The January Barometer
and the Individual Investor

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ABSTRACT

The January Barometer hypothesis argues that investors may benefit from switching market behavior over the months of February through December based on the returns observed in the month of January. If January returns are negative the investors should exit the market according to the hypothesis but should otherwise remain invested. We simulate the behavior of an individual investor who could switch from an index fund to a money market fund and we find surprisingly strong increase in end wealth from adopting a January Barometer strategy. We also find implementation of a January barometric strategy based only on first day January returns to be unsuccessful. In addition, we find limited evidence of success from implementing a strategy based on gauging market sentiment early in the month of January.

I.   Introduction

Practitioners have argued that January returns act as a barometer to predict returns for the remainder of the year. According to this predictive tool if January has positive returns the returns for the next 11 months will also be positive. Thus, an investor may decide at the end of January whether to remain long in the market or not. If January returns are positive the investor should stay long. But, if January returns are negative, the investor should seek alternative investments. Presumably the investor may park cash in a money market instrument or the investor may buy bonds.

The January Barometer was cited in the practitioner literature before statistical analysis of the effect was found in the academic literature. The 1972 edition of his *Stock Trader's Almanac* Yale Hirsch[1] argues that the January Barometer is among the most accurate of stock market indicators, providing a correct prediction over 80% of the time. Much later the January Barometer was studied in the academic literature providing statistical support for the existence of the January Barometer.

The purpose of this study is to determine if the January Barometer may be an effective guide to individual investors. Unlike many market regularities, the weekend effect for example, trading on the January Barometer may provide long-term benefits and may easily be implemented by an individual investor. An individual investor focusing on index funds may trade once a year between the index fund and a money market fund. Such trading would not likely violate any restrictions placed on fund switching by the mutual fund company. Hence, the strategy may be accomplished without incurring transaction costs. We investigate the profitability of such a strategy by proxing index portfolio returns using three market indexes. In addition we investigate the possibility that the January Barometer might be more efficient, based on the well-known concentration of the January effect in the first several trading days of January, by using the first trading day of the month return instead of the return for the entire month as a signal for switching to the money market fund. This would provide an increase in profitability to the investor if the first-day return signaled low returns for the rest of January as well as for the rest of the year. Finally, we use an early January return measure designed to measure investor sentiment. If a January barometer strategy using this return measure is successful we add to the evidence concerning the cause of the January strategy.

The rest of the paper proceeds as follows: In Section II we review the literature relative to the January barometer. We do so in two parts: First, we report the literature regarding the validity of the January barometer. Second, we discuss findings regarding explanations for the existence of the January barometer with special emphasis on the possibility that investor sentiment is at the core of the relationship. In Section III we describe our data collection process and the empirical evidence is reported in section IV. Our results show strong evidence in favor of the January Barometer over our sample period. Attempts to improve the strategy using first day returns were unsuccessful. Reliance on a measure of investor sentiment proved more successful, but the success of this strategy is dependent on returns from a single year. A conclusion follows.

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[1] This reference was cited by Cooper, McConnell and Ovtchinnikov (2006, p. 319). Hirsch's remarkable Almanac also identified the Monday effect and the holiday effect before these effects were cited in the academic literature.

II. Previous Evidence of the January Barometer

A. The Existence of the January Barometer

In order to justify our study we examine the evidence of the connection between January returns and returns for the rest of the year, as such a correlation is required for A January barometer strategy to be successful. Beginning with Hensel and Ziemba (1995) a number of academic studies support the existence of the January barometer. They study the period 1926 through 1993 using the S&P 500 index and argue for the effectiveness of the January barometer. Brown and Luo (2006) use the NYSE equally-weighted return to index and find generally consistent results with the January barometer. They suggest (p. 29) that following a down January an investor would achieve superior returns by replacing a stock investment with Treasuries.[2] The most comprehensive study of the January barometer is conducted by Cooper, McConnell and Ovtchinnikov (2006). Cooper, McConnell and Ovtchinnikov (CMO) dub evidence in support of the January barometer as "the other January effect," a designation that has generally been followed in the subsequent literature. (We continue to use the term January barometer as it seems more appropriate in terms of a strategy for an individual investor.)

CMO study the effectiveness of the January barometer over the period 1940 through 2003 using the excess return (raw returns minus the T-bill rate) on the CRSP equally-weighted and value weighted indexes. They find strong support for the effectiveness of the January barometer as the average excess returns for both the value-weighted and equally weighted CRSP Index are negative following a negative following negative January returns.   During this time period they report that the 11-month excess return to the value weighted index is negative 61% of the observations if January excess returns are negative and only 12% of the observations when January excess returns are positive.   The spread between excess returns following positive January returns versus negative January returns is 20.04% for the equally-weighted index and 14.71% for the value-weighted index. In both cases the p-value for testing the difference between the trailing positive and negative months is less than .001. They examine the data on a decade by decade basis and find the spread between trailing positive and trailing negative universally positive, although given the small decade-long sample sizes the differences are generally statistically insignificant. CMO extend their analysis back to 1825 using a data base created by Goetzmann, Ibbotson and Peng (2001). They find a significant January barometer effect over the period 1825 through 2003. They find, however, over the decade of the great depression 1929 through 1939 that the January barometer provides a perverse indication for the next 11 month return.

Later studies have confirmed the January barometer for the U. S. equity market. Strum (2009) confirms the predictive power of the January barometer using the S&P 500 Index and the CRSP value-weighted and equally-weighted Indexes. Marshall and Visaltanachoti (2010) using the value weighted CRSP index find a January barometer effect, but argue that it is not economically significant, Brusa, Hernandez and Liu (2014) using the same indexes as Strum

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[2] Brown and Luo argue that the January barometer is ineffective when January is an up month. Their argument relies on the observation that returns for the next 11 months following Januaries is not superior to 11 month returns following positive returns for other months. We suggest that this comparison is biased because January is the only month where the following 11 months returns do not benefit from the inclusion of generally positive January returns. In keeping with the basic prediction of the January barometer they do find positive returns in the 11 month period following a positive January return.

confirm the January barometer for the U. S. market using regression analysis. So, there appears to be strong evidence in support of the validity of the market lore suggesting a January barometer for the U. S. market. On the other hand, studies of international markets fail to find an effective January barometer. These studies include Easton and Pinder (2007), Stivers, Sun and Sun (2009), Bohl and Salm (2010) and Marshall and Visaltanachoti (2010). Several of these studies also question the strength or persistence of the January barometer for U. S. data. Easton and Pinder argue that in the last period studied by CMO the January barometer does not provide effective predictions if raw returns are studied instead of excess returns. In a similar argument, Stivers et. al. maintain that the January barometer has disappeared in the "post-discovery" period of 1975 through 2006 for U. S. markets. Given these questions our first empirical effort will be to examine the existence of a January barometer effect in our sample.

B. **Causes of the January Barometer**

Although successful application of a January barometer strategy does not require understanding the cause of the effect, an investor may be more confident in implementing the strategy if the switching indication associates with a confirmation signal. Thus, we examine explanations of the cause of the January barometer. Most of the current studies on the January barometer have concentrated on an examination of the existence of the effect without exploring the possible cause of the effect. CMO provide an exception to this pattern. CMO postulate that economic variables might cause a correlation between January returns and the rest of the month. They test the impact of changes in the dividend yield and several monetary variables on the correlation between January returns and the rest of the year. They conclude that these monetary variables do not explain the January barometer effect. Strum agrees that monetary policy does not influence the January barometer but asserts that the predictive power of the January barometer is increased if one considers the influence of changes in fiscal policy associated with the presidential election cycle.

CMO also explore the possibility that the return auto-correlation of the January barometer associated with payment for risk. To that end they test whether the January barometer applies equally to value and growth securities and equally to small firm and large firm securities. They find that this is the case and dismiss the argument that the January barometer occurs because of a pattern in payment for risk. Consistent with this result, Brusa et. al. find that the January barometer is found across portfolios formed on the basis of market risk as measured by beta across portfolios formed on the basis of total risk.

CMO examine the possibility that investor sentiment may cause high or low January returns and continue into the next 11-month period. If indeed behavioral factors do explain the January effect then the influence of investor sentiment on the January barometer seems highly plausible. CMO however, argue that investor sentiment does not explain the other January effect. This conclusion is based on an examination of the Baker-Wurgler (2006) index of investor sentiment. Because the B-W index does not even predict which Januaries have positive or negative returns CMO dismiss the investor sentiment argument. We suggest that this finding may result from B-W index's inability to explain return variation rather than the lack of validity in the hypothesis that investor sentiment is at the root of the return correlation described by the January barometer. We use an investment sentiment indicator in an attempt to improve the profitability of a January Barometer strategy. If this attempt is successful we will provide

support for the hypothesis that the correlation required for the success of the January barometer is caused by changes in investor sentiment.

III.   Data Procedures

To examine the January barometer we gather return data from the CRSP data base. Following CMO we gather data starting in 1940. Monthly returns are available from January 1940 through December 2013 for the CRSP Equally-Weighted Index (CRSP EWI), for the CRSP Value-Weighted Index (CRSP VWI), and the Standard & Poore's 500 Index (SPI). For each of these returns on an annual basis we calculate the cumulative returns from February through December. We also gather the monthly T-bill rate from Kenneth French's website.[3] for the period January 1940 through December 2013.

To examine whether a January strategy could be more effective using early January returns, we gather daily return data for the CRSP EWI and VWI over the period January 2, 1940 through December 31, 2013.   Daily data for the SPI is not available until 1963. For that index we collect daily data from January 2, 1963 through December 31, 2013. Also, we gather daily T-bill rates from Kenneth French's website. for the period January 1940 through December 2013. In all cases we determine the returns for the rest of January as required to implement the January barometer strategy by comparing daily returns to the return for the entire month of January.

To examine the impact of investor sentiment on the effectiveness of the January barometer strategy we create a portfolio of small-firm, loser securities on the basis that early January returns to this portfolio would be especially affected by investor sentiment. We create the portfolio using a double sort procedure where small firms are identified as securities within the lowest size quintile using NYSE breakpoints. Loser securities are identified as securities within lowest quintile of cumulative returns over the past five year period. (Only firms that have return data for 60 successive months are included.)   Their returns are for the start of every year from 1963 through 2012. We calculate the equally-weighted return for those securities for the first four trading days of January. And use these returns to determine if the investor should be long in the market our hold T bills for the rest of the year.

IV.   Empirical Results

A. Monthly Data

We begin our analysis using monthly data to determine the efficiency of the January barometer. CMO measure the January barometer using excess return data (raw returns minus corresponding T-bill return). Easton and Pinder and Stivers et. al. question the continued existence of the January barometer effect in the U. S. market, arguing in part that the results only hold for excess data and not for raw data. Further, they argue that the January barometer as discussed in the practitioner literature focuses on raw data. Because an alternative investment strategy may likely involve the investment in T bills, we suggest that the use of excess returns is an acceptable test of the existence of a January barometer. Hence, we report results for both raw data points and excess return data points.

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[3]This data can be found at the following address: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/

Table 1 presents summary statistics for the number of positive and negative returns for the month of January and for the cumulative returns for February through December. Panel A reports the results for raw data and Panel B reports returns for the excess return data. January returns are predominately positive especially for the EWI where the correlation between the size and January effects is evident. Returns for the 11-month, February through December period are also mostly positive given the cumulative effect across 11 months of observation. But, for the EWI index there are more positive January returns than positive returns for February through December.[4]

The January barometer suggests that negative January returns will be followed by negative returns in February through December and that positive January returns will also continue through the rest of the year. Thus, validation of the January barometer requires evidence that the probability for a positive return for the rest of the year increases following a positive January return and *vice versa.* In Panel C of Table 1, for all three indexes and for both excess return and raw returns, we report the conditional probability for positive and negative returns over the last eleven months of the year given January returns. For all three indexes and for both raw data and excess return data, the probability of a positive return for February through December is greater following a positive January return than following a negative January return. Likewise, for all comparisons, the likelihood of a negative return is greater following a negative January. We test for statistical significance of these differences using a two-population proportions test. Specifically, we test the null hypothesis that the proportion of returns for February through December that are positive is the same following a positive January as following a negative January. Our alternative hypothesis is the proportion of returns for February through December that are positive is greater following a positive January than that following a negative January. We also test the null hypothesis that the proportion of returns for February through December that are negative is the same following a negative January as following a positive January against the hypothesis that the proportion of returns for February through December that are negative is greater following a negative January than that following a positive January. Because the results of these tests must be identical except for the sign we report the results of the test only once.

Panel D of Table 1reports the results of testing for differences in the likelihood of positive or negative rest of the year returns given January returns. For the SPI and the CRSP VWI we reject the null hypothesis of no difference in proportions in favor of the alternative hypothesis that returns for February through December are more likely positive (negative) following a positive (negative) January return than following a negative (positive) January return. For both indexes for the excess return data the difference is significant at the 1% level. For the raw data the difference for the SPI is significant at the 0.1% level and the difference for the CRSP VWI is significant at the 5% level. For both raw data and excess return data we cannot assert that the likelihood of a positive (negative) return for the months of February through December increases following a positive (negative) return for January for the CRSP EWI.

As reported in Table 1, consistent with the preponderance of positive returns for the February through December period, the majority of the returns for the last eleven months of the year are positive regardless of the sign of the January returns. This means that investors following the January barometer dictate to exit the market after a negative January return will most often forgo positive market returns. Of course, returns in these months may be lower than returns of an alternative investment and the investor may still be pleased with a market exit. However, for the

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[4] This is consistent with the findings of De Bondt et. al. (2014) showing that median returns for small-firm portfolios are primarily negative outside of January.

January barometer to have any merit would require that January return behavior would affect both the propensity and the magnitude of return behavior in the following eleven months. This is to say that an investor using the January barometer is interested in the size of the return not just the sign of the return. The investor wishes the average return received for the February through December to be higher when the January barometer has signaled to remain in the market than when the January barometer has signaled a market exit. So, we compare average returns for the February through December period in years when the return for January is positive against February through December returns in years when the return for January is negative. Tests are conducted using standard two-population t-test for all three indexes for both raw returns and excess returns. We test the hypothesis that average returns for the period February through December are equal in years where January returns are positive and years where January returns are negative. The alternate hypothesis is that remaining year returns are just as high following positive January returns as when following negative January returns.

Table 2 reports results of the two-population t-tests for our six comparisons. In all cases the average return for the remainder of the year is higher in years when January returns are positive. For the SPI the difference is always significant at the 0.1 % level; the difference for the CRSP VWI is always significant at the 1% level; and, differences for the CRSP EWI are significant at the 5% level. The January barometer is able to correctly advise investors as to which years will have the higher returns for the period February through December. Examination of the average excess returns in years following negative January returns is especially instructive. In these years, for all three indexes, average excess returns are negative. This shows that in those years T-bill returns were greater than equity returns as measured by the index. Thus, over the time period examined, if investors followed the January barometer strategy and invested their funds in T-bills following negative January returns those investors would outperform a buy and hold strategy.

Our next step is to compare portfolio wealth from a strategy applying the January barometer portfolio wealth from applying a buy and hold strategy. We compare results for investing in large-firm securities and for investing in small-firm securities. The benchmark buy and hold strategies will hold a portfolio invested in alternatively a large-firm or small-firm index. We simulate returns for the large-firm index by the returns for the SPI and for the small-firm index by returns to the CRSP EWI. Returns for the application of the January barometer will be determined as follows: 1) the investor always be in the market (holding either the large-firm or small-firm index) during January; 2) the investor will remain in the market for the rest of the year if the excess returns for the appropriate index is positive in January; 3) the investor will exit the market and hold T-bills for the remainder of the year if January excess returns are negative; 4) at the end of the year the investor will return to the market. This strategy should be easily operationalized for a mutual fund investor who owns funds within a fund family that has both index funds and money market funds. Switching funds within the fund family no more than once a year ought not to incur any transaction fees. We recognize that index funds, indeed mutual funds in general, are not available in the early years of our sample period.

Table 3 reports results from the simulation studies. We first report results from applying the strategy over the entire sample period of 1940 through 2013. As discussed above Easton and Pinder and Stivers et. al. argue that the January barometer does not function well in recent time periods. To reflect this possibility we compare the January barometer strategy and the buy and hold strategy in two different time periods. Stivers et. al suggest that the time January barometer became ineffective after reports of the existence of a January barometer effect in the 1970s.

Thus we create sub-periods by dividing our data in half. The first sub-period includes the years 1940 through 1976; the second sub-period includes the years 1977 through 2013. In all cases we stimulate the investment of $1 at the start of the time period, calculating end wealth without including any additional contributions during the simulation period.

As reported in Table 3, the January barometer strategy does very well indeed relative to a buy and hold strategy over the entire sample period. Applying the January barometer strategy to the SPI index turns a $1 investment at the start of 1940 into $704 at the end of 2013. In contrast a buy and hold strategy applied to the SPI results in end of $148, less than one-fourth of the wealth amassed by the January barometer strategy. End wealth is much higher, reflecting the small-firm effect, investing in the small firm index. And, the January barometer strategy remains dominant in the small-firm comparison. The wealth resulting from applying the January barometer strategy to an investment of $1 at the start of 1940 is $53,369. The end wealth from applying the January barometer strategy to investing in the CRSP EWI is more than three times the end wealth of a buy and hold strategy which is $15,343. Notice that both small-firm strategies are substantially higher than either SPI strategy.

The magnitude of the differences in the January barometer strategy and the buy and holds strategy results from a higher average return for the January barometer strategy when that strategy is holding T-bills relative to the equity return to the buy and hold strategy during the same time period. This difference is reflected in higher average annual returns for the January barometer strategy relative to the buy and hold strategy. But the difference in end wealth seems larger than what one might expect looking at the difference in arithmetic mean returns. For example the end wealth of the January barometer for investing in the SPI is more than four times the end wealth for a buy and hold strategy utilizing a buy and hold strategy, but the arithmetic mean of the January barometer is just 15% higher for the January barometer. Most of this seeming paradox is explained by the impact of compounding over the seventy-four year sample period, but there is more to the difference. The standard deviation of the annual returns for the January barometer is substantially less than the standard deviation of the annual returns for the buy and hold strategy. Thus, the greater fluctuation in the base used to calculated average annual returns for the buy and hold strategy overestimates the wealth crating capacity of this investment. The reported geometric means show a greater difference between the two strategies than do the arithmetic mean.

We confirm previous reports of the reduced strength of the January barometer over time. Almost all of the benefit from the January barometer strategy accrues in the first half of the sample. At the termination of the first half of the sample period for both the SPI and CRSP EWI the end wealth of the January barometer strategy is more than three times the end wealth of the buy and hold strategy. Applying the January barometer strategy to the SPI results in an end wealth which is only a third higher than the end wealth of a buy and hold strategy. The application of the two strategies to the CRSP EWI results in very little difference in end wealth, albeit the January barometer strategy has a slightly higher end wealth. Notice that the buy and hold strategy has a higher arithmetic mean annual return than does the January barometer strategy. But as in comparisons with the entire sample period, the January barometer strategy has a substantially lower standard deviation in annual returns resulting in a slightly higher geometric mean and end wealth for the January barometer strategy. So, one may still conclude value in the January barometer because the same or slightly higher end wealth is achieved with lower variation in wealth.

B. First Day Returns

The January barometer strategy presumes that an entire month of returns is required to determine if the returns for the rest of the year will be negative. We ask the question: Are first day January returns positively correlated with returns for the rest of the month. If this correlation exists an investor could exit the market after one day of negative returns and avoid negative returns for the rest of January. So, we conduct our simulation with the January barometer strategy redefined as follows: 1) Investors always hold equities for the first day of the year; 2) if returns for the first day of the year are negative exit the market for the rest of the year; 3) if returns for the first day of the year are positive remain in the market for the rest of the year. We apply this strategy again using the CRSP EWI.

Daily data is available for the CRSP EWI for the entire period January 1940 through December 2013. In twenty-two of the seventy-four years in our sample the first day of the year returns are negative for the CRSP EWI. If all twenty-two negative first day returns associated with negative returns for the rest of the month using the first-day of January indicator would be highly successful. It would provide most of the gains from the monthly January barometer strategy and provide additional gains from missing negative January returns. Results of the application of the first-day of January barometer strategy is reported in Table 4. The first-day of January barometer strategy is an unmitigated failure. The results from the buy and hold strategy, of course, duplicate the results reported in comparisons of the monthly January barometer strategy. But, in the comparison reported in Table 4, instead of being a fraction of the end wealth for the barometer strategy, the end wealth of the buy and hold strategy is a multiple of the end wealth of the barometer strategy. The end wealth of a $1 investment in the buy and hold strategy on January 2, 1940 is $15,342.87, which is more than five times the end wealth of $3,038.92 resulting from an identical investment guided by the first day of January barometer strategy. Ironically, the first day of January barometer strategy is less of a disaster in the second half of the sample period which is when the monthly January barometer strategy did less well.

The promise of the first day of January barometer strategy was the possible correlation between that first day return and the returns for the rest of January. If this correlation existed the first-day of January strategy would have benefitted from avoiding negative January returns and the same negative rest of the year returns avoided by the monthly January barometer strategy. It seems that the correlation does not exist. In eighteen of the twenty two years that the first day of January barometer strategy signaled a market exit, the rest of January had a positive return. The average return for the rest of January for those eighteen years is 8.24%. And in the 2013 when the first day of January barometer strategy signaled an exit, the return for the rest of the month was 23.27%. The first day of January barometer strategy signal also did very poorly in terms of missed returns for the rest of the year. In sixteen of the twenty exited years, excess returns were positive for the CRSP EWI. In twelve of those sixteen years, the monthly January barometer was holding the equity index. The first day of January barometer strategy did signal a market exit in 2000 and 2008 where the monthly January barometer did not. The only other positive to

note for the first day of January barometer strategy is a lower level of risk. Apparently, it takes a whole month to make an effective barometric strategy.[5]

C. Gauging Investor Sentiment

A second attempt to improve the January barometer signal utilizes a measure designed to measure market sentiment. The measure utilizes returns to a portfolio that is long in small and loser securities. Evidence from De Bondt et. al. suggests that returns are particular high for this portfolio at the first of the year and that these purchases likely represent high risk purchases by portfolio managers. The stronger the purchase of these securities the higher positive investment sentiment would seem to be. Thus, we use the first day return to that portfolio as a barometer to exit the market. Applying the same strategy as we did to the first day returns of the CRSP EWI, we remain in the market if the first day return to this market is positive and we exit the market if the first day returns to this portfolio is negative returning to the market the first day of the next year. We use T-bills as the out-of-market asset, and the SPI as the in-the-market asset. Data for the small-firm loser portfolio is available from 1963 through 2012, so our simulation covers this period.

Results reported in Table 5 are favorable to the investment sentiment barometer. The end wealth for investing $1 at the start of the sample period using the investor sentiment barometer is $35.56 which is more than 50% higher than the end wealth of the buy and hold strategy of $22.60. The investor sentiment barometer strategy has an average annual return of 8.28% contrasted to an average annual return of 7.80% for the buy and hold strategy. Thus, one could argue that investor sentiment is a cause of the success of the January barometer.

The merit of the investor sentiment barometer and the inference concerning the importance of investor sentiment with regard to the cause of the January barometer, however, are seriously challenged by an inspection of the application of the investor sentiment. There are only three years in which the investor sentiment argument signals a market exit.   Given the large difference in the end wealth of the strategies one might suggest that investment sentiment barometer appears to be particularly effective, making such a difference with astute decisions as to when to exit the market. The truth is, however, that in two of the three market exits the buy and hold strategy did better. The entire success of the investor sentiment barometer was to exit the market in 2008. It would be bold to attribute this exit to efficiency rather than chance.

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[5] We also compare the first day of the month January barometer to the buy and hold strategy using the CRSP VWI over the same time period as with the CRSP EWI. These results also favored the buy and hold strategy which had an end wealth of $2,192.29 as compared to an end wealth of $268.40 for the first day of the month January barometer. We also test the use of the first day returns with the SPI. Daily data is available from CRSP for the SPI starting in 1963, so our sample period for this test is 1963 through December 2013. Of the fifty-one years in the sample twenty-six have negative first day of the year returns for the SPI. Exiting the market based on this signal provide to be an inefficient January barometer strategy. An investment of $1 at the start of the sample period resulted in an end wealth of $29.29 for the buy and hold strategy and $15.12 for the first day of the year January barometer strategy. The average annual return is 8.22% for the buy and hold strategy and 6.15% for the first day of the year January barometer strategy.

V.   Conclusion

Using data for the CRSP equally-weighted and value-weighted indexes and the Standard & Poore's 500 Index we confirm existence of a January barometer effect over the period 1940 through 2013. For all three indexes average cumulative returns are significantly higher for the period February through December in years in which the January index return is positive relative to years in which the January return is negative. The proportion of positive returns for the February through December period is also significantly higher for the CRSP Value-Weighted Index and the S & P 500 Index. In addition, we compare stimulated returns to a January barometer strategy to a buy and hold strategy with a January barometer strategy that could be easily applied by individual investors. We find substantially higher end wealth for the January barometer strategy for both indexes over the entire sample period. Applying the strategy for two sub-periods we find the January barometer strategy providing higher end wealth in both periods for both indexes. In the second sub-period, however, the wealth increases in applying the January barometer strategy were modest.

These results are consistent with market lore and previous empirical studies. Thus, our results may be taken as support for the existence of a January barometer effect and for the recommendation that individual investors ought to apply the strategy. There are troubling issues, however, that make us cautious in our recommendations.

Previous studies have not found that the January barometer effect exist in other international markets. If this effect is operational, then we would expect to see evidence of the effect in other markets. Also troubling is findings by previous researchers that the effect has diminished over time. Our results are consistent with these findings as our simulation study is much less effective in the second half of the sample. Previous researchers have suggested that the strategy has become less profitable after its discovery, but this argument is flawed in that the more investors who apply the strategy the more profitable it would become as exiting the market in expectation of lower returns would tend to cause lower returns. A more plausible explanation is that the pattern inspiring the January barometer strategy recommendations was accidental, akin to the famed super bowl indicator. This association with the super bowl indicator is strengthen because despite numerous tests researchers have yet to find support for an explanation of the return correlations at the base of the January barometer effect. We are awaiting the results of another data point given the negative January 2014. At this writing (early September 2014) the 2014 data point appears to dispute the effectiveness of the January barometer.

Also in this paper, we tried to identify a more effective January barometer strategy by using first day of the year returns to signal a market exit. We found this strategy to be very ineffective. We also implemented a strategy whereby the exit signal resulted from a measure of investor sentiment. This strategy did provide substantially higher returns, but the success of the strategy was dependent on the gain in a single year. Thus, we are unable to add much support to the hypothesis that the January barometer effect is due to investor sentiment.

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Table 1
Return Signs and Matches

This table reports the number of positive and negative returns for the months of January as well as for the cumulative returns from February to December using S&P 500 index, value-weighted CRSP (center for research in security prices) index, and equal-weighted CRSP index. Panel A (B) reports the results for raw (excess) return from January 1940 to December 2013. Match is the number of years when negative January returns will be followed by negative returns in February through December and that positive January returns will also be followed by positive returns in February through December. Panel C reports these results in percentage form conditional on January's return. Panel D reports the results of a two-population proportion test of the hypothesis that the proportions are equal given positive and negative returns for January.

	S & P 500	VW CRSP	EW CRSP
Panel A: Raw Return			
# Jan Positive	47	48	58
# Jan Negative	27	26	16
# Feb-Dec Positive	54	58	51
# Feb-Dec Negative	20	16	23
Matches	53	50	47
Panel B: Excess Return			
# Jan Positive	46	47	56
# Jan Negative	28	27	18
# Feb-Dec Positive	50	53	46
# Feb-Dec Negative	24	21	28
Matches	53	56	50
Panel C: Probability of 11-Month Return Given January Raw Data			
Feb-Dec is Positive | Jan. is Positive	85.11%	85.42%	70.69%
Feb-Dec is Positive | Jan. is Negative	51.85%	65.38%	62.50%
Feb-Dec is Negative | Jan. is Negative	48.15%	34.62%	37.50%
Feb-Dec is Negative | Jan. is Positive	14.89%	14.58%	29.31%
Excess Return			
Feb-Dec is Positive | Jan. is Positive	80.44%	87.23%	69.64%
Feb-Dec is Positive | Jan. is Negative	53.57%	55.56%	61.11%
Feb-Dec is Negative | Jan. is Negative	46.43%	44.44%	38.89%
Feb-Dec is Negative | Jan. is Positive	19.56%	12.77%	30.36%
Panel D: Probability of equal proportions given sign of January			
	S & P 500	VW CRSP	EW CRSP
Raw returns Z-statistic	3.1015	1.9992	0.6267
p-value	0.00097	.02275	0.26435
Excess returns Z-statistic	2.4527	3.0567	0.6725
p-value	0.00714	.00111	0.25143

Table 2
Comparison of Returns from February to December
Between Positive January and Negative January

This table reports the cumulative returns from February to December following positive January and negative January for S&P 500 index, value-weighted CRSP (center for research in security prices) index, and equal-weighted CRSP index. Panel A (B) reports the results for raw (excess) return from January 1940 to December 2013. We test for equality between means of eleven month returns following positive January returns versus 11-month periods following negative January returns. We test with a standard two-population t-test. We test for equality of variance between the two groups. If we fail to reject the hypothesis of equal variance at the 5% level we assume equal population variances when doing the t-test, otherwise we assume unequal variances. The reported p-value is for a one-tail test assuming mean returns are higher following positive Januaries consistent with the January barometer strategy.

	S & P 500	VW CRSP	EW CRSP
Panel A: Raw Return			
Following + January	11.47%	14.18%	13.37%
Following - January	-0.87%	4.03%	0.99%
Difference	12.34%	10.15%	12.38%
t-statistic	[3.4933]	[2.8146]	[1.9714]
p-value	(0.0006)	(0.0031)	(0.0263)
Panel B: Excess Return			
Following + January	7.92%	11.43%	10.47%
Following - January	-4.15%	-1.02%	-3.69%
Difference	12.07%	12.45%	14.16%
t-statistic	[3.4347]	[3.2268]	[2.3676]
p-value	(0.0006)	(0.0013)	(0.0103)

Table 3
Summary Statistics of Two Investment Strategies
Based on January Returns of S&P500 Index or CRSP Index

This table reports arithmetic and geometric average of annual returns for the following two strategies. JB (January Barometer) is a strategy where the investor invest $1 at the end of December of the previous year of the beginning of the sample period into S&P500 index or equal-weighted CRSP index and hold the asset until the end of following January and remain in the market for the rest of the year if the excess returns for the appropriate index is positive in January or exit the market and hold T-bills for the remainder of the year otherwise. BH (buy and hold) is a strategy where the investor invest $1 at the end of December of the previous year of the beginning of the sample period into S&P500 index or equal-weighted CRSP index and hold the asset until the end of the sample period.

	S & P 500		EW CRSP	
	Panel A: Whole Period (Jan. 1940 ~ Dec. 2013)			
	JB	BH	JB	BH
Arithmetic Average	9.99%	8.35%	17.88%	16.91%
Standard Deviation	12.83%	16.64%	22.46%	26.10%
Geometric Average	9.26%	6.98%	15.84%	13.91%
The End Wealth	$704.39	$147.98	$53,368.8	$15,342.8
	Panel B: The First Sub-period (Jan. 1940 ~ Dec. 1976)			
Arithmetic Average	10.40%	7.38%	17.09%	17.09%
Standard Deviation	13.40%	17.07%	28.62%	28.62%
Geometric Average	9.61%	5.98%	17.45%	13.57%
The End Wealth	$29.84	$8.60	$385.38	$111.19
	Panel C: The Second Sub-period (Jan. 1977 ~ Dec. 2013)			
Arithmetic Average	9.58%	9.32%	15.71%	16.73%
Standard Deviation	12.21%	16.14%	18.84%	23.30%
Geometric Average	8.91%	7.99%	14.25%	14.24%
The End Wealth	$23.60	$17.20	$138.48	$137.98

Table 4
Summary Statistics of Two Investment Strategies
Based on First Day Returns of CRSP Index in January

This table reports arithmetic and geometric average of annual returns for the following two strategies. JB (January Barometer) is a strategy where the investor invest $1 at the end of December of the previous year of the beginning of the sample period into equal-weighted CRSP index and hold the asset until the end of the first day of January and remain in the market for the rest of the year if the excess returns for CRSP equal-weighted index is positive on the first day of January or exit the market and hold T-bills for the remainder of the year otherwise. BH (buy and hold) is a strategy where the investor invest $1 at the end of December of the previous year of the beginning of the sample period into equal-weighted CRSP index and hold the asset until the end of the sample period.

Panel A: Whole Period (Jan. 1940 ~ Dec. 2013)		
	JB	BH
Arithmetic Average	13.95%	16.92%
Standard Deviation	24.58%	22.52%
Geometric Average	11.44%	13.91%
The End Wealth	$3,038.92	$15,342.87
Panel B: The First Sub-period (Jan. 1940 ~ Dec. 1976)		
Arithmetic Average	13.65%	17.09%
Standard Deviation	28.36%	28.63%
Geometric Average	10.29%	13.57%
The End Wealth	$37.54	$111.19
Panel C: The Second Sub-period (Jan. 1977 ~ Dec. 2013)		
Arithmetic Average	14.25%	16.73%
Standard Deviation	20.09%	23.30%
Geometric Average	12.60%	14.24%
The End Wealth	$80.95	$137.98

Table 5
Summary Statistics of Two Investment Strategies
Based on First Day Returns of Small and Loser Portfolio in January

This table reports arithmetic and geometric average of annual returns for the following two strategies. JB (January Barometer) is a strategy where the investor invest $1 at the end of December of the previous year of the beginning of the sample period into S&P 500 index and hold the asset until the end of the first day of January and remain in the market for the rest of the year if the excess returns for the small and loser portfolio is positive on the first day of January or exit the market and hold T-bills for the remainder of the year otherwise. BH (buy and hold) is a strategy where the investor invest $1 at the end of December of the previous year of the beginning of the sample period into S&P 500 index and hold the asset until the end of the sample period. The sample period is January 1963 to December 2012.

	JB	BH
Arithmetic Average	8.28%	7.80%
Standard Deviation	14.69%	14.51%
Geometric Average	7.21%	6.43%
The End Wealth	$32.56	$22.60