# Exploiting the "Turn of the Month" effect in China and Hong Kong

Anthony Pan

23 July 2015

**Abstract**

The turn of the month effect is the tendency for stocks to increase in price during the last few days and the first few days of each month. In this report, I consider a trading strategy exploiting the effect in the Chinese and Hong Kong stock markets in the period January 2002 to July 2015.

## 1 Introduction

In a previous report, I find that a significant turn of the month effect exists to different extents in the Chinese and Hong Kong stock markets, producing statistically significant returns during the last couple and first couple of trading days of the month in the stock indices SHASHR, SZASHR, SHSZ300, HSI, and HSCEI. The turn of the month occurs in the period Days (-1, +3) in Chinese A shares, or shares of Chinese companies traded in RMB restricted to local investors and qualified institutional foreign investors. For the HSI, an index tracking the 48 largest companies in Hong Kong that make up about 60% of capitalization of securities listed on the Hong Kong Stock Exchange, there are abnormal turn of month returns in the period Days (-3, +2). In the HSCEI, which tracks H-shares–stocks of Chinese companies listed on the Hong Kong Stock Exchange and traded in Hong Kong dollars–the turn of month period is shorter, occurring only on Days -1 and +1.

Studies have been conducted on the exploitation of the turn of month effect as a trading strategy, with the general consensus being that a switching strategy involving moving money between a stock market index and a cash account to exploit the turn of month effect outperforms a simple buy-and-hold strategy on the stock market index. Literature on using the turn of the month effect as a trading strategy begins with Henzel and Ziemba (1996), who report a trading strategy that achieves superior performance by switching between an interest bearing cash account and the S&P 500 Index around the turn-of-the-month, and find that the strategy consistently beats the buy-and-hold strategy in the S&P 500 index with higher returns and lower standard deviations.

In addition, Kunkel and Compton (1998) find that investors improve the risk-adjusted performance of their retirement accounts by using a switching strategy with no transaction cost between a money market account and a broad market indexed stock account. Grimbacher, Swinkels, and Van Vliet (2010) find that the investment performance of a strategy based on the turn of month effect in the U.S. from 1963 to 2008 is about the same as a baseline strategy of being always long in the equity market; this is a significant finding because in the baseline strategy, the invested money is not liquid, while the turn of month strategy keeps the investment money liquid for all but four trading days in the month. They found that with no transaction cost, the turn of month strategy provided an excess return of 4.98% with 6.5% volatility and a Sharpe ratio of 0.76, compared to an excess return of 4.44% by the market. With a transaction cost of .1%, the strategy provide less excess return than the market, with a return of of 2.59%, 6.5% volatility, and a sharpe ratio of 0.40. Liu (2013) also investigates trading around the turn of the month in the U.S. from 2001-2011, finding that investments made in the S&P 500 on the days before the turn of the month perform better than those made during the turn of the month.

This report extends current literature by turning attention to Asian markets in order to investigate the performance of a trading strategy involving the turn of month effect in a recent time period. I investigate a simple trading strategy exploiting the turn of month effect in the Chinese and Hong Kong stock markets using the indices SHASHR, SZASHR, SHSZ300, HSI, and HSCEI.

## 2 Data and Methodology

I examine the performance of Chinese and Hong Kong stock indices SHASHR, SZASHR, SZ300, HSI, and HSCEI in the period of December 30th, 2001 to July 17, 2015 with data for daily net returns from the Bloomberg terminal. I also use Bloomberg to obtain average bid price to maturity rates of 10 year bonds for China and Hong Kong as a measure of the risk free rate of return. Data cleaning, analysis, and graphs were completed in R.

I first look at the average daily return for the turn of the month, and then the cumulative returns over the turn of the month period for each of the five indices, verifying that returns over this period are significantly greater than zero with a t-statistic. I then investigate a trading strategy where the investor is long in the equity market during the turn of month days, and invested in cash (with no returns) during non-turn of month days. I compare this strategy to a baseline strategy of being always long in the equity market. The period of 12/30/2001-7/17/2015 consists of 163 months, consisting of 3,281 trading days in the SHASHR, SZASHR, and SHSZ300, and 3,345 trading days in the HSI and HSCEI.

In addition, I consider a .03% and .05% trading cost in the Chinese equity market, and a .1% and .2% transaction cost in Hong Kong market in implementing the trading strategy to simulate approximate transaction costs for an investor trading in the Chinese and Hong Kong markets. I calculate investment summaries for the baseline strategy as well as the proposed strategy with no transaction cost, a .1% transaction cost, and a .2% transaction cost. I use 10 year government bond rates as the risk free rate of return and find alpha, beta, and $R^2$ by regressing turn of month returns onto their respective index.

## 3 Turn of Month Effect

The indices and their respective turn of month periods are shown in the Table 1 and Table 2 below with data for daily net returns (%) from 12/30/2002 to 7/15/2015. These tables confirm that returns during the turn of month are significant.[1] An important point to note in Table 1 is that all of the average turn of month returns are significantly different from zero, from non-turn of month days, as well as from the average returns of the entire month. None of the average returns for non-turn of month days are significant.

Table 1: Average Daily Returns (%) of Indexes, Jan. 2002 to Jul. 2015

| Index | TOM Period | Returns (TOM) | Returns (Others) | Difference (Others) | Difference (Month) |
|---|---|---|---|---|---|
| *SHASHR* | (-1,+3) | .2123 | .0080 | .2043 | .1637 |
| (*t*-value) | | (3.28**) | (.25) | (2.86**) | (2.30*) |
| *SZASHR* | (-1,+3) | .2732 | .0157 | .2575 | .2063 |
| (*t*-value) | | (3.86***) | (.4484) | (3.26**) | (2.66**) |
| *SHSZ300* | (-1,+3) | .2429 | .0101 | .2327 | .1866 |
| (*t*-value) | | (3.51***) | (.30) | (3.02**) | (2.47*) |
| *HSI* | (-3,+2) | .1847 | .00524 | .1795 | .1359 |
| (*t*-value) | | (3.65***) | (.18) | (3.06**) | (2.39*) |
| *HSCEI* | (-1,+1) | .4581 | .0495 | .4081 | .3687 |
| (*t*-value) | | (4.68***) | (1.37) | (3.91*** ) | (3.56***) |

TOM refers to "Turn of Month." *, **, and *** denote significance at the .05, .01 and .001 levels, respectively

---

[1]The turn of month periods are taken from a previous report, in which I conduct a more thorough investigation of the turn of month effect and find that the returns on each day of the periods in Tables 1 and 2 are significant for their respective index.

Table 2: Average Cumulative Returns (%) of Indexes, Jan. 2002 to Jul. 2015

| Index | TOM Period | Returns (TOM) | Returns (Others) | Difference (Others) | Difference (Month) |
|---|---|---|---|---|---|
| *SHASHR* | (-1,+3) | .8493 | .1289 | .7203 | -.1248 |
| (*t*-value) | | (3.29**) | (.2328) | (1.17) | (-.18) |
| *SZASHR* | (-1,+3) | 1.093 | .2534 | .8395 | -.2517 |
| (*t*-value) | | (3.65***) | (.40) | (1.20) | (-.32) |
| *SHSZ300* | (-1,+3) | .9858 | .1643 | .8215 | -.1939 |
| (*t*-value) | | (3.57***) | (.28) | (1.26) | (.795) |
| *HSI* | (-3,+2) | .9275 | .0817 | .8461 | -.0771 |
| (*t*-value) | | (3.85***) | (.17) | (1.59) | (-.15) |
| *HSCEI* | (-1,+1) | .9161 | .9183 | -.00226 | -.9145 |
| (*t*-value) | | (4.30***) | (1.44) | (-.0034) | (-1.32) |

Table 2 displays average cumulative returns of the indices in question.[2] In each case, returns during the turn of month are significantly different from zero, but other results are not significant. This is caused in part by the reduced sample size after aggregating each category and in part by the very large volatility (standard deviation) of monthly returns.
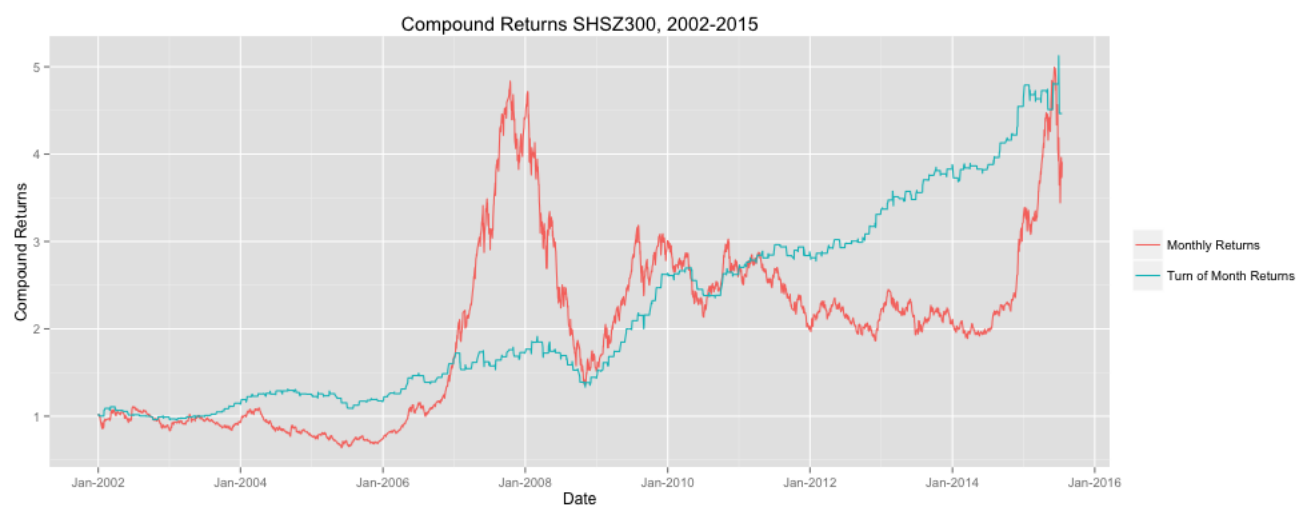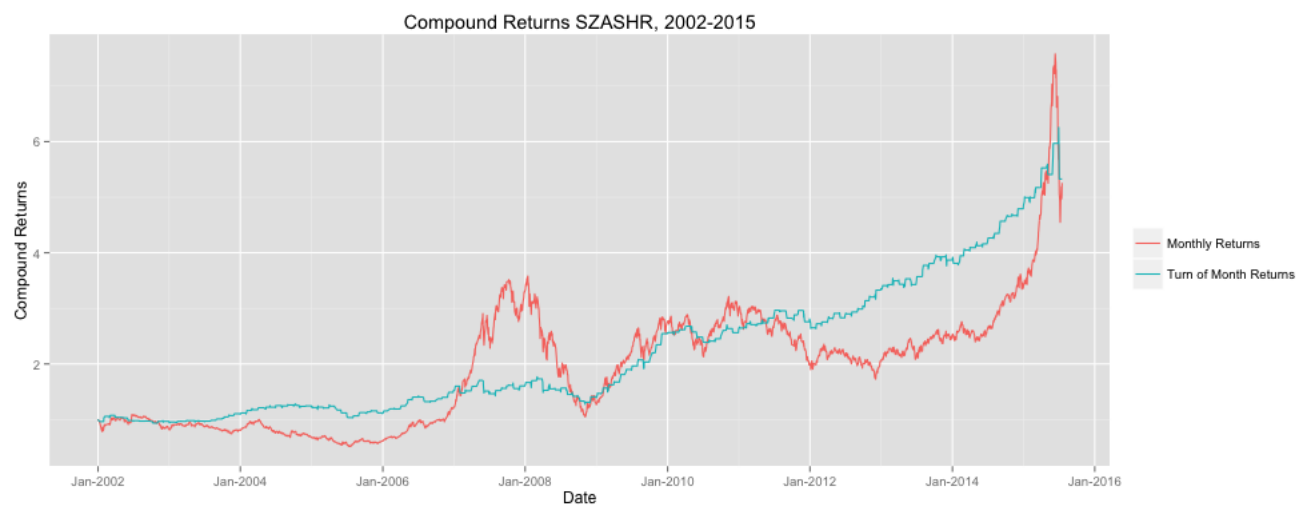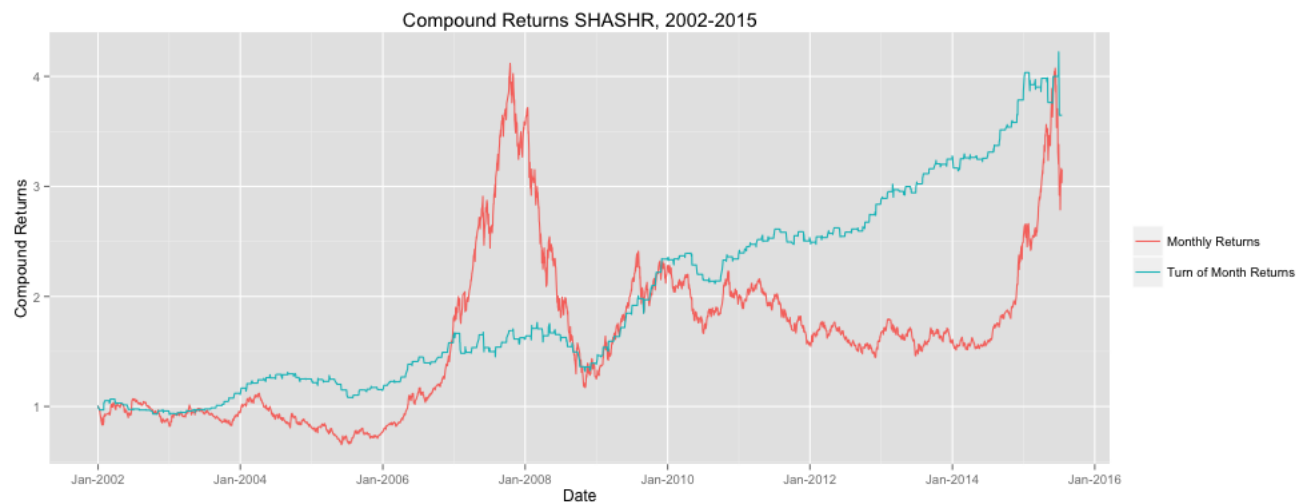
# 4   Trading Strategy

Let us now consider a simple trading strategy in this where the investor is long in the equity market during the turn of month period, compared to a baseline strategy of always being long in the equity market. Below, I graph the compound returns of the trading strategy against the baseline strategy from January 2002 to July 2015 for each of the five indices in question.
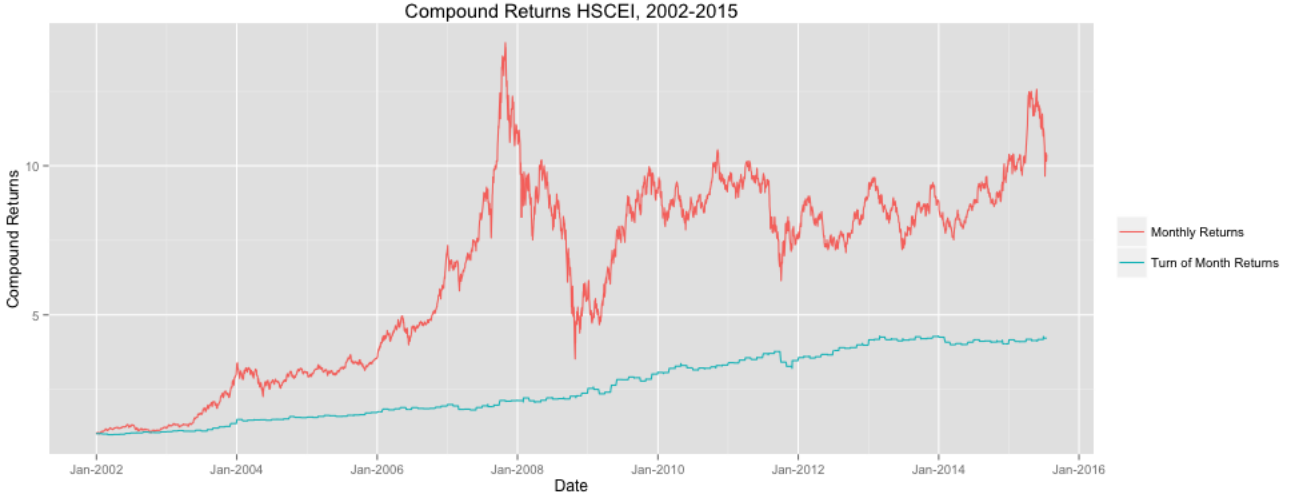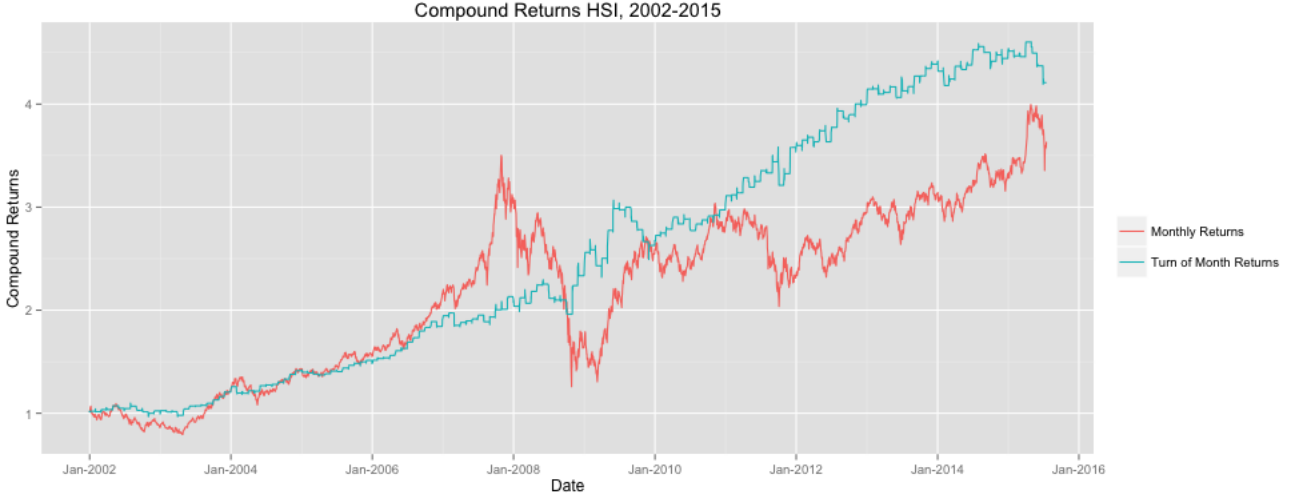
We observe in the graphs that the trading strategy is much less volatile than the baseline strategy. In all of the indices except HSCEI, the turn of month trading strategy with no transaction cost earns more profit with less volatility than the baseline strategy. This worth noting because in the turn of month strategy, the investor's money is liquid for over 80% of the time period, as opposed to completely illiquid in the baseline strategy.

Historically speaking, the trading strategy seems to be more successful in periods when the benchmark index is more stable. The period in which it seems to have produced the most excess returns is in the period of 2011 to mid-2014 in the all indices except for HSCEI. During the global financial crisis of 2007-2008 when the markets were very volatile, each of the benchmark indices show a period of very quick growth and decline, while the trading strategy is much less volatile. It is also noteworthy that in 2009 in each of the Chinese indices, the turn of month and baseline trading strategies overlap. Therefore, if we were to consider the period of 2002-2009, the trading strategy and baseline strategy would yield indistinguishable results; this also suggests that any excess returns provided by the trading strategy over the baseline strategy is a result of superior performance in the more recent period of 2009-2015. Since the beginning of 2015, the benchmark index has become more volatile especially in the Chinese market, rising and falling very fast within a six-month period–it is uncertain whether or not the turn of month strategy will continue to produce profits in the future with such volatile markets.

The trading strategy underperforms in the HSCEI for the entire period of 2002-2015. This lack of profit may be a result of the HSCEI's shorter turn of month period of only two days in contrast to a period of four or five days in the other indices. In a previous report, I find that returns in the HSCEI are only significantly different from zero in Day -1 and Day +1; returns from the rest of the month account for the rest of the index's growth. The shorter turn of month period in the HSCEI means that the trading strategy is invested in the stock market for only two trading days per month and produces less compound returns due to the turn of month effect being less pronounced.

---

[2]Note that Table 2 displays cumulative returns, not compound returns.

## Compound Returns SHASHR, 2002-2015



## Compound Returns SZASHR, 2002-2015



## Compound Returns SHSZ300, 2002-2015

Compound Returns HSI, 2002-2015


Compound Returns HSCEI, 2002-2015

In the previous trading analysis, we have not accounted for transactions costs when going in and out of the equity market. In our analysis of investments made on December 31 2001 to July 17, 2015 comparing the baseline strategy to the turn of month trading strategy, we also consider a trading cost of .03% and .05% in the Chinese market and .1% and .2% in the Hong Kong market. Table 3 displays summary statistics of each of the investments made; the index row represents the baseline strategy, the (0%) TOM row represents the turn of month trading strategy with no transaction costs, and the other rows considers the turn of month strategy with an added (%) transaction cost. For each of the indices, graphs of returns from 2002-2015 with transaction costs in addition to annual earnings for the trading strategy with transaction costs have been included in the appendix.

For the risk free interest rate, I use China's 10 year government bond (bid price to maturity) rate averaged from 2005-2014, which is 3.6339%. I averaged Hong Kong's 10 year government bond (bid price to maturity) rate from 2002-2014 to obtain a rate of 2.8238%. The risk free rate of return was used in the calculation of alpha, the Sharpe Ratio, and the Treynor Ratio. For alpha, beta, $R^2$, and the Treynor Ratio, I compare returns from the trading strategy to returns from the baseline strategy, using each respective index as the benchmark index as an intuitive way to measure the risk of trading strategy against the baseline strategy.

Table 3 shows that average daily returns for the baseline strategy in each of the indices are the largest, followed by the turn of month strategy with no transaction cost and decreasing with increasing transaction

Table 3: ($1,000) Investment Summaries: Jan. 2002 - Jul. 2015

| Index | Avg. Daily Returns | Std. Dev. | Alpha (%) | Beta | $R^2$ | Annualized Returns (%) | Investment Growth |
|---|---|---|---|---|---|---|---|
| *SHASHR* | .0486 | 1.647 | 0 | 1 | 1 | 13.62 | $3,153.97 |
| (0.%) TOM | .0422 | .742 | 5.60 | .625 | .522 | 15.48 | $3,647.05 |
| (.03%) | .0392 | .741 | 5.04 | .556 | .526 | 14.24 | $3,308.20 |
| (.05%) | .0372 | .741 | .047 | .513 | .529 | 13.41 | $3,099.93 |
| *SZASHR* | .0669 | 1.801 | 0 | 1 | 1 | 20.27 | $5,257.47 |
| (0.%) TOM | .0543 | .812 | 1.97 | .893 | .803 | 20.45 | $5,327.12 |
| (.03%) | .0513 | .811 | 2.26 | .797 | .805 | 19.15 | $4,832.17 |
| (.05%) | .0493 | .810 | 2.38 | .738 | .806 | 18.30 | $4,527.95 |
| *SHSZ300* | .0569 | 1.75 | 0 | 1 | 1 | 16.38 | $3,910.96 |
| (0.%) TOM | .0487 | .791 | 6.29 | .643 | .586 | 18.12 | $4,465.05 |
| (.03%) | .0458 | .790 | 5.88 | .575 | .589 | 16.84 | $4,050.19 |
| (.05%) | .0438 | .789 | 5.58 | .533 | .592 | 16.00 | $3,795.21 |
| *HSI* | .0489 | 1.491 | 0 | 1 | 1 | 14.78 | $3,537.77 |
| (0.%) TOM | .0449 | .7148 | -.0181 | 1.314 | .886 | 16.72 | $4,208.24 |
| (.1%) | .0327 | .7159 | -.0073 | .799 | .889 | 11.65 | $2,800.62 |
| (.2%) | .0206 | .7202 | -.0133 | .443 | .883 | 6.80 | $1,863.08 |
| *HSCEI* | .0894 | 1.974 | 0 | 1 | 1 | 29.07 | $10,377.81 |
| (0.%) TOM | .0446 | .568 | .0677 | .282 | .802 | 17.01 | $4,537.55 |
| (.1%) | .0397 | .564 | .0600 | .233 | .808 | 14.95 | $3,277.97 |
| (.2%) | .0348 | .562 | .0501 | .191 | .813 | 12.92 | $2,367.27 |

costs. However, when using the turn of month trading strategy, standard deviation of returns drops significantly to below half of the standard deviation of the baseline strategy. The trading strategy provides higher annualized returns than the baseline strategy in all indices except for the HSCEI, leading to greater profits. When a transaction cost is added, the trading strategy in the SZASHR and HSI also become unprofitable due to the higher costs of trading, but the returns in the SHASHR and SHSZ300 are still profitable in the case of a .03% transaction cost. In fact, returns for the .05% transaction cost strategy in SHASHR and SHSZ300, are only slightly less profitable than the baseline strategy ($54.40 in SHASHR, and $115.75 in SHSZ300).

The trading strategy returns exhibit a positive Jensen's alpha in all indices except HSI, meaning that actual returns exceeded the theoretical (risk-adjusted) predicted returns. Lower transaction costs led to higher alphas in all cases; the trading strategy displays positive abnormal returns, an attractive quality for investors. Beta, in this case representing the volatility of the trading strategy in comparison to the baseline strategy, was less than 1 for the trading strategy and even lower for increasing transaction costs (excluding TOM (0%) in the HSI), which means that the trading strategy has less volatility than the baseline strategy, and increasing transaction costs decreases return volatility. Trading strategies in the SZASHR, HSI, and HSCEI were highly correlated to their respective indices with a correlation ($R^2$) of over .80, and trading strategies in the SHASHR and SHSZ300 were more weakly correlated with a correlation between .50 and .60.

The risk-adjusted performance measures included in Table 4 are the Sharpe ratio, the Treynor ratio, and the information ratio. Each ratio is a measurement of risk, but they differ slightly in their interpretations. The Sharpe ratio measures excess return per unit of deviation, a higher ratio indicating superior risk-adjusted performance. In all indices except HSCEI, the trading strategy with no transaction cost has a larger Sharpe ratio than the baseline strategy. The .03% transaction cost strategy has a greater Sharpe ratio than the benchmark index in SZASHR and SHSZ300, but all other transaction costs cause the baseline strategy to perform better.

On the other hand, the Treynor ratio measures returns earned in excess of that which could have been earned on an investment with no risk, and is calculated with excess return over the risk free rate divided by systematic risk, beta. A higher Treynor ratio indicates greater returns than the risk free rate. The baseline strategy performed the best according to this metric in all cases, but since we solved for beta by regressing

Table 4: Financial Ratio Calculations

| Index | Sharpe Ratio | Treynor Ratio | Information Ratio |
|---|---|---|---|
| *SHASHR* | .00744 | .01223 | 0 |
| (0.%) TOM | .00789 | .00936 | .0238 |
| (.03%) | .00388 | .00417 | .00848 |
| (.05%) | .00120 | .00173 | -.00312 |
| *SZASHR* | .0170 | .0305 | 0 |
| (0.%) TOM | .0221 | .0201 | .0025 |
| (.03%) | .0185 | .0188 | -.0164 |
| (.05%) | .0160 | .0176 | -.0300 |
| *SHSZ300* | .0118 | .0206 | 0 |
| (0.%) TOM | .0157 | .0193 | .0183 |
| (.03%) | .0119 | .0164 | .0052 |
| (.05%) | .0094 | .0140 | -.0045 |
| *HSI* | .0138 | .0206 | 0 |
| (0.%) TOM | .0233 | .0127 | .0328 |
| (.1%) | .0063 | .0056 | -.0873 |
| (.2%) | -.0106 | -.0173 | -.1687 |
| *HSCEI* | .0310 | .0612 | 0 |
| (0.%) TOM | .0289 | .0581 | -.0513 |
| (.1%) | .0204 | .0493 | -.0573 |
| (.2%) | .0118 | .0347 | -.0627 |

onto the index, the higher Treynor ratio in the baseline strategy is not very revealing. As expected, the Treynor ratio decreases as transaction costs increase.

The information ratio is appropriate when the investor is holding the strategy in combination with a passive market index, and measures the excess return of the turn of month trading strategy compared to its respective index. Table 4 shows that in all indices, the trading strategy with no transaction costs, as well as the strategy with .03% transaction cost in SHASHR and SHSZ300 produces excess return compared to the baseline strategy, but the trading strategy does not perform as well as the baseline strategy in Hong Kong markets or in the SZASHR when any greater transaction costs are added.
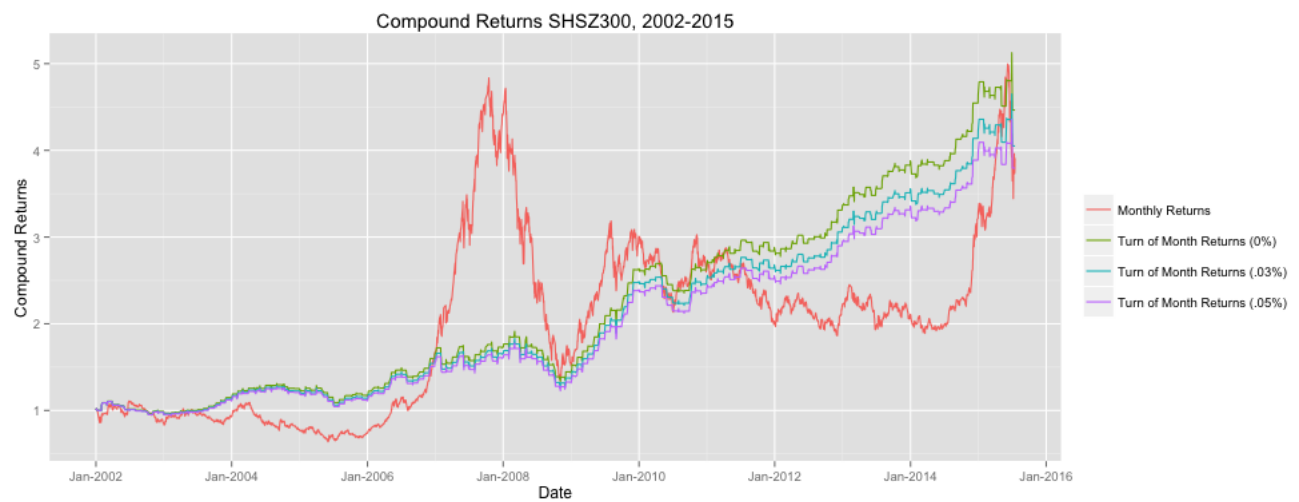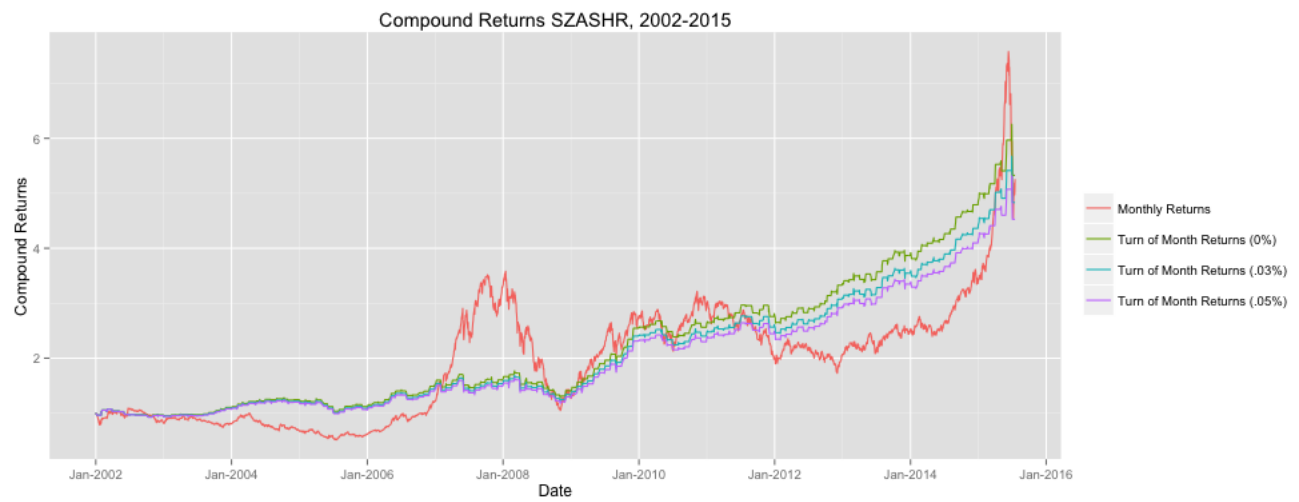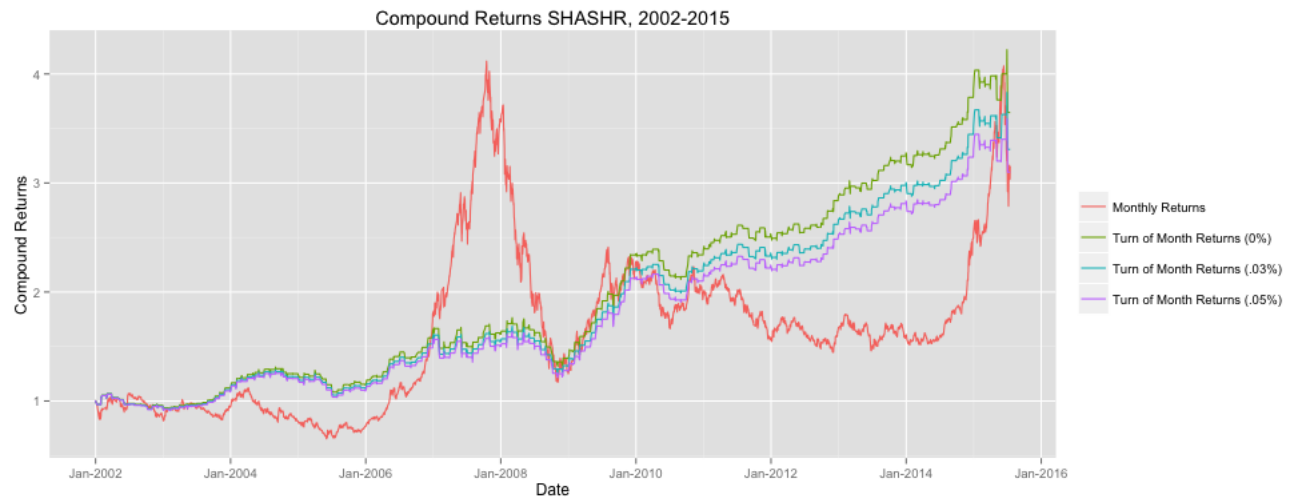
# 5   Conclusion

This report investigates a trading strategy exploiting the turn of month effect in Chinese and Hong Kong markets with the stock indices SHASHR, SZAHSR, SHSZ300, HSI, and HSCEI. Using data from December 30, 2001 to July 17th, 2015, I find that a trading strategy of being long on the stock index during the turn of month period with no transaction cost outperforms a baseline strategy of being always long on the index in all cases except for the HSCEI. However, when accounting for transaction costs, the baseline strategy outperforms the trading strategy in the Hong Kong markets, but a .03% transaction cost in SHASHR and SHSZ300 still demonstrated positive returns. In the time period examined, the turn of month effect was slightly more pronounced in SHASHR and SHSZ300 than the other indices. Additional graphs and tables with more detailed accounts of the effect of transaction costs over time can be found in the appendix.

This investigation also did not account for slippage, the difference between the expected price of the trade and the price the trade executes at, so returns for the trading strategy may be a rather optimistic measure of profits. The underperformance of the trading strategy in the HSCEI may be due to the relatively short turn of month period in the index compared to the others as found in a previous report; the turn of month effect cannot be exploited for profit using the HSCEI. It is important also to note that in the turn of month trading strategies, the investment is liquid for over 80% of trading days while in the baseline strategy the investment is completely illiquid; in addition, volatility of the turn of month trading strategy is much less than the baseline strategy. Thus, it may be worthwhile for the investor, even with a small trading cost, to execute the turn of month trading strategy for greater asset liquidity and little volatility.

# References

[1] Grimbacher, Stefan Benjamin, Laurens AP Swinkels, and Pim Van Vliet. An anatomy of calendar effects. Working Paper, 2010.

[2] Hensel, Chris R., and William T. Ziemba. "Investment results from exploiting turn-of-the-month effects." The Journal of Portfolio Management 22.3 (1996): 17-23.

[3] Kunkel, Robert A., William S. Compton, and Scott Beyer. "The turn-of-the-month effect still lives: the international evidence." International Review of Financial Analysis 12.2 (2003): 207-221.

[4] Liu, Lan. "The Turn-Of-The-Month Effect In The S&P 500 (2001-2011)." Journal of Business & Economics Research (JBER) 11.6 (2013): 269-276.
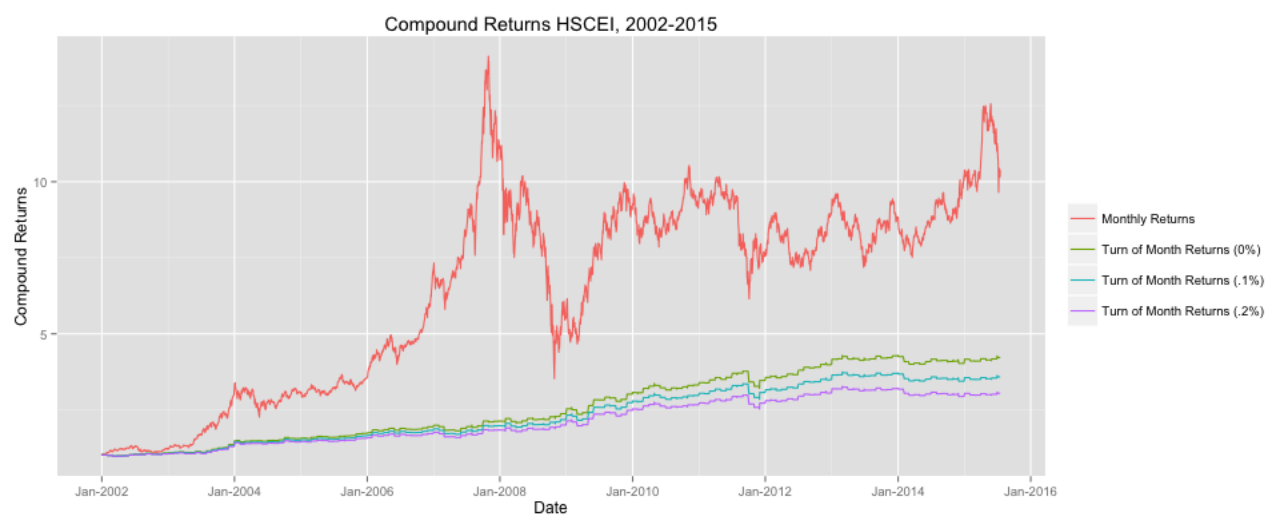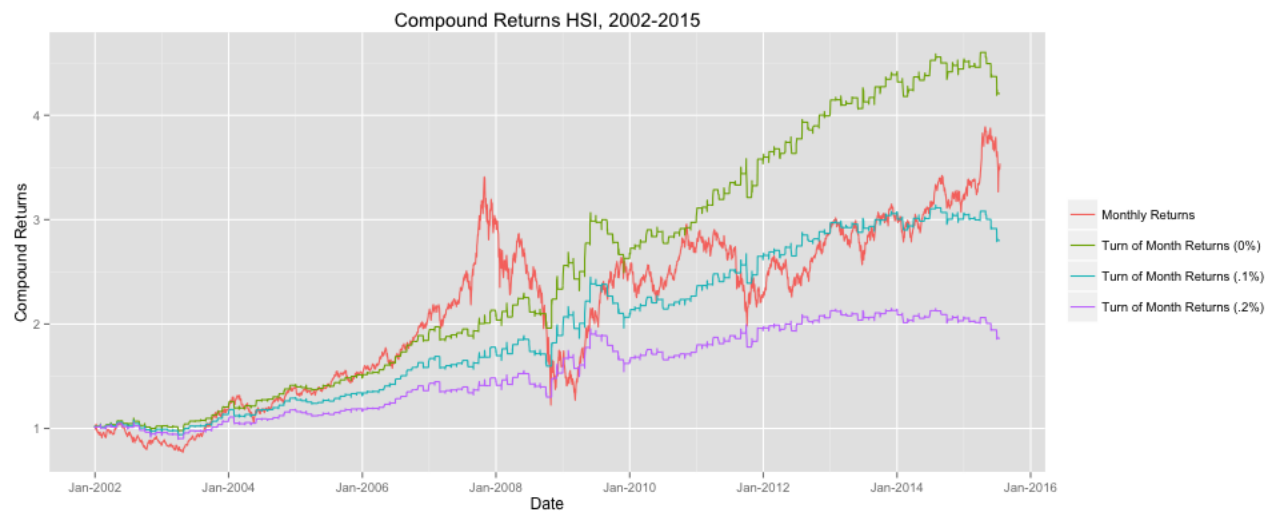
# 6  Appendix



Compound Returns SHASHR, 2002-2015



Compound Returns SZASHR, 2002-2015



Compound Returns SHSZ300, 2002-2015

Compound Returns HSI, 2002-2015



Compound Returns HSCEI, 2002-2015

Table 5: SHASHR: Value of Investment Over Time

| Date | Index | TOM (0%) | TOM (.05%) | TOM(.05%) |
|---|---|---|---|---|
| 12/31/2001 | $1,000.00 | $1,000.00 | $1,000.00 | $1,000.00 |
| 12/31/2002 | 842.70 | 953.26 | 946.13 | 941.41 |
| 12/31/2003 | 942.84 | 1108.85 | 1092.66 | 1082.00 |
| 12/31/2004 | 811.84 | 1243.79 | 1216.84 | 1199.20 |
| 12/30/2005 | 765.54 | 1144.97 | 1112.13 | 1090.75 |
| 12/29/2006 | 1800.71 | 1645.89 | 1587.21 | 1549.24 |
| 12/28/2007 | 3554.99 | 1610.77 | 1542.19 | 1498.10 |
| 12/31/2008 | 1249.16 | 1383.80 | 1315.38 | 1271.65 |
| 12/31/2009 | 2279.03 | 2350.23 | 2217.99 | 2133.98 |
| 12/31/2010 | 1982.84 | 2381.95 | 2231.81 | 2136.98 |
| 12/30/2011 | 1582.98 | 2534.20 | 2357.42 | 2246.44 |
| 12/31/2012 | 1674.46 | 2883.42 | 2663.03 | 2525.51 |
| 12/31/2013 | 1608.69 | 3276.35 | 3004.22 | 2835.43 |
| 12/31/2014 | 2544.75 | 3867.72 | 3521.02 | 3307.28 |
| 07/16/2015 | 3153.97 | 3647.05 | 3308.20 | 3099.93 |

Table 6: SZASHR: Value of Investment Over Time

| Date | Index | TOM (0%) | TOM (.03%) | TOM(.05%) |
|---|---|---|---|---|
| 12/31/2001 | $1,000.00 | $1,000.00 | $1,000.00 | $1,000.00 |
| 12/31/2002 | 836.36 | 967.09 | 952.48 | 947.72 |
| 12/31/2003 | 802.93 | 1095.15 | 1079.16 | 1068.63 |
| 12/31/2004 | 678.06 | 1232.82 | 1206.11 | 1188.62 |
| 12/31/2005 | 611.10 | 1106.75 | 1075.00 | 1054.34 |
| 12/31/2006 | 1221.00 | 1520.38 | 1466.17 | 1431.10 |
| 12/31/2007 | 3281.83 | 1597.40 | 1529.39 | 1485.66 |
| 12/31/2008 | 1266.70 | 1390.47 | 1321.72 | 1277.77 |
| 12/31/2009 | 2766.62 | 2560.86 | 2416.77 | 2325.23 |
| 12/31/2010 | 2986.97 | 2623.29 | 2457.93 | 2353.50 |
| 12/31/2011 | 2021.04 | 2809.78 | 2613.77 | 2490.73 |
| 12/31/2012 | 2072.14 | 3358.56 | 3101.86 | 2941.68 |
| 12/31/2013 | 2513.20 | 3880.83 | 3558.49 | 3358.56 |
| 12/31/2014 | 3400.05 | 4848.29 | 4413.69 | 4145.76 |
| 07/17/2015 | 5,257.47 | 5,327.17 | 4832.17 | 4527.95 |

Table 7: SHSZ300: Value of Investment Over Time

| Date | Index | TOM (0%) | TOM (.03%) | TOM(.05%) |
|---|---|---|---|---|
| 12/30/2001 | $1,000.00 | $1,000.00 | $1,000.00 | $1,000.00 |
| 12/30/2002 | 855.19 | 985.06 | 977.70 | 972.82 |
| 12/31/2003 | 925.78 | 1136.45 | 1119.87 | 1108.94 |
| 12/31/2004 | 774.88 | 1246.93 | 1219.91 | 1202.22 |
| 12/31/2005 | 736.85 | 1164.18 | 1130.79 | 1109.05 |
| 12/31/2006 | 1667.08 | 1649.12 | 1590.32 | 1552.28 |
| 12/31/2007 | 4392.48 | 1720.16 | 1646.92 | 1599.83 |
| 12/31/2008 | 1514.40 | 1432.78 | 1361.94 | 1316.66 |
| 12/31/2009 | 3009.16 | 2635.58 | 2487.30 | 2393.08 |
| 12/31/2010 | 2668.32 | 2677.19 | 2508.44 | 2401.86 |
| 12/31/2011 | 2028.27 | 2881.05 | 2680.07 | 2553.91 |
| 12/31/2012 | 2227.22 | 3367.61 | 3110.21 | 2949.60 |
| 12/31/2013 | 2108.51 | 3879.75 | 3557.50 | 3357.63 |
| 12/31/2014 | 3285.91 | 4645.80 | 4229.35 | 3972.61 |
| 07/17/2015 | 3910.96 | 4465.05 | 4050.19 | 3795.21 |

Table 8: HSI: Value of Investment Over Time

| Date | Index | TOM (0%) | TOM (.1%) | TOM(.2%) |
|---|---|---|---|---|
| 12/31/2001 | $1,000.00 | $1,000.00 | $1,000.00 | $1,000.00 |
| 12/31/2002 | 841.43 | 997.32 | 966.86 | 937.30 |
| 12/31/2003 | 1188.11 | 1216.41 | 1144.40 | 1076.58 |
| 12/31/2004 | 1391.76 | 1416.39 | 1293.13 | 1180.49 |
| 12/30/2005 | 1508.74 | 1482.82 | 1313.75 | 1163.81 |
| 12/29/2006 | 2096.63 | 1903.91 | 1636.95 | 1407.21 |
| 12/31/2007 | 3006.12 | 2108.31 | 1759.09 | 1467.45 |
| 12/31/2008 | 1611.11 | 2368.05 | 1917.38 | 1552.15 |
| 12/31/2009 | 2521.61 | 2676.86 | 2103.33 | 1652.29 |
| 12/31/2010 | 2733.72 | 3028.08 | 2308.95 | 1760.13 |
| 12/30/2011 | 2255.63 | 3542.39 | 2621.25 | 1939.05 |
| 12/31/2012 | 2869.90 | 4014.53 | 2882.78 | 2069.40 |
| 12/31/2013 | 3053.48 | 4411.71 | 3074.31 | 2141.57 |
| 12/31/2014 | 3210.93 | 4492.00 | 3037.71 | 2053.44 |
| 07/17/2015 | 3537.77 | 4208.24 | 2800.62 | 1863.08 |

Table 9: HSCEI: Value of Investment Over Time

| Date | Index | TOM (0%) | TOM (.1%) | TOM(.2%) |
|---|---|---|---|---|
| 12/31/2001 | $1,000.00 | $1,000.00 | $1,000.00 | $1,000.00 |
| 12/31/2002 | 1197.65 | 1140.77 | 1112.59 | 1085.08 |
| 12/31/2003 | 3157.09 | 1563.98 | 1489.16 | 1417.84 |
| 12/31/2004 | 3062.70 | 1816.04 | 1688.13 | 1569.11 |
| 12/30/2005 | 3550.43 | 1936.65 | 1757.53 | 1594.83 |
| 12/29/2006 | 7038.79 | 2491.46 | 2207.39 | 1955.46 |
| 12/31/2007 | 11178.37 | 2408.08 | 2082.89 | 1801.36 |
| 12/31/2008 | 5598.32 | 2332.27 | 1969.45 | 1662.80 |
| 12/31/2009 | 9273.50 | 3738.93 | 3082.38 | 2540.63 |
| 12/31/2010 | 9410.75 | 4646.83 | 3739.96 | 3009.43 |
| 12/30/2011 | 7543.00 | 4280.53 | 3363.42 | 2642.16 |
| 12/31/2012 | 8996.47 | 4894.72 | 3754.76 | 2879.53 |
| 12/31/2013 | 8833.84 | 4884.10 | 3657.72 | 2738.49 |
| 12/31/2014 | 10160.25 | 4686.90 | 3426.76 | 2504.64 |
| 07/17/2015 | 10377.81 | 4537.55 | 3277.97 | 2367.27 |