C.TELEPHONE 6.25 CUM.RED.PREF | 2613 | . | 21960 | . | 120000 | . | . | . | 1 | 1 | 1 |
| 53 | BC TELEPHONE 4.75 CUM RED PREF (SER 1965) | 2614 | 100 | 1948 | 6.2500 | 65000 | 1 | . | . | 1 | 1 | 1 |
| 54 | BAILEY SELBURN OIL AND GAZ LTD 5% | 2801 | 25 | 1312195? | 1.2500 | 200000 | 1 | . | 0 | 1 | 1 | 1 |
| 55 | BATHURST PAPER LTD $1.05 PR 1963 | 3001 | 20 | 11964 | 1.0500 | 198413 | 0 | . | 1 | 1 | 1 | 1 |
| 56 | BAY MILLS LTD. 6 CUM. RED. PART. 1ST PREF PAR | 3101 | 10 | 111963 | 0.6000 | 60000 | . | 0 | 1 | 1 | 1 | 1 |

TABLE A. : TSE Straight Preferred Stocks Traded over the Period 1957-1980

| OBS | SECNA | SECNR | ISSPR | ISDAT | DIV | SHISS | ASSPR | SINKN | VOTE | DIVTP | CAL | NCAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 57 | RHC MORTGAGE LTD $2.28 PRMAN | 3201 | 25.00 | 1980 | 2.2800 | 800000 | . | . | 0 | 1 | 1 | 5 |
| 58 | RLAYER LUMBER CO LTD 1.40 PR | 3301 | 20.00 | 1956 | 1.4000 | 82767 | 1 | . | 1 | 1 | 1 | 1 |
| 59 | RECKER MILK CO LTD (THE) PRMAN | 3401 | 0.00 | 41967 | 0.1000 | 1179610 | 0 | . | 0 | 2 | 1 | . |
| 60 | RELL CANADA $1.80 | 3501 | 20.00 | 91976 | 1.8000 | 3500000 | 1 | 0 | 1 | 1 | 1 | 5 |
| 61 | RELL CANADA $2.25 | 3504 | 30.00 | 91973 | 2.2500 | 1700000 | 1 | 0 | 1 | 1 | 1 | 5 |
| 62 | RUNTS DRUGS STORES CANADA LTD 4.00 | 3801 | . | . | 2.0000 | 10000 | . | . | . | . | . | . |
| 63 | RIW VALLEY INDUSTRIES LTD 5.50 | 3902 | 20.00 | 71965 | 1.1000 | 100000 | 1 | 0 | . | . | 1 | 1 |
| 64 | ROWATER CORP.OF N.AMERICA LTD.,THE, 5 PREF | 4001 | 50.00 | 31956 | 2.5000 | 350000 | 1 | 0 | 1 | 1 | 1 | 8 |
| 65 | ROWATER CORP.OF N.AMERICA LTD 5.5 CUM PREF | 4002 | 50.00 | 121956 | 2.7500 | 150000 | 1 | 0 | 1 | 1 | 1 | 8 |
| 66 | ROWATERS MERSEY PAPER CO LTD 5.5% PR | 4101 | 50.00 | 81956 | 2.7500 | 200000 | 1 | 0 | 1 | 2 | 1 | 7 |
| 67 | RP CANADA LTD PR A | 4201 | 100.00 | 101950 | 5.0000 | 28000 | 1 | 0 | 1 | 1 | 1 | 5 |
| 68 | RRASCAN LTD 8.50 | 4302 | 25.00 | 61976 | 2.1250 | 1400000 | 1 | 0 | 1 | 1 | 1 | 3 |
| 69 | RRIDGE AND TANK CO OF CANADA 2.00 | 4401 | 50.00 | 29031954 | 2.0000 | 32467 | 1 | 1 | 1 | 1 | 1 | 1 |
| 70 | RRIGHT T.G. CO.LTD PREF | 4501 | 23.00 | 19031951 | 1.1500 | 100000 | . | . | . | . | . | . |
| 71 | RRITISH COLUMBIA ELECTRIC 4 PREF | 4701 | 100.00 | 41947 | 4.0000 | 120000 | 0 | . | . | . | . | . |
| 72 | RRITISH COLUMBIA ELECTRIC 4.25 PREF | 4702 | 50.00 | 61955 | 2.2150 | 220000 | 0 | . | . | . | . | . |
| 73 | RRITISH COLUMBIA ELECTRIC 4.5 PREF | 4703 | 50.00 | 101954 | 2.2500 | 300000 | 0 | . | . | . | . | . |
| 74 | RRITISH COLUMBIA ELECTRIC 4.75 PREF | 4704 | 100.00 | 111948 | 4.7500 | 80000 | 0 | . | . | . | . | . |
| 75 | RRITISH COLUMBIA ELECTRIC 5 PREF | 4705 | 50.00 | 101956 | 2.5000 | 240000 | 0 | . | . | . | . | . |
| 76 | RRITISH COLUMBIA ELECTRIC 5.5 PREF | 4706 | 50.00 | 121957 | 2.7500 | 300000 | 0 | . | . | . | . | . |
| 77 | RROCKVILLE CHEMICALS LTD PREF | 4801 | 10.00 | 14121959 | 0.6000 | 1300000 | 1 | 1 | 1 | 2 | 0 | 1 |
| 78 | RROOKE BOND FOODS LTD PR | 4901 | 25.00 | 91947 | 1.6400 | 52000 | 1 | 1 | 1 | 1 | 0 | 1 |
| 79 | RURRARD DRY DOCK CO LTD PR A | 5001 | 0.00 | 61947 | 0.4800 | 250000 | 1 | . | 1 | 1 | 0 | . |
| 80 | C.I.L. INC 7.50 PR | 5101 | 50.00 | . | 3.7500 | 46500 | 1 | . | 1 | 1 | 0 | . |
| 81 | CANDEV | 5201 | 25.00 | 1969 | 1.6250 | 120000 | 1 | 0 | 1 | 1 | 1 | 6 |
| 82 | CADILLAC FAIRVIEW CORP. LTD A PR | 5202 | 0.00 | 31081978 | 0.0500 | 20950 | 1 | 0 | 1 | 1 | 1 | 9 |
| 83 | CALDWELL LINEN MILLS LTD 1ST PREF | 5301 | 0.00 | . | 1.5000 | . | 1 | . | 1 | 1 | 0 | . |
| 84 | CALGARY POWER 5.00 | 5401 | 100.00 | 101953 | 5.0000 | 35468 | 1 | . | 1 | 1 | 1 | 3 |
| 85 | CALGARY POWER LTD 10.00 | 5402 | 100.00 | 121974 | 10.0000 | 300000 | 1 | 1 | 1 | 1 | 1 | 11 |
| 86 | CALGARY POWER LTD $2.36 | 5403 | 25.00 | 101976 | 2.3600 | 30000 | 1 | 0 | 1 | 1 | 1 | 14 |
| 87 | CALGARY POWER LTD 4.50 | 5404 | 100.00 | 31948 | 4.5000 | 50000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 88 | CALGARY POWER LTD 4.00 | 5405 | 100.00 | 51947 | 4.0000 | 50000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 89 | CALGARY POWER LTD 7.50 | 5407 | 100.00 | 121973 | 7.5000 | 250000 | 1 | 0 | 1 | 1 | 1 | 6 |
| 90 | CALGARY POWER LTD 7.00 | 5408 | 100.00 | 21973 | 7.0000 | 150000 | 1 | 0 | 1 | 1 | 1 | 6 |
| 91 | CALGARY POWER LTD 8.75 | 5409 | 100.00 | 31977 | 8.7500 | 330000 | 1 | 0 | 1 | 1 | 1 | 9 |
| 92 | CALGARY POWER LTD 9.75 | 5410 | 100.00 | 11976 | 9.7500 | 300000 | 1 | 1 | 1 | 1 | 1 | 7 |
| 93 | CALGARY POWER LTD 9.80 | 5411 | 100.00 | 71975 | 9.8000 | 200000 | 1 | 1 | 1 | 1 | 1 | 13 |
| 94 | CANADA BREAD CO.LTD A PREF | 5501 | 100.00 | 27081935 | 5.0000 | . | . | . | . | . | . | . |
| 95 | CORPORATE FOODS LIMITED A PR | 5502 | 40.00 | 1101968 | 2.7500 | 50000 | 1 | . | 0 | 1 | 1 | 1 |
| 96 | CAPLING DIXEFEE $2.65 PRMAN | 5602 | 50.00 | 21963 | 2.6500 | 500000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 97 | CANADA CEMENT LAFARGE | 5701 | 20.00 | 91946 | 1.3000 | 900000 | . | . | . | . | 1 | 1 |
| 98 | CANADA MALTING CO LTD 6% | 5801 | 1.00 | 401968 | 0.0600 | 3000000 | . | . | . | . | 1 | 1 |
| 99 | CANADA MALTING CO.LTD 4.5 CUM PREF | 5802 | 25.00 | 1955 | 1.1700 | 300000 | 1 | . | 1 | 1 | 1 | 1 |
| 100 | CANADA SAFEWAY LTD 4.40 | 5901 | 100.00 | 61955 | 4.4000 | 100000 | 1 | . | 1 | 1 | 1 | 5 |
| 101 | CANADA STEAMSHIP LINES LTD. PREF. | 6001 | 6.25 | . | 0.3125 | 1834000 | 1 | . | 1 | 1 | 1 | 1 |
| 102 | CANADIAN BRONZE CO, LTD PREF | 6101 | 100.00 | . | 5.0000 | 7500 | 1 | . | 1 | 1 | 1 | 1 |
| 103 | CELANESE CANADA INC $1.00 | 6201 | 25.00 | 31947 | 1.0000 | 10000 | 1 | . | 1 | 1 | 1 | 1 |
| 104 | CELANESE CANADA, INC 1.75 | 6202 | 25.00 | 1091945 | 1.7500 | 400000 | 1 | . | 1 | 1 | 1 | 1 |
| 105 | CANADIAN COLLIERIES RES.LTD 5 PREF 1963,SER. | 6301 | 20.00 | 1041963 | 1.0000 | 267867 | 0 | . | 1 | 0 | 1 | 1 |
| 106 | CANADIAN COLLIERIES RESOURCES LTD 6=P SERIES PREF | 6302 | 1.00 | 1956 | 0.0500 | . | 1 | . | 1 | 0 | 1 | 1 |
| 107 | CANADIAN COTTONS LTD PREF | 6401 | 20.00 | . | 1.2000 | . | . | . | . | 0 | . | . |
| 108 | CANADIAN DRAWN STEEL CO.LTD PREF | 6501 | 0.00 | 19101958 | 0.6000 | . | . | . | . | . | . | . |
| 109 | CANADIAN FOODS PRODUCTS LTD 6% | 6701 | 50.00 | 101960 | 3.0000 | 18394 | 0 | . | 1 | 1 | 1 | 1 |
| 110 | CANADIAN FOUNDATION CO. LTD PRMAN | 6801 | 20.00 | 121963 | 1.2000 | 297198 | 1 | 0 | 1 | 1 | 1 | 8 |
| 111 | CANADIAN GAS & ENERGY INVEST, LTD | 6901 | 0.20 | 41960 | . | 900000 | 1 | 0 | 1 | 2 | 1 | 1 |
| 112 | CANADIAN HYDROCARBONS LTD 5.50 | 7101 | 20.00 | 101964 | 1.1000 | 250000 | 1 | 0 | 1 | 1 | 1 | 2 |



| OBS | SECNA | SECNO | ISSPR | ISDAT | DIV | SHISS | ASSPR | SINKN | VOTE | DIVTP | CAL | NCAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 111 | CANADIAN OIL COS LTD 5 PREF | 7301 | 100.00 | 71945 | 5.0000 | . | 0 | . | 1 | 1 | 1 | 1 |
| 114 | CANADIAN OIL COS LTD 4 PREF | 7302 | 100.00 | 41947 | 4.0000 | . | 0 | . | 1 | 1 | 1 | 1 |
| 115 | CANADIAN OIL COS LTD 8 PREF | 7304 | 100.00 | 1908 | 8.0000 | . | 0 | . | 1 | 1 | 1 | . |
| 116 | CANADIAN PACIFIC LTD 4.00 CDN *PRM | 7501 | 3.00 | . | 0.1200 | 24931972 | 0 | . | 1 | 0 | . | . |
| 117 | CDN PAC 7.25CP C | 7502 | 10.00 | 91971 | 0.7250 | 28128670 | . | 0 | 1 | 1 | 1 | 3 |
| 118 | CANADIAN PACIFIC RAILWAY CO. 4 PREF, STK UNITS | 7503 | 3.00 | . | 0.1200 | 24931972 | 0 | . | 0 | 0 | 0 | . |
| 119 | CDN PAC 4%%CP X | 7504 | 4.87 | 1932 | 0.2000 | 28203477 | . | . | 1 | 0 | . | . |
| 120 | CANADIAN UTILITIES LTD 6.00 | 7901 | 100.00 | 21967 | 6.0000 | 50000 | 1 | 0 | 1 | 1 | . | 5 |
| 121 | CANADIAN UTILITIES LTD 4.25 | 7902 | 100.00 | 11956 | 4.2500 | 15000 | 1 | 0 | 1 | 1 | . | 1 |
| 122 | CANADIAN UTILITIES LTD 5.00 | 7903 | 100.00 | 11946 | 5.0000 | 40000 | 1 | . | 1 | 1 | . | 1 |
| 123 | CANADIAN UTILITIES LTD 7.30 | 7904 | 25.00 | 101977 | 1.8250 | 1200000 | 1 | 0 | . | 1 | . | 6 |
| 124 | CANADIAN UTILITIES LTD. 9.24 | 7905 | 25.00 | 121976 | 2.3100 | 1600000 | 1 | 0 | . | 1 | . | 6 |
| 125 | CANADIAN UTILITIES LTD 10.25 | 7906 | 25.00 | 11975 | 2.5620 | 1200000 | 1 | 0 | . | 1 | . | 6 |
| 126 | CANADIAN UTILITIES LTD 2ND PR SER*PRM | 7907 | 25.00 | 41980 | 2.5600 | 2000000 | 1 | 0 | . | 1 | . | 6 |
| 127 | CANADA PERMANENT MORTGAGE CORP. 8.00 | 8402 | 25.00 | 21091977 | 2.0000 | 841141 | 1 | . | . | 1 | . | 11 |
| 128 | CANADIAN OCCIDENTAL PETROLUM LTD 10.00 | 8701 | 25.00 | 101976 | 2.5000 | 1000000 | 1 | 0 | . | 1 | . | 6 |
| 129 | CANADIAN WESTERN NATURAL GAS CO LTD 4% PR | 8801 | 18.75 | 61947 | 0.8000 | 275410 | 1 | 0 | . | 1 | . | 1 |
| 130 | CDN WESTERN NATURAL GAZ CO LTD 5.50 PR | 8802 | 20.00 | 21958 | 1.1000 | 700000 | 1 | 0 | . | 1 | . | 1 |
| 131 | CENTRAL CANADA INVESTMENTS LTD PREF | 8901 | 100.00 | 1952 | 5.0000 | 21956 | 0 | . | 1 | 1 | . | 1 |
| 132 | CHATCO STEEL PRODUCTS LTD PREF | 9001 | 10.00 | 91945 | 0.5000 | 35000 | 0 | . | 1 | 1 | . | 1 |
| 133 | COLLINGWOOD TERMINAL LTD PREF | 9201 | 0.00 | 51942 | 0.2500 | . | 1 | . | 0 | . | . | . |
| 134 | COMINCO LTD $2.00 | 9401 | 25.00 | 41976 | 2.0000 | 2000000 | 1 | 0 | . | 1 | . | 6 |
| 135 | COMTECH PRA CIGU | 9501 | 10.00 | 81946 | 0.5000 | 14490 | 1 | 0 | 1 | 1 | . | 1 |
| 136 | CONSOLIDATED-BATHURST INC 6.00 PR | 9601 | 25.00 | 1966 | 1.5000 | 6000000 | 1 | 0 | 1 | 1 | . | 1 |
| 137 | CONSOLIDATED BUILDING CORPORATION PREF | 9801 | 10.00 | 61961 | 0.6000 | 300000 | . | . | 1 | 1 | . | 3 |
| 138 | CONSUMERS GAS CO.,THE 5.5 SERIES B PREF | 9901 | 100.00 | 21959 | 5.5000 | 100000 | 1 | 1 | 1 | 1 | . | 5 |
| 139 | CONSUMERS GAS CO.OF TORONTO 5.5 SERIES A PR | 9902 | 100.00 | 61957 | 5.5000 | 50000 | 1 | 1 | 1 | 1 | . | 5 |
| 140 | CORONATION CREDIT CORP. LTD,$1.20 PREF SER 'A' | 10101 | 20.00 | 41964 | 1.2000 | 125000 | 0 | . | 1 | 1 | . | 1 |
| 141 | CRESTBROOK TIMBER LTD 5.5 PREF | 10302 | 50.00 | 23021956 | 2.7500 | 16000 | 1 | 0 | 1 | 1 | . | 6 |
| 142 | CROWN TRUST COMPANY 8.75 | 10401 | 20.00 | 41977 | 1.7500 | 300000 | 1 | 0 | 1 | 1 | . | 6 |
| 143 | DALE-ROSS HOLDINGS LIMITED 6.00 | 10601 | 10.00 | 121964 | 0.6000 | 200000 | 1 | 0 | 1 | 1 | . | 1 |
| 144 | DALEX CO.LIMITED PREF | 10701 | 100.00 | 1956 | 7.0000 | 1500 | 1 | 0 | 1 | 1 | . | 1 |
| 145 | DAON DEVELOPPEMENT 8.625 PR*AM | 10801 | 10.00 | 101978 | 0.8625 | 2500000 | 1 | 0 | 1 | 1 | . | 2 |
| 146 | DAON D 9.5% DAPP | 10802 | 10.00 | 91979 | 0.9500 | 1500000 | 1 | 0 | 1 | 1 | . | 6 |
| 147 | DEBHOLD (CANADA) LIMITED | 10901 | 100.00 | 121966 | 6.2500 | 100000 | 1 | . | 1 | 0 | . | 1 |
| 148 | DOMINION-SCOTTISH INVESTMENTS LTD 5.00 | 11301 | 50.00 | 81929 | 2.5000 | 83270 | 1 | . | 1 | 1 | 1 | . |
| 149 | DOMINION TEXTILE INC $7.00 PR | 11401 | 100.00 | . | 7.0000 | 19406 | 1 | . | 1 | 1 | 0 | . |
| 150 | DOMINION AND ANGLO INVESTMENT CORPORATION LTD 5.00 | 11501 | 100.00 | 91928 | 5.0000 | 10000 | 1 | . | 1 | 1 | . | 1 |
| 151 | DOM.FOUNDRIES & STEEL LTD 4.5 PREF | 11601 | 100.00 | 71950 | 4.5000 | 80000 | 1 | . | 1 | 1 | . | 1 |
| 152 | DOMINION FOUNDRIES AND STEEL LTD 4.75 | 11602 | 100.00 | 51965 | 4.7500 | 250000 | 1 | 0 | 1 | 1 | . | 4 |
| 153 | DOMINION COAL CO LTD GX | 11801 | 25.00 | 1936 | 1.5000 | 240000 | 1 | 0 | 1 | 1 | . | 1 |
| 154 | DOMINION DAIRIES LTD | 11901 | 35.00 | 1944 | 1.7500 | 40000 | 1 | . | 0 | 0 | . | . |
| 155 | ELECTROHOME LTD 5.75 | 12001 | 100.00 | 51960 | 5.7500 | 20000 | 1 | 0 | 1 | 1 | . | 4 |
| 156 | DOMINION FABRICS LTD CLASS 'A' PR | 12101 | 0.00 | 1965 | 0.3200 | 170000 | . | . | 1 | 2 | . | . |
| 157 | DOMINION FABRICS LTD 2ND PREF | 12102 | 0.00 | 111942 | 1.7000 | 20000 | 1 | . | 1 | 1 | 0 | 1 |
| 158 | DOMTAR INC PR | 12301 | 23.50 | 21946 | 1.0000 | 300000 | 1 | . | 1 | 1 | . | 1 |
| 159 | DOVER INDUSTRIES LTD 6.00 | 12401 | 10.00 | 21959 | 0.6000 | 102626 | 1 | 0 | 1 | 1 | . | . |
| 160 | DUPONT OF CANADA (1956) LTD | 12501 | 50.00 | . | 3.7500 | 46500 | 1 | . | 1 | 1 | . | . |
| 161 | DYLEX LTD PR*AM | 12601 | 0.00 | . | 0.0100 | 5102009 | 0 | . | 1 | 2 | . | . |
| 162 | EASY WASHING MACHINE CO.LTD 5 PREF | 12801 | 20.00 | 121955 | 1.0000 | . | 1 | . | 1 | 1 | . | 1 |
| 163 | ECONOMIC INVESTMENT TRUST LTD 5.00 | 12901 | 50.00 | 41962 | 2.5000 | 100000 | 1 | 0 | 1 | 1 | . | 1 |
| 164 | FEDERAL GRAIN LIMITED PREF | 13201 | 100.00 | 71929 | 6.5000 | 30000 | . | 0 | 1 | 1 | . | 1 |
| 165 | FIDELITY TRUST CO. 8.60 | 13301 | 20.00 | 81977 | 1.7200 | 250000 | 1 | 0 | 1 | 1 | . | 6 |
| 166 | FLASH FASTENERS OF CAN.LTD PREF | 13401 | 20.00 | 1947 | 1.0000 | . | 1 | 1 | 1 | 1 | . | 1 |
| 167 | FOODEX INC PR | 13501 | 0.00 | 61978 | 0.8553 | 1883496 | 1 | . | 1 | 1 | . | 5 |
| 168 | FOUR SEASONS HOTELS LTD 8.00 *A*PR | 13601 | 10.00 | 21978 | 0.8000 | 400000 | 1 | 0 | 1 | 1 | . | 1 |

| OBS | SECNA | SECNB | ISSUR | ISDAT | DIV | SHISS | ASSDR | SINKN | VOTE | DIVID | CAL | NCAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 169 | EDF-PIONNEER ELECTRICS LTD, 1ST PREF SERIES 'A' | 13701 | 50.0 | 21964 | 2.7500 | 80000 | 1 | . | 1 | 1 | 1 | 4 |
| 170 | FREIMAN,A.J.LTD 4.5 PREF | 13801 | 100.0 | 51946 | 4.5000 | . | 0 | 1 | 1 | 1 | 1 | 1 |
| 171 | FIRST CITY TRUST CO 8.32 PR"A" | 14001 | 10.0 | 28091977 | 0.8320 | 577000 | 1 | . | 1 | 1 | 1 | 6 |
| 172 | FIRST CITY TRUST CO 8.75 | 14002 | 8.5 | 1979 | 0.7430 | 1639542 | . | . | 0 | 0 | 1 | 1 |
| 173 | FST CY 11075PCTU | 14003 | 10.0 | 1976 | 1.0750 | . | . | 0 | 1 | 1 | 1 | 5 |
| 174 | GAZ METROPOLITAIN INC 5.40 65 PR | 14101 | 100.0 | 41965 | 5.4000 | 100000 | 1 | 0 | 1 | 1 | 1 | 5 |
| 175 | GAZ METROPOLITAN 5.50 66PR | 14102 | 100.0 | 41966 | 5.5000 | 75000 | 1 | 0 | 1 | 1 | 1 | 5 |
| 176 | GNATGAZ | 14103 | 100.0 | 3091959 | 6.0000 | 150000 | 1 | 0 | 1 | 1 | 1 | 6 |
| 177 | GARDELL HOLDINGS LTD 9.50 1ST PR | 14201 | 5.0 | 1978 | 0.4750 | 300000 | . | . | 1 | 1 | 1 | 10 |
| 178 | GATINEAU POWER CO.5 PREF | 14301 | 100.0 | 1938 | 5.0000 | . | 1 | . | 1 | 1 | 1 | 1 |
| 179 | GATINEAU POWER CO. 5.5 PREF | 14302 | 100.0 | 1939 | 5.5000 | . | 1 | . | 1 | 1 | 1 | 1 |
| 180 | GSW.LTD 5% | 14401 | 100.0 | 6061944 | 5.0000 | 500000 | 1 | 1 | 1 | 1 | 1 | 1 |
| 181 | GERIN LTD 7.00 1ST PR | 14601 | 10.0 | 71972 | 0.7000 | 262900 | 1 | . | 1 | 1 | 1 | 7 |
| 182 | GLOBE REALTY LTD $1.88 PR"A" | 14701 | 0.0 | 111979 | 1.8800 | 6400000 | 1 | . | 1 | 1 | 1 | 5 |
| 183 | GOODYEAR CANADA INC 4.00 | 14801 | 50.0 | 71966 | 2.0000 | 160000 | 1 | . | 1 | 1 | 1 | 5 |
| 184 | GORDON MACKAY STORES LTD | 14901 | 0.0 | 51946 | 0.5000 | 134317 | 1 | . | 1 | 1 | 0 | . |
| 185 | GRAFTON GROUP LTD PR"A" | 15001 | 0.0 | 10611979 | 3.0000 | 8246.34 | 0 | 0 | 1 | 1 | 1 | 4 |
| 186 | GRAFTON | 15002 | 20.0 | 28051966 | 1.2000 | 50000 | 1 | 1 | . | 1 | 1 | 1 |
| 187 | GREAT LAKES POWER CORP.LTD 5 PREF | 15101 | 25.0 | 1949 | 1.2500 | . | 1 | . | 1 | 1 | 1 | 1 |
| 188 | GREAT NORTHERN GAS UTILITIES LTD PREF | 15201 | 50.0 | 121954 | 2.5000 | . | 1 | . | 1 | 1 | 1 | 1 |
| 189 | GREAT NORTHERN GAS UTILITIES LTD 2.80 PREF | 15202 | 50.0 | 41957 | 2.8000 | . | 1 | . | 1 | 1 | 1 | 2 |
| 190 | GREAT NORTHER GAS UTILITIES LTD PR | 15203 | 20.0 | 101964 | 1.1000 | . | 1 | . | 1 | 0 | 1 | 2 |
| 191 | GREY GOOSE CORP LTD 9.75 | 15301 | 10.0 | 39977 | 0.9750 | 275000 | 1 | 0 | 1 | 1 | 1 | 6 |
| 192 | GUARANTY TRUST CO. OF CANADA 8.00 | 15401 | 20.0 | 11978 | 1.6000 | 750000 | 1 | 0 | 1 | 1 | 1 | 6 |
| 193 | GURNEY PRODUCTS LTD PREF | 15501 | 30.0 | 21951 | 1.6000 | 25000 | 0 | 1 | 1 | 1 | 1 | 1 |
| 194 | HAHN BRASS LTD 5 1ST PREF | 15601 | 10.0 | 101958 | 0.9000 | 22740 | . | . | . | 1 | 1 | 1 |
| 195 | HAHN BRASS LTD 5 2ND PREF | 15602 | 20.0 | 21959 | 1.0000 | 20000 | . | . | . | 0 | 1 | 1 |
| 196 | HAMILTON COTTON CO. LTD THE 5 PREF | 15701 | 100.0 | 26071950 | 5.0000 | 6000 | . | 1 | . | 1 | 1 | 1 |
| 197 | HARDEF FARMS INTERNATIONAL LTD 1ST PREF SERIES A | 16001 | 100.0 | 10031959 | 6.5000 | 50000 | . | . | . | 1 | 1 | 1 |
| 198 | HARDING CARPETS LTD 5.75 PREF | 16101 | 25.0 | 8021962 | 1.4375 | 80000 | 1 | . | 1 | 1 | 1 | 1 |
| 199 | HAWKER SIDDELEY CANADA INC 5.75 | 16301 | 100.0 | 91957 | 5.7500 | 240000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 200 | HENDERSHOT PAPER PROD LTD 6 PREF | 16501 | 100.0 | 1959 | 6.0000 | . | 0 | . | 1 | 1 | 1 | 1 |
| 201 | HOWARD SMITH PAPER MILLS LTD PREF | 16701 | 50.0 | . | 2.0000 | . | 0 | . | 1 | 1 | 1 | 6 |
| 202 | HUDSON'S BAY CO $1.80 PR"A" | 16801 | . | 31121978 | 1.8000 | 6059067 | . | . | 1 | 1 | . | . |
| 203 | HUGHES-OWENS CO LTD 6.4 | 16901 | 25.0 | 41953 | 1.6000 | 20000 | 1 | . | 1 | 1 | 1 | 1 |
| 204 | HUSKY OIL LTD 6.00 'A' PR | 17101 | 50.0 | 1956 | 3.0000 | 71363 | 1 | . | 1 | 1 | 1 | 1 |
| 205 | HUSKY OIL LTD 6.00 'B' PR | 17102 | 50.0 | 61964 | 3.0000 | 200000 | 1 | . | 1 | 1 | 1 | 1 |
| 206 | I.T.L. INDUSTRIES LTD PR 6.50 | 17201 | 30.0 | 21964 | 1.6250 | 50000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 207 | IAC 4.5PR IACH | 17301 | 100.0 | 11955 | 4.5000 | 100000 | 1 | 0 | 1 | 1 | 1 | 5 |
| 208 | IAC LTD 5.75 | 17302 | 25.0 | 41966 | 1.4375 | 600000 | 1 | 0 | 1 | 1 | 1 | 6 |
| 209 | INDUSTRIAL ACCEPTANCE CORP.LTD 4.5 2.25 PREF | 17303 | 50.0 | 11956 | 2.2500 | 100000 | 1 | 0 | 1 | 1 | 1 | 4 |
| 210 | ICG. UTILITIES LTD PR "A" | 17401 | 25.0 | 101966 | 1.5000 | 120000 | . | 0 | 1 | 1 | 1 | 7 |
| 211 | IMASCO LTD 6.00 | 17501 | . | . | 2.7500 | 1650000 | 1 | . | 1 | 1 | 1 | 1 |
| 212 | IMPERIAL INVESTMENT CORP. LTD 1.25 PREF | 17701 | 20.0 | 81960 | 1.2500 | 350000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 213 | IMPERIAL INVESTMENT CORP.LTD 1.40 PREF | 17702 | 25.0 | 41958 | 1.4000 | 270000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 214 | IMPERIAL INVESTMENT CORP.LTD 6.25 PREF | 17703 | 20.0 | 1219577 | 1.2500 | 43976 | 1 | 1 | 1 | 1 | 1 | 1 |
| 215 | INCO LIMITED 7.05 | 17801 | 25.0 | 121977 | 1.7600 | 5000000 | 1 | 0 | 1 | 1 | 1 | 6 |
| 216 | INCO | 17802 | 100.0 | 10121928 | 7.0000 | 108370 | 1 | . | 1 | 1 | 1 | 1 |
| 217 | INGRAM & BELL LTD PREF | 17901 | 0.0 | 1956 | 0.6000 | . | . | . | 1 | 1 | . | . |
| 218 | INLAND CEMENT CO.LTD PREF | 18001 | 10.0 | . | 0.6000 | . | 1 | . | 1 | 0 | 0 | 1 |
| 219 | INLAND NATURAL GAZ CO LTD PR "A" | 18101 | 20.0 | 111956 | 1.0000 | 250000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 220 | INLAND NATURAL GAZ CO LTD 10.00 2ND | 18102 | 25.0 | 61976 | 2.5000 | 400000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 221 | INTER-CITY GAS LIMITED A25 SERIES 'A' 2ND PREF. | 18301 | 20.0 | 101966 | 1.2500 | 125000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 222 | INTER-CITY GAS LTD 6.50 | 18302 | 20.0 | 31970 | 1.3000 | 125000 | 1 | 0 | 1 | 1 | 1 | 7 |
| 223 | INTER-CITY GAS LTD 7.50 | 18303 | 20.0 | 71971 | 1.5000 | 100000 | 1 | 0 | 1 | 1 | 1 | 6 |
| 224 | INTERNATIONAL BRONZE POWDERS LTD 6% | 18401 | 25.0 | 1934 | 1.5000 | . | 1 | . | 1 | 1 | 0 | . |

| OBS | SECNA | SECNB | ISSPR | ISDAT | DIV | SHISS | ASSPR | SINKN | VOTE | DIVTP | CAL | NCAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 225 | WOOD,JOHN,INDUSTRIES LTD 4.5 PREF | 18501 | 100.0 | 71945 | 4.500 | . | 0 | 1 | 1 | 1 | 1 | 1 |
| 226 | INTERNATIONAL MILLING CO. 4 SER.A | 18601 | 100.0 | 1943 | 4.000 | . | 1 | 1 | 1 | 1 | 1 | 1 |
| 227 | IROQUOIS GLASS LTD PREF | 19201 | 10.0 | 71958 | 0.600 | 195000 | 0 | . | 1 | 0 | 1 | 6 |
| 228 | IVACO INC $2.50 PR"D" | 19301 | 25.0 | 71980 | 2.500 | 720000 | 1 | 0 | 1 | 0 | 1 | 9 |
| 229 | IVACO INC 8.25 PR"C" | 19302 | 50.0 | 61977 | 4.425 | 300000 | 1 | 0 | 1 | 0 | 1 | 9 |
| 230 | J.M. SCHNEIDER, LIMITED 1ST PREF | 19401 | 0.0 | . | 0.320 | . | 1 | . | 1 | 0 | . | . |
| 231 | JOCKEY CLUB LTD THE 6 PREF | 19501 | 10.0 | . | 0.600 | . | 0 | . | 1 | 1 | . | . |
| 232 | JOCKEY CLUB LTD 560 CU RED 2ND PREF 1963 | 19502 | 10.0 | . | 0.560 | . | 0 | . | 1 | 1 | . | . |
| 233 | JOCKEY CLUB LTD THE 550'B'PREF | 19503 | 10.0 | . | 0.550 | . | 0 | . | 1 | 1 | . | . |
| 234 | KOFFLER STORES LTD 7 PR SERIES'A' | 19701 | 10.0 | 31971 | 0.700 | 600000 | 1 | 0 | 1 | 1 | 1 | 3 |
| 235 | LAIDLAW SP FLOAT | 19801 | 10.0 | 1980 | 0.800 | 336715 | 1 | 0 | 1 | 1 | 1 | 7 |
| 236 | LAIDLAW TRANSPORTATION LTD 9.75 | 19802 | 10.0 | 11977 | 0.975 | 400000 | 1 | 0 | 0 | 1 | 1 | 6 |
| 237 | LAKE OF THE WOOD MILLING CO.LTD PREF | 19901 | 100.0 | . | 7.000 | . | . | . | 1 | 1 | . | . |
| 238 | LAURENTIDE ACCEPTANCE CORP.LTD 1.20 SERIES PREF | 20301 | 20.0 | 1101956 | 1.200 | 50000 | . | . | 1 | 1 | 1 | 1 |
| 239 | LEVY INDUSTRIES LTD 6.00 PR "AM" | 20401 | 12.0 | 1101962 | 0.720 | 199710 | 1 | 0 | 1 | 1 | 1 | 1 |
| 240 | LEVY INDUSTRIES LTD PREF | 20402 | . | 61960 | . | 55000 | . | . | . | 1 | 1 | 1 |
| 241 | LIVINGSTON INDUSTRIES LIMITED 6 CUM RED 1ST PR | 20501 | 50.0 | 71967 | 3.000 | 100000 | . | . | 1 | 1 | 1 | 9 |
| 242 | LOBLAW COMPANY LTD 42.40 1ST PR | 20601 | 50.0 | 11956 | 2.400 | 439652 | 1 | . | 1 | 1 | 1 | 9 |
| 243 | LOBLAWS LTD 41.60 PR "AM" | 20701 | 30.0 | 101956 | 1.600 | 335000 | 1 | 0 | 1 | 1 | 1 | 9 |
| 244 | LOBLAW GROCETERIAS CO.LTD 2ND PREF | 20702 | 15.0 | . | 0.500 | . | . | . | 1 | 1 | 1 | 1 |
| 245 | LOBLAWS LTD 41.50 "AM" PR 1ST | 20703 | 30.0 | 41956 | 1.500 | 665000 | 1 | 0 | 1 | 1 | 1 | 5 |
| 246 | M E P C CANADIAN PROPERTIES LTD PREF | 20901 | 25.0 | 1966 | 1.500 | . | 1 | 0 | 1 | 1 | 1 | 1 |
| 247 | MDG INVESTMENTS CORP LTD CL"AM" | 21001 | 25.0 | 111964 | 1.300 | 80000 | 1 | . | 1 | 1 | 1 | 5 |
| 248 | MACLEODS LTD A PREF | 21101 | 20.0 | 15091958 | 1.200 | 160000 | 0 | 0 | 1 | 1 | 1 | 1 |
| 249 | MAHER INC PR"AM" | 21201 | 0.0 | . | 0.600 | 156666 | . | . | 1 | 0 | 1 | 1 |
| 250 | MAILMAN CORPORATION LTD PREF | 21301 | 100.0 | . | 5.000 | . | 0 | 1 | 1 | 1 | 1 | 1 |
| 251 | MANITOBA SUGAR CO.LTD 6 PREF | 21401 | 100.0 | 41940 | 6.000 | . | . | . | 1 | 1 | 1 | 1 |
| 252 | MAPLE LEAF MILLING COMPANY LTD 5 PREF | 21501 | 100.0 | . | 5.000 | . | 0 | . | 1 | 1 | 1 | 1 |
| 253 | MAPLE LEAF MILLS LTD 5.5 | 21502 | 100.0 | 31961 | 5.500 | 18627 | 1 | . | 1 | 1 | 1 | 7 |
| 254 | MARITIME TELEGRAPH AND TELEPHONE CO LTD 7.10 | 21601 | 10.0 | 41972 | 0.710 | 900000 | 1 | 0 | 1 | 1 | 1 | 9 |
| 255 | MARITIME TELEGRAPH AND TELEPHONE CO. LTD 7.65 | 21602 | 10.0 | 71977 | 0.765 | 1500000 | 1 | 0 | 1 | 1 | 1 | 9 |
| 256 | MARITIME TELEGRAPH AND TELEPHONE CO. LTD 8.60 | 21603 | 10.0 | 51974 | 0.860 | 1000000 | 1 | 0 | 1 | 1 | 1 | 7 |
| 257 | MARITIME TELEGRAPH AND TELEPHONE CO. LTD 9.40 | 21604 | 10.0 | 31975 | 0.940 | 1750000 | 1 | 0 | 1 | 1 | 1 | 6 |
| 258 | MASSEY FERGUSON LTD $2.50 PR"AM" | 21701 | 25.0 | 41975 | 2.500 | 1600000 | 1 | 0 | 1 | 1 | 1 | 6 |
| 259 | MASSEY FERGUSON LTD $2.50 PR"AM" | 21702 | 25.0 | 31976 | 2.500 | 2400000 | 1 | 0 | 1 | 1 | 1 | 6 |
| 260 | MCCAINE CO.LTD.,THE L. PREF | 21801 | 0.0 | . | 1.000 | 20000 | 1 | . | 1 | 1 | 1 | 1 |
| 261 | METROPOLITAN STORES OF CANADA LTD 1.30 PR (1967) | 22201 | 20.0 | 1111967 | 1.300 | 150000 | 1 | 1 | 1 | 1 | 1 | 1 |
| 262 | METROPOLITAN STORES OF CANADA LTD 1.30 PR (1961) | 22202 | 20.0 | 51961 | 1.300 | 150000 | 1 | 1 | 1 | 1 | 1 | 1 |
| 263 | MEXICAN LD CO LTD (THE). PR | 22301 | 13.5 | 11953 | 1.000 | 852548 | 1 | 1 | 1 | 1 | 1 | 1 |
| 264 | MICC INVESTMENTS LTD 8.625 | 22401 | 25.0 | 31978 | 2.156 | 1000000 | 1 | 0 | 1 | 1 | 1 | 2 |
| 265 | MICC INVESTMENTS LTD 10.00 | 22402 | 25.0 | 31976 | 2.500 | 800000 | 1 | 0 | 1 | 1 | 1 | 6 |
| 266 | MOLSONS BREWERY LTD PREF | 22501 | 40.0 | 1959 | 2.200 | 227366 | 1 | . | 1 | 1 | 1 | 1 |
| 267 | MONARCH KNITTING CO.LTD 4.5 PREF | 22601 | 100.0 | 31947 | 4.500 | 5000 | 0 | . | 1 | 1 | 1 | 7 |
| 268 | MUNICIPAL SAVING AND LOAN CORP 9.75 | 22901 | 10.0 | 51977 | 0.975 | 250000 | 1 | 0 | 1 | 1 | 1 | 7 |
| 269 | NEW BRUNSWICK TELEPHONE CO. LTD $1.37 | 23101 | 20.0 | 31972 | 1.370 | 400000 | 1 | 0 | 1 | 1 | 1 | 7 |
| 270 | NEW BRUNSWICK TELEPHONE CO. LTD $1.85 | 23102 | 20.0 | 21975 | 1.850 | 750000 | 1 | 0 | 1 | 1 | 1 | 7 |
| 271 | NORTH CANADIAN OILS LTD 5.5 | 23201 | 50.0 | 10061955 | 2.750 | 70000 | 1 | . | 1 | 1 | 1 | 2 |
| 272 | NOVA SCOTIA SAVINGS AND LOANS CO 10.25 | 23301 | 20.0 | 71975 | 2.050 | 150000 | 1 | . | 1 | 1 | 1 | 7 |
| 273 | NORTHWESTERN UTILITIES LTD PR | 23401 | 100.0 | 61946 | 4.000 | 105000 | 1 | . | 1 | 1 | 1 | 1 |
| 274 | NATIONAL GROCERS CO.LTD PREF | 23501 | 20.0 | 11939 | 1.500 | 14550 | 1 | . | 1 | 1 | 1 | 1 |
| 275 | NATIONAL HEES INDUSTRIES LTD PREF | 21701 | 10.0 | 29111971 | 0.600 | 300000 | . | . | 1 | 0 | 1 | 7 |
| 276 | NEWFOUNDLAND TELEPHONE CO LTD 7.25 PR"AM" | 23801 | 20.0 | 91972 | 1.450 | 250000 | 1 | 0 | 1 | 1 | 1 | 5 |
| 277 | NORTHERN AND CENTRAL GAS CORP. LTD $2.60 | 24001 | 50.0 | 111965 | 2.600 | 160000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 278 | NORTHERN AND CENTRAL GAS CORP. LTD $2.70 | 24002 | 50.0 | 1011968 | 2.700 | 42992 | 1 | 0 | 1 | 1 | 1 | 1 |
| 279 | NORTHERN AND CENTRAL GAS CORPORATION LTD 7.85 | 24003 | 25.0 | 111977 | 1.962 | 1400000 | 1 | 0 | 1 | 1 | 1 | 6 |
| 280 | NORCEN ENERGY RESOURCES LTD $1.06 | 24004 | 25.0 | 28101975 | 1.060 | 4618 | 1 | 0 | 1 | 1 | 1 | 1 |

| OBS | SECNA | SECNB | ISSPR | ISDAT | DIV | SHISS | ASSPR | SINKN | VOTE | DIVTP | CAL | NCAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 281 | NORTH STAR OIL LTD 2.50 PREF 1956 SERIES | 24101 | 50 | 1956 | 2.500 | 120000 | 1 | 1 | 1 | 1 | 1 | 1 |
| 282 | NORTHERN QUEBEC POWER CO. LTD 1ST PREF | 24201 | 50 | 1954 | 2.250 | . | 1 | . | 1 | 1 | 1 | 1 |
| 283 | NORTHERN TAR CHEMICAL & WOOD LTD PREF | 24301 | 25 | 41964 | 1.700 | . | 1 | 0 | 1 | 1 | 1 | 1 |
| 284 | NU-WEST DEVELOPMENT CORPORATION LTD 8.75 | 24501 | 20 | 111977 | 1.750 | 500000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 285 | NU-WEST DEVELOPMENT CORPORATION LTD 8.85 | 24502 | 20 | 61978 | 1.770 | 750000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 286 | OGILVIE FLOUR MILLS CO.LTD PREF | 24801 | 100 | . | 7.000 | . | 1 | . | 1 | 1 | 0 | . |
| 287 | ONTARIO STEEL PRODUCTS CO. LTD PREF | 25001 | 100 | . | 7.000 | 3603 | 0 | . | 1 | 1 | . | . |
| 288 | OVERLAND EXPRESS LTD (THE) N.V. 2ND PREF | 25101 | 0 | . | 0.100 | . | 0 | . | 0 | 0 | . | . |
| 289 | ROBERTSON,P.L.,MFG.CO.LTD 1.00 DIV. PREF | 25201 | 0 | 71953 | 1.000 | 130670 | 1 | . | 1 | 1 | . | . |
| 290 | ROBERTSON,P.L. MFG.CO.LTD 6 1ST PREF SERIES A | 25202 | 20 | 51959 | 1.200 | 50000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 291 | PACIFIC NORTHERN GAS LTD 6.75 | 25301 | 25 | . | 1.687 | 200000 | 1 | . | 1 | 1 | 1 | . |
| 292 | PACIFIC WESTERN AIRLINES LTD PR | 25401 | 0 | . | 2.200 | . | 1 | 0 | 1 | 1 | 1 | 1 |
| 293 | PEMBINA PIPELINE LTD 5 1ST PREF | 25501 | 50 | 9111954 | 2.500 | 60000 | . | . | . | . | 1 | 1 |
| 294 | PEMBINA PIPE LINE LTD 2ND PR SER A | 25502 | 30 | 31031971 | . | 1100000 | . | . | . | . | 1 | 1 |
| 295 | PENMANS LTD PREF | 25601 | 100 | . | 6.000 | . | . | . | . | . | 1 | 1 |
| 296 | PENNINGTON'S STORES LTD PR | 25701 | 0 | 1979 | 0.425 | 1141313 | . | . | 0 | 1 | 1 | 1 |
| 297 | PEOPLE JEWELLERS LTD 6% | 25801 | 100 | 1983 | 6.000 | 32000 | 1 | 1 | 1 | 1 | 1 | 1 |
| 298 | PERMO GAS & OIL LTD PREF | 25901 | 2 | . | . | 4292693 | . | . | . | . | . | . |
| 299 | POLYSAR LTD 8.40 1ST PR "A" | 26001 | 25 | 71975 | 2.100 | 2000000 | 1 | 0 | 1 | 1 | 1 | 4 |
| 300 | POWER CORPORATION 2.375 PR 1965 | 26101 | 50 | 26071965 | 2.375 | 800000 | 1 | 0 | 1 | 1 | 1 | 4 |
| 301 | QUEBEC-TELEPHONE 4.75 | 26302 | 20 | 31965 | 0.950 | 400000 | 1 | . | 1 | 1 | 1 | 1 |
| 302 | QUEBEC-TELEPHONE 7.75 | 26303 | 20 | 71973 | 1.550 | 300000 | 1 | 0 | 1 | 1 | 1 | 3 |
| 303 | REID LITHOGRAPHING CO.LTD PREF | 26601 | 50 | 21962 | 3.125 | 16000 | 0 | 0 | 1 | 1 | 1 | 1 |
| 304 | REVELSTOKE COMPANIES LTD 8.00 | 26701 | 20 | 81961 | 1.200 | 125000 | 1 | 0 | 1 | 1 | 1 | 4 |
| 305 | REYNOLDS ALUMINIUM CO. OF CANADA LTD 4.75 | 26801 | 100 | 101955 | 4.750 | 15000 | 1 | . | 1 | 1 | 1 | 20 |
| 306 | RIO ALGOMA LTD 6.50 | 26901 | 5 | 30011980 | 0.425 | 15000000 | 0 | . | 1 | 0 | 1 | 5 |
| 307 | RIO ALGOM LTD 85.80 | 26902 | 100 | 31966 | 5.800 | 150000 | 1 | 0 | 1 | 1 | 1 | 5 |
| 308 | ROBINSON COTTON MILLS LTD PREF | 27001 | 5 | 41951 | 0.150 | 300000 | 0 | . | 1 | 0 | 1 | 3 |
| 309 | ROTHMAN (FRANCO) | 27101 | 100 | 11969 | 6.850 | 200000 | 1 | 0 | 1 | 1 | 1 | 7 |
| 310 | ROYAL TRUST COMPANY MORTGAGE CORP (THE) PR A 8.00 | 27201 | 20 | 121964 | 1.000 | 250000 | 1 | . | 1 | 1 | 0 | 7 |
| 311 | RUSSEL HUGH INC $1.70 PR"C" | 27301 | 0 | 1979 | 1.700 | 750000 | . | . | 1 | 1 | 1 | 7 |
| 312 | SCOTT MISENER STEAM SHIPS LTD 5 1ST PREF | 27501 | 5 | . | . | . | . | . | 1 | 1 | 1 | . |
| 313 | SCOTT MISNER STEAMSHIPS LTD 5.5 1ST. PREF. | 27502 | 20 | 71964 | 1.100 | 144614 | . | 0 | 1 | 1 | 1 | 10 |
| 314 | SCYTHES AND COMPANY LTD 5 PREF | 27601 | 25 | 28021945 | 1.250 | 15000 | . | . | . | . | 1 | 1 |
| 315 | SECO-CEM LTD 32.25 PR"A" | 27801 | 0 | 1980 | 2.250 | 2199100 | . | . | 0 | 1 | 1 | 6 |
| 316 | SECO CEMD LTD PRIAR 7.25% | 27802 | 10 | 121971 | 0.725 | 1000000 | 0 | . | 1 | 1 | 1 | 7 |
| 317 | SHAWINIGAN WATER & POWER CO. SERIES A 4 PREF | 27901 | 0 | 61947 | 2.000 | 400000 | . | . | 1 | 1 | 1 | 1 |
| 318 | SHAWINIGAN WATER & POWER CO. SERIES B 4.5 PREF | 27902 | 0 | 81950 | 2.250 | 100000 | . | . | 1 | 1 | 1 | 1 |
| 319 | SICK'S BREWERIES LTD 6 PREF | 28201 | 5 | 91958 | 0.300 | 452000 | . | . | 0 | 0 | 1 | 1 |
| 320 | SILVMIT LTD 5 PR | 28301 | 0 | 1406 1979 | 0.060 | . | . | . | 1 | 1 | 1 | 1 |
| 321 | SLATER CO.LTD N. PREF | 28401 | 50 | 1947 | 2.120 | . | 1 | . | 1 | 1 | 1 | 1 |
| 322 | SLATER INDUSTRIES LTD 6.75 SER.A | 28502 | 20 | 13101960 | 1.250 | 100000 | 1 | . | 1 | 1 | 1 | 1 |
| 323 | SLATER STEEL INDUSTRIES LIMITED 5.5 CLASS"B" | 28503 | 20 | 11964 | 1.100 | 100000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 324 | SLATER STEEL INDUSTRIES LTD 1ST PR | 28504 | 20 | 11964 | 1.100 | 100000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 325 | SLATER STEEL INDUSTRIES LTD 2ND PR | 28505 | 20 | 121964 | 1.100 | 200000 | 1 | 0 | 1 | 1 | 1 | 7 |
| 326 | SLATER STEEL INDUSTRIES LTD 6.00 | 28506 | 20 | 31966 | 1.200 | 200000 | 1 | 0 | 1 | 1 | 1 | 7 |
| 327 | SOMERVILLE BELKIN INDUSTRIES LTD PR | 28601 | 50 | 101953 | 2.800 | 40000 | 1 | . | 1 | 1 | 1 | 8 |
| 328 | SONOR INVESTMENTS LTD 8.00 | 28701 | 5 | 1972 | 0.400 | 228400 | 1 | . | 1 | 1 | 1 | 8 |
| 329 | ST-LAWRENCE CORP LTD 5% | 28901 | 100 | 51956 | 5.000 | 150000 | 0 | . | 1 | 1 | 1 | 6 |
| 330 | STEINBERG INC A PR | 29001 | 100 | 61956 | 5.250 | 50000 | 1 | 0 | 1 | 1 | 1 | 6 |
| 331 | STEINBERG INC $1.95 2ND PR SERIF 1 | 29002 | 25 | 1061979 | 1.950 | 1000000 | 1 | 0 | 1 | 1 | 1 | 6 |
| 332 | SUPERIOR PROPANE LTD 1.40 PR | 29501 | 24 | 31954 | 1.400 | 40000 | 1 | . | 1 | 1 | 1 | 2 |
| 333 | SUPERTEST PETROLEUM CORP. LTD PREF | 29601 | 100 | 9111950 | 5.000 | 66000 | 1 | 1 | 1 | 1 | 1 | 3 |
| 334 | TAMBLYN G LTD 4% | 29701 | 50 | 51946 | 2.000 | 15000 | 1 | . | 1 | 1 | 1 | 3 |
| 335 | TANCORD INDUSTRIES LTD PREF | 29801 | 4 | 1963 | 0.240 | . | 0 | . | . | 0 | 1 | 3 |
| 336 | TORONTO DOMINION REALTY CO LTD $1.835 | 29901 | 25 | 1051979 | 1.835 | 2000000 | 1 | . | 1 | 1 | 1 | 5 |

| OBS | SECNA | | | |
|---|---|---|---|---|
| 337 | THIRD C.D.N. GENERAL INVESTMENTS TRUST LTD PR | | | |
| 338 | THOMSON NEWSPAPERS LTD 6.75 | | | |
| 339 | TORDOM CORP $2.375 | | | |
| 340 | TORONTO STAR LTD 6% | | | |
| 341 | TRANSCANADA PIPELINES LTD $2.80 PR | | | |
| 342 | TRANS CANADA PIPE LINES LTD $4.50 | | | |
| 343 | TRADERS GROUP LTD 4.50 | | | |
| 344 | TRADERS GROUP LTD $2.16 | | | |
| 345 | TRADERS GROUP LTD $10.25 | | | |
| 346 | TRADERS GROUP LTD 7.50 | | | |
| 347 | TRIMAC LTD 9.12 | | | |
| 348 | TURBO RESOURCES LTD 8.75 | | | |
| 349 | UNITED CORPORATIONS LTD $1.50 2ND PR 59 | | | |
| 350 | UNITED CORPORATIONS LTD $1.50 2ND PR 63 | | | |
| 351 | UNION GAS LTD "A" PR | | | |
| 352 | UNION GAZ LTD 6.00% PR "A" | | | |
| 353 | UNITED WESTBURNE INDUSTRIES LTD 6.25 | | | |
| 354 | UNION ACCEPTANCE CORP. LTD 6 1ST PREF 'C' | | | |
| 355 | UNION ACCEPTANCE CORP. LTD 1ST PREF | | | |
| 356 | UNION ACCEPTANCE CORP.LTD 6.75 1ST PREF B | | | |
| 357 | UNION ACCEPTANCE CORP.,LTD 2ND PREF | | | |
| 358 | UNITED FUEL INVEST. LTD B PREF | | | |
| 359 | UNITED FUEL INVEST. LTD A A PREF | | | |
| 360 | VENEZUELAN POWER COMPANY LTD PREF | | | |
| 361 | VERSATILE CORNAT CORP. PR "A" | | | |
| 362 | VICTORIA AND GREY TRUST CO 5.35 | PRAA | | |
| 363 | VICTORIA WOOD DEVEL. CORP. LTD 7.5 1ST PREF | | | |
| 364 | VIRGINIA DARE LTD. 5 PREF | | | |
| 365 | WESLEY MASON MILLS LTD 5.5 PREF | | | |
| 366 | WESTCOAST TRANSMISSION CO LTD 8.50 | | | |
| 367 | WESTFAIR FOODS LTD PR | | | |
| 368 | WESTON LTD GFD 4.50 PR SR | | | |
| 369 | WESTON GFD LTD 6.00 SR 2ND PR | | | |
| 370 | WHITE HARDWARE LTD 1ST PREF | | | |
| 371 | THE WHITE PASS AND YUKON CORP. LTD "A" PR | | | |
| 372 | WOODS G.H 5.5 PR | | | |
| 373 | ZELLER'S LTD 4.5 | | | |



| OBS | SECNR | ISSPR | ISDAT | DIV | SHISS | ASSPR | SINKN | VOTE | DIVTP | CAL | NCAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 30101 | | 50 | 11962 | 2.500 | 60000 | 1 | 1 | 1 | 1 | 1 | 1 |
| 30201 | | 50 | 111967 | 3.375 | 300000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 30301 | | 25 | 2041980 | 2.375 | 1200000 | . | . | 0 | 1 | 1 | 1 |
| 30401 | | 50 | 91958 | 3.000 | 50000 | 1 | 0 | 1 | 2 | 1 | 1 |
| 30502 | | 50 | 51966 | 2.800 | 1000000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 30503 | | 50 | 91974 | 4.500 | 1000000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 30601 | | 100 | 111945 | 4.500 | 25000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 30603 | | 30 | 51969 | 2.160 | 250000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 30604 | | 10 | 71974 | 1.025 | 750000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 30605 | | 50 | 1975 | 3.750 | 330359 | 1 | 0 | 1 | 1 | 1 | 1 |
| 30701 | | 25 | 51977 | 2.280 | 320000 | 1 | 0 | 0 | 1 | 1 | 1 |
| 30903 | | 20 | 91977 | 1.750 | 250000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 31102 | | 30 | 121959 | 1.500 | 80290 | 1 | 0 | 1 | 1 | 1 | 1 |
| 31103 | | 30 | 31963 | 1.500 | 119170 | 1 | . | 1 | 1 | 1 | 1 |
| 31201 | | 50 | 11959 | 2.750 | 170000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 31202 | | 50 | 71980 | 3.000 | 90000 | 1 | . | 1 | 1 | 1 | 1 |
| 31401 | | 50 | 31967 | 3.125 | 60000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 31601 | | 50 | . | 3.000 | 22000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 31602 | | 50 | 14111949 | 3.125 | 30000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 31603 | | 50 | 111962 | 3.125 | 9000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 31604 | | 0 | 1955 | 0.600 | 24745 | 0 | . | 0 | 2 | . | . |
| 31701 | | 25 | . | 1.000 | . | 1 | . | 0 | 0 | . | . |
| 31702 | | 50 | . | 3.000 | . | 1 | . | 0 | 1 | . | . |
| 31801 | | 10 | 1954 | 0.600 | 260000 | . | . | 0 | 1 | 1 | 1 |
| 31901 | | 15 | 71978 | 1.400 | 1624515 | . | . | 0 | 1 | 1 | 1 |
| 32001 | | 50 | 71966 | 2.675 | 100000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 32101 | | 10 | 1969 | 0.780 | . | 1 | 0 | 0 | 1 | 1 | 1 |
| 32201 | | 25 | . | 1.250 | . | 1 | . | 1 | 1 | 1 | 1 |
| 32601 | | 100 | 11949 | 5.500 | 7500 | 1 | 1 | 1 | 1 | 1 | 1 |
| 32801 | | 50 | 17071974 | 4.250 | 800000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 32901 | | 35 | 101948 | 1.400 | 59715 | 1 | 0 | 1 | 1 | 0 | 1 |
| 33001 | | 100 | 1944 | 4.500 | 268665 | 1 | . | 1 | 1 | 1 | 1 |
| 33002 | | 100 | A1957 | 6.000 | 80000 | 1 | . | 1 | 1 | 1 | 1 |
| 33101 | | 50 | 1954 | 2.800 | . | 1 | 1 | 1 | 1 | 1 | 1 |
| 33201 | | 25 | 171968 | 1.687 | 270000 | 1 | 0 | 1 | 1 | 1 | 1 |
| 33301 | | 100 | 1031954 | 5.500 | . | 1 | 1 | 1 | 1 | 1 | 1 |
| 33401 | | 50 | 1985 | 2.250 | 100000 | 1 | 0 | 1 | 1 | 1 | 1 |

## APPENDIX 2

### COMPARISON OF THE PREFERRED STOCK ISSUERS AND CANADIAN FIRMS RECORDED ON COMPUSTAT

COMPAS = Average Assets for Compustat

PFDAS = Average Assets for TSE Traded Straight Preferred Stock Issuers

COMPDET = Average debt for Compustat

PFDDET = Straight Preferred Stock Issuers

SAS

| OBS | COMPAS | PFDAS | COMPDET | PFDDET |
|---|---|---|---|---|
| 1 | 119.569 | 57.19 | 25.138 | 25.07 |
| 2 | 124.335 | 55.08 | 26.165 | 10.81 |
| 3 | 133.947 | 138.00 | 28.615 | 44.54 |
| 4 | 138.554 | 61.17 | 31.380 | 18.38 |
| 5 | 140.520 | 288.20 | 32.742 | 87.48 |
| 6 | 149.155 | 223.60 | 34.452 | 91.24 |
| 7 | 161.268 | 397.00 | 39.205 | 90.11 |
| 8 | 174.696 | 146.00 | 44.800 | 57.73 |
| 9 | 186.092 | 178.60 | 48.437 | 95.71 |
| 10 | 225.880 | 47.44 | 56.178 | 8.85 |
| 11 | 269.895 | 452.10 | 63.389 | 55.80 |
| 12 | 299.188 | 185.70 | 75.443 | 92.10 |
| 13 | 328.477 | 1065.00 | 83.684 | 429.00 |
| 14 | 370.310 | 755.90 | 95.224 | 377.90 |
| 15 | 434.550 | 845.00 | 107.804 | 304.20 |
| 16 | 530.676 | 1337.00 | 123.967 | 427.60 |
| 17 | 669.803 | 928.50 | 159.511 | 351.00 |
| 18 | 866.706 | 621.80 | 254.490 | 274.70 |

## APPENDIX 3

### SOME MARKET CHARACTERISTICS OF TSE TRADED STRAIGHT PREFERRED STOCKS

SERIE 2 = The Average Number of Shares Outstanding for Each Issue

SERIE 3 = The Average Number of Shares Traded Each Month for Each Issue

ISSVAL = The Market Value of Each Issue at the Time of Issue

MAT = The Maturity for all Issues (in months)

MATADJ = The Maturity for 162 Issues Not Traded During the Last 12 months of the Data Bank

VARIABLE=SERIE2

MOMENTS

| | | | |
|---|---|---|---|
| N | 35558 | SUM WGTS | 35558 |
| MEAN | 474835 | SUM | 1,688E+10 |
| STD DEV | 1534768 | VARIANCE | 2,356E+12 |
| SKEWNESS | 11,5632 | KURTOSIS | 174,676 |
| USS | 9,177E+16 | CSS | 8,375E+16 |
| CV | 323,221 | STD MEAN | 8139,06 |
| T:MEAN=0 | 58,3403 | PROB>\|T\| | 0,0001 |
| SGN RANK | 316101731 | PROB>\|S\| | 0,0001 |
| NUM ^= 0 | 35558 | | |

QUANTILES(DEF=4)

| | | | |
|---|---|---|---|
| 100% MAX | 28203477 | 99% | 6770944 |
| 75% Q3 | 326185 | 95% | 1834000 |
| 50% MED | 131277 | 90% | 978443 |
| 25% Q1 | 55107 | 10% | 21956 |
| 0% MIN | 262 | 5% | 13345 |
| | | 1% | 4072,31 |
| RANGE | 28203215 | | |
| Q3-Q1 | 271078 | | |
| MODE | 100000 | | |

| | |
|---|---|
| MISSING VALUE | . |
| COUNT | 8 |
| % COUNT/NOBS | 0,02 |

EXTREMES

| LOWEST | HIGHEST |
|---|---|
| 262 | 28203472 |
| 262 | 28203472 |
| 262 | 28203472 |
| 811 | 28203472 |
| 831 | 28203472 |

VARIABLE=SERIE3

MOMENTS

| | | | |
|---|---|---|---|
| N | 35565 | SUM WGTS | 35565 |
| MEAN | 4295,55 | SUM | 152771391 |
| STD DEV | 43523,8 | VARIANCE | 1894321151 |
| SKEWNESS | 93,0269 | KURTOSIS | 10699,5 |
| USS | 6,803E+13 | CSS | 6,737E+13 |
| CV | 1013,23 | STD MEAN | 230,789 |
| T:MEAN=0 | 18,6125 | PROB>\|T\| | 0,0001 |
| SGN RANK | 316226198 | PROB>\|S\| | 0,0001 |
| NUM ^= 0 | 35565 | | |

QUANTILES(DEF=4)

| | | | |
|---|---|---|---|
| 100% MAX | 5123547 | 99% | 60263,7 |
| 75% Q3 | 2002,5 | 95% | 14370,5 |
| 50% MED | 610 | 90% | 6230 |
| 25% Q1 | 202 | 10% | 100 |
| 0% MIN | 1 | 5% | 45 |
| | | 1% | 10 |
| RANGE | 5123546 | | |
| Q3-Q1 | 1800,5 | | |
| MODE | 100 | | |

| | |
|---|---|
| MISSING VALUE | . |
| COUNT | 1 |
| % COUNT/NOBS | 0,00 |

EXTREMES

| LOWEST | HIGHEST |
|---|---|
| 1 | 708000 |
| 1 | 712019 |
| 1 | 794000 |
| 1 | 5102419 |
| 1 | 5123547 |

VARIABLE=LSSVAL

MOMENTS

| | | | |
|---|---|---|---|
| N | 290 | SUM WGTS | 290 |
| MEAN | 13598529 | SUM | 3943573353 |
| STD DEV | 20327329 | VARIANCE | 4.132E+14 |
| SKEWNESS | 3.3652 | KURTOSIS | 14.9119 |
| USS | 1.730E+17 | CSS | 1.194E+17 |
| CV | 149.482 | STD MEAN | 1193662 |
| T:MEAN=0 | 11.3923 | PROB>\|T\| | 0.0001 |
| SGN RANK | 21097.5 | PROB>\|S\| | 0.0001 |
| NUM ^= 0 | 290 | | |

QUANTILES(DEF=4)

| | | | |
|---|---|---|---|
| 100% MAX | 150000000 | 99% | 126109654 |
| 75% Q3 | 15000000 | 95% | 55049561 |
| 50% MED | 6000000 | 90% | 34799805 |
| 25% Q1 | 2500000 | 10% | 923729 |
| 0% MIN | 41470 | 5% | 431694 |
| | | 1% | 142249 |
| RANGE | 149958530 | | |
| Q3-Q1 | 12500000 | | |
| MODE | 5000000 | | |

| | |
|---|---|
| MISSING VALUE | . |
| COUNT | 83 |
| % COUNT/NOBS | 22.25 |

EXTREMES

| LOWEST | HIGHEST |
|---|---|
| 41470 | 75000000 |
| 115450 | 80000000 |
| 144900 | 125000000 |
| 150000 | 137350928 |
| 180000 | 150000000 |

VARIABLE=MAT

MOMENTS

| | | | |
|---|---|---|---|
| N | 373 | SUM WGTS | 373 |
| MEAN | 158.976 | SUM | 59298 |
| STD DEV | 124.205 | VARIANCE | 15426.9 |
| SKEWNESS | 1.15047 | KURTOSIS | 1.48798 |
| USS | 15165772 | CSS | 5738821 |
| CV | 78.1283 | STD MEAN | 6.4311 |
| T:MEAN=0 | 24.7198 | PROB>\|T\| | 0.0001 |
| SGN RANK | 34875.5 | PROB>\|S\| | 0.0001 |
| NUM ¬= 0 | 373 | | |

QUANTILES(DEF=4)

| | | | |
|---|---|---|---|
| 100% MAX | 664 | 99% | 617.559 |
| 75% Q3 | 222.5 | 95% | 408 |
| 50% MED | 140 | 90% | 322.6 |
| 25% Q1 | 58 | 10% | 30.4 |
| 0% MIN | 2 | 5% | 15 |
| | | 1% | 5 |
| RANGE | 662 | | |
| Q3-Q1 | 164.5 | | |
| MODE | 8 | | |

EXTREMES

| LOWEST | HIGHEST |
|---|---|
| 2 | 585 |
| 3 | 616 |
| 5 | 622 |
| 5 | 644 |
| 5 | 664 |

VARIABLE=MATADJ

MOMENTS

| | | | |
|---|---|---|---|
| N | 162 | SUM WGTS | 162 |
| MEAN | 145.29 | SUM | 23537 |
| STD DEV | 110.525 | VARIANCE | 12215.7 |
| SKEWNESS | 1.3678 | KURTOSIS | 2.62901 |
| USS | 5386423 | CSS | 1966729 |
| CV | 76.0717 | STD MEAN | 8.68364 |
| T:MEAN=0 | 16.7315 | PROB>\|T\| | 0.0001 |
| SGN RANK | 6601.5 | PROB>\|S\| | 0.0001 |
| NUM ^= 0 | 162 | | |

QUANTILES(DEF=4)

| | | | |
|---|---|---|---|
| 100% MAX | 664 | 99% | 534.216 |
| 75% Q3 | 200.5 | 95% | 355.2 |
| 50% MED | 119.5 | 90% | 305.2 |
| 25% Q1 | 63.75 | 10% | 31.9 |
| 0% MIN | 3 | 5% | 14.9 |
| | | 1% | 4.26 |
| RANGE | 661 | | |
| Q3-Q1 | 136.75 | | |
| MODE | 122 | | |

EXTREMES

| LOWEST | HIGHEST |
|---|---|
| 3 | 430 |
| 5 | 432 |
| 7 | 447 |
| 11 | 458 |
| 11 | 664 |

APPENDIX 4

COMPARISON OF TSE TRADED

STRAIGHT PREFERRED STOCK YIELD AND

THE McLEOD YOUNG WEIR

20 CORPORATE BONDS YIELD

YI = TSE Traded Straight Preferred Stock Yield

MYIELD = McLeod Young Weir 20 Corporate Bonds Yield

DIFF = The Difference between MYIELD and YI

SAS

| OBS | PERIODE | YI | MYIELD | DIFF |
|---|---|---|---|---|
| 1 | 1 | 0,0566645 | 0,0516 | 0,0050645 |
| 2 | 2 | 0,0576479 | 0,0511 | 0,0065479 |
| 3 | 3 | 0,0557225 | 0,0520 | 0,0037225 |
| 4 | 4 | 0,0564885 | 0,0523 | 0,0041885 |
| 5 | 5 | 0,0607844 | 0,0527 | 0,0080844 |
| 6 | 6 | 0,0598893 | 0,0529 | 0,0069893 |
| 7 | 7 | 0,0558822 | 0,0533 | 0,0025822 |
| 8 | 8 | 0,0577537 | 0,0560 | 0,0017537 |
| 9 | 9 | 0,0579603 | 0,0561 | 0,0018603 |
| 10 | 10 | 0,0587140 | 0,0547 | 0,0040140 |
| 11 | 11 | 0,0546702 | 0,0516 | 0,0030702 |
| 12 | 12 | 0,0557248 | 0,0504 | 0,0053248 |
| 13 | 13 | 0,0570077 | 0,0495 | 0,0075077 |
| 14 | 14 | 0,0544795 | 0,0490 | 0,0054795 |
| 15 | 15 | 0,0520872 | 0,0480 | 0,0040872 |
| 16 | 16 | 0,0524051 | 0,0486 | 0,0038051 |
| 17 | 17 | 0,0535306 | 0,0484 | 0,0051306 |
| 18 | 18 | 0,0541427 | 0,0484 | 0,0057427 |
| 19 | 19 | 0,0519147 | 0,0492 | 0,0027147 |
| 20 | 20 | 0,0585057 | 0,0496 | 0,0089057 |
| 21 | 21 | 0,0552042 | 0,0505 | 0,0047042 |
| 22 | 22 | 0,0551044 | 0,0502 | 0,0049044 |
| 23 | 23 | 0,0537352 | 0,0507 | 0,0030352 |
| 24 | 24 | 0,0546637 | 0,0518 | 0,0028637 |
| 25 | 25 | 0,0548771 | 0,0516 | 0,0032771 |
| 26 | 26 | 0,0550329 | 0,0517 | 0,0033329 |
| 27 | 27 | 0,0537132 | 0,0520 | 0,0017132 |
| 28 | 28 | 0,0538742 | 0,0523 | 0,0013742 |
| 29 | 29 | 0,0529305 | 0,0544 | -0,0014695 |
| 30 | 30 | 0,0560777 | 0,0555 | 0,0003777 |
| 31 | 31 | 0,0536592 | 0,0559 | -0,0022408 |
| 32 | 32 | 0,0544304 | 0,0578 | -0,0033696 |
| 33 | 33 | 0,0563761 | 0,0603 | -0,0039239 |
| 34 | 34 | 0,0567302 | 0,0602 | -0,0034698 |
| 35 | 35 | 0,0564113 | 0,0601 | -0,0036887 |
| 36 | 36 | 0,0553248 | 0,0609 | -0,0055752 |
| 37 | 37 | 0,0599642 | 0,0620 | -0,0020358 |
| 38 | 38 | 0,0581813 | 0,0617 | -0,0035187 |
| 39 | 39 | 0,0586632 | 0,0601 | -0,0014368 |
| 40 | 40 | 0,0588344 | 0,0592 | -0,0003656 |
| 41 | 41 | 0,0582717 | 0,0583 | -0,0000283 |
| 42 | 42 | 0,0609898 | 0,0557 | 0,0052898 |
| 43 | 43 | 0,0619092 | 0,0551 | 0,0068092 |
| 44 | 44 | 0,0606499 | 0,0535 | 0,0071499 |
| 45 | 45 | 0,0555209 | 0,0527 | 0,0028209 |
| 46 | 46 | 0,0600799 | 0,0539 | 0,0061799 |
| 47 | 47 | 0,0615857 | 0,0558 | 0,0057857 |
| 48 | 48 | 0,0680577 | 0,0553 | 0,0127577 |
| 49 | 49 | 0,0634979 | 0,0556 | 0,0078979 |
| 50 | 50 | 0,0618090 | 0,0549 | 0,0069090 |
| 51 | 51 | 0,0609717 | 0,0556 | 0,0053717 |
| 52 | 52 | 0,0589393 | 0,0561 | 0,0028393 |
| 53 | 53 | 0,0591877 | 0,0554 | 0,0037877 |
| 54 | 54 | 0,0619764 | 0,0542 | 0,0077764 |
| 55 | 55 | 0,0548737 | 0,0539 | 0,0009737 |
| 56 | 56 | 0,0613090 | 0,0541 | 0,0072090 |

SAS

| OBS | PERIODE | YI | MYIELD | DIFF |
|---|---|---|---|---|
| 57 | 57 | 0.0626801 | 0.0540 | 0.0086801 |
| 58 | 58 | 0.0625172 | 0.0536 | 0.0089172 |
| 59 | 59 | 0.0616097 | 0.0529 | 0.0087097 |
| 60 | 60 | 0.0659558 | 0.0531 | 0.0128558 |
| 61 | 61 | 0.0540817 | 0.0528 | 0.0012817 |
| 62 | 62 | 0.0651853 | 0.0526 | 0.0125853 |
| 63 | 63 | 0.0665273 | 0.0518 | 0.0147273 |
| 64 | 64 | 0.0547179 | 0.0516 | 0.0031179 |
| 65 | 65 | 0.0544832 | 0.0533 | 0.0011832 |
| 66 | 66 | 0.0561908 | 0.0570 | -0.0008092 |
| 67 | 67 | 0.0567584 | 0.0576 | -0.0008416 |
| 68 | 68 | 0.0707125 | 0.0565 | 0.0142125 |
| 69 | 69 | 0.0706036 | 0.0564 | 0.0142036 |
| 70 | 70 | 0.0712808 | 0.0545 | 0.0167808 |
| 71 | 71 | 0.0573850 | 0.0541 | 0.0032850 |
| 72 | 72 | 0.0656518 | 0.0535 | 0.0121518 |
| 73 | 73 | 0.0656260 | 0.0536 | 0.0120260 |
| 74 | 74 | 0.0538349 | 0.0541 | -0.0002651 |
| 75 | 75 | 0.0674293 | 0.0545 | 0.0129293 |
| 76 | 76 | 0.0664228 | 0.0536 | 0.0128228 |
| 77 | 77 | 0.0642845 | 0.0530 | 0.0112845 |
| 78 | 78 | 0.0682225 | 0.0534 | 0.0148225 |
| 79 | 79 | 0.0547403 | 0.0547 | 0.0000403 |
| 80 | 80 | 0.0686127 | 0.0555 | 0.0131127 |
| 81 | 81 | 0.0707081 | 0.0550 | 0.0157081 |
| 82 | 82 | 0.0545955 | 0.0544 | 0.0001955 |
| 83 | 83 | 0.0535416 | 0.0544 | -0.0008584 |
| 84 | 84 | 0.0772540 | 0.0544 | 0.0228540 |
| 85 | 85 | 0.0722642 | 0.0550 | 0.0172642 |
| 86 | 86 | 0.0632824 | 0.0552 | 0.0080824 |
| 87 | 87 | 0.0639414 | 0.0554 | 0.0085414 |
| 88 | 88 | 0.0671438 | 0.0553 | 0.0118438 |
| 89 | 89 | 0.0635200 | 0.0551 | 0.0084200 |
| 90 | 90 | 0.0627205 | 0.0552 | 0.0075205 |
| 91 | 91 | 0.0612722 | 0.0553 | 0.0059722 |
| 92 | 92 | 0.0600068 | 0.0551 | 0.0049068 |
| 93 | 93 | 0.0692297 | 0.0550 | 0.0142297 |
| 94 | 94 | 0.0590838 | 0.0549 | 0.0041838 |
| 95 | 95 | 0.0586920 | 0.0549 | 0.0037920 |
| 96 | 96 | 0.0669835 | 0.0548 | 0.0121835 |
| 97 | 97 | 0.0612086 | 0.0541 | 0.0071086 |
| 98 | 98 | 0.0618700 | 0.0537 | 0.0081700 |
| 99 | 99 | 0.0726368 | 0.0548 | 0.0178368 |
| 100 | 100 | 0.0691549 | 0.0549 | 0.0142549 |
| 101 | 101 | 0.0674540 | 0.0552 | 0.0122540 |
| 102 | 102 | 0.0606837 | 0.0564 | 0.0042837 |
| 103 | 103 | 0.0706627 | 0.0574 | 0.0132627 |
| 104 | 104 | 0.0586094 | 0.0577 | 0.0009094 |
| 105 | 105 | 0.0615861 | 0.0584 | 0.0031861 |
| 106 | 106 | 0.0679269 | 0.0584 | 0.0095269 |
| 107 | 107 | 0.0615113 | 0.0590 | 0.0025113 |
| 108 | 108 | 0.0650982 | 0.0603 | 0.0047982 |
| 109 | 109 | 0.0626692 | 0.0599 | 0.0027692 |
| 110 | 110 | 0.0660210 | 0.0615 | 0.0045210 |
| 111 | 111 | 0.0674776 | 0.0619 | 0.0055776 |
| 112 | 112 | 0.0687027 | 0.0623 | 0.0064027 |

SAS

| OBS | PERIODE | YI | MYIELD | DIFF |
|---|---|---|---|---|
| 113 | 113 | 0,0696066 | 0,0825 | 0,007107 |
| 114 | 114 | 0,0750251 | 0,0625 | 0,012525 |
| 115 | 115 | 0,0753065 | 0,0642 | 0,011107 |
| 116 | 116 | 0,0704796 | 0,0676 | 0,002880 |
| 117 | 117 | 0,0756051 | 0,0875 | 0,008105 |
| 118 | 118 | 0,0703767 | 0,0674 | 0,002977 |
| 119 | 119 | 0,0701908 | 0,0682 | 0,001991 |
| 120 | 120 | 0,0741742 | 0,0877 | 0,005474 |
| 121 | 121 | 0,0715903 | 0,0655 | 0,006090 |
| 122 | 122 | 0,0691068 | 0,0653 | 0,003867 |
| 123 | 123 | 0,0659295 | 0,0656 | 0,000330 |
| 124 | 124 | 0,0675221 | 0,0664 | 0,001122 |
| 125 | 125 | 0,0699633 | 0,0685 | 0,001463 |
| 126 | 126 | 0,0703241 | 0,0699 | 0,000424 |
| 127 | 127 | 0,0721989 | 0,0701 | 0,002099 |
| 128 | 128 | 0,0742045 | 0,0715 | 0,002705 |
| 129 | 129 | 0,0764733 | 0,0737 | 0,002773 |
| 130 | 130 | 0,0811309 | 0,0749 | 0,006231 |
| 131 | 131 | 0,0728129 | 0,0753 | -0,002487 |
| 132 | 132 | 0,0747849 | 0,0752 | -0,000415 |
| 133 | 133 | 0,0754826 | 0,0749 | 0,000583 |
| 134 | 134 | 0,0771525 | 0,0764 | 0,000752 |
| 135 | 135 | 0,0793972 | 0,0785 | 0,000897 |
| 136 | 136 | 0,0728940 | 0,0783 | -0,005406 |
| 137 | 137 | 0,0764482 | 0,0799 | -0,003452 |
| 138 | 138 | 0,0753376 | 0,0799 | -0,004562 |
| 139 | 139 | 0,0731953 | 0,0792 | -0,006005 |
| 140 | 140 | 0,0720076 | 0,0776 | -0,005592 |
| 141 | 141 | 0,0687475 | 0,0776 | -0,008852 |
| 142 | 142 | 0,0699004 | 0,0790 | -0,009100 |
| 143 | 143 | 0,0691865 | 0,0797 | -0,010513 |
| 144 | 144 | 0,0699912 | 0,0811 | -0,011109 |
| 145 | 145 | 0,0695715 | 0,0818 | -0,012229 |
| 146 | 146 | 0,0712361 | 0,0822 | -0,010964 |
| 147 | 147 | 0,0737249 | 0,0834 | -0,009575 |
| 148 | 148 | 0,0725040 | 0,0831 | -0,010596 |
| 149 | 149 | 0,0735074 | 0,0851 | -0,011593 |
| 150 | 150 | 0,0775083 | 0,0879 | -0,010392 |
| 151 | 151 | 0,0806447 | 0,0887 | -0,008055 |
| 152 | 152 | 0,0783281 | 0,0888 | -0,010472 |
| 153 | 153 | 0,0790266 | 0,0887 | -0,009673 |
| 154 | 154 | 0,0802732 | 0,0890 | -0,008727 |
| 155 | 155 | 0,0801982 | 0,0906 | -0,010402 |
| 156 | 156 | 0,0824653 | 0,0932 | -0,010739 |
| 157 | 157 | 0,0850975 | 0,0936 | -0,008502 |
| 158 | 158 | 0,0855822 | 0,0933 | -0,007738 |
| 159 | 159 | 0,0837284 | 0,0928 | -0,009072 |
| 160 | 160 | 0,0872500 | 0,0927 | -0,005450 |
| 161 | 161 | 0,0893693 | 0,0934 | -0,004031 |
| 162 | 162 | 0,0897792 | 0,0930 | -0,003221 |
| 163 | 163 | 0,0887199 | 0,0918 | -0,003080 |
| 164 | 164 | 0,0872848 | 0,0923 | -0,005015 |
| 165 | 165 | 0,0864769 | 0,0921 | -0,005623 |
| 166 | 166 | 0,0859662 | 0,0925 | -0,006534 |
| 167 | 167 | 0,0847345 | 0,0909 | -0,006165 |
| 168 | 168 | 0,0846682 | 0,0887 | -0,004032 |

SAS

| OBS | PERIODE | YI | MYIELD | DIFF |
|---|---|---|---|---|
| 169 | 169 | 0,0784818 | 0,0816 | =0,003138 |
| 170 | 170 | 0,0791382 | 0,0833 | =0,004162 |
| 171 | 171 | 0,0792329 | 0,0841 | =0,004847 |
| 172 | 172 | 0,0772819 | 0,0849 | =0,007618 |
| 173 | 173 | 0,0773464 | 0,0853 | =0,007954 |
| 174 | 174 | 0,0765360 | 0,0864 | =0,009864 |
| 175 | 175 | 0,0765052 | 0,0868 | =0,010295 |
| 176 | 176 | 0,0767770 | 0,0852 | =0,008423 |
| 177 | 177 | 0,0787422 | 0,0841 | =0,005358 |
| 178 | 178 | 0,0783245 | 0,0827 | =0,004376 |
| 179 | 179 | 0,0766946 | 0,0819 | =0,005205 |
| 180 | 180 | 0,0757488 | 0,0830 | =0,007251 |
| 181 | 181 | 0,0744576 | 0,0826 | =0,008142 |
| 182 | 182 | 0,0735317 | 0,0822 | =0,008668 |
| 183 | 183 | 0,0732238 | 0,0825 | =0,009276 |
| 184 | 184 | 0,0730878 | 0,0830 | =0,009912 |
| 185 | 185 | 0,0723121 | 0,0833 | =0,010988 |
| 186 | 186 | 0,0727492 | 0,0839 | =0,011151 |
| 187 | 187 | 0,0729455 | 0,0838 | =0,010854 |
| 188 | 188 | 0,0733114 | 0,0844 | =0,011089 |
| 189 | 189 | 0,0728545 | 0,0851 | =0,012248 |
| 190 | 190 | 0,0744785 | 0,0845 | =0,010021 |
| 191 | 191 | 0,0727587 | 0,0825 | =0,009741 |
| 192 | 192 | 0,0720057 | 0,0817 | =0,009694 |
| 193 | 193 | 0,0696720 | 0,0818 | =0,012128 |
| 194 | 194 | 0,0705490 | 0,0819 | =0,011351 |
| 195 | 195 | 0,0696208 | 0,0824 | =0,012779 |
| 196 | 196 | 0,0703380 | 0,0831 | =0,012762 |
| 197 | 197 | 0,0712770 | 0,0845 | =0,013223 |
| 198 | 198 | 0,0713166 | 0,0845 | =0,013183 |
| 199 | 199 | 0,0728615 | 0,0856 | =0,012738 |
| 200 | 200 | 0,0734971 | 0,0873 | =0,013803 |
| 201 | 201 | 0,0737408 | 0,0862 | =0,012459 |
| 202 | 202 | 0,0728513 | 0,0864 | =0,013549 |
| 203 | 203 | 0,0747236 | 0,0873 | =0,012576 |
| 204 | 204 | 0,0754599 | 0,0885 | =0,013040 |
| 205 | 205 | 0,0748187 | 0,0900 | =0,015181 |
| 206 | 206 | 0,0777309 | 0,0900 | =0,012269 |
| 207 | 207 | 0,0771080 | 0,0925 | =0,015392 |
| 208 | 208 | 0,0800450 | 0,0997 | =0,019655 |
| 209 | 209 | 0,0827225 | 0,1016 | =0,018877 |
| 210 | 210 | 0,0849616 | 0,1047 | =0,019738 |
| 211 | 211 | 0,0855497 | 0,1083 | =0,022750 |
| 212 | 212 | 0,0893112 | 0,1105 | =0,021189 |
| 213 | 213 | 0,0927642 | 0,1100 | =0,017236 |
| 214 | 214 | 0,0910768 | 0,1046 | =0,013523 |
| 215 | 215 | 0,0909637 | 0,1034 | =0,012436 |
| 216 | 216 | 0,0946488 | 0,1076 | =0,012951 |
| 217 | 217 | 0,0872645 | 0,1042 | =0,016936 |
| 218 | 218 | 0,0842688 | 0,1000 | =0,015731 |
| 219 | 219 | 0,0868553 | 0,1018 | =0,014945 |
| 220 | 220 | 0,0891424 | 0,1075 | =0,018358 |
| 221 | 221 | 0,0898049 | 0,1065 | =0,016695 |
| 222 | 222 | 0,0914287 | 0,1056 | =0,014171 |
| 223 | 223 | 0,0911962 | 0,1092 | =0,018004 |
| 224 | 224 | 0,0910388 | 0,1092 | =0,018161 |

SAS

| OBS | PERIODE | YI | MYIELD | DIFF |
|---|---|---|---|---|
| 225 | 225 | 0,0917737 | 0,1137 | =0,021926 |
| 226 | 226 | 0,0935670 | 0,1112 | =0,017633 |
| 227 | 227 | 0,0926524 | 0,1113 | =0,018648 |
| 228 | 228 | 0,0932444 | 0,1102 | =0,016956 |
| 229 | 229 | 0,0898604 | 0,1072 | =0,017540 |
| 230 | 230 | 0,0903760 | 0,1068 | =0,016424 |
| 231 | 231 | 0,0910670 | 0,1080 | =0,016933 |
| 232 | 232 | 0,0916259 | 0,1064 | =0,014774 |
| 233 | 233 | 0,0904615 | 0,1057 | =0,015238 |
| 234 | 234 | 0,0895387 | 0,1069 | =0,017361 |
| 235 | 235 | 0,0896733 | 0,1062 | =0,016527 |
| 236 | 236 | 0,0901935 | 0,1039 | =0,013707 |
| 237 | 237 | 0,0902044 | 0,1029 | =0,012696 |
| 238 | 238 | 0,0899108 | 0,1021 | =0,012189 |
| 239 | 239 | 0,0904686 | 0,1003 | =0,009831 |
| 240 | 240 | 0,0882889 | 0,0970 | =0,008731 |
| 241 | 241 | 0,0875959 | 0,0967 | =0,009104 |
| 242 | 242 | 0,0853576 | 0,0975 | =0,012142 |
| 243 | 243 | 0,0871076 | 0,0983 | =0,011192 |
| 244 | 244 | 0,0858757 | 0,0978 | =0,011924 |
| 245 | 245 | 0,0825031 | 0,0967 | =0,014197 |
| 246 | 246 | 0,0815197 | 0,0959 | =0,014380 |
| 247 | 247 | 0,0801233 | 0,0961 | =0,015977 |
| 248 | 248 | 0,0798690 | 0,0955 | =0,015631 |
| 249 | 249 | 0,0792765 | 0,0949 | =0,015624 |
| 250 | 250 | 0,0788121 | 0,0956 | =0,016788 |
| 251 | 251 | 0,0798149 | 0,0961 | =0,016285 |
| 252 | 252 | 0,0797625 | 0,0963 | =0,016538 |
| 253 | 253 | 0,0805651 | 0,0986 | =0,018035 |
| 254 | 254 | 0,0812598 | 0,0995 | =0,018240 |
| 255 | 255 | 0,0813992 | 0,0994 | =0,018001 |
| 256 | 256 | 0,0811503 | 0,0996 | =0,018480 |
| 257 | 257 | 0,0791941 | 0,0994 | =0,020206 |
| 258 | 258 | 0,0776977 | 0,0993 | =0,021602 |
| 259 | 259 | 0,0778022 | 0,0987 | =0,020898 |
| 260 | 260 | 0,0766620 | 0,0988 | =0,022138 |
| 261 | 261 | 0,0779987 | 0,0992 | =0,021201 |
| 262 | 262 | 0,0791164 | 0,1028 | =0,023584 |
| 263 | 263 | 0,0793444 | 0,1027 | =0,023356 |
| 264 | 264 | 0,0797020 | 0,1035 | =0,023798 |
| 265 | 265 | 0,0793084 | 0,1048 | =0,025492 |
| 266 | 266 | 0,0797845 | 0,1054 | =0,025605 |
| 267 | 267 | 0,0789392 | 0,1049 | =0,025961 |
| 268 | 268 | 0,0773090 | 0,1032 | =0,025891 |
| 269 | 269 | 0,0775799 | 0,1032 | =0,025620 |
| 270 | 270 | 0,0773393 | 0,1036 | =0,026241 |
| 271 | 271 | 0,0791554 | 0,1054 | =0,026245 |
| 272 | 272 | 0,0797932 | 0,1084 | =0,028607 |
| 273 | 273 | 0,0815387 | 0,1111 | =0,029561 |
| 274 | 274 | 0,0854413 | 0,1196 | =0,034159 |
| 275 | 275 | 0,0867302 | 0,1171 | =0,030370 |
| 276 | 276 | 0,0861356 | 0,1205 | =0,034364 |
| 277 | 277 | 0,0868168 | 0,1279 | =0,041083 |
| 278 | 278 | 0,0893597 | 0,1335 | =0,044140 |
| 279 | 279 | 0,0954872 | 0,1389 | =0,043413 |
| 280 | 280 | 0,0927344 | 0,1288 | =0,036066 |

SAS

| OBS | PERIODE | YI | MYIELD | DIFF |
|---|---|---|---|---|
| 281 | 281 | 0,0882075 | 0,1231 | -0,034893 |
| 282 | 282 | 0,0901733 | 0,1217 | -0,031527 |
| 283 | 283 | 0,0904144 | 0,1318 | -0,041385 |
| 284 | 284 | 0,0932509 | 0,1337 | -0,040449 |
| 285 | 285 | 0,0958447 | 0,1378 | -0,04195* |

VARIABLE=MYIELD

MOMENTS

| | | | |
|---|---|---|---|
| N | 285 | SUM WGTS | 285 |
| MEAN | 0,0779891 | SUM | 22,2269 |
| STD DEV | 0,0224398 | VARIANCE | ,000503545 |
| SKEWNESS | 0,403788 | KURTOSIS | -0,86203 |
| USS | 1,87646 | CSS | 0,143007 |
| CV | 28,773 | STD MEAN | 0,00132922 |
| T:MEAN=0 | 58,6729 | PROB>\|T\| | 0,0001 |
| SGN RANK | 20377,5 | PROB>\|S\| | 0,0001 |
| NUM ^= 0 | 285 | | |

QUANTILES(DEF=4)

| | | | |
|---|---|---|---|
| 100% MAX | 0,1389 | 99% | 0,134274 |
| 75% Q3 | 0,0964999 | 95% | 0,11127 |
| 50% MED | 0,0799 | 90% | 0,10634 |
| 25% Q1 | 0,0552 | 10% | 0,05286 |
| 0% MIN | 0,048 | 5% | 0,0516 |
| | | 1% | 0,0484 |
| RANGE | 0,0909 | | |
| Q3-Q1 | 0,0413 | | |
| MODE | 0,0516 | | |

EXTREMES

| LOWEST | HIGHEST |
|---|---|
| 0,048 | 0,1318 |
| 0,0484 | 0,1335 |
| 0,0484 | 0,1337 |
| 0,0486 | 0,1378 |
| 0,049 | 0,1389 |

VARIABLE=DIFF

MOMENTS

| | | | |
|---|---|---|---|
| N | 285 | SUM WGTS | 285 |
| MEAN | -.00552191 | SUM | -1.57375 |
| STD DEV | 0.0127699 | VARIANCE | 0.00016307 |
| SKEWNESS | -0.543788 | KURTOSIS | -0.137419 |
| USS | 0.0550018 | CSS | 0.0463117 |
| CV | -231.258 | STD MEAN | .000756422 |
| T:MEAN=0 | -7.30005 | PROB>\|T\| | 0.0001 |
| SGN RANK | -8787.5 | PROB>\|S\| | 0.0001 |
| NUM ^= 0 | 285 | | |

QUANTILES(DEF=4)

| | | | | | |
|---|---|---|---|---|---|
| 100% | MAX | 0.022854 | 99% | | 0.0173443 |
| 75% | Q3 | 0.00418615 | 95% | | 0.0129073 |
| 50% | MED | -.00456235 | 90% | | 0.0089103 |
| 25% | Q1 | -0.013536 | 10% | | -0.0213617 |
| 0% | MIN | -0.0441403 | 5% | | -0.0278981 |
| | | | 1% | | -0.0481594 |
| RANGE | | 0.0669943 | | | |
| Q3-Q1 | | 0.0177221 | | | |
| MODE | | -0.0441403 | | | |

EXTREMES

| LOWEST | HIGHEST |
|---|---|
| -0.0441403 | 0.0157081 |
| -0.0434128 | 0.0167808 |
| -0.0419553 | 0.0172642 |
| -0.0413856 | 0.0178368 |
| -0.0410832 | 0.022854 |

VARIABLE=YI MEAN OF YIELD

MOMENTS

| | | | |
|---|---|---|---|
| N | 285 | SUM WGTS | 285 |
| MEAN | 0,0724672 | SUM | 20,6532 |
| STD DEV | 0,0117563 | VARIANCE | 0,00013821 |
| SKEWNESS | 0,0228689 | KURTOSIS | -1,03519 |
| USS | 1,53593 | CSS | 0,0392517 |
| CV | 16,2229 | STD MEAN | ,000696382 |
| T:MEAN=0 | 104,062 | PROB>\|T\| | 0,0001 |
| SGN RANK | 20377,5 | PROB>\|S\| | 0,0001 |
| NUM ^= 0 | 285 | | |

QUANTILES(DEF=4)

| | | | |
|---|---|---|---|
| 100% MAX | 0,0958447 | 99% | 0,094766 |
| 75% Q3 | 0,0802357 | 95% | 0,0910738 |
| 50% MED | 0,0728545 | 90% | 0,0895856 |
| 25% Q1 | 0,0617094 | 10% | 0,0556418 |
| 0% MIN | 0,0519147 | 5% | 0,0544451 |
| | | 1% | 0,0523606 |
| RANGE | 0,04393 | | |
| Q3-Q1 | 0,0185263 | | |
| MODE | 0,0519147 | | |

EXTREMES

| LOWEST | HIGHEST |
|---|---|
| 0,0519147 | 0,0932505 |
| 0,0520872 | 0,093567 |
| 0,0524051 | 0,0946487 |
| 0,0529305 | 0,0954871 |
| 0,0535306 | 0,0958447 |

# APPENDIX 5

## DESCRIPTIVE STATISTICS ON THE RETURN OF TREASURY BILLS, BONDS, PREFERRED STOCKS AND COMMON STOCKS

RTBA = Return of Treasury Bills

RMYW = Return of Bonds

SERIE8 = Return of Preferred Stocks

TSE = Return of Common Stocks

VARIABLE=RTBA

MOMENTS

| | | | |
|---|---|---|---|
| N | 284 | SUM WGTS | 284 |
| MEAN | 0.00473636 | SUM | 1.34512 |
| STD DEV | 0.00221546 | VARIANCE | 4.908E-06 |
| SKEWNESS | 1.05598 | KURTOSIS | 0.911733 |
| USS | 0.00776003 | CSS | 0.00138904 |
| CV | 46.7756 | STD MEAN | .000131463 |
| T:MEAN=0 | 36.028 | PROB>\|T\| | 0.0001 |
| SGN RANK | 20235 | PROB>\|S\| | 0.0001 |
| NUM ¬= 0 | 284 | | |

QUANTILES(DEF=4)

| | | | |
|---|---|---|---|
| 100% | MAX 0.0130333 | 99% | 0.0114483 |
| 75% | Q3 0.00604791 | 95% | 0.00903333 |
| 50% | MED 0.0041875 | 90% | 0.00752916 |
| 25% | Q1 0.00305417 | 10% | 0.00258333 |
| 0% | MIN 0.001075 | 5% | 0.00218333 |
| | | 1% | 0.00126875 |
| RANGE | 0.0119583 | | |
| Q3-Q1 | 0.00299375 | | |
| MODE | 0.00305 | | |

EXTREMES

| LOWEST | HIGHEST |
|---|---|
| 0.001075 | 0.0113 |
| 0.00109167 | 0.0113417 |
| 0.0013 | 0.0113583 |
| 0.00139167 | 0.0119583 |
| 0.00145833 | 0.0130333 |

VARIABLE=RMYW

MOMENTS

| | | | |
|---|---|---|---|
| N | 284 | SUM WGTS | 284 |
| MEAN | 0.00402969 | SUM | 1.14443 |
| STD DEV | 0.0157669 | VARIANCE | .000248596 |
| SKEWNESS | 0.230427 | KURTOSIS | 4.24485 |
| USS | 0.0749643 | CSS | 0.0703526 |
| CV | 391.268 | STD MEAN | .000935595 |
| T:MEAN=0 | 4.30709 | PROB>\|T\| | 0.0001 |
| SGN RANK | 7438 | PROB>\|S\| | 0.0001 |
| NUM ^= 0 | 283 | | |

QUANTILES(DEF=4)

| | | | |
|---|---|---|---|
| 100% | MAX 0.0779051 | 99% | 0.0552625 |
| 75% | Q3 0.0110744 | 95% | 0.0273578 |
| 50% | MED0.00432234 | 90% | 0.0193952 |
| 25% | Q1 -.00307748 | 10% | -0.0137295 |
| 0% | MIN-0.0538032 | 5% | -0.021441 |
| | | 1% | -0.0496154 |
| RANGE | 0.131708 | | |
| Q3-Q1 | 0.0141519 | | |
| MODE | -0.0538032 | | |

EXTREMES

| LOWEST | HIGHEST |
|---|---|
| -0.0538032 | 0.04775 |
| -0.0513383 | 0.0484867 |
| -0.0493114 | 0.0522436 |
| -0.0387 | 0.072383 |
| -0.0382303 | 0.0779051 |

VARIABLE=SERIE8

MOMENTS

| | | | |
|---|---|---|---|
| N | 284 | SUM WGTS | 284 |
| MEAN | 0.00563716 | SUM | 1.60095 |
| STD DEV | 0.0164301 | VARIANCE | .000269948 |
| SKEWNESS | 1.23515 | KURTOSIS | 7.27608 |
| USS | 0.0854202 | CSS | 0.0763953 |
| CV | 291.461 | STD MEAN | .000974947 |
| T:MEAN=0 | 5.78201 | PROB>\|T\| | 0.0001 |
| SGN RANK | 8688 | PROB>\|S\| | 0.0001 |
| NUM ^= 0 | 284 | | |

QUANTILES(DEF=4)

| | | | |
|---|---|---|---|
| 100% MAX | 0.108612 | 99% | 0.0647993 |
| 75% Q3 | 0.0118323 | 95% | 0.0301454 |
| 50% MED | 0.00538176 | 90% | 0.022787 |
| 25% Q1 | -.00242282 | 10% | -0.0114799 |
| 0% MIN | -0.0503377 | 5% | -0.0206399 |
| | | 1% | -0.0355426 |

| | |
|---|---|
| RANGE | 0.158949 |
| Q3-Q1 | 0.0142551 |
| MODE | -0.0503377 |

EXTREMES

| LOWEST | HIGHEST |
|---|---|
| -0.0503377 | 0.0547077 |
| -0.0405377 | 0.0571863 |
| -0.0346611 | 0.0623071 |
| -0.0311213 | 0.0789326 |
| -0.025371 | 0.108612 |

VARIABLE=TSE

MOMENTS

| | | | |
|---|---|---|---|
| N | 285 | SUM WGTS | 285 |
| MEAN | 0.00878561 | SUM | 2.5039 |
| STD DEV | 0.0431649 | VARIANCE | 0.00186321 |
| SKEWNESS | -0.438205 | KURTOSIS | 1.49406 |
| USS | 0.55115 | CSS | 0.529151 |
| CV | 491.313 | STD MEAN | 0.00255687 |
| T:MEAN=0 | 3.43608 | PROB>\|T\| | .000678378 |
| SGN RANK | 5810.5 | PROB>\|S\| | 0.0001 |
| NUM ^= 0 | 285 | | |

QUANTILES(DEF=4)

| | | | |
|---|---|---|---|
| 100% MAX | 0.1645 | 99% | 0.106032 |
| 75% Q3 | 0.0352 | 95% | 0.0699099 |
| 50% MED | 0.0128 | 90% | 0.0552399 |
| 25% Q1 | -0.0154 | 10% | -0.0459 |
| 0% MIN | -0.1772 | 5% | -0.06735 |
| | | 1% | -0.106222 |
| RANGE | 0.3417 | | |
| Q3-Q1 | 0.0506 | | |
| MODE | -0.0154 | | |

EXTREMES

| LOWEST | HIGHEST |
|---|---|
| -0.1772 | 0.0962999 |
| -0.1082 | 0.0991 |
| -0.1059 | 0.1035 |
| -0.0991 | 0.1216 |
| -0.0962999 | 0.1645 |

# APPENDIX 6

## TABLES FOR TESTING SKEWNESS AND KURTOSIS

TABLE A 6

(i) TABLE FOR TESTING SKEWNESS

(One-tailed percentage points of the distribution of $\sqrt{b_1} = g_1 = m_3/m_2^{3/2}$)*

| Size of Sample $n$ | Percentage Points 5% | 1% | Standard Deviation | Size of Sample $n$ | Percentage Points 5% | 1% | Standard Deviation |
|---|---|---|---|---|---|---|---|
| 25 | 0.711 | 1.061 | 0.4354 | 100 | 0.389 | 0.567 | 0.2377 |
| 30 | 0.662 | 0.986 | .4052 | 125 | 0.350 | 0.508 | .2139 |
| 35 | 0.621 | 0.923 | .3804 | 150 | 0.321 | 0.464 | .1961 |
| 40 | 0.587 | 0.870 | .3596 | 175 | 0.298 | 0.430 | .1820 |
| 45 | 0.558 | 0.825 | .3418 | 200 | 0.280 | 0.403 | .1706 |
| 50 | 0.534 | 0.787 | .3264 | | | | |
| | | | | 250 | 0.251 | 0.360 | .1531 |
| 60 | 0.492 | 0.723 | .3009 | 300 | 0.230 | 0.329 | .1400 |
| 70 | 0.459 | 0.673 | .2806 | 350 | 0.213 | 0.305 | .1298 |
| 80 | 0.432 | 0.631 | .2638 | 400 | 0.200 | 0.285 | .1216 |
| 90 | 0.409 | 0.596 | .2498 | 450 | 0.188 | 0.269 | .1147 |
| 100 | 0.389 | 0.567 | .2377 | 500 | 0.179 | 0.255 | .1089 |

* Since the distribution of $\sqrt{b_1}$ is symmetrical about zero, the percentage points represent 10% and 2% two-tailed values. Reproduced from Table 34 B of *Tables for Statisticians and Biometricians*, Vol. 1, by permission of Dr. E. S. Pearson and the *Biometrika* Trustees.

TABLE A 6—(*Continued*)

(ii) TABLE FOR TESTING KURTOSIS

(Percentage points of the distribution of $b_2 = m_4/m_2^2$)*

| Size of Sample $n$ | Percentage Points Upper 1% | Upper 5% | Lower 5% | Lower 1% | Size of Sample $n$ | Percentage Points Upper 1% | Upper 5% | Lower 5% | Lower 1% |
|---|---|---|---|---|---|---|---|---|---|
| 50 | 4.88 | 3.99 | 2.15 | 1.95 | 600 | 3.54 | 3.34 | 2.70 | 2.60 |
| 75 | 4.59 | 3.87 | 2.27 | 2.03 | 650 | 3.52 | 3.33 | 2.71 | 2.61 |
| 100 | 4.39 | 3.77 | 2.35 | 2.18 | 700 | 3.50 | 3.31 | 2.72 | 2.62 |
| 125 | 4.24 | 3.71 | 2.40 | 2.24 | 750 | 3.48 | 3.30 | 2.73 | 2.64 |
| 150 | 4.13 | 3.65 | 2.45 | 2.29 | 800 | 3.46 | 3.29 | 2.74 | 2.65 |
| | | | | | 850 | 3.45 | 3.28 | 2.74 | 2.66 |
| 200 | 3.98 | 3.57 | 2.51 | 2.37 | 900 | 3.43 | 3.28 | 2.75 | 2.66 |
| 250 | 3.87 | 3.52 | 2.55 | 2.42 | 950 | 3.42 | 3.27 | 2.76 | 2.67 |
| 300 | 3.79 | 3.47 | 2.59 | 2.46 | 1000 | 3.41 | 3.26 | 2.76 | 2.68 |
| 350 | 3.72 | 3.44 | 2.62 | 2.50 | | | | | |
| 400 | 3.67 | 3.41 | 2.64 | 2.52 | 1200 | 3.37 | 3.24 | 2.78 | 2.71 |
| 450 | 3.63 | 3.39 | 2.66 | 2.55 | 1400 | 3.34 | 3.22 | 2.80 | 2.72 |
| 500 | 3.60 | 3.37 | 2.67 | 2.57 | 1600 | 3.32 | 3.21 | 2.81 | 2.74 |
| 550 | 3.57 | 3.35 | 2.69 | 2.58 | 1800 | 3.30 | 3.20 | 2.82 | 2.76 |
| 600 | 3.54 | 3.34 | 2.70 | 2.60 | 2000 | 3.28 | 3.18 | 2.83 | 2.77 |

* Reproduced from Table 34 C of *Tables for Statisticians and Biometricians*, by permission of Dr. E. S. Pearson and the *Biometrika* Trustees.

1. From Snedecor and Cochran, Statistical Methods, Sixth Edition, The Iowa State University Press, Ames, Iowa, U.S.A., 1967, p. 552.

APPENDIX 7

PLOT OF THE AVERAGE MONTHLY

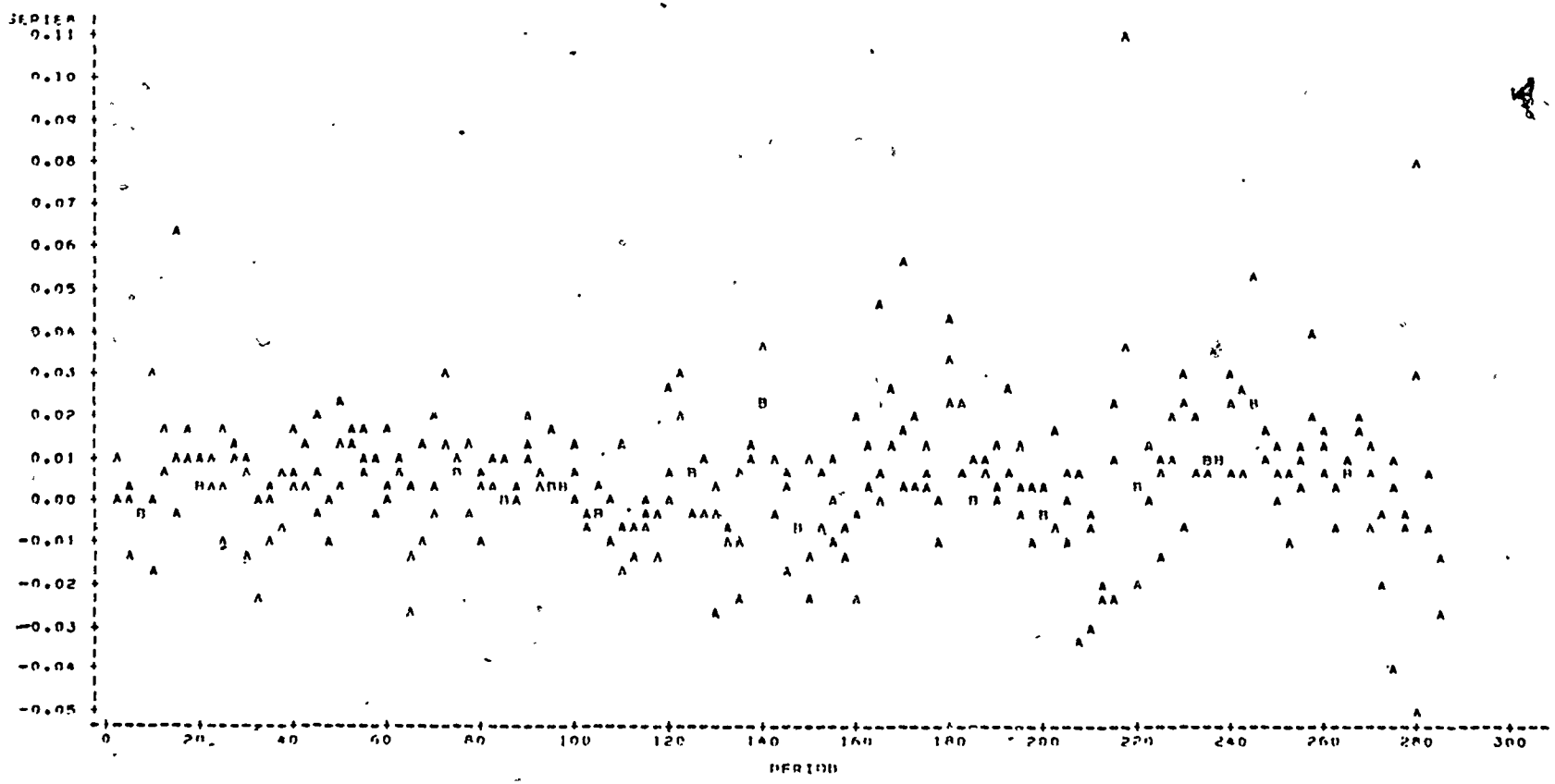
RETURNS FOR TSE TRADED STRAIGHT

PREFERRED STOCKS

SERIE8 = Average Monthly Returns for TSE Traded Straight Preferred Stocks

PERIOD = Months (1 for January 1957 and 285 for September 1980)

PLOT OF SERIES*PERIODE LEGEND: A = 1 OBS, B = 2 OBS, ETC.



# APPENDIX 8

## ESTIMATES OF THE CAPM FOR THE RETURN OF TSE TRADED STRAIGHT PREFERRED STOCK PORTFOLIOS

$RMD = (R_m - R_f)$

$RID = (R_i - R_f)$

A Portfolio of 30 Stocks over the Period
February 1957 to September 1980

DEP VARIABLE: RID

| SOURCE | DF | SUM OF SQUARES | MEAN SQUARE | F VALUE | PROB>F |
|---|---|---|---|---|---|
| MODEL | 1 | 0.235952 | 0.235952 | 637.103 | 0.0001 |
| ERROR | 282 | 0.104439 | 0.0003703514 | | |
| C TOTAL | 283 | 0.340391 | | | |

| | | | |
|---|---|---|---|
| ROOT MSE | 0.019245 | R-SQUARE | 0.6932 |
| DEP MEAN | -0.052626 | ADJ R-SQ | 0.6921 |
| C.V. | -36.5687 | | |

| VARIABLE | DF | PARAMETER ESTIMATE | STANDARD ERROR | T FOR H0: PARAMETER=0 | PROB > \|T\| |
|---|---|---|---|---|---|
| INTERCEP | 1 | -0.00654638 | 0.00215332 | -3.040 | 0.0026 |
| RMD | 1 | 0.894735 | 0.035448 | 25.241 | 0.0001 |

A Portfolio of 30 Stocks over the Period
October 1960 to September 1965

DEP VARIABLE: RID

| SOURCE | DF | SUM OF SQUARES | MEAN SQUARE | F VALUE | PROB>F |
|---|---|---|---|---|---|
| MODEL | 1 | 0.00667438 | 0.00667438 | 43.993 | 0.0001 |
| ERROR | 58 | 0.008799502 | 0.0001517155 | | |
| C TOTAL | 59 | 0.015474 | | | |

| | | | |
|---|---|---|---|
| ROOT MSE | 0.012317 | R-SQUARE | 0.4313 |
| DEP MEAN | -0.031398 | ADJ R-SQ | 0.4215 |
| C.V. | -39.2301 | | |

| VARIABLE | DF | PARAMETER ESTIMATE | STANDARD ERROR | T FOR H0: PARAMETER=0 | PROB > \|T\| |
|---|---|---|---|---|---|
| INTERCEP | 1 | -0.00960849 | 0.003649714 | -2.633 | 0.0108 |
| RMD | 1 | 0.731847 | 0.110339 | 6.633 | 0.0001 |

A Portfolio of 30 Stocks over the Period
October 1965 yo September 1970

DEP VARIABLE: RID

| SOURCE | DF | SUM OF SQUARES | MEAN SQUARE | F VALUE | PROB>F |
|---|---|---|---|---|---|
| MODEL | 1 | 0.017033 | 0.017033 | 80.985 | 0.0001 |
| ERROR | 58 | 0.012199 | 0.0002103256 | | |
| C TOTAL | 59 | 0.029232 | | | |

| | | | |
|---|---|---|---|
| ROOT MSE | 0.014503 | R-SQUARE | 0.5827 |
| DEP MEAN | -0.056373 | ADJ R-SQ | 0.5755 |
| C.V. | -25.7263 | | |

| VARIABLE | DF | PARAMETER ESTIMATE | STANDARD ERROR | T FOR HO: PARAMETER=0 | PROB > \|T\| |
|---|---|---|---|---|---|
| INTERCEP | 1 | -0.00715597 | 0.005780628 | -1.238 | 0.2207 |
| RMD | 1 | 0.875301 | 0.097265 | 8.999 | 0.0001 |

A Portfolio of 30 Stocks over the Period
October 1970 to September 1975

DEP VARIABLE: RID

| SOURCE | DF | SUM OF SQUARES | MEAN SQUARE | F VALUE | PROB>F |
|---|---|---|---|---|---|
| MODEL | 1 | 0.073057 | 0.073057 | 231.021 | 0.0001 |
| ERROR | 58 | 0.018342 | 0.0003162364 | | |
| C TOTAL | 59 | 0.091399 | | | |

| | | | |
|---|---|---|---|
| ROOT MSE | 0.017783 | R-SQUARE | 0.7993 |
| DEP MEAN | -0.047852 | ADJ R-SQ | 0.7959 |
| C.V. | -37.1626 | | |

| VARIABLE | DF | PARAMETER ESTIMATE | STANDARD ERROR | T FOR H0: PARAMETER=0 | PROB > \|T\| |
|---|---|---|---|---|---|
| INTERCEP | 1 | 0.002907019 | 0.004052546 | 0.717 | 0.4760 |
| RMD | 1 | 1.058816 | 0.069662 | 15.199 | 0.0001 |

A Portfolio of 30 Stocks over the Period
October 1975 to September 1980

DEP VARIABLE: RID

| SOURCE | DF | SUM OF SQUARES | MEAN SQUARE | F VALUE | PROB>F |
|---|---|---|---|---|---|
| MODEL | 1 | 0.057002 | 0.057002 | 349.687 | 0.0001 |
| ERROR | 58 | 0.009454447 | 0.000163007 | | |
| C TOTAL | 59 | 0.066456 | | | |

| | | | |
|---|---|---|---|
| ROOT MSE | 0.012767 | R-SQUARE | 0.8577 |
| DEP MEAN | -0.087179 | ADJ R-SQ | 0.8553 |
| C.V. | -14.6451 | | |

| VARIABLE | DF | PARAMETER ESTIMATE | STANDARD ERROR | T FOR H0: PARAMETER=0 | PROB > \|T\| |
|---|---|---|---|---|---|
| INTERCEP | 1 | 0.0005885607 | 0.004974476 | 0.118 | 0.9062 |
| RMD | 1 | 1.016784 | 0.054374 | 18.700 | 0.0001 |

APPENDIX 9

DISTRIBUTION OF BETAS FOR

TSE TRADED STRAIGHT

PREFERRED STOCK ISSUES

RMD = Beta

Betas Estimated over the Period
1957-1980

VARIABLE=RMD

MOMENTS

| | | | |
|---|---|---|---|
| N | 277 | SUM WGTS | 277 |
| MEAN | 0.87998 | SUM | 243.754 |
| STD DEV | 0.49017 | VARIANCE | 0.240266 |
| SKEWNESS | -7.8622 | KURTOSIS | 106.214 |
| USS | 280.813 | CSS | 66.3135 |
| CV | 55.7024 | STD MEAN | 0.0294514 |
| T:MEAN=0 | 29.879 | PROB>\|T\| | 0.0001 |
| SGN RANK | 18973.5 | PROB>\|S\| | 0.0001 |
| NUM ^= 0 | 277 | | |

QUANTILES(DEF=4)

| | | | |
|---|---|---|---|
| 100% MAX | 2.54364 | 99% | 1.91866 |
| 75% Q3 | 1.03016 | 95% | 1.379 |
| 50% MED | 0.887892 | 90% | 1.22963 |
| 25% Q1 | 0.733165 | 10% | 0.555369 |
| 0% MIN | -5.52774 | 5% | 0.438524 |
| | | 1% | 0.0764921 |
| RANGE | 8.07138 | | |
| Q3-Q1 | 0.296992 | | |
| MODE | -5.52774 | | |

EXTREMES

| LOWEST | HIGHEST |
|---|---|
| -5.52774 | 1.77022 |
| -0.0657533 | 1.83971 |
| 0.116613 | 1.89533 |
| 0.22464 | 2.00138 |
| 0.23156 | 2.54364 |

Betas Estimated over the Period
October 1960 to September 1965

VARIABLE=RMD

MOMENTS

| | | | |
|---|---|---|---|
| N | 78 | SUM WGTS | 78 |
| MEAN | 0.680423 | SUM | 53.073 |
| STD DEV | 0.60319 | VARIANCE | 0.363839 |
| SKEWNESS | 2.57365 | KURTOSIS | 13.9398 |
| USS | 64.1276 | CSS | 28.0156 |
| CV | 88.6493 | STD MEAN | 0.0682979 |
| T:MEAN=0 | 9.96258 | PROB>\|T\| | 0.0001 |
| SGN RANK | 1461.5 | PROB>\|S\| | 0.0001 |
| NUM ^= 0 | 78 | | |

QUANTILES(DEF=4)

| | | | |
|---|---|---|---|
| 100% MAX | 4.17965 | 99% | 4.17965 |
| 75% Q3 | 0.939924 | 95% | 1.57547 |
| 50% MED | 0.563091 | 90% | 1.40433 |
| 25% Q1 | 0.33077 | 10% | 0.192913 |
| 0% MIN | -0.568265 | 5% | 0.0330915 |
| | | 1% | -0.568265 |
| RANGE | 4.74791 | | |
| Q3-Q1 | 0.609153 | | |
| MODE | -0.568265 | | |

EXTREMES

| LOWEST | HIGHEST |
|---|---|
| -0.568265 | 1.56486 |
| -0.450913 | 1.57464 |
| -0.326044 | 1.59119 |
| 0.0519938 | 1.79441 |
| 0.0977622 | 4.17965 |

Betas Estimated over the Period
October 1965 to September 1970

VARIABLE=RMD

MOMENTS

| | | | |
|---|---|---|---|
| N | 135 | SUM WGTS | 135 |
| MEAN | 0.852664 | SUM | 115.11 |
| STD DEV | 0.63802 | VARIANCE | 0.407069 |
| SKEWNESS | 3.1163 | KURTOSIS | 13.3318 |
| USS | 152.697 | CSS | 54.5473 |
| CV | 74.8267 | STD MEAN | 0.054912 |
| T:MEAN=0 | 15.5278 | PROB>\|T\| | 0.0001 |
| SGN RANK | 4588 | PROB>\|S\| | 0.0001 |
| NUM ^= 0 | 135 | | |

QUANTILES(DEF=4)

| | | | |
|---|---|---|---|
| 100% MAX | 4.58183 | 99% | 4.33721 |
| 75% Q3 | 0.997011 | 95% | 1.92896 |
| 50% MED | 0.713369 | 90% | 1.34087 |
| 25% Q1 | 0.520289 | 10% | 0.336857 |
| 0% MIN | -0.0259272 | 5% | 0.249615 |
| | | 1% | -0.0125726 |
| RANGE | 4.60775 | | |
| Q3-Q1 | 0.476722 | | |
| MODE | -0.0259272 | | |

EXTREMES

| LOWEST | HIGHEST |
|---|---|
| -0.0259272 | 2.28383 |
| 0.0111691 | 2.76422 |
| 0.0494757 | 3.37925 |
| 0.0863437 | 3.90237 |
| 0.206289 | 4.58183 |

Betas Estimated over the Period
October 1970 to September 1975

VARIABLE=RMD

MOMENTS

| | | | |
|---|---|---|---|
| N | 146 | SUM WGTS | 146 |
| MEAN | 0.855659 | SUM | 124.926 |
| STD DEV | 0.491827 | VARIANCE | 0.241893 |
| SKEWNESS | 0.197727 | KURTOSIS | 12.1492 |
| USS | 141.969 | CSS | 35.0746 |
| CV | 57.4793 | STD MEAN | 0.0407039 |
| T:MEAN=0 | 21.0216 | PROB>\|T\| | 0.0001 |
| SGN RANK | 5222.5 | PROB>\|S\| | 0.0001 |
| NUM ^= 0 | 146 | | |

QUANTILES(DEF=4)

| | | | |
|---|---|---|---|
| 100% MAX | 3.04335 | 99% | 2.93547 |
| 75% Q3 | 0.994885 | 95% | 1.73491 |
| 50% MED | 0.831587 | 90% | 1.26332 |
| 25% Q1 | 0.616708 | 10% | 0.446646 |
| 0% MIN | -2.00108 | 5% | 0.271048 |
| | | 1% | -1.05483 |
| RANGE | 5.04443 | | |
| Q3-Q1 | 0.378177 | | |
| MODE | -2.00108 | | |

EXTREMES

| LOWEST | HIGHEST |
|---|---|
| -2.00108 | 1.82196 |
| 0.0122239 | 1.82564 |
| 0.138294 | 2.76449 |
| 0.182255 | 2.81383 |
| 0.197939 | 3.04335 |

Betas Estimated over the Period
October 1975 to September 1980

VARIABLE=RMD

MOMENTS

| | | | |
|---|---|---|---|
| N | 166 | SUM WGTS | 166 |
| MEAN | 0.960636 | SUM | 159.466 |
| STD DEV | 0.337572 | VARIANCE | 0.113955 |
| SKEWNESS | -1.90516 | KURTOSIS | 8.10897 |
| USS | 171.994 | CSS | 18.8025 |
| CV | 35.1405 | STD MEAN | 0.0262007 |
| T:MEAN=0 | 36.6646 | PROB>\|T\| | 0.0001 |
| SGN RANK | 6842.5 | PROB>\|S\| | 0.0001 |
| NUM ^= 0 | 166 | | |

QUANTILES(DEF=4)

| | | | |
|---|---|---|---|
| 100% MAX | 1.69967 | 99% | 1.64865 |
| 75% Q3 | 1.15743 | 95% | 1.40228 |
| 50% MED | 1.00515 | 90% | 1.28387 |
| 25% Q1 | 0.83818 | 10% | 0.63337 |
| 0% MIN | -0.995002 | 5% | 0.369507 |
| | | 1% | -0.564896 |
| RANGE | 2.69467 | | |
| Q3-Q1 | 0.31925 | | |
| MODE | -0.995001 | | |

EXTREMES

| LOWEST | HIGHEST |
|---|---|
| -0.995001 | 1.53099 |
| -0.353052 | 1.54136 |
| -0.237926 | 1.61555 |
| 0.0416513 | 1.62353 |
| 0.222431 | 1.69967 |

## APPENDIX 10

### STEPWISE REGRESSIONS TO TEST THE EFFECT OF COVENANTS AND MARKETABILITY ON THE RISK AND THE RETURN CHARACTERISTICS OF TSE TRADED STRAIGHT PREFERRED STOCKS

DEPENDENT VARIABLES :

MEAN = Average Monthly Return

YIELD = Average yield each month

RMD = Beta

NOTE : The independent variables are defined in Chapter 5.

STEPWISE REGRESSION PROCEDURE FOR DEPENDENT VARIABLE MEAN

STEP 1 VARIABLE PART ENTERED R SQUARE = 0.17024378 C(P) = 56.86235585

| | DF | SUM OF SQUARES | MEAN SQUARE | F | PROB>F |
|---|---|---|---|---|---|
| REGRESSION | 1 | 0.00087808 | 0.00087808 | 33.86 | 0.0001 |
| ERROR | 165 | 0.00427970 | 0.00002594 | | |
| TOTAL | 166 | 0.00515778 | | | |

| | B VALUE | STD ERROR | TYPE II SS | F | PROB>F |
|---|---|---|---|---|---|
| INTERCEPT | 0.00840700 | | | | |
| PART | 0.01345498 | 0.00231249 | 0.00087808 | 33.86 | 0.0001 |

STEP 2 VARIABLE TRANS ENTERED R SQUARE = 0.24940711 C(P) = 37.88627278

| | DF | SUM OF SQUARES | MEAN SQUARE | F | PROB>F |
|---|---|---|---|---|---|
| REGRESSION | 2 | 0.00128639 | 0.00064319 | 27.25 | 0.0001 |
| ERROR | 164 | 0.00387140 | 0.00002361 | | |
| TOTAL | 166 | 0.00515778 | | | |

| | B VALUE | STD ERROR | TYPE II SS | F | PROB>F |
|---|---|---|---|---|---|
| INTERCEPT | 0.00920614 | | | | |
| PART | 0.01542353 | 0.00225632 | 0.00110304 | 46.73 | 0.0001 |
| TRANS | -0.00000013 | 0.00000003 | 0.00040831 | 17.30 | 0.0001 |

STEP 3 VARIABLE F ENTERED R SQUARE = 0.30469726 C(P) = 25.23591824

| | DF | SUM OF SQUARES | MEAN SQUARE | F | PROB>F |
|---|---|---|---|---|---|
| REGRESSION | 3 | 0.00157136 | 0.00052385 | 23.81 | 0.0001 |
| ERROR | 163 | 0.00358622 | 0.00002200 | | |
| TOTAL | 166 | 0.00515778 | | | |

| | B VALUE | STD ERROR | TYPE II SS | F | PROB>F |
|---|---|---|---|---|---|
| INTERCEPT | 0.00930547 | | | | |
| F | -0.01908807 | 0.00530190 | 0.00028517 | 12.96 | 0.0004 |
| PART | 0.01948584 | 0.00245317 | 0.00138613 | 63.09 | 0.0001 |
| TRANS | -0.00000015 | 0.00000003 | 0.00050495 | 22.95 | 0.0001 |

STEPWISE REGRESSION PROCEDURE FOR DEPENDENT VARIABLE MEAN

STEP 4 VARIABLE RMD ENTERED R SQUARE = 0.34898389 C(P) = 18.50118948

| | DF | SUM OF SQUARES | MEAN SQUARE | F | PROB>F |
|---|---|---|---|---|---|
| REGRESSION | 4 | 0.00179998 | 0.00045000 | 21.71 | 0.0001 |
| ERROR | 162 | 0.00335780 | 0.00002073 | | |
| TOTAL | 166 | 0.00515778 | | | |

| | B VALUE | STD ERROR | TYPE II SS | F | PROB>F |
|---|---|---|---|---|---|
| INTERCEPT | 0.01469447 | | | | |
| F | -0.02256237 | 0.00525142 | 0.00038261 | 18.46 | 0.0001 |
| PART | 0.02179441 | 0.00248055 | 0.00160005 | 77.80 | 0.0001 |
| RMD | -0.00595997 | 0.00179534 | 0.00022842 | 11.02 | 0.0011 |
| TRANS | -0.00000010 | 0.00000003 | 0.00021324 | 10.29 | 0.0016 |

STEP 5 VARIABLE CUM ENTERED R SQUARE = 0.37067198 C(P) = 11.75444893

| | DF | SUM OF SQUARES | MEAN SQUARE | F | PROB>F |
|---|---|---|---|---|---|
| REGRESSION | 5 | 0.00191185 | 0.00038237 | 18.97 | 0.0001 |
| ERROR | 161 | 0.00324594 | 0.00002016 | | |
| TOTAL | 166 | 0.00515778 | | | |

| | B VALUE | STD ERROR | TYPE II SS | F | PROB>F |
|---|---|---|---|---|---|
| INTERCEPT | 0.02006630 | | | | |
| CUM | -0.00487459 | 0.00206944 | 0.00011186 | 5.55 | 0.0197 |
| F | -0.02298845 | 0.00518238 | 0.00039671 | 19.68 | 0.0001 |
| PART | 0.01735469 | 0.00308831 | 0.00063666 | 31.58 | 0.0001 |
| RMD | -0.00867361 | 0.00179639 | 0.00027825 | 13.80 | 0.0003 |
| TRANS | -0.00000010 | 0.00000003 | 0.00019351 | 9.60 | 0.0023 |

STEP 6 VARIABLE ASSPR ENTERED R SQUARE = 0.39592287 C(P) = 7.06366363

| | DF | SUM OF SQUARES | MEAN SQUARE | F | PROB>F |
|---|---|---|---|---|---|
| REGRESSION | 6 | 0.00204208 | 0.00034035 | 17.48 | 0.0001 |
| ERROR | 160 | 0.00311570 | 0.00001947 | | |
| TOTAL | 166 | 0.00515778 | | | |

| | B VALUE | STD ERROR | TYPE II SS | F | PROB>F |
|---|---|---|---|---|---|
| INTERCEPT | 0.01522621 | | | | |
| ASSPR | 0.00608063 | 0.00235124 | 0.00013024 | 6.69 | 0.0106 |
| CUM | -0.00601622 | 0.00208118 | 0.00016273 | 8.36 | 0.0044 |
| F | -0.02760170 | 0.00539654 | 0.00050942 | 26.16 | 0.0001 |
| PART | 0.02073711 | 0.00330497 | 0.00076665 | 39.37 | 0.0001 |
| RMD | -0.00668521 | 0.00176548 | 0.00027922 | 14.34 | 0.0002 |
| TRANS | -0.00000010 | 0.00000003 | 0.00020021 | 10.28 | 0.0016 |

STEPWISE REGRESSION PROCEDURE FOR DEPENDENT VARIABLE MEAN

STEP 7 VARIABLE B ENTERED R SQUARE = 0.42261998 C(P) = 1.98967077

| | DF | SUM OF SQUARES | MEAN SQUARE | F | PROB>F |
|---|---|---|---|---|---|
| REGRESSION | 7 | 0.00217978 | 0.00031140 | 16.63 | 0.0001 |
| ERROR | 159 | 0.00297800 | 0.00001873 | | |
| TOTAL | 166 | 0.00515778 | | | |

| | B VALUE | STD ERROR | TYPE II SS | F | PROB>F |
|---|---|---|---|---|---|
| INTERCEPT | 0.01487878 | | | | |
| ASSPR | 0.00633922 | 0.00230766 | 0.00014131 | 7.54 | 0.0067 |
| CUM | -0.00787569 | 0.00215319 | 0.00025058 | 13.38 | 0.0003 |
| B | 0.00231616 | 0.00085422 | 0.00013770 | 7.35 | 0.0074 |
| F | -0.02752690 | 0.00529258 | 0.00050665 | 27.05 | 0.0001 |
| PART | 0.02068980 | 0.00324130 | 0.00076313 | 40.74 | 0.0001 |
| RHO | -0.00660898 | 0.00173167 | 0.00027281 | 14.57 | 0.0002 |
| TRANS | -0.00000009 | 0.00000003 | 0.00016715 | 8.92 | 0.0033 |

NO OTHER VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

STEPWISE REGRESSION PROCEDURE FOR DEPENDENT VARIABLE YIELD

WARNING: 1 OBSERVATIONS DELETED DUE TO MISSING VALUES.

STEP 1 VARIABLE CUM ENTERED R SQUARE = 0.46306139 C(P) = 41.45359077

| | DF | SUM OF SQUARES | MEAN SQUARE | F | PROB>F |
|---|---|---|---|---|---|
| REGRESSION | 1 | 0.02605034 | 0.02605034 | 141.45 | 0.0001 |
| ERROR | 164 | 0.03020400 | 0.00018417 | | |
| TOTAL | 165 | 0.05625434 | | | |

| | B VALUE | STD ERROR | TYPE II SS | F | PROB>F |
|---|---|---|---|---|---|
| INTERCEPT | 0.03457103 | | | | |
| CUM | 0.05265001 | 0.00442692 | 0.02605034 | 141.45 | 0.0001 |

STEP 2 VARIABLE ASSPR ENTERED R SQUARE = 0.50116407 C(P) = 29.02299310

| | DF | SUM OF SQUARES | MEAN SQUARE | F | PROB>F |
|---|---|---|---|---|---|
| REGRESSION | 2 | 0.02819265 | 0.01409633 | 81.88 | 0.0001 |
| ERROR | 163 | 0.02806168 | 0.00017216 | | |
| TOTAL | 165 | 0.05625434 | | | |

| | B VALUE | STD ERROR | TYPE II SS | F | PROB>F |
|---|---|---|---|---|---|
| INTERCEPT | 0.02129294 | | | | |
| ASSPR | 0.02213016 | 0.00627344 | 0.00214232 | 12.44 | 0.0006 |
| CUM | 0.04408166 | 0.00492129 | 0.01381286 | 80.23 | 0.0001 |

STEP 3 VARIABLE PART ENTERED R SQUARE = 0.52048460 C(P) = 23.70189913

| | DF | SUM OF SQUARES | MEAN SQUARE | F | PROB>F |
|---|---|---|---|---|---|
| REGRESSION | 3 | 0.02927952 | 0.00975984 | 58.61 | 0.0001 |
| ERROR | 162 | 0.02697482 | 0.00016661 | | |
| TOTAL | 165 | 0.05625434 | | | |

| | B VALUE | STD ERROR | TYPE II SS | F | PROB>F |
|---|---|---|---|---|---|
| INTERCEPT | 0.03523066 | | | | |
| ASSPR | 0.01712950 | 0.00647274 | 0.00116616 | 7.00 | 0.0089 |
| CUM | 0.03508049 | 0.00598644 | 0.00571790 | 34.34 | 0.0001 |
| PART | -0.02187465 | 0.00856200 | 0.00108686 | 6.53 | 0.0115 |

STEPWISE REGRESSION PROCEDURE FOR DEPENDENT VARIABLE YIELD

STEP 4 VARIABLE F ENTERED — R SQUARE = 0.56195694 C(P) = 9.98686032

| | DF | SUM OF SQUARES | MEAN SQUARE | F | PROB>F |
|---|---|---|---|---|---|
| REGRESSION | 4 | 0.03161252 | 0.00790313 | 51.64 | 0.0001 |
| ERROR | 161 | 0.02464182 | 0.00015305 | | |
| TOTAL | 165 | 0.05625434 | | | |

| | B VALUE | STD ERROR | TYPE II SS | F | PROB>F |
|---|---|---|---|---|---|
| INTERCEPT | 0.04215661 | | | | |
| ASSPR | 0.00847206 | 0.00658997 | 0.00025296 | 1.65 | 0.2004 |
| CUM | 0.03670098 | 0.00575444 | 0.00622581 | 40.68 | 0.0001 |
| PART | -0.03686690 | 0.00905602 | 0.00252831 | 16.52 | 0.0001 |
| F | 0.05734635 | 0.01468831 | 0.00233300 | 15.24 | 0.0001 |

STEP 5 VARIABLE ASSPR REMOVED — R SQUARE = 0.55746016 C(P) = 9.69081704

| | DF | SUM OF SQUARES | MEAN SQUARE | F | PROB>F |
|---|---|---|---|---|---|
| REGRESSION | 3 | 0.03135955 | 0.01045318 | 68.02 | 0.0001 |
| ERROR | 162 | 0.02489479 | 0.00015367 | | |
| TOTAL | 165 | 0.05625434 | | | |

| | B VALUE | STD ERROR | TYPE II SS | F | PROB>F |
|---|---|---|---|---|---|
| INTERCEPT | 0.04893426 | | | | |
| CUM | 0.03628678 | 0.00563200 | 0.00710177 | 46.21 | 0.0001 |
| PART | -0.04146653 | 0.00831578 | 0.00382105 | 24.87 | 0.0001 |
| F | 0.06370039 | 0.01385963 | 0.00324619 | 21.12 | 0.0001 |

STEP 6 VARIABLE D ENTERED — R SQUARE = 0.56934178 C(P) = 7.18853491

| | DF | SUM OF SQUARES | MEAN SQUARE | F | PROB>F |
|---|---|---|---|---|---|
| REGRESSION | 4 | 0.03202794 | 0.00800699 | 53.21 | 0.0001 |
| ERROR | 161 | 0.02422639 | 0.00015047 | | |
| TOTAL | 165 | 0.05625434 | | | |

| | B VALUE | STD ERROR | TYPE II SS | F | PROB>F |
|---|---|---|---|---|---|
| INTERCEPT | 0.04893426 | | | | |
| CUM | 0.03619015 | 0.00566119 | 0.00614933 | 40.87 | 0.0001 |
| PART | -0.04146653 | 0.00822882 | 0.00382105 | 25.39 | 0.0001 |
| D | 0.00414018 | 0.00196442 | 0.00066639 | 4.44 | 0.0366 |
| F | 0.05956021 | 0.01385468 | 0.00278088 | 18.48 | 0.0001 |

STEPWISE REGRESSION PROCEDURE FOR DEPENDENT VARIABLE YIELD

STEP 7 VARIABLE NEF ENTERED R SQUARE = 0.57584075 C(P) = 6.72589265

| | DF | SUM OF SQUARES | MEAN SQUARE | F | PROB>F |
|---|---|---|---|---|---|
| REGRESSION | 5 | 0.03239354 | 0.00647871 | 43.44 | 0.0001 |
| ERROR | 160 | 0.02386080 | 0.00014913 | | |
| TOTAL | 165 | 0.05625434 | | | |

| | B VALUE | STD ERROR | TYPE II SS | F | PROB>F |
|---|---|---|---|---|---|
| INTERCEPT | 0.04681728 | | | | |
| NEF | 0.00529243 | 0.00338016 | 0.00036560 | 2.45 | 0.1194 |
| CUM | 0.03356455 | 0.00588003 | 0.00485923 | 32.58 | 0.0001 |
| PART | -0.03934956 | 0.00830281 | 0.00334962 | 22.46 | 0.0001 |
| D | 0.00392528 | 0.00196044 | 0.00059786 | 4.01 | 0.0469 |
| F | 0.05448267 | 0.01416875 | 0.00220505 | 14.79 | 0.0002 |

NO OTHER VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

STEPWISE REGRESSION PROCEDURE FOR DEPENDENT VARIABLE RNO

STEP 1 VARIABLE TRANS ENTERED R SQUARE = 0.20305977 C(P) = 25.62660233

| | DF | SUM OF SQUARES | MEAN SQUARE | F | PROB>F |
|---|---|---|---|---|---|
| REGRESSION | 1 | 1.78816278 | 1.78816278 | 42.04 | 0.0001 |
| ERROR | 165 | 7.01792822 | 0.04253290 | | |
| TOTAL | 166 | 8.80609100 | | | |

| | B VALUE | STD ERROR | TYPE II SS | F | PROB>F |
|---|---|---|---|---|---|
| INTERCEPT | 0.90399628 | | | | |
| TRANS | 0.00000853 | 0.00000132 | 1.78816278 | 42.04 | 0.0001 |

STEP 2 VARIABLE CAL ENTERED R SQUARE = 0.27853907 C(P) = 9.78151741

| | DF | SUM OF SQUARES | MEAN SQUARE | F | PROB>F |
|---|---|---|---|---|---|
| REGRESSION | 2 | 2.45284041 | 1.22642020 | 33.68 | 0.0001 |
| ERROR | 164 | 6.35325059 | 0.03873933 | | |
| TOTAL | 166 | 8.80609100 | | | |

| | B VALUE | STD ERROR | TYPE II SS | F | PROB>F |
|---|---|---|---|---|---|
| INTERCEPT | 1.13672227 | | | | |
| CAL | -0.24618864 | 0.03943449 | 0.66467763 | 17.16 | 0.0001 |
| TRANS | 0.00000788 | 0.00000187 | 1.50278291 | 38.79 | 0.0001 |

NO OTHER VARIABLES MET THE 0.1500 SIGNIFICANCE LEVEL FOR ENTRY INTO THE MODEL.

# APPENDIX 11

## ESTIMATES OF THE MARKET MODEL USED TO COMPUTE THE RESIDUALS FOR THE TESTS OF THE EFFECTS OF TAX CHANGES

PFWI = The Return on the TSE Traded Straight Preferred Stock Value Weighted Index

INDEX = The Return on the Global Index

ESTIMATES FOR THE PERIOD 1965-1969

DEP VARIABLE: PFWI

| SOURCE | DF | SUM OF SQUARES | MEAN SQUARE | F VALUE | PROB>F |
|---|---|---|---|---|---|
| MODEL | 1 | 0.012077 | 0.012077 | 79.975 | 0.0001 |
| ERROR | 58 | 0.008758855 | 0.0001510147 | | |
| C TOTAL | 59 | 0.020836 | | | |

| | | | |
|---|---|---|---|
| ROOT MSE | 0.012289 | R-SQUARE | 0.5796 |
| DEP MEAN | 0.0006457318 | ADJ R-SQ | 0.5724 |
| C.V. | 1903.082 | | |

| VARIABLE | DF | PARAMETER ESTIMATE | STANDARD ERROR | T FOR H0: PARAMETER=0 | PROB > \|T\| |
|---|---|---|---|---|---|
| INTERCEP | 1 | -0.00067538 | 0.001593341 | -0.424 | 0.6732 |
| INDEX | 1 | 1.006730 | 0.112573 | 8.943 | 0.0001 |

ESTIMATES FOR THE PERIOD 1973-1976

DEP VARIABLE: [illegible]

| SOURCE | DF | SUM OF SQUARES | MEAN SQUARE | F VALUE | PROB>F |
|---|---|---|---|---|---|
| MODEL | 1 | 0,023292 | 0,023292 | 135,475 | 0,0001 |
| ERROR | 38 | 0,006533433 | 0,0001719325 | | |
| C TOTAL | 39 | 0,029826 | | | |

| | | | |
|---|---|---|---|
| ROOT MSE | 0,013112 | R-SQUARE | 0,7809 |
| DEP MEAN | 0,004870392 | ADJ R-SQ | 0,7752 |
| C.V. | 269,2248 | | |

| VARIABLE | DF | PARAMETER ESTIMATE | STANDARD ERROR | T FOR H0: PARAMETER=0 | PROB > \|T\| |
|---|---|---|---|---|---|
| INTERCEP | 1 | 0,001826514 | 0,002089666 | 0,874 | 0,3876 |
| INDEX | 1 | 0,961093 | 0,082573 | 11,639 | 0,0001 |

# END

13.11.85

# FIN