

# Understanding the Turn-of-the-year Effect

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## ABSTRACT

*This paper examines the cause of the turn-of-the-year effect. In the United States, January returns are not different from non-January returns in the pre-1917 period; after personal income taxes become effective in 1917, returns in January have been distinctly higher than those in other months. Furthermore, the turn-of-the-year effect does not exist in Hong Kong and Mainland China, where there are no capital gains taxes in Hong Kong and the flat capital gains tax in China has no influence on trading decisions. The evidence collectively means that tax-loss-selling is the fundamental reason for the turn-of-the-year effect.*

*JEL classification: G11, G12, G15*

**Keywords:** *Turn-of-the-year; Tax-loss selling; January*

## INTRODUCTION

The turn-of-the-year effect represents one of the most puzzling phenomena in the finance area. It is first identified by Rozeff and Kinney (1976), who find that stocks earn higher returns in January than in other months, thus also dubbed the January effect. Since then, a large volume of research has been exploring the phenomenon. Recently, Ng and Wang (2004) and Starks, Yong, and Zheng (2006) add to the long-lasting debate. Ng and Wang demonstrate that window dressing is the root cause for the turn-of-the-year effect. However, Starks, Yong, and Zheng examine the municipal closed-end funds and argue that it is tax-loss-selling that drives the turn-of-the-year effect.

The conflicting evidence renders it intriguing to further investigate the underlying reason for the turn-of-the-year effect. To this end, I examine the phenomenon from both time-series and cross-section perspectives. In the United States, income taxes become effective in 1917; I explore if the turn-of-the-year effect exists before and after the significant tax event. If the return patterns are the same in both periods, it means that income tax is not behind the effect. If the turn-of-the-year effect only exists when income taxes are effective, then income taxes are the culprit of the effect.

I also take a cross-section approach and investigate the turn-of-the-year effect in international markets: Hong Kong and Mainland China. These two markets are chosen because both markets have become increasingly important in the world. Hong Kong is Asia's second largest stock market and, in the past two decades, its economy has more than doubled in size. Allen, Qian, and Qian (2005) state that "Despite its poor legal and financial systems, China has one of the fastest growing economies in the world. Using Purchasing Power Parity, it presently is the second largest economy, and if currency trends continue, will overtake the U.S. and become the largest economy in the world in ten years." There is no capital gains tax in Hong Kong and the flat capital gains taxes do not affect trading decisions in Mainland China. Effectively, there is no tax incentive for the existence of the turn-of-the-year effect in those two markets.

This study contributes to the literature in two main ways. First, in the United States, the investigation is over a long horizon that has not been completely examined before: from January 1802 to August 2004. The return series used is consistently constructed and the results shed light on the turn-of-the-year effect in both the pre- and post-income-taxes periods: the effect only co-exists with income tax. Second, the findings constitute the out-of-sample evidence for the turn-of-the-year effect in both Hong Kong and Mainland China. The absence of the effect in both countries support the view that the turn-of-the-year effect stems from the incentives associated with taxes.

The remainder of the paper describes the data, conducts empirical analyses, and concludes.

## DATA

This study uses monthly data from two sources: the Global Financial Data Inc. and Datastream International. Market returns before and after 1917 are required in the investigation of whether the imposition of capital gains taxes in 1917 influences the turn-of-the-year effect in the United States. Since common databases do not go that far back, e.g., data in the Center for Research in Security Prices begin in 1920s and Datastream International starts coverage in 1970s, the long series of returns are derived from the month-end closing values of market indexes in the Global Financial Data Inc. from January 1802 to August 2004. If the closing values are stagnant for up to four months in a row, only the first value is retained and the rest is taken as missing. The Global Financial Data Inc. constructs return series in a systematic fashion and the consistency of the data is instrumental in examining the turn-of-the-year effect over long horizon.

The out-of-sample tests in Hong Kong from January 1973 to August 2004 and Mainland China from July, 1993 to August 2004 utilize monthly market return indexes available in Datastream International. To preclude imprecise observations from contaminating the results, whenever the return index is the same for at least four months consecutively, the earliest value is kept and repeated values are coded missing. Resulted index values are used to generate monthly returns. If any monthly return is over 1000%, it is coded as missing.

## EMPIRICAL ANALYSES

### Returns at the turn-of-the-year in the United States

The issue to be examined here is whether income taxes lead to the turn-of-the-year effect. In the United States, federal income taxes were introduced in 1913; however, it was not until 1916 that losses could be taken and the tax rates were petty until 1917. So 1917 is the cutoff year for the significant event: the pre-tax period is 1802-1917 and post-tax period is 1918-2004.

Since each calendar year is the period for tax in the United States, January is the turn-of-the-year month and the tax-loss-selling hypothesis predicts that, with capital gains tax, returns in January should be higher than in other months. To test this, for each year, turn-of-the-year return in January is compared with non-turn-of-the-year return, measured as the average monthly return from February to December; the difference is calculated. In the pre- or post-tax period, turn-of-the-year return, non-turn-of-the-year return, and their difference are averaged across all years. The same method is applied in subsequent analyses.

Table 1 presents the results. Panel A is for the pre-tax period: monthly returns for the turn-of-the-year and other months are 0.61% and 0.55%, respectively. The difference of 0.04% per month is economically small and statistically insignificant. This means that, without taxes, the turn-of-the-year effect does not exist in the United States.

**Table 1. The Turn-of-the-year Effect in the United States:  
Before and After the Imposition of Capital Gains Taxes**

Market returns for the United States from January 1802 to August 2004 are from the Global Financial Data Inc. The column "TOTY" reports, in percentage, the average monthly returns in the beginning month of the tax year, January. The column "NTOTY" reports the time-series average of the monthly return from all other months. The difference is reported as "DIFF." Associated *t*-statistics are in parentheses. Panel A contains the results for the period before the capital gains tax was effective and Panel B is for after.

Start	End	TOTY	t(TOTY)	NTOTY	t(NTOTY)	DIFF	t(DIFF)
<b>Panel A: Before the Imposition of Capital Gains Tax</b>							
180202	191712	0.61	(1.69)	0.55	(4.91)	0.04	(0.11)
<b>Panel B: After the Imposition of Capital Gains Tax</b>							
191801	200408	1.75	(3.58)	0.89	(5.08)	0.87	(1.68)

Panel B of Table 1 shows the findings for the post-tax period. Returns are 1.75% at the turn-of-the-year and 0.89% for other months; the difference 0.87% is both statistically significant and economically large, almost the same magnitude as the return in non-January months. In sum, Table 1 shows that the turn-of-the-year phenomenon manifests only when taxes are effective.

### Returns at the turn-of-the-year in Hong Kong

Hong Kong has been strategically important in the world economy. It is an international center of finance: its stock market is the second largest in Asia, its banking industry is the 12th largest in the world, and its foreign exchange market is the sixth largest in the world. In the past two decades, Hong Kong's economy has more than doubled in size.

Tax year in Hong Kong is from April 1 of one year to March 31 of the next year. April is the turn-of-the-year month. Since there is no capital gains tax in Hong Kong, the tax-loss-selling hypothesis does not predict that returns in April should be higher than in other months.

The findings in Table 2 are consistent with the tax-loss-selling hypothesis. The average return in the turn-of-the-year month, April, is 1.22% and is 2.05% in other months. The two returns are not significantly different each other with a *t*-statistic of -0.35.

**Table 2. Monthly Returns at the Turn-of-the-year in Hong Kong**

Market returns for Hong Kong are calculated from the total return index in the Datastream International. The column "TOTY" reports, in percentage, the average monthly returns in the beginning month of the tax year, April. The column "NTOTY" reports the time-series average of the monthly return from all other months. The difference is reported as "DIFF." Associated *t*-statistics are in parentheses.

Start	End	TOTY	t(TOTY)	NTOTY	t(NTOTY)	DIFF	t(DIFF)
197302	200408	1.22	(0.64)	2.05	(2.97)	-0.84	(-0.35)

### Returns at the turn-of-the-year in Mainland China

China has gained increasing attention in the world. Its two stocks exchanges are located in Shanghai and Shenzhen with trading hours of 9:30-11:30 and 1:00-3:00. Although stock markets are less important in financing than the banking system, both exchanges have growing rapidly since being established in 1990 and 1991, respectively. Before 2001, A-shares were only available to domestic investors and B-shares were only available to foreign investors. Since March 2001, the Chinese government allowed local investors to trade B-shares, which are denominated in U.S. dollars and Hong Kong dollars on the Shanghai Stock Exchange and the Shen Zhen Stock Exchange, respectively. Calendar year is also the tax year in China.

The tax-loss-selling hypothesis predicts that there is no turn-of-the-year effect in China, because the capital gains tax is flat with traded equities being exempt. Such tax system does not provide any incentive for investors to trade loser stocks before tax year ends; as a result, returns are not predicted to be higher in the following month.

**Table 3. Monthly Returns at the Turn-of-the-year in Mainland China**

Market returns for Mainland China are calculated from the total return index in the Datastream International. The column "TOTY" reports, in percentage, the average monthly returns in the beginning month of the tax year, January. The column "NTOTY" reports the time-series average of the monthly return from all other months. The difference is reported as "DIFF." Associated *t*-statistics are in parentheses.

Start	End	TOTY	t(TOTY)	NTOTY	t(NTOTY)	DIFF	t(DIFF)
199308	200408	-5.67	(-1.68)	2.77	(1.72)	-8.81	(-2.14)

Table 3 displays the return patterns. Average monthly return is -5.67% for turn-of-the-year month and is 2.77% for non-turn-of-the-year months. The difference of -8.81% per month is very large in magnitude and highly significant. The fact that returns are not any higher around the turn-of-the-year is consistent with the tax-loss-selling hypothesis.

### CONCLUSION

This paper investigates the turn-of-the-year effect. I present new evidence for the United States in the periods that income taxes do and do not exist, respectively, and examine the effect in Hong Kong and Mainland China. The results show that the turn-of-the-year effect exists in the United States only when personal income taxes are effective; moreover, the effect is absent in Hong Kong and Mainland China. Because there are no capital gains taxes in Hong King and the flat capital gains taxes have no impact on trading in Mainland China, all the findings indicate that taxes are the underlying reason for the turn-of-the-year effect.

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