An Update on Sector Rotation in the "Sell in May and Go Away" Strategy

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Abstract

A common mantra on Wall Street is to "Sell in May and Go Away." This strategy follows documented seasonal patterns that point to higher (lower) market returns during the months of November to April (May to October). We examine whether this pattern continues to exist in more recent periods, and we also explore whether such a strategy can be improved by simultaneously rotating into and out of cyclical (or defensive) sectors. Our results suggest that investors can still generate positive alpha by following the traditional "Sell in May" strategy, albeit at a slightly reduced level in more recent years. We also find that a sector rotation strategy that moves into cyclical (noncyclical) sectors during the November to April (May to October) period can provide significant incremental alpha, but primarily when implemented in concert with a counterbalanced short selling strategy.

Keywords: Sector Rotation, Sell in May, Halloween Indicator, Seasonality, Short Selling

JEL Classification: G11

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I Introduction

In general, it is difficult for investors to consistently outperform the market on a risk-adjusted basis, i.e., to "beat the market." This difficulty, however, has not stopped both researchers and investors alike from seeking out ways to try to do so, as identifying such an anomaly would create an opportunity for significant excess return. Given the amount of time and energy spent in this pursuit, it is not surprising that a number of so-called market anomalies have been identified. For example, the January Effect (see Thaler, 1987) denotes that stocks generally have higher returns in the month of January. Similarly, Tinic and West (1984) note that small-cap stocks have higher returns in January, termed the Turn-of-the-year Effect, and Cross (1973) finds that market returns tend to be lower on Mondays, i.e., the Day-of-the-Week Effect.

Obviously, these anomalies are identified using historical information, so, as Sullivan, Timmermann and White (2001) note, there is a risk of data mining, as well as with whether such anomalies even continue to exist over time or are randomly confined to a particular period. In fact, controlling for factors related to size, value, profitability, and conservatism (i.e., the Fama and French (2014) five-factor model), often eliminates many of these previously identified anomalies, essentially producing alphas (i.e., abnormal returns) that are insignificantly different from zero. Moreover, a number of these anomalies have effectively shrunk over time, either because they did

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not truly exist or because trading of a related strategy has effectively arbitraged the impact (what Dimson and Marsh (1999) refer to as Murphy's Law).

One anomaly that is still debated, however, is the Halloween Effect, or more commonly known as the "Sell in May and Go Away" strategy. While there is uncertainty as to the origin of this approach, Bouman and Jacobsen (2002), building on practitioner strategies developed by O'Higgins and Downes (1990), provide a formal analysis, confirming that average market returns tend to be higher in the months of November through April as compared to the other months of the year (i.e., May through October). Subsequent studies examine this issue, attempting to provide some potential explanations for the phenomenon, which include seasonal affective disorder (e.g., Kamstra, Kramer, and Levi, 2003) or the timing of vacations (e.g., Bouman and Jacobsen, 2002); however, these reasons generally lack support as a complete explanation for the phenomenon.

We add to the existing research by further exploring the Sell in May and Go Away (SMGA) strategy. In particular, we examine a more recent time period to determine if monthly returns still differ across the November to April (Nov-Apr) period as compared to the May to October (May-Oct) period, finding that the average monthly return in the Nov-Apr time period remains larger than the May-Oct period. Our primary contribution, however, is to examine whether the base strategy of being invested in the market during Nov-Apr and out of the market in May-Oct can be improved upon. For example, Doeswijk (2008) suggests that cyclical sectors outperform in strong market periods and defensive sectors outperform in weaker periods, so going long in cyclicals in the Nov-Apr period and long in noncyclicals (or defensives) in the May-Oct period could produce improved performance. We find no support for this strategy; however, we also explore the impact of overlaying a short-sale strategy in the respective monthly periods, finding that this approach not only reduces net market exposure (i.e., beta risk), but also improves alpha. In total, we find that the SMGA strategy is still feasible for producing positive risk-adjusted performance and that this performance can be improved through sector rotation that is implemented in tandem with a combined short selling strategy.

II Background

As noted, Bouman and Jacobsen (2002) explore the SMGA approach, confirming the benefits of its use both in the United States and across almost all (36 of 37) developed markets, as well as across a broad sample of emerging markets. Further, they note that the positive results do not appear to be driven by other anomalies such as the January Effect, nor do they find any compelling reason for its continued existence. While the SMGA approach received a great deal of attention in earlier years, additional exploration has been relatively muted. Nonetheless, the few studies that have been added to the literature generally confirm the benefit of the SMGA strategy. For example, Degenhardt and Auer (2018) find that the SMGA strategy is also profitable when applied within futures contracts, and Pavlova, Whitworth, and de Boyrie (2022) note that it can also be applied within a subset of ESG (i.e., environmental, social and governance) focused investments.

On a broader basis, Andrade, Chhaochharia, and Fuerst (2013) find that the SMGA strategy continued to generate positive risk-adjusted returns through their extended time period, as do Zhang and Jacobson (2021) across the globe. However, some studies question (the extent of) the continued efficacy of the SMGA approach. For example, Jones and Lundstrum (2009) find that the size and significance of favorable results is heavily based on the time period examined. In addition, Dichtl and Drobetz (2015) find that the level of excess return associated with the SMGA approach has weakened in more recent years.

While the SMGA approach continues to be explored, the level of activity in this area has slowed as compared to early periods. This lack of attention is particularly noteworthy given the introduction of market and sector ETFs that effectively allow investors to undertake the SMGA strategy in a relatively easy, low-cost way – something that was more difficult at the time these anomalies were first noted. Moreover, these strategies have made their way into funds that are available to the broad investing public. For example, the Pacer CFRA-Stovall Equal Weight Seasonal Rotation ETF (i.e., exchange traded fund) generally follows the strategy developed by Doeswijk (2008), but with slightly different sectors defined as either cyclical or defensive. Similarly, private managers such as Peloton Capital Management have integrated the SMGA strategy into managed funds that are available to a more narrow set of accredited investors.

While each fund is similar in its broad application of the SMGA (and related sector rotation) strategy, each manager has the discretion to define which sectors they deem cyclical or not. For example, Table 1 provides a list of sectors employed by each of the three respective sources: (1) the sector rotation strategy defined by Doeswijk (2008), i.e., *Doeswijk*, (2) the managed fund offered by Peloton Capital Management (i.e., *Peloton*), and (3) the Pacer CFRA-Stovall Equal Weight Seasonal Rotation ETF (i.e., *Pacer*). Given the continued use of the SMGA strategy in financial markets, it is important to explore whether the strategy continues to be valid, and, if so, which sectors are optimal for implementing a related sector rotation approach. Thus, we believe an update in this area is warranted.

Table 1: Defining Cyclical and Noncyclical Sectors

	Doeswijk	Peloton	Pacer
Cyclical:			
Energy	Y	Y	
Discretionary	Y	Y	Y
Industrials	Y	Y	Y
Materials	Y	Y	Y
Technology			Y
Noncyclical (Defensive)			
Staples	Y	Y	Y
Utilities	Y	Y	
Healthcare	Y	Y	Y
Technology		Y	

This table identifies which sectors are classified as either cyclical or noncyclical by three sources (Y = yes). *Doeswijk* is based on Doeswijk (2008); *Peloton* is from the strategy employed by Peloton Capital Management; and *Pacer* is based on the Pacer CFRA-Stovall Seasonal Rotation ETF (ticker: SZNE). The sectors of communications, financials, and real estate are not classified as either defensive or cyclical by any source, so they are excluded from the analysis.

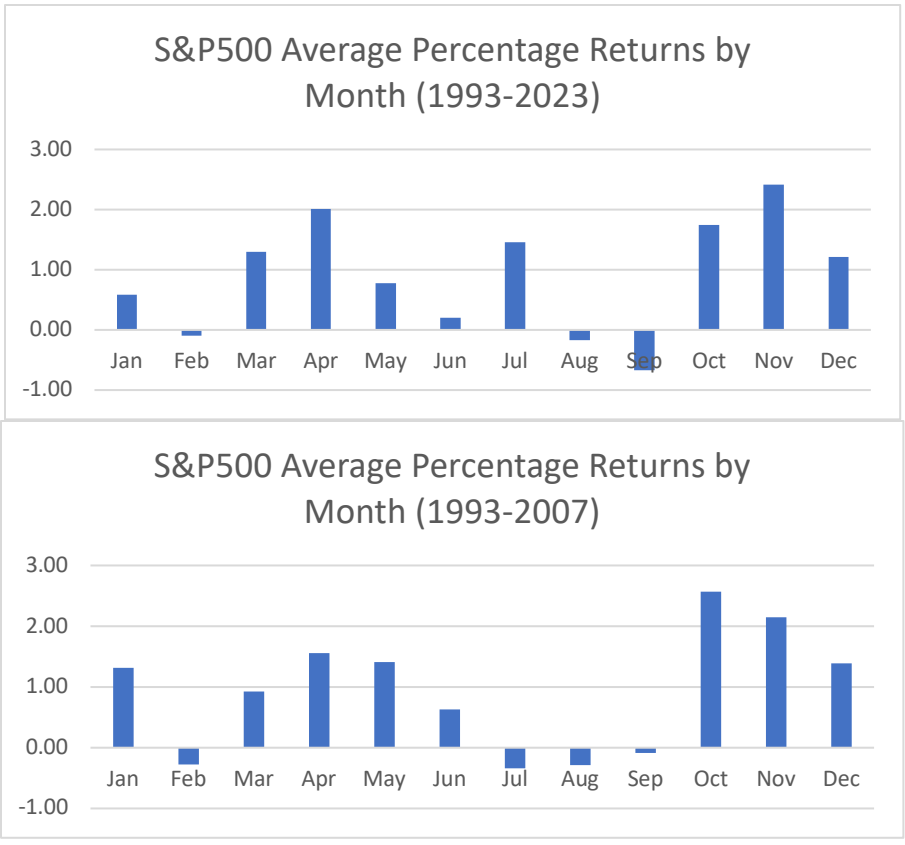
III Data and Summary Statistics

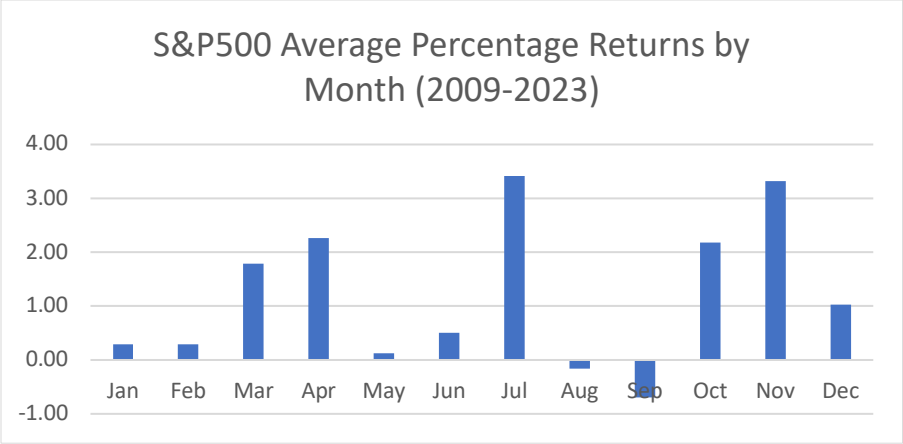
We begin by collecting monthly (index) returns data from YCharts for both the S&P500 and each underlying sector within the S&P500 over the 1993 to 2023 time period. We are particularly interested in whether individual investors are able to capture potential returns associated with the SMGA strategy, which would likely be accomplished via a trading approach employing liquid ETFs. Given this focus, we begin our period of analysis in 1993 when the S&P500 SPDR ETF

(ticker SPY) began trading. This provides a 31-year period, which we also split into two subperiods: 1993-2007 and 2009-2023. This segmentation is primarily designed to examine if the potential efficacy of the SMGA strategy has declined over time. Note that we exclude 2008 from our subperiod analysis given the unusual nature of that particular year. Fortunately, this provides us with a natural breakpoint and two equal 15-year subperiods pre- and post-2008. Further, keeping 2008 would significantly skew the results depending on which of the two subperiods it is placed. Nonetheless, for robustness, we explore the impact of excluding 2008 in a forthcoming section.

As a high-level overview, we report monthly average returns for the S&P500 in Figure 1. The first chart provides average monthly returns across the entire 1993 to 2023 time period, while the remaining two charts provide average monthly returns for the respective subperiods (i.e., 1993-2007 and 2009-2023). While the charts illustrate that average monthly returns vary through time, there is a consistently noticeable pattern of higher returns over the months of Nov-Apr. Specifically, over the entire period, the average monthly return is 0.90 percent. For the respective months, the average monthly return is 1.23 percent over the Nov-Apr period and 0.57 over the May-Oct period, representing a difference of 0.66 percent (consistent with the SMGA philosophy). For the 1993-2007 subperiod, the average monthly return is 0.91 percent. The average monthly return is 1.18 percent over the months of Nov-Apr and 0.65 over the months of May-Oct, representing a difference of 0.53 percent. For 2009-2023 subperiod, the average monthly return is 1.19 percent. During these years, the average monthly return is 1.50 percent over the months of Nov-Apr and 0.89 over the months of May-Oct, representing a difference of 0.66 percent. Thus, the potential of the SMGA strategy appears to remain intact even in more recent years.

Figure 1: S&P500 Average Returns by Month





This figure illustrates average S&P returns by month for the 1993-2023 time period, as well as for two subperiods (1993-2007 and 2009-2023).

To explore the impact of isolating 2008, in unreported results we examine the returns from the SMGA strategy in that single year. Monthly returns, as one would expect given the global financial crisis, are negative across the entire year; however, the SMGA strategy is still favorable, providing a net monthly average return difference of 3.55 percent, which is larger than the average difference in either subperiod. Therefore, excluding 2008 in the subperiod analysis is a conservative approach as it likely biases us against finding any excess return through use of the basic SMGA strategy.

IV Primary Analysis

Base SMGA strategy

The primary SMGA strategy involves going long in the market during Nov-Apr and sitting out May-Oct, during which time an investor would earn the risk-free rate of return. To provide a baseline for comparison, we begin by calculating some univariate statistics for the S&P500 and the base SMGA strategy for the 1993-2023 period, as well as for our two subperiods (i.e., 1993-2007 and 2009-2023). We report these values in Table 2. Specifically, we provide monthly average (and median) percentage returns, as well as the *p*-value and standard deviation of the monthly returns. We also include the Sharpe and Sortino ratios (e.g., the ratio of average monthly returns to deviation for the Sharpe and to downside deviation for the Sortino).

Given that the SMGA strategy effectively sits out of the market half the year, we might expect to earn a significantly lower return. However, this is not necessarily the case. In fact, over the early part of the period studied, the average monthly return is actually higher for the SMGA strategy. Combined with a lower deviation, the SMGA strategy, as would be expected, creates a significantly higher Sharpe (and Sortino) ratio. Given the strong market post-2008, the SMGA strategy fails to deliver the same relative performance. Yet, even in this period, the average return is in line with the overall average, and the deviation is slightly below the overall S&P500.

To provide a broader level of control, we also conduct a Fama and French (2014) analysis that captures five factors known to impact portfolio returns. These include overall market returns (*Market*), as well as factors that control for size (*SMB*, or small minus big), value versus growth (*HML*, or high book-to-market minus low book-to-market), profitability (*RMW*, or robust minus

weak), and conservativeness (*CMA*, or conservative minus aggressive). All factor data, including the risk-free rate, are collected from Ken French's website. In this analysis, the coefficient on each factor identifies the level of impact the respective factor has on the underlying portfolio return. The most important metric in this performance analysis is the intercept, which represents alpha (α), the standard industry measure of risk-adjusted, or abnormal, return.

Table 2: Base SMGA Strategy Returns

	S&P500			SMGA		
	1993-2023	**1993-2007**	**2009-2023**	**1993-2023**	**1993-2007**	**2009-2023**
Mean	0.90	0.91	1.19	0.90	0.99	0.90
(p-value)	(<.0001)	(.0021)	(.0004)	(<.0001)	(<.0001)	(.0034)
Median	1.38	1.31	1.88	0.31	0.40	0.09
Deviation	4.32	3.92	4.44	3.52	2.91	4.06
Sharpe	0.21	0.23	0.27	0.26	0.34	0.22
Sortino	0.28	0.31	0.37	0.39	0.61	0.32

This table provides monthly average (and median) percentage returns for the S&P500, as well as for the base SMGA strategy, which entails going long in the market during the months of Nov-Apr and into a risk-free asset for the other months. In addition, we report the *p*-value and standard deviation of the monthly returns, as well as the Sharpe and Sortino ratios (e.g., the ratio of average monthly returns to deviation for the Sharpe and to downside deviation for the Sortino). We provide values for the entire 1993-2023 time period, as well as for our two subperiods (i.e., 1993-2007 and 2009-2023)

We report the results of this analysis in Table 3 for our base SMGA strategy over the full 1992-2023 period, as well as across our two subperiods. Given that the S&P500 is a broad market index, we would expect to find alphas for an index strategy that are effectively zero and betas that are essentially equal to one. We confirm these baseline expectations in unreported results of SPY. Given that the S&P500 is a large-cap index, it is also not surprising that we find the coefficient on SMB is negative, nor that there is a slight value, profitability, or conservative tilt, since the market factor used in the regression is a broader index that would capture mid- and small-cap stocks as well. Again, these unreported results are all as would be expected for an index, particularly with regard to alpha.

We find, as would be expected, that the market beta for the base SMGA strategy is effectively cut in half (i.e., 0.5 vs. 1.0) relative to a full-year index strategy, which is consistent with the fact that we are essentially in the market only half the year, with the remaining time being in a risk-free asset. Of most interest, we find that once we control for the market and other factors, the SMGA strategy provides a positive alpha. For example, an alpha of 0.31 indicates a gross annualized excess return of 3.72 percent. Consistent with the results in Table 2, and the findings of Dichtl and Drobetz (2015), we find that the alpha value has declined slightly in recent years (both in size and significance), yet it continues to remain economically meaningful. Taken as a whole, we find that the SMGA strategy continues to be capable of increasing portfolio efficiency, but possibly not to the same degree as in earlier periods.

Table 3: Fama and French (2014) Alphas for the Base SMGA Strategy

	(1) SMGA '93-'23	(2) SMGA '93-'07	(3) SMGA '09-'23
α	0.31	0.32	0.25
	(.0320)	(.0910)	(.2625)
B_{Market}	0.50	0.47	0.53
	(<.0001)	(<.0001)	(<.0001)
SMB	0.01	-0.10	0.11
	(.9167)	(.1205)	(.2420)
HML	0.31	0.21	0.34
	(<.0001)	(.0286)	(<.0001)
RMW	0.10	0.05	0.13
	(.1297)	(.5251)	(.2652)
CMA	-0.17	-0.06	-0.25
	(.0484)	(.6062)	(.0683)
n	372	372	372
Adj. R^2	(.4464)	(.3573)	(.5209)

This table provides regression results from a standard Fama and French (2014) analysis of the base SMGA strategy defined in Table 2. Alpha (α) is the risk-adjusted monthly excess return from the respective strategy, and B_{Market} is the beta versus the market index. The remaining values represent coefficient estimates for the other market factors: small size (SMB), value (HML), profitability (RMW), and conservative (CMA). P-values for the estimated coefficients are also provided (in parenthesis). All factor data is collected from Ken French's website.

Sector rotation

Following Doeswijk (2008), we next explore whether concentrating on specific sectors in the SMGA strategy can increase alpha. In particular, Doeswijk (2008) suggests that cyclical stocks should do relatively better during the higher return months of Nov-Apr, while defensive (or non-cyclical) sectors should do relatively better during May-Oct. So, we examine a set of strategies built around this sector rotation approach. More specifically, we explore performance for the three strategies described in Table 1 (i.e., *Doeswijk*, *Peloton*, and *Pacer*). For each of these, the sector rotation strategy is the essentially the same; the only difference is which sectors are identified as cyclical or defensive. For sector definitions, we use the segmentation employed by State Street in their market leading sector ETFs. Again, this approach allows us to examine the performance as employed by a typical retail investor.

We report the results of this analysis in Table 4. For each strategy we report the average monthly (equal-weighted) return (i.e., *Gross*), as well as the average monthly return net of the S&P500 return (i.e., *Premium*). We report these values for the entire period in Panel A, as well as for the subperiods in Panels B (1993-2007) and C (2009-2023). We find that the return *Premium* is positive and significantly different from zero for all strategies across the entire period, as well as for the first subperiod (193-2007). While still positive, on average, *Premium* loses much of its significance within the more recent subperiod (i.e., Panel C), suggesting that the sector rotation approach to the SMGA strategy may have lost efficacy. To get a more complete picture, however, we return to the Fama-French (2014) analysis to explore the risk-adjusted return for each strategy, and we report these results in Table 5.

Table 4: Returns to Sector Rotation Strategy

Panel A: Average Monthly Returns 1993-2023

	Doeswijk	Peloton	Pacer
Gross	1.16	1.22	1.22
	(<.0001)	(<.0001)	(<.0001)
Premium	0.26	0.32	0.32
	(.0428)	(.0018)	(.0061)

Panel B: Average Monthly Returns 1993-2007

	Doeswijk	Peloton	Pacer
Gross	1.27	1.31	1.33
	(<.0001)	(<.0001)	(<.0001)
Premium	0.35	0.40	0.42
	(.0642)	(.0079)	(.0234)

Panel C: Average Monthly Returns 2009-2023

	Doeswijk	Peloton	Pacer
Gross	1.27	1.36	1.31
	(<.0001)	(<.0001)	(<.0001)
Premium	0.07	0.17	0.12
	(.6885)	(.2425)	(.4260)

This table provides monthly (equal-weighted) average percentage returns for each strategy as defined in Table 1 (i.e., *Doeswijk*, *Peloton*, and *Pacer*). For each we report the gross average monthly return (*Gross*), as well as the average monthly return net of the return of the S&P500 (*Premium*). For each average, we also report the p-value from a difference test examining whether the average return is different from zero. Panel A provides values for the entire 1993-2023 time period, while Panel B (Panel C) provides averages for the 1993-2007 (2009-2023) time periods.

Table 5: Fama and French (2014) Alphas for Sector Rotation Strategy

	(1) Doeswijk	(2) Peloton	(3) Pacer
α	0.24	0.26	0.32
	(.0441)	(.0112)	(.0080)
B_{Market}	0.86	0.94	0.90
	(<.0001)	(<.0001)	(<.0001)
SMB	-0.08	-0.06	-0.11
	(.0498)	(.0882)	(.0094)
HML	0.19	0.12	0.08
	(<.0001)	(.0024)	(.1044)
RMW	0.19	0.19	0.15
	(.0005)	(<.0001)	(.0040)
CMA	0.11	0.08	0.07
	(.1381)	(.1941)	(.3419)
n	372	372	372
Adj. R^2	(.7324)	(.8232)	(.7547)

This table repeats the analysis provided in Table 3, but it focuses on various sector rotation strategies. Column 1 examines the strategy proposed by Doeswijk (2008). Columns 2 and 3 examine the high-level sector strategies employed by Peloton and Pacer, respectively.

Examining Table 5, we find that each of the sector rotation strategies has a beta below one, suggesting a smaller amount of market risk. Again, since the sectors are from the S&P500, we find a negative coefficient on SMB and a positive coefficient on the other factors. Once all factors are controlled, each strategy, most notably, creates a positive alpha across the full time period. Thus, one might be tempted to conclude that the sector rotation strategy is value enhancing, and this might be true relative to a straight investment in the market. However, we need to compare these alphas to those provided by the base SMGA strategy (without sector rotation), as well as across the subperiods.

Regarding the first comparison, recall that the (monthly) alpha generated from the base SMGA strategy across the entire period was 0.31 (see column 4 in Table 3). Comparing this to the alphas generated by sector rotation (i.e., Table 5), we note that the alphas are at the same level or lower when sector rotation is employed, begging the question of whether the added complexity is worth it. We also note that the sector rotation carries a higher market beta, which is consistent with longer times invested in the market. Our results, therefore, do not necessarily imply that sector rotation produces a lower average gross return, but they do indicate that on a risk-adjusted basis sector rotation does not appear to improve the efficiency of the base SMGA strategy. In fact, adding leverage to the base SMGA strategy to achieve the same level of beta as the sector rotation strategy would generate a higher alpha.

Regarding the second comparison, we repeat the sector rotation analysis for the subperiods, and we report these results in Table 6. For brevity, however, we exclude the factor coefficients and only include the estimated alphas. Note that the alphas for the entire period match those reported in Table 5. For the subperiods, we find that the alphas decline over time, albeit slightly, which is consistent with our earlier findings from Table 4. Comparing the subperiod alphas to the base SMGA strategy (i.e., Table 3), we continue to find that the sector rotation strategy fails to increase efficiency. While we follow the sector definitions provided by Pacer and Peloton, our results are a high-level view of the strategies, as Peloton, in particular, uses proprietary timing and rotation strategies that are intended to boost alpha.

Table 6: Sector Rotation Fama and French (2014) Alphas by Period

	Doeswijk			**Peloton**			**Pacer**		
	All	93-07	09-23	All	93-07	09-23	All	93-07	09-23
α	0.24	0.24	0.20	0.26	0.25	0.22	0.32	0.40	0.19
	(.0441)	(.1825)	(.2695)	(.0112)	(.1053)	(.1323)	(.0080)	(.0421)	(.2051)

This table repeats the analysis provided in Table 5, but also looks at subperiod estimates (i.e., 1993-2007 and 2009-2023) for each strategy. For brevity, we only report the alpha estimates, as the remaining factor coefficients remain relatively stable.

Impact of short selling

While the long-only sector rotation strategy does not appear to add incremental alpha relative to the base SMGA approach, it does offer the opportunity to incorporate short selling as part of the broader investment plan, which could potentially increase its efficacy. With this in mind, we next explore a long-short strategy that goes long (short) in cyclicals (noncyclicals) in Nov-Apr and long (short) in defensives (cyclicals) in May-Oct. We report the results of this analysis in Table 7. Panel

A provides average monthly returns, and Panel B reports the alphas and market betas from the standard Fama and French (2014) regression (other factors excluded for brevity).

Table 7: Long-Short Strategy Returns

Panel A: Average Monthly Returns

	Doeswijk	Peloton	Pacer
Gross	0.55	0.53	0.52
	(.0063)	(.0014)	(.0128)
Premium	-0.35	-0.37	-0.39
	(.2287)	(.1760)	(.1951)

Panel B: Fama and French (2014) Alphas

	Doeswijk			Peloton			Pacer		
	All	93-07	09-23	All	93-07	09-23	All	93-07	09-23
α	0.49	0.41	0.46	0.37	0.19	0.42	0.50	0.55	0.34
	(.0174)	(.1541)	(.1504)	(.0314)	(.4219)	(.1227)	(.0200)	(.1112)	(.2249)
B_{Market}	-0.03	0.02	-0.07	-0.00	0.10	-0.05	-0.05	-0.04	-0.06
	(.5043)	(.8481)	(.3731)	(.9608)	(.1626)	(.4523)	(.3755)	(.6915)	(.3384)

This table examines the results of a long-short strategy that goes long (short) in cyclicals (noncyclicals) in November through April and long (short) in noncyclicals (cyclicals) in May through October for the 1993-2023 period. Panel A replicates the results from Table 4 (Panel A), while Panel B replicates the Fama and French (2014) analysis as performed in Tables 5 and 6.

Examining Panel A, the long-short sector rotation strategy produces an average monthly return of between 0.52 and 0.55 percent, depending on the specific sectors defined as cyclical or defensive (i.e., the varying definitions suggested by *Doeswijk*, *Peloton*, and *Pacer*). The average monthly S&P500 return is 0.90 (from Table 2), which produces a net *Premium* of between -0.35 and -0.39 percent for the long-short strategies. While the return is lower, the long-short strategy should also significantly reduce net market exposure. In fact, Panel B illustrates that a long-short approach results in a beta that is effectively 0. Moreover, the alpha is positive and significant across most time periods and across the varying definitions of cyclical/defensive sectors. Comparing this to the base SMGA approach, our results suggest that sector rotation can be efficiency enhancing when a broader long-short strategy is employed. As such, implementation of a sector rotation strategy among investment managers is likely best positioned within a market-neutral hedge fund structure that has the capacity to implement this more robust trading philosophy and that is in search of positive alpha with zero net market exposure.

Robustness tests

To examine the veracity of our results, we conduct a series of robustness tests. We begin by examining a shift in the start date at which we shift back into the market. In particular, the charts in Figure 1 illustrate that monthly returns in October may be on the higher side. So, we explore a strategy that continues to sell in May, but that re-enters the market in October instead of November. We report the results of this analysis within the sector rotation strategy in Table 8. We find that changing the monthly window does not improve performance over the standard November re-entry date. In particular, gross average monthly returns remain effectively unchanged, while the

alphas decline, suggesting the October date may have a larger impact in increasing risk than on any change in return. Thus, we recommend retaining the standard monthly periods within the SMGA strategy and related approaches.

Table 8: October Trigger

Panel A: Returns 1993-2023

	Doeswijk	Peloton	Pacer
Gross	1.13	1.16	1.20
	(<.0001)	(<.0001)	(<.0001)
Premium	0.23	0.26	0.30
	(.0643)	(.0117)	(.0077)

Panel B: Alphas

	Doeswijk			Peloton			Pacer		
	All	93-07	09-23	All	93-07	09-23	All	93-07	09-23
α	0.14	0.17	0.26	0.13	0.12	0.14	0.26	0.35	0.17
	(.2557)	(.3486)	(.0276)	(.1922)	(.4334)	(.3642)	(.0276)	(.0649)	(.2541)

This table examines the results of a cyclical strategy that begins in October instead of November. Thus, investors would invest in cyclicals in October through April and in noncyclicals in May through September. Panel A replicates the results from Table 4 (Panel A), while Panel B replicates the Fama and French (2014) analysis as performed in Tables 5 and 6.

In unreported results, we also explore a combination of the SMGA strategy and sector investing. Specifically, we consider separate strategies that either invest only in cyclicals in May-Nov or only in defensives in May-Oct. These approaches do not improve performance; in fact, we find generally negative alphas associated with these varying methods. We also repeat our standard Fama and French (2014) analyses but with the inclusion of the momentum factor developed by Carhart (1997). This inclusion has little impact on our alphas and conclusions. Lastly, we also repeat our analysis using alternative S&P500 index funds (e.g., IVV and VOO). IVV began in May 2000 and VOO in September 2010. So, for comparison to our base results, we created samples based on similar time periods. The only difference in results (primarily alpha) is driven by slightly different expense ratios among the respective ETFs; however, these differences are very small and therefore result in no meaningful difference. Thus, our results remain robust.

V Discussion and Conclusion

Given the competitiveness within financial markets, investment managers are continually searching for ways to outperform the market. This research has led to the identification of a number of market anomalies. While most of these are found to be transient and disappear over time or after controlling for other factors, one that has appeared to remain robust is the "Sell in May and Go Away" (SMGA) strategy, which invests in the market during the months of November to April, but exits the market (to a risk-free) asset in May to October.

We examine the SMGA strategy, finding that it continues to be effective at generating positive alpha, albeit at a slightly reduced level in more recent years. We also explore the use of a sector rotation strategy within SMGA that goes long in cyclicals during the Nov-Apr period and long in defensives in the May-Oct period. We find that this approach does not improve upon the

more basic SMGA philosophy. However, we do find that adding short selling does improve risk-adjusted performance. Thus, investors who have the knowledge and ability to add this layer may be able to craft strategies that are capable of positive, risk-adjusted performance.

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