Switching Strategies for Individual Investors: Recent Evidence from the Self-directed Family of CREF Retirement Accounts

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Abstract

Systematically moving an investment balance from one account to another, and then back again, with the hope of generating returns that exceed those from a buy-and-hold alternative, is the essential description of a switching strategy. In this study, month-end switching is examined within the funds available to TIAA-CREF retirement plan participants. Data are reviewed through the end of 2008. While the transaction cost and tax acceleration hurdles that typically disadvantage switchers are mooted with the CREF strategy, institutional and regulatory impediments have remained daunting. While a simulated CREF Stock/Money Market switching strategy has yielded a positive *wealth relative* when compared to buy-and-hold over the period of study, the window of opportunity for this particular switching implementation has been closed by a recent SEC rule change. Nevertheless, opportunities to profitably implement switching appear to remain plausible through self-directed retirement brokerage accounts.

I. Introduction

Investment strategists have long sought to discover trading algorithms which might boost returns over those attainable through simple buy-and-hold approaches. One class of promising algorithm involves the systematic switching of account balances between or among two or more investment vehicles. Investigations have focused on the opportunities for enhanced returns faced by both institutional and individual investors. In historical data, researchers have identified many candidate strategies which promise premium return opportunity, but those higher gross returns have been achievable only with measurable additional cost. Generally, a switching strategy must overcome three obstacles before it can compete successfully on a net return basis with a buy-and-hold baseline. First, a switching strategy implies transaction costs – to be viable, a switching algorithm must out-perform buy-and-hold by at least the measure of these incremental direct costs. Historically, high transaction cost hurdles have been a particularly daunting deterrent for individual investors who might wish to switch. Second, in accounts where realized gains and losses are currently taxable events, switching strategies have the potential to expose the investor to significant current incremental tax burdens and, at a minimum, increased tax reporting and compliance costs. Third, in some of the sponsored investment product lines where switching strategies have been feasible to implement, institutional and regulatory barriers have, from time-to-time, checked the active individual investor's ability to switch.

One systematic switching strategy that has received some research attention involves a perceived turn-of-month (TOM) effect purported to exist in the returns of U.S. equity securities. Equity indices are, it is has been shown, highly unstable generators of returns. Market volatility is such that, for any reasonably long holding period, there will be many days with positive returns and many days with negative returns. The system trader's challenge is to identify an actionable pattern in the returns, and trade accordingly. For myriad hypothesized reasons, indices such as the Dow Industrial Average or the Standard & Poor's 500 are thought to

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systematically display higher returns in the few days surrounding each monthly calendar change, with more modest returns experienced during the remainder of the month. A TOM switching strategy establishes a long position in the equity index or a diversified basket of stocks just prior to the month-end, maintains the position over the calendar change, and liquidates it shortly thereafter. Liquidation proceeds are invested at money market rates for the ensuing weeks until a second foray into the equity index is launched at the next TOM. The investment returns to such a switching strategy, after transaction costs have been deducted, are compared to the indicated returns from a simple buy-and hold strategy.

Under the tax-code, investment gains of individuals are generally deferred until realized through the ultimate sale of an investment position. Thus, gains accruing in a buy-and-hold portfolio escape current taxation while gains that are realized through a switching algorithm might face hefty current tax levies. The potential acceleration of tax obligations is a second hurdle that aspiring switchers must clear.

While a switching strategy can certainly be implemented with a simple brokerage account, some investment plan sponsors provide families of investment opportunities and permit the movement of fund balances among their various funds. Administrative considerations influence the feasibility of switching strategies utilizing such sponsored investment plan accounts. Regulatory and sponsor-imposed rules that limit in-and-out transactions constitute a third hurdle for a successful switching strategy.

II.   The Literature

Systematic switching strategies have been developed to exploit calendar based effects thought to be present in the return streams of U.S. equities. Wachtel (1942) first described a January effect which attributed above average returns to the first month of the year – a December sell-off, motivated by desires to create tax-losses for the previous year, is generally regarded as a leading enabler of the January effect. Kunkel and Compton (1998) summarize the January effect literature, noting the finding by Riepe (1998) that opportunities to exploit the effect have diminished.

Cross (1973) first documented the existence of a negative Monday effect in the returns of equities. Kamara (1997) shows that the intensity of the purported Monday effect, and by extension it's potential as a profitable basis for a switching strategy, has diminished over time.

Ariel (1987) described a month-end pattern in the returns of stock portfolios. He found that returns for the first half of the month exceed, on average, returns for the latter half. Subsequent studies (Lakonishok and Smidt, 1988) and (Ogden, 1990) narrowed the range for superior returns to the few days surrounding month-end, and supported two hypotheses that liquidity issues motivated those returns. First, institutional investors seek to reposition portfolios before month end, resulting in a concentrated month-end sell-off of some positions. Second, near month-end in-flows of investable funds to the household sector stimulates a short-lived surge in demand for investments at the beginning of the next month. Henzel and Ziemba (1996) found that this TOM effect could be profitably exploited by switching between an S&P 500 portfolio and a money market account. They examined the S&P 500 from 1928 to 1993 and determined that average daily returns were positive during TOM (defined in this study to be the last trading day of the month plus the first four trading days of the next month) and the first half

of the month. The second half of the month was negative. They concluded that "the cumulative wealth effects of investment during various time periods magnify the effects. The results indicate that the total return from the S&P 500 over this sixty-five-year period was received mostly during the turn of the month. The strategy of being long the S&P 500 during the TOM or the FH and long T-bills otherwise has very high total returns (exceeded only by small stocks). When risk is considered, this strategy dominates all the strategies considered, including small-stock investment."

Kunkel and Compton (1998) examined the CREF Stock fund to see if academicians can exploit TOM to earn a higher return while reducing overall risk. By being in the CREF Stock Account from day -4 to day +2 (four trading days before the end of the month through the second trading day of the next month) and in the Money Market Account the rest of the time their CREF Stock and Money Market portfolio earned an average annual return of 17.7% compared with a 15.6% annual return for a buy-and-hold strategy in the CREF Stock portfolio. For reference, buy-and-hold in the CREF Money Market portfolio yielded 5.8% over the period studied.

McConnell and Xu (2008) found that in U.S. equities, the effect is "found to be so powerful in the 1926-2005 period that, on average, investors received no reward for bearing market risk except at turns of the month. The effect is not confined to small-capitalization or low-price stocks, to calendar year-ends or quarter-ends, or to the United States… (They found) that it occurs in 31 of the 35 countries examined. Furthermore, it is not caused by month-end buying pressure as measured by trading volume or net flows to equity funds. This persistent peculiarity in returns remains a puzzle in search of an answer."

III. Institutional and Regulatory Environment

TIAA-CREF is a retirement plan trustee and investment management company that serves individuals in the fields of higher education, medicine, the arts and research. TIAA-CREF is the primary custodian for employer sponsored retirement plans for University faculty in the United States. A notable characteristic of the TIAA-CREF system is its long history of progressively embracing the concept of self-direction of retirement savings by individual participants. Several investment vehicles are available through TIAA-CREF and account owners are permitted to frequently re-allocate their savings among the funds. Historically, transfers among the various funds have been affected at net-asset-value, which is calculated daily. This costless-transfer feature has virtually eliminated the transactions cost hurdle that aspiring switchers must first confront. Further, as a retirement plan, gains and losses that are realized when transferring out of one TIAA-CREF fund and into another are deferred until the plan owner begins to withdraw retirement income. The second hurdle, addressing potential current tax exposures, is also cleared when switching is implemented within a retirement plan such as TIAA-CREF. It is within this protected environment that Kunkel and Compton (1998) first found their significant results.

On May 23, 2005, the Securities and Exchange Commission issued rule 22c-2 under the Investment Company Act of 1940. The new regulation became effective on October 16, 2007. Essentially, the rule addresses a perceived free-rider problem that plagues managers of mutual funds. By law, mutual fund investors must be able to remove their investments and receive their pro-rata shares of fund assets. For long-term investors, this requirement is not burdensome, but when investors frequently trade in and out of a fund, they generate administrative costs for the

fund that, through reduced net returns, all investors must share. While not mandating redemption fees on short-duration investments in mutual funds, the SEC rule did empower fund trustees to apply such redemption fees when, in their judgment, such action was in the fund's best interest. Further, the rule prohibits certain short-duration redemptions:

> Rule 22c-2 prohibits a fund from redeeming shares within seven days after the share purchase unless the fund meets three conditions. First, the board of directors must either (i) approve a redemption fee, or (ii) determine that imposition of a redemption fee is either not necessary or not appropriate. Second, the fund (or its principal underwriter) must enter into a written agreement with each financial intermediary under which the intermediary agrees to (i) provide, at the fund's request, identity and transaction information about shareholders who hold their shares through an account with the intermediary, and (ii) execute instructions from the fund to restrict or prohibit future purchases or exchanges. Third, the fund must maintain a copy of each written agreement with a financial intermediary for six years. (SEC, 2005)

IV. The Studies

While several researchers have documented the erosion of opportunities to exploit some calendar effects, notable the January and so-called Monday effects, the persistence of TOM noted by McConnell and Xu (2008) motivates a revisiting of the CREF switching strategy first examined by Kunkel and Compton (1998). We find that TOM is still present in the CREF stock account at the end of 2008, but is no longer directly exploitable through a CREF based multiple account switching strategy. That opportunity was closed administratively by the implementation of SEC rule 22c-2 on October 21, 2007.

We examine the relative performance of a buy-and-hold investment in the CREF stock account and a switching strategy utilizing the CREF stock and money market accounts. We also examine the relative performance of static and switching strategies based upon the Dow Jones Industrial Average.

V. Data and Methodology

Daily data for CREF Stock and Money Market were obtained from TIAA-CREF (2009a) and (2009b). Daily data for the DJIA was obtained from yahoo.com (2009). The time period for the study is from 3 January 1992 through 31December 2008.

T-Values test the null hypothesis that average daily return is not significantly different than 0.00 for each of the 3 data series for 9 trading days before and after the end of the month. The test is applied for the period 3 January 1992 through 31 December 2007 and again from 2 January 2008 through 31 December 2008. The second interval was one of the worst years in recent history for the stock market. The results of these tests determined the TOM interval for the studies. Money market returns were always significantly different from zero, but returns in the two equity market series were clustered significantly around the TOM. Our analysis proceeded with a TOM interval from day (-4) to day (+2). Wealth Relatives were then calculated for 1992-2007, for the year 2008, and for two 7 year sub- periods, 1992-1999 and 2000-2007. The purpose for the 7 year calculations was to compare and contrast performance during a largely bullish market with performance that was first bullish and then very bearish.

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VI. Results

Table 1 shows the average daily returns during various periods for trading days -9 through 9. For the 1992-2007 period CREF exhibits only three significant trading days -2, 1 and 7 (day 7 is at the 10% level), while the DJIA shows only one significant day, trading day 1. Not surprisingly all trading days for the Money Market are highly significant.

For the 1992-1997 time period, a period similar to the Kunkel and Compton study, CREF exhibits 7 significant trading days (one more than the Kunkel and Compton study)—but three of these days are at the 10% level. The DJIA shows significance at day 1, compared with two days (1 & 2) for the Kunkel and Compton study. All days are highly significant for the Money Market series.

For the 1998-2007 time period, CREF and the DJIA exhibit two significant trading days. All days are highly significant for the Money Market series.

For 2008 CREF experiences one trading day (-4) that is significant at 10%. The DJIA experienced no trading days that were significantly different than 0. All trading days were significant and positive for the Money Market, but days -9 and -8 were at the 10% level.

The same TOM time period that Kunkel and Compton used (-4 to 2) is used in this study. For all of the four panels in Table I most of the TOM trading days were positive regardless of whether they are significantly different than 0. This will help explain the better, albeit negative returns exhibited by the switching portfolios in 2008.

Figure I Panel A shows a graph of the wealth relatives (for those of us in Finance, the FVIF) for 2008. The wealth relatives for the CREF & MM, DJIA & MM, CREF, DJIA, and the Money Market are 0.78, 0.82, 0.60, 0.66, and 1.02 respectively. This increase in compounded return comes with some reduction in risk as measured by standard deviation. The Coefficients of Variation for the CREF & MM, DJIA & MM, CREF, and DJIA, are -14.45, -15.80, -15.34, and -17.66 respectively. The Money Market, while not a risk-free asset has a CV of 1.29.

Figure I Panel B shows a graph of the wealth relatives (for those of us in Finance, the FVIF). The wealth relatives for the CREF & MM, DJIA & MM, CREF, DJIA, and the Money Market are 8.98, 6.47, 4.48, 4.12, and 1.87 respectively. This increase in compounded return comes with a large reduction in risk as measured by standard deviation. The Coefficients of Variation for the CREF & MM, DJIA & MM, CREF, and DJIA, are 10.51, 13.35, 22.06, and 24.94 respectively. The Money Market, while not a risk-free asset has a CV of 1.43. Remember CV is the amount of risk per unit of return. The lower the CV numbers the better.

VII. Conclusion

While opportunities to exploit more celebrated calendar effects such as the January effect and the week-end effect have waned in recent years, the Turn-of-Month (TOM) effect remains a fruitful area for seeking excess returns. The clever CREF account switching strategy proposed by Kunkel and Compton remains viable in theory, but recent mutual fund redemption fee rule changes mandated by the SEC seem to have closed this window to practical application. We find compelling evidence that a TOM motivated switching strategy can be profitably applied to a

broad based market index. Ever more cost effective brokerage opportunities suggest that a TOM motivated strategy might overcome the transaction cost hurdle in a self-directed retirement brokerage account. That question motivates our continuing inquiry into TOM phenomena.

Table I

Average Daily Returns during the Turn of the Month Period

***1%, **5%, *10% levels for t-test where the null hypothesis is the return is not different than 0

| | 1992-2007 | | | | 1998-2007 | | |
| | CREF | DJIA | MM | | CREF | DJIA | MM |
Day	Return	Return	Return	Day	Return	Return	Return
-9	-0.003%	-0.060%	0.016%***	-9	0.059%	-0.031%	0.015%***
-8	-0.025%	-0.069%	0.014%***	-8	-0.043%	-0.127%	0.014%***
-7	-0.073%	-0.071%	0.014%***	-7	-0.108%	-0.099%	0.013%***
-6	-0.025%	-0.005%	0.014%***	-6	-0.009%	0.016%	0.013%***
-5	0.010%	0.036%	0.019%***	-5	0.005%	0.012%	0.017%***
-4	0.068%	0.044%	0.017%***	-4	0.033%	-0.003%	0.014%***
-3	0.082%	0.055%	0.014%***	-3	0.053%	0.049%	0.013%***
-2	0.137%**	0.090%	0.015%***	-2	0.126%	0.088%	0.013%***
-1	0.080%	-0.121%	0.014%***	-1	0.069%	-0.135%	0.013%***
1	0.255%***	0.320%***	0.021%***	1	0.298%***	0.329%***	0.019%***
2	0.056%	0.057%	0.015%***	2	0.002%	0.014%	0.014%***
3	0.020%	0.060%	0.015%***	3	-0.039%	0.044%	0.014%***
4	0.084%	0.063%	0.015%***	4	0.137%	0.094%	0.013%***
5	-0.016%	0.030%	0.016%***	5	0.004%	0.059%	0.015%***
6	-0.084%	-0.045%	0.019%***	6	-0.134%	-0.093%	0.017%***
7	-0.109%*	-0.068%	0.014%***	7	-0.186%**	-0.157%*	0.013%***
8	0.028%	0.066%	0.014%***	8	0.010%	0.064%	0.013%***
9	0.040%	0.040%	0.014%***	9	0.001%	-0.020%	0.013%***

| | 1992-1997 | | | | 2008 | | |
| | CREF | DJIA | MM | | CREF | DJIA | MM |
Day	Return	Return	Return	Day	Return	Return	Return
-9	-0.107%	-0.110%	0.018%***	-9	0.060%	-0.087%	0.006%*
-8	0.006%	0.026%	0.015%***	-8	-0.338%	-0.274%	0.011%*
-7	-0.020%	-0.024%	0.016%***	-7	-0.944%	-0.630%	0.008%***
-6	-0.050%	-0.040%	0.016%***	-6	-0.859%	-0.732%	0.008%***
-5	0.019%	0.077%	0.021%***	-5	0.105%	0.148%	0.008%***
-4	0.128%*	0.121%	0.021%***	-4	1.849%*	1.560%	0.009%***
-3	0.130%**	0.066%	0.015%***	-3	0.095%	0.048%	0.009%***
-2	0.154%**	0.092%	0.017%***	-2	0.080%	0.083%	0.009%***
-1	0.101%*	-0.096%	0.015%***	-1	0.443%	0.372%	0.013%***
1	0.184%**	0.306%***	0.024%***	1	-0.575%	-0.487%	0.013%***
2	0.147%*	0.131%	0.016%***	2	-0.146%	-0.020%	0.012%***
3	0.120%*	0.088%	0.017%***	3	-0.846%	-0.758%	0.011%***
4	-0.006%	0.012%	0.017%***	4	-1.057%	-0.907%	0.014%***
5	-0.050%	-0.018%	0.018%***	5	-0.289%	-0.378%	0.011%***
6	-0.001%	0.034%	0.021%***	6	-0.276%	-0.098%	0.010%***
7	0.019%	0.082%	0.016%***	7	-0.578%	-0.572%	0.007%***
8	0.059%	0.068%	0.015%***	8	-0.604%	-0.643%	0.007%***
9	0.105%	0.140%	0.016%***	9	1.416%	1.272%	0.011%***

Day represents the trading days around the turn of the month, with -1 being the day before and 1 being the first day of trading, etc.
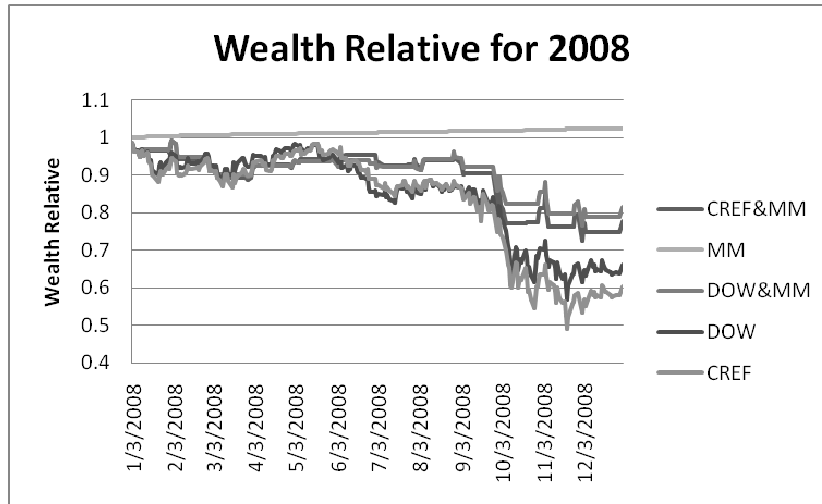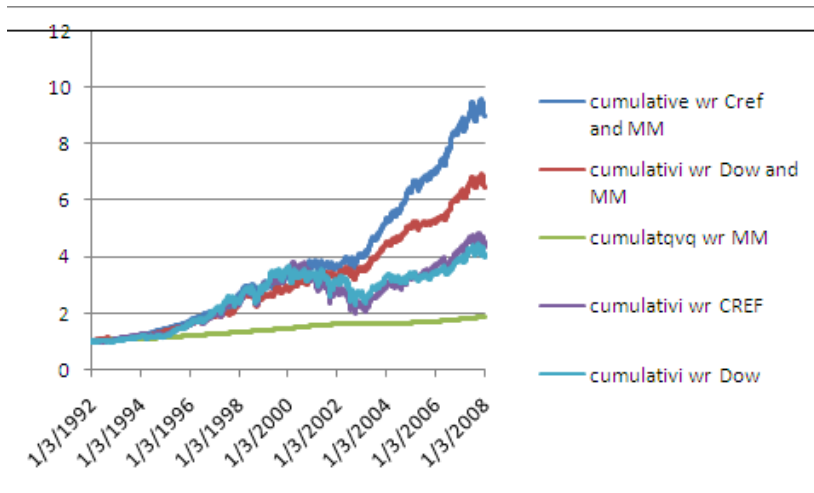
Figure I Panel A

Wealth Relative for 2008

CREF&MM
MM
DOW&MM
DOW
CREF

Figure I Panel B

Wealth Relatives for 1992-2007

cumulative wr Cref and MM

cumulativi wr Dow and MM

cumulatqvq wr MM

cumulativi wr CREF

cumulativi wr Dow

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