THE JANUARY EFFECT AND INSTITUTIONAL INVESTMENT IN PORTUGAL*

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Abstract

Over the last twenty years, many researchers have documented that the average rate of return from stocks in the month of January is higher than in any other month of the year. More recently, several researchers have offered a convincing explanation for this so called January effect. The window dressing hypothesis claims that high returns on risky securities in January are caused by systematic shifts in portfolio holdings of institutional investors at the turn of the year. The purpose of this paper is to provide some insights into this seasonal behaviour of stock prices by testing the window dressing hypothesis and examining the impact mutual funds trading has had on the aggregate stock market in Portugal over the 1996-2001 period.

Key words: January Effect, Mutual Fund, Window Dressing.

1. INTRODUCTION

Financial research has brought considerable analysis to bear on explaining calendar anomalies over the last twenty years. One of the most contrasted anomalies is the January effect, which claims that stock returns tend to be relatively high on the first month of the year. This effect was firstly detected for the American stock market, but we can consider it to be a generalised phenomenon with few exceptions.

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* This paper was accepted for publication in this special issue of *Estudos de Gestão – Portuguese Journal of Management Studies* as a result of a selection criterion that elected it as one of the most significant papers in its field, from those presented at the XIIth Jornadas de Gestão Científica, na Universidade da Beira Interior, Covilhã, Portugal. Therefore, it did not pass our ordinary double blind referee process as it happens in our regular issues.

There have been numerous attempts to explain this seasonal behaviour in the stock time series returns. Two of the most frequently suggested reasons are the so called tax-loss selling hypothesis, which explains the behaviour of individual investors at the turn of the year, and the window dressing hypothesis, which explains the behaviour of institutional investors.

The tax-loss selling hypothesis explains the January effect as follows. Individual investors sell stocks whose prices have already fallen during the year in order to realize capital losses and take advantage of the resulting tax benefits. This selling pressure depresses the prices of these stocks even further. In January, selling pressure diminishes and stock prices return to equilibrium values.

A second explanation for the observed seasonality in returns is the window dressing hypothesis. This explanation argues that institutional investors systematically rebalance portfolio holdings throughout the year in order to mark up or affect performance-based remuneration. Empirical evidence in the US and Canada provides some support for this argument (Bildersee and Kahn, 1987; Lakonishok, Shleifer, Thaler and Vishny, 1991; Athanassakos, 1992; Cuny, Fedenia and Haugen, 1996; Sias and Starks, 1997; Acrert and Athanassakos, 2000). Large institutional investors are net buyers of risky securities at the beginning of the year when they are less concerned about including well-known, risky, or poorly performing stocks from their portfolios and replace these stocks with well-known and less risky stocks with solid recent performance. At the end of the year, managers do not want their clients to see "marginal" investments in portfolios they have never heard of before (Haugen and Lakonishok, 1988, p. 97).

The purpose of this paper is to provide some insights into this seasonal behaviour of stock prices by testing the window dressing hypothesis and examining the impact equity mutual funds trading has on the aggregate stock market.

The paper is organized as follows. The second section describes the database used in the study. In the third section we display the methodology and the results of the analysis. Finally, the fourth section summarizes the main conclusions of the research.

2. DATA

The initial data required for this study consist of assets values and portfolio holdings of Portuguese equity mutual funds at the end of each month from the begining of 1996 to the end of 2001, period characterized by the enormous increase in collective inversion on the Portuguese stock market. This is the reason to examine the impact of institutional investors in stock returns and the links with the January effect.

These funds are selected because their investment policy is to hold predominatly national common stocks, although we considered that all funds have not the same

ability to produce window dressing strategies at the turn of the year. We established three funds size groups. Large institutional investors constitute the large size group, which is considered with a greater ability and interest to mark up their portfolios holdings and the rest are split into a medium sized group and small size group.

We also needed the price, at the end of each month, of all firms on the Portuguese stock market, the PSI 30 index and *certificados de aforro* in order to generate their monthly returns.

3. METHODOLOGY

3.1. Return analysis

In order to contrast the existence of monthly seasonality in equity mutual fund returns, we proposed a classic methodology based on a regression model in which the mutual fund returns are explained using dummy variables which represent each month of the year.

$$R_{pt} = \alpha_1 D_{JAN} + \alpha_2 D_{FEB} + ... + \alpha_{12} D_{DEC} + \varepsilon_{pt}$$

Where R_{pt} is the return of mutual funds in period t; $D_{JAN} ... D_{DEC}$ are the dummy variables where, for example, D_{JAN} is 1 if it falls on January and zero otherwise (analogous for the remaining eleven months); $\alpha_1 ... \alpha_{12}$ are the coefficients that reflect the average return for each month; ε_{pt} is an error term assumed to be normally distributed with zero mean and finite variance.

The lack of monthly seasonality test is carried out using the joint equality between mutual fund returns across months. Therefore, we can analyse whether the returns are independent of the month in which they occur. Then, we also contrast the existence of differences between December – January and January – rest of the year in average returns of mutual funds.

The main results are shown in Table 1. We can observe the estimated coefficients for the annual, January and December average return from each type of funds and the t-Student test value for each coefficient. The coefficient estimates the average return and the t-Student test assesses the significance or non-significance of the mentioned coefficients. As we can observe, large and medium sized funds returns show significant positive January returns while December and annual returns are not significant. Results are not very different from what we would obtain in other markets.

The results show that large institutional investors exploit January market rising trends to increase their portfolio returns while at the same time they contribute to generate that phenomenon.

TABLE 1

Shifts in average funds returns

Funds	Average Returns			Differences	
	Annual	January	December	January vs December	January vs rest of year
Large size	1,5129 (0,24)	6,3275 (2,24)*	3,4894 (1,23)	2,8381 (0,71)	4,8146 (1,78)**
Medium sized	0,9923 (0,13)	7,7437 (2,53)*	4,7484 (1,55)	2,9953 (2,09)*	6,7514 (2,20)*
Small size	0,0779 (0,04)	5,7556 (0,78)	-15,8395 (-2,17)*	21,595 (1,68)**	5,6777 (2,58)*

Note: (*) significant at the 5% level, (**) significant at the 10% level.

A second analysis proposed is based on contrasting the existence of monthly seasonality in mutual funds tracking errors, assuming that reduction in tracking error involves rebalancing the portfolio into stocks contained in the benchmark.

The methodology employed consists in generating a new seasonal regression model in which the dependent variable is the portfolio tracking error, which is measured by the absolute deviation of its monthly return from the PSI 30 benchmark portfolio return.

$$\left| R_{pt} - R_m \right| = \alpha_1 D_{JAN} + \alpha_2 D_{FEB} + \ldots + \alpha_{12} D_{DEC} + \varepsilon_{pt}$$

Table 2 displays monthly average tracking errors for the three data samples around the end of the year. On average, mutual funds show a significant increase in tracking error from December to January. The first and second samples of mutual funds show significantly positive January-December tracking error differences. In contrast, the third group of mutual funds shows non-significant January-December tracking error differences. However, the comparison of January tracking errors of mutual funds with the rest of the year provides little support for our hypothesis.

This second analysis shows that it is large institutional investors who generate shifts in their investment policy at the turn-of-the-year, and that it is in January when they move to riskier positions. However, we detect again that those strategies can not be observed in smaller institutional investors.

3.2. Portfolio holdings analysis

The second part of the empirical analysis is based on the study of institutional investors portfolio holding shifts at the turn-of-the-year.

TABLE 2

Differences in monthly average tracking error of mutual funds

Funds	Mean Absolute Tracking Error			Differences	
	Annual	January	December	January vs December	January vs rest of year
Large size	1,2219 (1,17)	1,9398 (4,04)*	0,6644 (1,38)	1,2754 (1,87)**	0,7831 (1,63)
Medium sized	1,7075 (0,71)	2,7132 (2,86)*	0,5299 (0,55)	2,1833 (1,82)**	1,0971 (0,97)
Small size	2,7789 (0,74)	2,6369 (1,77)*	2,0941 (1,40)	0,5427 (0,25)	0,1548 (0,08)

Note: (*) significant at the 5% level, (**) significant at the 10% level.

The main objective of this contrast is to detect and to reflect a deeper insight into the changes towards riskier investment polices at the beginning of the year and their implications on portfolio beta coefficients. We assume that an increase in portfolio systematic risk at the beginning of the year is caused by an increase in riskier stock purchases.

We adapt a market ability methodology for this analysis and we contrast the following market model for each fund group where net portfolio returns depend on net market return and a dummy variable that reflects whether returns are generated in January. Then, β_{p2} coefficient indicates the increase in portfolio systematic risk generated in January.

$$R_{pt} - R_f = a_p + \beta_{p1}\left(R_{mt} - R_f\right) + \beta_{p2}\left(R_{mt} - R_f\right) \cdot D_{JAN} + \varepsilon_{pt}$$

Table 3 presents estimated coefficients and a t-Student test of individual significance. As we can observe the β_{p2} coefficient is, in all cases, positive but not significant. As a consequence, no conclusion may be drown from the analysis. Managers increase their portfolio systematic risk in January but this measurement is not statistically significant with this method of contrast.

Following Amutio (1995), we analyse in detail portfolio holdings with this new cross-sectional regression model,

$$Beta_i = \alpha_1 \cdot HOLD + \alpha_2 \cdot PURC + \alpha_3 \cdot SELL + \varepsilon_i$$

where $Beta_i$ is the beta coefficient calculated for each security that is included in portfolio funds; HOLD, PURCH and SELL are three dummy variables that reflect

TABLE 3

Market timing ability analysis

	α_p	β_{p1}	β_{p2}
Large size	-0,3576 (-1,82)**	0,8954 (32,85)*	1,0830 (1,61)
Medium sized	-1,5033 (-2,28)*	0,7819 (8,51)*	1,8337 (0,75)
Small size	-2,1730 (-0,96)	0,7726 (2,46)*	0,7468 (0,09)

Note: (*) significant at the 5% level
　　　(**) significant at the 10% level.

whether the security continued or was bought or sold in the porfolio between December and January. Then, with this new methodology the main predictions of the window dressing hypotesis can be contrasted. More exactly, the window dressing hypothesis predicts that institutional investors sell loser and riskier securities in December in order to present "respectable" portfolios to their clients and suggests that institutional investors tend to purchase smaller and riskier securities the following January.

Results are presented in Tables 4 and 5. Table 4 shows, for each fund group, the average systematic risk for those securities that were bought, sold or continued on those portfolios during December. As we can observe, all types of funds show a trading behaviour similar to the one described by the window dressing hypotesis. We have to emphasize that this behaviour has mainly been detected in large and medium sized funds in December 1996 and in large size funds in December 1999 and 2000. Although the significance of contrasts is not too high. We have to consider that this is a cross-seccional analysis and good results were not to be expected in all Decembers because the January effect is a phenomenon that occurs on average.

Finally, Table 5 shows the results for January. We emphasize the trading behaviour for the three types of funds in January 1997 and for medium sized funds in January 1998 and 2000. Then funds follow a policy like the one described by the window dressing hypotesis.

4. CONCLUSIONS

Our objetive of analising the trading activity of mutual funds in Portugal from 1996 to 2001 has been achieved and we have been able to determine whether

TABLE 4

Differences in risk around December

Funds	Systematic Risk			Differences		
	Holdings	Purchases	Sales	Holdings vs purchases	Holdings vs sales	Purchases vs sales
December 1996						
Large size	1,0923 (5,48)*	0,9059 (5,08)*	1,0128 (4,75)*	-0,1864 (0,48)	-0,0795 (0,07)	-0,1063 (0,14)
Medium sized	0,8455 (3,35)*	0,9754 (5,47)*	1,2958 (7,63)*	0,1299 (0,17)	0,4503 (2,20)**	-0,3204 (1,69)
Small size	0,8823 (2,37)*	1,2658 (6,81)*	0,8136 (1,26)	0,3835 (0,85)	-0,0687 (0,08)	0,4522 (0,45)
December 1997						
Large size	1,0286 (6,07)*	1,2323 (6,30)*	1,2706 (6,12)*	0,2037 (0,62)	-0,2420 (0,81)	-0,0382 (0,01)
Medium sized	1,2962 (7,88)*	1,1070 (5,14)*	1,2000 (5,96)*	0,0930 (0,09)	0,1891 (0,48)	0,0962 (0,13)
Small size	1,2586 (5,30)*	1,1012 (5,26)*	0,9659 (2,66)*	-0,1573 (0,24)	-0,2927 (0,45)	0,1353 (0,10)
December 1998						
Large size	0,8745 (1,11)	1,2379 (10,34)*	1,1891 (11,82)*	-0,3634 (1,99)	-0,4046 (2,27)**	0,0488 (0,25)
Medium sized	1,1556 (14,39)*	0,4335 (1,52)	0,8573 (4,77)*	0,7221 (5,99)*	0,2983 (2,30)**	-0,4238 (1,59)
Small size	1,0787 (6,93)*	1,3011 (4,64)*	1,0511 (4,19)*	-0,2224 (0,48)	0,0276 (0,08)	0,2500 (0,44)
December 1999						
Large size	1,1548 (9,94)*	0,9873 (5,27)*	1,2895 (9,73)*	0,1675 (0,57)	-0,1347 (0,58)	-0,3022 (1,73)
Medium sized	1,0008 (8,16)*	1,1130 (4,65)*	1,0617 (5,96)*	-0,1122 (0,17)	-0,0609 (0,07)	0,0513 (0,02)
Small size	1,5496 (7,47)*	1,3597 (13,11)*	0,0055 (0,01)	0,1899 (0,67)	1,5441 (13,86)*	1,3542 (13,12)*
December 2000						
Large size	1,8035 (6,52)*	0,9645 (3,23)*	1,2409 (5,88)*	0,8390 (4,25)*	0,5626 (2,62)**	-0,2764 (0,57)
Medium sized	1,1556 (14,39)*	0,4335 (1,52)	0,8573 (4,77)*	0,7221 (5,99)*	0,2983 (2,30)**	-0,4238 (1,59)
Small size	1,6554 (3,74)*	0,8851 (2,83)*	1,6658 (6,88)*	0,7703 (2,02)	-0,0104 (0,04)	-0,7807 (3,90)*

Note: (*) significant at the 5% level, (**) significant at the 10% level.

TABLE 5

Differences in risk around January

Funds	Systematic Risk				Differences	
	Holdings	Purchases	Sales	Holdings vs purchases	Holdings vs sales	Purchases vs sales
January 1997						
Large size	0,8258 (2,78)*	1,3814 (8,05)*	0,7676 (4,72)*	-0,5556 (2,62)**	0,0582 (0,02)	0,6138 (6,74)*
Medium sized	1,0747 (2,94)*	1,1913 (5,66)*	1,0433 (6,40)*	0,1166 (0,07)	-0,0313 (0,06)	0,1480 (0,30)
Small size	1,1131 (3,85)*	1,2243 (7,28)*	1,1895 (6,10)*	-0,1112 (2,63)**	-0,0764 (1,56)	0,0348 (0,97)
January 1998						
Large size	1,1867 (5,83)*	1,1720 (7,35)*	1,1772 (5,79)*	-0,0146 (0,03)	-0,0094 (0,02)	-0,0052 (0,01)
Medium sized	1,2037 (7,36)*	1,3465 (6,72)*	1,0981 (5,12)*	0,1427 (0,30)	-0,1056 (0,15)	0,2484 (0,71)
Small size	1,2563 (6,41)*	1,0862 (3,92)*	0,9063 (2,92)*	-0,1701 (0,25)	-0,3500 (0,91)	0,1799 (0,18)
January 1999						
Large size	1,1867 (5,83)*	1,1720 (7,35)*	1,1772 (5,79)*	0,0147 (0,24)	0,0095 (0,04)	-0,0052 (0,01)
Medium sized	1,1931 (9,82)*	0,9287 (6,36)*	1,1529 (8,32)*	0,2644 (3,02)**	0,0402 (1,04)	-0,2242 (1,24)
Small size	1,1734 (6,76)*	1,0946 (4,25)*	1,1683 (4,06)*	0,0788 (0,06)	0,0051 (0,02)	-0,0737 (0,03)
January 2000						
Large size	1,0726 (8,42)*	1,0312 (5,72)*	1,3542 (11,65)*	0,0414 (0,03)	-0,2816 (2,66)**	-0,3230 (2,67)**
Medium sized	1,0635 (8,11)*	1,0449 (4,88)*	0,9799 (6,47)*	0,0186 (0,05)	0,0836 (0,17)	0,0650 (0,06)
Small size	1,3613 (8,24)*	1,3449 (9,63)*	1,5813 (7,41)*	0,0164 (0,05)	-0,2200 (0,66)	-0,2364 (0,86)
January 2001						
Large size	1,2015 (3,75)*	1,1967 (4,29)*	1,5017 (6,32)*	0,0048 (0,01)	-0,3002 (0,56)	-0,3050 (0,69)
Medium sized	0,9635 (8,11)*	1,0558 (4,88)*	0,9577 (6,47)*	0,1186 (0,05)	0,0836 (0,17)	0,0650 (0,06)
Small size	1,3460 (5,46)*	1,3356 (1,56)	1,5746 (4,52)*	0,0104 (0,01)	-0,2286 (0,28)	-0,2390 (0,06)

Note: (*) significant at the 5% level, (**) significant at the 10% level.

funds trading behaviour at the turn of the year generate a significant impact on stock prices.

The main empirical result of this article is that large institutional investors profit from January market rising trends to increase their portfolio returns and that as a result they contribute to generate the January anomaly detected on the Portuguese market. Large institutional investors generate shifts in their investment policy at the turn-of-the-year, and it is in January when they move to riskier positions. However, we have to consider that this final conclusion has mainly been detected by the analysis of tracking error porfolios because the analysis based on portfolio holding shifts were in agreement with the window dressing hypothesis although its statistical significance is not high.

Finally, we consider that further analysis of the January effect and institutional investment in Portugal can be based on specific caracteristics of mutual funds like fiscal properties. Then, we can obtain deeper insights into institutional investors trading behaviour and their impact on the market.

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