The Turn-of-the-Year in Canada

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ABSTRACT

A number of investigators have reported that January stock returns in the U.S. exceed returns for other months of the year. This paper documents a similar finding for Canadian stocks over the period 1951–1980. However, Canada did not introduce a capital gains tax until 1973 and the paper reports that January returns in Canada exceed returns for other months of the year before and after this date. Thus, these data do not support the tax-loss-selling-pressure hypothesis as the entire explanation for the turn-of-the-year effect in stock returns, nor, by implication, do they support the tax-loss-selling-pressure hypothesis as the complete explanation for the "small firm" effect in U.S. stocks returns.

RECENTLY KEIM [9] has reported that returns on NYSE and ASE firms with small market values exceed, by significant margins, returns on firms with large market values. This result was previously reported by Banz [1] and Reinganum [11], but Keim's analysis shows that most of the excess return for small firms is concentrated in January.[1] Indeed, it is concentrated in the first two weeks in January. Roll [13] also documents this phenomenon and investigates a number of possible explanations for it.[2] After rejecting several possible "nonexploitable" explanations, Roll is left with year-end tax-loss selling pressure, of the sort discussed by Branch [2], Dyl [5], and Givoly and Ovadia [6], as the most likely explanation of this result.

According to the tax-loss-selling-pressure hypothesis, toward the end of the year stockholders sell stocks that have declined in price during the year. Investors do this to take advantage of the opportunity to write-off capital losses against ordinary income in computing their federal income taxes. The year-end sell-off exerts downward pressure on stock prices. As soon as the tax and calendar year ends, the selling pressure is relieved and stock prices quickly rebound to their "equilibrium" levels. Roll [13] presents some evidence consistent with this hypothesis. Specifically, he finds a negative correlation between stock returns in January and returns over the previous 12 months. That is, stocks that decrease in value during the year tend to be big gainers in January. Roll also finds that

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[1] A number of other recent papers have investigated the size and/or the turn-of-the-year effect in stock returns. These include James and Edmister [8], Stoll and Whaley [14], Lakonishok and Shapiro [10], Brown et al. [3], and probably several others of which we are unaware. Constantinides [4] presents a theoretical model to explain the turn-of-the-year effect.

[2] Roll [13] credits Hirsch [7] with having previously documented unusually high returns during the first few trading days of January.

on the last trading day of December small firms tend to earn abnormally high returns relative to larger firms. He labels the January effect in combination with the last trading day of December effect the "turn-of-the-year" effect.

Reinganum [12] exhaustively examines ASE and NYSE stock returns to determine whether the tax-loss-selling-pressure hypothesis can fully explain anomalous January stock returns. He constructs a measure of each stock's potential tax-loss selling (PTS) and finds that this measure is positively related to stock returns in the first few days of January. However, he also finds that small firms exhibit abnormally high returns in January even after controlling for differences in potential tax-loss selling. He concludes that the tax-loss-selling-pressure hypothesis explains part of the abnormally high returns among small firms in January, but there appears to be a small firm effect in January returns beyond that which can be attributable to tax-loss selling.

Our paper can be viewed as a search for confirmation (or rejection) of the tax-loss-selling-pressure hypothesis as an explanation of the "small firm" effect in "turn-of-the-year" stock returns. Specifically, we examine Canadian stock returns for a January effect and we ask whether the effect is concentrated among firms with small market values. We also construct a measure of potential tax-loss selling (PTS) and ask whether this measure is related to Canadian stock returns in January. The Canadian stock market provides an especially suitable laboratory for this investigation. In both the U.S. and Canada, the tax year ends with December 31. Currently, both countries have a capital gains tax and both allow deferral of the realization (for tax purposes) of capital gains and losses until the sale of a security. However, prior to 1972, Canada had no capital gains tax.

There is, however, one difference in the treatment of capital gains and losses in the two countries. The U.S. tax code distinguishes between long-term and short-term gains and losses on the basis of the length of time a security is held. At present, a gain or loss is considered short-term if the security is owned for one year or less. Short-term gains and losses are treated as ordinary income for tax purposes, while long-term gains are taxed at a lower rate. Short-term losses and gains and long-term losses and gains may be used to offset one another. Additionally, short-term losses in excess of short-term gains and one-half of long-term losses in excess of long-term gains may be used to offset ordinary income up to a maximum of $3,000.

In Canada, there is no distinction between long-term and short-term capital gains and losses and gains and losses may be used to offset one another. Additionally, one-half of capital losses in excess of capital gains may be used to offset ordinary income up to a maximum of $2,000 in any one tax year. Thus, currently there exists the same incentives in the two countries to realize capital losses near the end of each tax year and to defer realization of capital gains.

The tax-loss-selling-pressure hypothesis clearly predicts a turn-of-the-year effect in Canadian stock returns beginning with January 1973. If we assume that Canadian investors are the dominant force in determining Canadian stock returns, the hypothesis predicts no effect prior to January 1973. If we assume that Canadian and U.S. capital markets are well-integrated, the empirical prediction of the hypothesis for years prior to 1973 is less clearcut. For Canadian investors, there is no incentive to sell securities at the end of the tax year, but

U.S. investors in Canadian stocks have the same incentive to sell securities near year-end as do U.S. investors in U.S. stocks.

Presence of a turn-of-the-year effect for small firms in post-1972 Canadian stock returns coupled with the absence of any effect in 1972 and prior years is strongly consistent with the tax-loss-selling-pressure hypothesis and the hypothesis that U.S. and Canadian securities markets are not well-integrated. The presence of a turn-of-the-year effect both before and after 1972 is consistent with the tax-loss-selling-pressure hypothesis and with the hypothesis that the two countries capital markets are well-integrated. However, this outcome is also consistent with the hypothesis that the two countries' capital markets are well-integrated, but it is some other (unidentified) force driving the turn-of-the-year effect. This result would, however, narrow the search to those institutional and economic factors that are common to the two countries. Finally, failure to detect a turn-of-the-year effect either before or after 1972 is strongly inconsistent with the tax-loss-selling-pressure hypothesis. This result would suggest that investigators look elsewhere for an explanation of the phenomenon in U.S. data.

The paper is organized as follows. Section I describes the data. Section II investigates the seasonal pattern of Canadian stock returns and presents some tests of the tax-loss-selling-pressure hypothesis. Section III contains some brief concluding remarks.

I. Data

The data used in this analysis were taken from a tape prepared by Wood Gundy, Inc. of Canada. The tape contains month-end prices, stock splits, stock dividends, cash dividends, and number of shares outstanding at the end of each month for 391 companies listed on the Toronto Stock Exchange or the Montreal Stock Exchange over the period January 1950 through December 1980. With these data we computed monthly rates of return for each security on the tape. Month-end prices are the latest closing price of the month for trades on either the Toronto or Montreal Stock Exchange. For infrequently traded securities, the month-end price may reflect a transaction that took place considerably before the end of the month.

For most of the analysis that follows, securities were grouped into portfolios on the basis of their total market value. The total market value of each stock was determined at the end of each month beginning with January 1950 by multiplying the month-end price by the number of shares outstanding. The stocks were then ranked according to their total market values at the end of each December and five portfolios were created each year with an equal number of securities in each portfolio. Portfolio number one contains the 20% of the stocks with the smallest market values; Portfolio number two contains the next 20% of the securities; and so on, with portfolio number five containing the 20% of the stocks with the largest market values. An equal-weighted average rate of return was computed for each of the five portfolios for each month beginning with January 1951.

Column 2 of Table I shows the mean market value of each of the five portfolios

Table I

Characteristics of Five Portfolios of Canadian
Common Stocks

Market Value Portfolio	Mean Market Value (in millions of Canadian dollars)		Mean Monthly Return (in percent)	
	1951–1972	1973–1980	1951–1972[a]	1973–1980
1	$ 4.9	$ 9.8	2.02%	1.67%
			(0.27)	(0.58)
2	17.2	23.8	1.48	1.66
			(0.22)	(0.56)
3	37.8	60.2	1.14	1.41
			(0.22)	(0.59)
4	86.0	141.7	0.99	1.39
			(0.23)	(0.56)
5	365.1	672.3	0.90	1.23
			(0.23)	(0.58)

[a] Standard errors in parentheses.

for the years 1951–1972; Column 3 gives the mean market values for the years 1973–1980. Columns 3 and 4 of the table present the mean monthly returns for each of the market value portfolios for the periods 1951–1972 and 1973–1980, respectively. The table gives clear evidence of a size effect in *raw* monthly returns. For both time periods, the mean monthly return increases monotonically as the market value of the portfolios declines. However, the difference between the mean monthly returns of the lowest and highest market value portfolios is considerably less in the period 1973–1980 than in the period 1951–1972. Over the period 1951–1972, the mean return for the smallest market value portfolio is 2.02 percent; for the largest it is 0.90 percent. Over the period 1973–1980, the comparable returns are 1.67 percent and 1.23 percent.[3]

II. Analysis of Canadian Stock Returns

The first question is whether there is a seasonal pattern in Canadian stock returns like the one discovered in U.S. common stock returns. In particular, is the average return in January higher than the average return in the remaining months of the year?

Mean returns in January, mean returns for all other months of the year, and *t*-statistics based on the differences in mean returns for January versus all other months of the year for each of the five market value portfolios are reported in Table II. The results are shown for two subperiods—1951–1972 and 1973–1980—because of the change in the Canadian tax law. There are some differences in results for the two subperiods, but the similarities are more noticeable. There is clearly a "January effect" in both subperiods. The difference between the mean return in January and the mean return in the remaining months is significantly

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[3] We should emphasize that higher "raw" returns for firms with smaller market values does not imply that "excess" returns are earned by small market value firms. Such a conclusion would require specification of an asset pricing model and adjustment for risk.

Table II

Mean January Returns Versus Mean Returns for
Other Months of the Year (in percent)

Market Value Portfolio	Mean January Return	Mean February–December Return	*t*-Statistic
1951–1972			
1	5.90%	1.67%	5.45
2	4.50	1.20	5.60
3	4.10	0.85	5.41
4	3.29	0.80	3.94
5	2.23	0.76	2.43
1973–1980			
1	8.15%	1.13%	5.03
2	7.67	1.12	4.68
3	7.30	0.87	4.36
4	6.58	0.91	4.03
5	5.42	0.83	3.04

different from zero at the 0.01 level for all of the market value portfolios in both time periods.

The results to this point are consistent with the existence of a turn-of-the-year effect in Canadian stock returns. But the pre-1973 returns are consistent with the tax-loss-selling-pressure hypothesis only if it is assumed that the effect is caused by non-Canadian investors.

To further test the tax-loss-selling-pressure hypothesis, we examined the relationship between January returns and a measure of potential tax-loss selling (PTS) analogous to that of Reinganum [12]. As Reinganum notes, an ideal measure of PTS would measure aggregate dollar losses in each security each year relative to a price near the end of the year. Construction of this measure would require daily prices and trading volume at each of those prices. Unfortunately, these data were not available to us. However, since 1965 the tape does include the monthly high and low prices for each security. These data were used to construct a measure of PTS.

The measure of PTS used in our analysis is the ratio of the year-end price and the highest transaction price over a period which would allow any loss to be short-term for tax purposes in the United States. Hence, through 1976, the period was July 1 through December 31; in 1977, it was April 1 through December 31; and for 1978-1980 the whole year was included. The resulting measure ranges from 0.0 to 1.0. Presumably, for securities near the lower end of this range there is greater potential for tax-loss selling than for those near the upper end of the range.[4]

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[4] As noted above, the Canadian tax code does not distinguish between short-term and long-term capital losses. Hence, the appropriate period for purposes of computing PTS when analyzing Canadian returns is less obvious than when analyzing U.S. returns. We did replicate all our tests using holdings of nine months and twelve months to compute our measure of PTS. The results were little affected by the holding period used.

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To conduct the analysis, securities were grouped into 10 separate portfolios for each time period by dividing each of the five market-value portfolios into two parts on the basis of the measure of PTS. The "high PTS" portfolio, in each case, contains the 50% of securities with the highest measure of potential tax-loss selling. The remaining 50% of the securities were placed in the low PTS portfolios.

Mean January returns for each portfolio are presented in Table III. The table is comprised of two parts. Part A presents the results for the period 1965–1972; Part B presents the results for the period 1973–1980. Column 1 of the table contains results for the high PTS group and Column 2 contains results for the low PTS group. Each cell contains the average January return for the relevant market value portfolio and PTS group.

In both subperiods and for every market value portfolio (except one) the mean January return for the high PTS group exceeds the mean return for the low PTS group. The relationship appears to be somewhat stronger in the latter time period as the spreads between the mean returns for the high and low PTS groups are slightly greater than in the earlier time period. However, overall, the similarities between the results for the two time periods are more striking than the differences. To determine whether the January returns for the high PTS portfolios are statistically significantly different from those for the low PTS portfolios, t-tests were performed for both the periods 1965–1972 and 1973–1980. To increase the sample size for these tests, all of the different size portfolios were grouped into one portfolio. In both time periods, the high PTS portfolio provided a higher average rate of return in January than the low PTS portfolio, but in neither case is the difference in mean returns statistically significant at the 0.05 level. However, the difference is significant at the 0.10 level in the latter period.

Thus, the mean returns are higher for the high PTS group than for the low PTS group, but the differences are not statistically significant at traditionally

Table III

Mean January Return by Potential
Tax-Loss Selling Group and Market
Value Portfolio (in percent)

Market Value Portfolio	Potential Tax-Loss Selling Group	
	High PTS	Low PTS
A. 1965–1972		
1	8.86%	6.09%
2	5.55	4.87
3	6.38	2.99
4	4.39	3.44
5	3.11	3.27
B. 1973–1980		
1	11.12%	5.04%
2	9.61	5.89
3	8.46	6.06
4	7.70	5.34
5	6.77	3.70

acceptable levels. The only evidence supportive of the tax-loss-selling-pressure hypothesis as the explanation of high January stock returns is the nearly significant difference between mean returns in the 1973–1980 period. While the lack of a stronger relationship between January returns and the measure of PTS could be due to either shortcomings in the measure of PTS or to an insufficient number of observations, the evidence in support of the tax-loss-selling-pressure hypothesis as an explanation of high January returns is relatively weak.[5,6]

III. Summary

To summarize, we find that turn-of-the-year stock returns in Canada are similar to those in the U.S. as reported by Roll [13] and Reinganum [12]. There is a significant January effect in Canadian stock returns, and the effect is more pronounced for firms with smaller values. There is also a relationship between a measure of tax-loss-selling-pressure and January returns, but the relationship is not statistically significant. Furthermore, this pattern exists in Canadian stock returns both before and after the introduction of a capital gains tax in Canada.

In conclusion, given the tenuous relationship that we find between January returns and an estimated measure of potential tax-loss selling and given that the tax-loss-selling-pressure hypothesis would require that high January returns in Canada be caused by non-Canadian investors (at least prior to 1973), we are not inclined to view this as a complete explanation of anomalous January returns. Furthermore, by implication, the evidence does not support the tax-loss-selling-pressure hypothesis as the complete explanation of the "small firm" effect in U.S. stock returns. It is possible, however, that the tax-loss-selling-pressure hypothesis does explain abnormally high returns for small firms in the first few trading days of January as found by Roll and Reinganum for U.S. securities, but

[5] We also computed a t-statistic to test whether the mean January return was different from the mean return for February–December for each PTS/market value portfolio for each time period. For the pre-1973 period, for 4 of the 5 high PTS portfolios the t-statistic exceeded 2.00 and for 2 of the 5 low PTS portfolios the t-statistic exceeded 2.00 (for the other two portfolios the t-statistic exceeded 1.70). For the post-1973 period, for 5 of 5 high PTS portfolios the t-statistic exceeded 2.00 and for 4 of the 5 low PTS portfolios the t-statistic exceeded 2.00. In short, mean January returns were generally statistically higher than mean returns for the other months of the year regardless of PTS and regardless of market value portfolio.

[6] Both Roll [13] and Reinganum [12] investigated other potential explanations for abnormal January returns. For example, Roll investigated whether data errors or the clustering of new listings and delistings in January could be the culprits. He rejected both of these explanations. Because of data limitations, we cannot conduct similar tests, but we know of no reason to suspect that errors in the construction of our data base would be clustered in January. And because of the relative infrequency of new listings and delistings of securities in our file that seems an unlikely explanation as well.

Reinganum investigated a "contrarian" hypothesis. According to this hypothesis, securities that are big losers in one month tend to be big winners in the following month. Because market value portfolios are formed at the end of December, small market value portfolios will have a tendency to include securities that decline in price in December.

To test the contrarian hypothesis, we reformed market value portfolios at the end of each month. In no month, except January, do small firms earn exceptionally high returns when market value portfolios are created on the basis of the prior months' ending prices. Thus, we conclude, as does Reinganum, that there does not appear to be a general "rebound" effect in security prices.

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in addition to that there is another fundamental economic factor which explains high returns in January beyond the first few trading days in U.S. securities and for the entire month for Canadian securities. This explanation is consistent with the one offered by Reinganum [12]. Thus, the bad news is that there is still no complete explanation for the puzzling January stock returns in Canada and the U.S. The good news is that the two countries' capital markets appear to be well-integrated—anomalous January returns are present in both countries.

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