

Cash Balances and the January Effect in Stock Returns

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This paper tests Ritter's (1988) parking-the-proceeds hypothesis that individual investors park their December sales proceeds and reinvest them in January, causing the turn-of-the-year effect of high returns, particularly in small stocks. We examine fund balances in locations where investors typically would park their proceeds: brokerage cash accounts, other liquid funds accounts, money market funds, and other mutual funds. The results are not consistent with the parking-the-proceeds hypothesis; high January small firm returns do not tend to follow increases in parked proceeds. There is a slight tendency for high January returns of larger firms, however, to be associated with increases in some parked balances.

INTRODUCTION

Rozeff and Kinney's (1976) finding that mean stock returns in January are higher than for other months has stimulated further research on January returns. These subsequent studies attribute this *January effect* to the concentration of high January returns in the issues of smaller companies (Banz, 1981; Keim, 1983; Blume and Stambaugh, 1983; and Ritter and Chopra, 1989). Roll (1983), observing that most of the high returns occur during the first few days in January, calls this phenomenon the *turn-of-the-year effect*.

Of the various explanations for the turn-of-the-year effect, the tax-loss selling hypothesis (Reinganum, 1983; and Roll, 1983) in conjunction with Ritter's (1988) parking-the-proceeds hypothesis appear to be the most promising. The tax-loss selling hypothesis provides a plausible justification for investor selling behavior at year end, stating that investors sell stocks in order to realize the losses for tax purposes. The parking-the-proceeds hypothesis states that the buying and selling behavior of individual investors causes the turn-of-the-year effect.

The parking-the-proceeds hypothesis theorizes that as the end of December approaches, investors tend to sell securities but not reinvest the entire proceeds immediately. Over year's end, the investors *park the proceeds* in anticipation of reinvesting the funds from December's sales during the month of January. The tendency of individual investors to concentrate their purchases in stocks of smaller companies produces relatively more buying pressure on the smaller stocks and hence their rise in price.

Ritter identifies the tax-loss selling hypothesis as the reason that investors sell near the end of the year. The tax-loss selling hypothesis states that investors sell securities in which they have capital losses at the end of the year to realize the losses and reduce

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income taxes. The tax-loss selling hypothesis does provide a plausible reason to explain end-of-the-year selling, but it is not a necessary part of the parking-the-proceeds hypothesis. The more general parking-the-proceeds hypothesis need only state that investors sell near the end of the year.

Ritter identifies three conditions as necessary for the parking-the-proceeds hypothesis to operate:

- Individual investors' portfolios are more concentrated in low priced, low capitalization stocks than are the portfolios of institutional investors;
- Buying and selling pressure affects stock prices, especially prices of smaller firms; and
- Investors do not reinvest the proceeds from December's tax-motivated security sales immediately.

Individual investors are net buyers of small stocks early in January using the proceeds from December's sales.

Using a proprietary database of the daily purchases and sales of New York Stock Exchange stocks by cash account customers of Merrill Lynch, Pierce, Fenner, and Smith, Ritter provides empirical support for the parking-the-proceeds hypothesis. He finds buy/sell ratios for the latter part of December are significantly lower than during the early part of January. In addition, January's buy/sell ratios are significantly positively related to January small firm market returns.

Dyl and Maberly (1991) provide additional support for the hypothesis. They examine odd-lot sales and purchase ratios over the turn of the year and find that odd-lot sales are relatively higher at year's end than in January, odd-lot purchases are relatively higher at the beginning of the year than in December, and both of these changes are significantly related to January market returns. Dyl and Maberly also investigate selling near the end of the year and conclude that sales are extraordinarily large at years' ends, but tax-loss selling only accentuates the level of sales; it is not the principal cause of higher January returns.

Both the Ritter and Dyl and Maberly studies measure parked proceeds indirectly by inferring cash parking from individual investor buying and selling behavior. Although this is consistent with the parking-the-proceeds hypothesis, it does not represent direct evidence that proceeds are parked over year's end.

It is possible that sales proceeds in December are used for other transactions, such as the substantial increase in retail activity at the end of the year as in the scenario of Ogden (1990). Ogden argues that an increase in the receipt of liquid funds at the end of the year or beginning of the new year contributes to the turn-of-the-year effect. The origins of these funds, such as private business profits or year-end bonuses, could be sources of parked proceeds.

The purpose of this paper is to investigate the relationship between year-end parked cash balances and January returns to provide a direct test of the parking-the-proceeds hypothesis. To accomplish this, we collect cash balances in accounts where proceeds would be expected to be parked and compare them to January returns.

EVIDENCE FROM BROKERAGE ACCOUNTS

We examine balances in accounts where individual investors typically would park their proceeds for short periods while awaiting reinvestment opportunities. Where would investors park funds for a short time interval? Ritter (1988, p. 706) notes that "individuals typically 'park' the proceeds in their brokerage accounts for a period of time, and only later reinvest it." Net balances in investor cash accounts at brokerage firms therefore should provide a good measure of parked proceeds.

The data representing these parked proceeds are total net credit balances in customer cash accounts at NYSE-member brokerage firms from 1972 through 1989. The end-of-month balances are available in the *Federal Reserve Bulletin*. To measure the relative amount parked during each month, we compute the percent change in the account balances from the previous month.

For market returns we use the monthly market index returns from the Center for Research in Security Prices (CRSP). The index representing the general market is the value-weighted CRSP index which weights all firms proportional to their total market value. To measure the small firm returns, we use the CRSP equally weighted index which is more heavily weighted to returns on smaller firms.¹ The January effect states that small firm returns are abnormally high in January, however, i.e., the January small firm premium is positive. To extract the small firm premium, we computed monthly residuals from the market model regressing the equally weighted CRSP returns on the value-weighted CRSP returns.²

Table 1 shows the mean month-end brokerage cash account percentage changes and monthly market returns. The average December cash account balance increase is greater than any other month, providing evidence that cash parking does occur at the end of the year. Table 1 also provides evidence of the existence of the turn-of-the-year effect for our cash account balances sample. The January mean returns for the CRSP value-weighted and equally weighted indexes and the small firm return premium are greater than any other month and are significant at the $\alpha = .05$ level.

¹ Our results are not sensitive to our choice of the CRSP equally weighted index as a small firm index. Results computed using the small capitalization stocks in Ibbotson (1991) are essentially the same as the reported results.

² The procedure to compute these residuals is as follows. We ran the following regression using monthly returns

$$(R_{EW} - R_F) = \alpha + \beta(R_{VW} - R_F)$$

where:

- R_{EW} = The return on the CRSP equally weighted index;
- R_{VW} = The return on the CRSP value-weighted index; and
- R_F = The return on U.S. T-bills.

The regression yielded the following results:

$$(R_{EW} - R_F) = 0.003 + 1.114(R_{VW} - R_F)$$

$$R^2 = 0.84$$

Residuals from the regression provide the measure of the small firm return premium.

Table 1—Mean Monthly Brokerage Cash Account Changes and Market Returns, July 1972 to June 1989 (Mean percentage changes in month-end cash account balances with securities brokerage firms, mean monthly returns on the market [CRSP value-weighted and CRSP equally weighted indexes], and mean monthly small firm premiums [residuals of regressing CRSP equally weighted returns less T-bill rates on CRSP value-weighted returns less T-bill rates])

Month	Means (in percent)			
	Percent Change in Cash Accounts	Return on CRSP Value-Weighted	Return on CRSP Equally Weighted	Small Firm Return Premium
January	-0.52	3.16	6.10	2.39
February	-0.32	0.50	1.08	0.34
March	1.32	0.99	1.86	0.58
April	-1.64	1.29	1.11	-0.51
May	-0.34	0.80	0.75	-0.33
June	2.96	2.05	2.12	-0.36
July	0.71	-0.31	0.38	0.54
August	-0.76	1.64	1.36	-0.66
September	2.53	-1.02	-0.61	0.35
October	1.73	0.53	-0.98	-1.75
November	1.06	1.64	1.84	-0.17
December	9.53	1.02	0.91	-0.41

At first glance, one might interpret this as support for the parking-the-proceeds hypothesis. The relevant relationship that would support the parking-the-proceeds hypothesis, however, is an association between increases in year-end parked balances and high January returns. If the parking-the-proceeds hypothesis is true, we would expect cash account balance increases to precede positive January returns. There are two ways that this relationship could occur. First, there could be a general relationship between parked balances (changes in the previous month's balance) and market returns for every month. If this relationship is positive, then the increased parked proceeds in December observed in Table I would cause higher January returns. The second possibility is that the relationship only exists in January, and no general relationship exists between monthly returns and the prior month's cash account changes for all other months.

We use the following regression model to test for these relationships:

$$(1) M_t = a_0 + a_1 \text{CASH}_{t-1} + a_2 D \text{CASH}_{t-1}$$

where:

- M_t = The CRSP (or small firm premium) return in month t ;
- CASH_{t-1} = The cash balance percent change in month $t-1$; and
- D = Dummy variable with value of 1 in January and 0 in all other months.

As discussed in Rao and Miller (1971, pp. 89-90), the value of a_1 measures a general relationship between parked balances and market returns, and a_2 measures an incremental relationship existing in January (over and above the general relationship measured by a_1).

Table 2—Regressions Relating Returns to Parked Cash (t-statistics for the testing the coefficient's difference from zero are in parentheses)

M_t	a_0	a_1	a_2	R^2
Panel A				
Results of running the regression: $M_t = a_0 + a_1 \text{CASH}_{t-1} + a_2 D \text{CASH}_{t-1}$				
where:				
M_t	= The CRSP value-weighted market (or small firm premium) return in month t;			
CASH_{t-1}	= The cash balance percent change in month t-1; and			
D	= Dummy variable with value of 1 in January, 0 in all other months			
CRSP Value-Weighted	0.009 (2.653 ^c)	-0.061 (-1.074)	0.233 (2.121 ^b)	0.022
CRSP Equally Weighted	0.012 (2.766 ^c)	0.225 (1.673 ^a)	-0.015 (-0.210)	0.016
Small Firm Premium	-0.000 (-0.229)	0.054 (1.896 ^a)	-0.035 (-0.637)	0.018
Panel B				
Results of running the regression: $M_{\text{Jan}} = a_0 + a_1 \text{CASH}_{\text{Dec}}$				
where:				
M_{Jan}	= The CRSP (or small firm premium) return in January;			
CASH_{Dec}	= The cash balance percent change in December.			
CRSP value-weighted	0.024 (0.995)	0.084 (0.447)		0.013
CRSP equally weighted	0.081 (2.425 ^b)	-0.206 (-0.778)		0.039
Small firm premium	0.052 (3.656 ^c)	-0.299 (-2.626 ^b)		0.315

^{a,b,c}Significant at the .10, .05, and .01 level respectively, two tailed test

Table 2 provides the results of these regressions performed using the CRSP indexes and the small firm return premium. The results relating the CRSP value-weighted index to parked balances show that parked balance changes are significantly related to market returns only for January ($t = 2.121$) while the coefficient for a general relationship over all months is not significant. The CRSP equally weighted index (small firms) shows similar results, though significant only at the .10 level. The R^2 of the regression is disappointingly low, indicating that while the relationship is significant, a large portion of January returns are explained by other factors. While these results are consistent with the parking-the-proceeds hypothesis, recall that the hypothesis deals with the abnormal returns on small firms.

The results using small firm return premiums do not support the hypothesis. The regression shows that the coefficient for a general relationship is positive, but it is significant only at the .10 level. While this mildly supports the parking-the-proceeds hypothesis, the coefficient of the January interaction term is negative and not significant, which does not support the hypothesis.

In addition, we ran regressions on December parked balances and January returns; this relates parked balance changes to returns only in January. The model is of the following form:

$$(2) M_{Jan} = a_0 + a_1 CASH_{Dec}$$

where:

$$\begin{aligned} M_{Jan} &= \text{The CRSP (or small firm premium) return in January;} \\ CASH_{Dec} &= \text{The cash balance percent change in December.} \end{aligned}$$

These results, reported in Table 2, yield similar conclusions. The CRSP value-weighted index returns have a positive (but not significant) coefficient, the CRSP equally weighted returns have a negative (but not significant) coefficient, and the small firm premium has a significantly negative coefficient which is not consistent with the parking-the-proceeds hypothesis.

These conflicting findings motivate us to examine other locations where investors might park proceeds over year's end.

EVIDENCE FROM OTHER PARKED BALANCES

Another location for parking cash for short periods while maintaining maximum liquidity is a checking account. The amount of funds in demand and other liquid deposits with commercial banks and other financial institutions is included in the M1 measure of the money supply. These data are available monthly in the *Federal Reserve Bulletin*. Because investors probably do not keep parked proceeds in the form of currency, we subtract currency in circulation from M1 to yield a variable we call *liquid funds balances* as one alternate parked proceeds measure and compute the monthly percent change in this variable.

During the past 15 years, money market funds have offered a place where investors can park their funds for short periods and still receive a market rate of return on idle funds. Brokerage firms even sponsor such money market accounts, making them available to their customers for parking proceeds while awaiting reinvestment. We record two additional measures of parked proceeds: month-end balances in broker-sponsored money market funds and in general purpose money market funds. These data are from various annual issues of *The Mutual Fund Factbook* and are available starting in 1978. We compute the monthly percent changes in these account balances.

Another possible location where investors could park proceeds is a general equity mutual fund. While cash accounts or money market funds may be a first choice location for many investors to park funds, all mutual funds provide sufficient liquidity to offer a parking location. For portfolio management purposes, an investor may prefer to park in a no-load fund in order to maintain investment in a diversified portfolio of equities while completing the security selection decision for individual stock purchases. Monthly share sales and redemptions of mutual fund shares (excluding money market funds) are available from the *Federal Reserve Bulletin*. We obtain these data from 1977 to 1989 and compute monthly net sales (sales of mutual fund shares less redemptions of shares) as a percentage

of total fund assets. This variable represents a measure of the relative amount of funds flowing in or out of mutual funds.

Table 3 presents the mean monthly values for the four alternate parking locations. Results for the liquid funds balances show December's mean change (2.825 percent) to be larger than every month except April (4 percent). Though this may be viewed as weak evidence of parking, we defer a conclusion until examining regression results relating parked balance changes to market returns.

Table 3—Mean Monthly Changes in Money Balances in Locations Where Investors May Park Funds (Mean percent changes in month-end liquid fund accounts with financial institutions (M1 minus currency in circulation), 1972 to 1989; mean percent changes in month-end money market fund balances, 1978 to 1989, and mean net cash inflows into mutual funds (mutual fund net sales (share sales minus redemptions) as a percent of total fund assets), 1977 to 1989)

Month	Mean Percent Change in			
	Liquid Fund Balances	Broker Money Market Fund Balances	General Money Market Fund Balances	Mutual Fund Net Sales as Percent of Total Assets
January	-0.31	6.15	1.92	3.06
February	-3.60	3.20	3.36	1.87
March	1.03	2.07	2.38	1.92
April	4.00	-0.37	1.38	1.24
May	-2.67	1.69	3.51	1.52
June	1.87	1.07	1.37	1.65
July	1.05	4.28	3.90	1.60
August	-0.37	2.62	2.39	1.22
September	1.06	1.44	1.98	1.00
October	0.96	3.16	3.41	1.57
November	1.34	2.60	1.72	1.54
December	2.82	-1.35	0.24	0.56

Neither the brokerage-sponsored nor the general money market fund percent changes indicate any evidence of parking. The lowest changes for both fund types (-1.35 percent for broker and 0.24 percent for general) occur in December. It is likely that interest rate changes and other factors (there was high growth in assets and the number of funds) during this period influenced fund balance changes more than any impact that parking might have.

Results for the mutual fund net sales show that the smallest amount of money flowed into funds during December, and the greatest inflow occurred in January. Based on mean flows only, there is no evidence of parking in mutual funds. On the other hand, this does support the notion of tax-loss selling; investors could be realizing losses in December by redeeming mutual fund shares.

To examine the relationship between parked proceeds and January returns further, we compute the same type of regressions as for the brokerage cash balances, using instead the four alternate parking location measures as the dependent variable. Table 4 presents these results. (For brevity, results for the CRSP equally weighted index and using only January observations are not reported. They are, however, consistent with the reported regressions.)

Table 4—Regression Relating Returns to Parked Funds (t-statistics are in parentheses. Liquid fund balances are percent changes in the money supply (M1) less currency in circulation. Broker and general money market funds are percent changes in month-end balances at broker-sponsored and general-purpose money market funds. Mutual fund sales are net sales (share sales less redemptions) at mutual funds (excluding money market) as a percent of total fund assets.)

Results of running the following regression $M_t = a_0 + a_1 \text{ PARK}_{t-1} + a_2 \text{ D PARK}_{t-1}$

where:

- M_t = The CRSP value weighted market (or small firm premium) return in month t ;
 PARK_{t-1} = The funds parked in month $t-1$; and
 D = Dummy variable with value of 1 in January, 0 in all other months

Parking Location	a_0	a_1	a_2	R^2
Liquid Fund Balances				
CRSP value weighted	0.011 (2.533 ^b)	-0.024 (-0.123)	1.102 (2.118 ^b)	0.037
Small firm premium	-0.002 (-1.247)	-0.021 (-0.298)	0.140 (0.747)	0.004
Broker Money Market Funds				
CRSP value weighted	0.016 (3.208 ^c)	-0.057 (-0.646)	0.177 (0.542)	0.005
Small firm premium	-0.002 (-1.454)	0.013 (0.434)	-0.142 (-1.267)	0.014
General Money Market Funds				
CRSP value weighted	0.018 (3.614 ^c)	-0.161 (-1.563)	0.188 (0.455)	0.020
Small firm premium	-0.002 (-1.364)	0.016 (0.460)	-0.058 (-0.402)	0.003
Mutual Fund Net Sales				
CRSP value weighted	0.006 (1.048)	0.433 (1.864 ^a)	2.456 (1.858 ^a)	0.054
Small firm premium	0.000 (-0.018)	-0.079 (-0.933)	-0.591 (-1.228)	0.019

^{a,b,c}Significant at the .10, .05, and .01 level respectively, two-tailed test.

The first regression for the liquid fund balances indicates that while there is no general relationship between lagged money balances and the CRSP value-weighted index, there is a significant and positive relationship in January. The regression using small firm premiums shows no relationship.

Consistent with the absence of December parked proceeds of money market funds in Table 3, the regressions in Table 4 show no relationship between parked proceeds and January returns. While these results do not disprove the parking-the-proceeds hypothesis, they provide no support and indicate that investors do not use money market funds to park December cash that they intend to reinvest in January.

Results from the mutual fund data and the CRSP value-weighted index yield a significantly positive value for a_1 , indicating that there is a direct relationship between cash

inflows to mutual funds in one month and the market return in the following month. This relationship is logical; the cash flowing into mutual funds creates demand for stocks when the mutual funds subsequently invest their cash. The significantly positive value of a_2 indicates that there is an incremental relationship in January. This result is consistent with results using brokerage cash balances. When examining the traditional January effect (i.e., small firms), however, the regression on the small firm premium shows no significance and no support for the parking-the-proceeds hypothesis. This also is consistent with the result using brokerage cash balances.

CONCLUSION

The results reported in this paper provide little support for the parking-the-proceeds hypothesis. While there is no relationship between changes in money market funds (both broker-sponsored and general funds) and January returns, high CRSP value-weighted (large firm) returns in January are related significantly to high year-end balances in customer cash accounts with brokerage firms, high liquid fund balances, and high December cash inflows to mutual funds (excluding money market funds). While these parked proceeds do explain a portion of the high January returns for the market, they provide no explanation for the small firm premium. The results provide no support for the parking-the-proceeds hypothesis as a reason for the traditional turn-of-the-year effect of observed high returns on small firms.

These results are consistent with an alternative explanation of the turn-of-the-year effect. Ogden (1990) hypothesizes that the turn-of-the-year effect is associated with higher receipts of funds that are timed at the beginning of the year, and Ogden (1993) explores evidence consistent with his earlier hypothesis. As individuals receive these periodic cash flows, they invest a portion in equity securities, particularly stocks of small companies, contributing to the turn-of-the-year effect. Ogden also attributes the monthly seasonal (see Ariel, 1987) to the increase in cash receipts during the first few days of each month. These higher receipts during the beginning of the month could cause the higher buy-sell ratios observed by Ritter and the pattern of odd-lot trades observed by Dyl and Maberly during the early part of January even if proceeds of December's sales are not parked over the end of the year.

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