



## Article

## Assessment of window dressing using fund returns and portfolio holdings

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## ABSTRACT

This paper presents the analysis of the monthly portfolio holdings and daily returns of a large sample of Spanish domestic equity funds to test the potential manipulation of portfolios in mandatory reports. The comparison between the return of the fund portfolio holdings and the observed fund return reveals that only a low percentage of filings may be classified as window-dressed portfolios. These portfolios are dispersed across funds and fund managers, but they are clustered over three specific quarters that coincide with bear market months. The results seem to indicate that although window dressing is not a widespread practice in the Spanish market, there is evidence to suggest that mutual funds employ this trading strategy as a response to poor past performance.

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## 1. Introduction

There is an evident worldwide development and growth of the mutual fund industry. The importance of this industry is not only economic but also social, given the magnitude of the assets under management and household participation. Therefore, there is an increasing need to ensure that investors receive reliable information to make decisions and that they are adequately protected against abusive mutual fund practices.

As a result of this potential manipulation, the disclosed portfolios may reveal an uninformative image of the recent management of the fund, thus rising agency problems between fund managers and investors. Managers are motivated to improve the disclosed portfolio image to create the impression that the fund is performing relatively well to attract larger money inflows from investors who mostly make investment decisions according to recent performance records (Chevalier and Ellison, 1997; Sirri and Tufano, 1998, among others).

According to current legislation of collective investment in Spain, mutual fund managers must reveal their portfolio holdings to shareholders each quarter.<sup>1</sup> Despite these disclosure requirements to ensure that investors are informed, fund managers might

have incentives to use trading strategies to alter the reliability of their reports. In this case, the disclosed information is not useful for investor decisions because the information is simply a snapshot of the securities portfolio at a particular date; it does not necessarily provide information about the securities held throughout the quarter. Unfortunately, this practice of portfolio manipulation is difficult for mutual fund authorities to detect, and even more difficult for individual investors, given the high quality information needed to carry out comprehensive analyses on this matter.

The objective of this paper is to examine mutual fund returns and portfolio holdings in a sample of Spanish equity funds to test the existence of intentional portfolio manipulation around portfolio disclosures. This phenomenon is broadly known as window dressing hypothesis. Some of the studies in this field are: Lakonishok et al. (1991), Musto (1999), He et al. (2004), Ng and Wang (2004), Meier and Schaumburg (2006), and Morey and O'Neal (2006).

To our knowledge, this study is the first that examines fund returns and portfolio holdings to analyze the window-dressing hypothesis in a European fund industry. Then, we expect to obtain answers to the following questions: Do Spanish equity funds window dress their portfolios? In this case, is the use of window-dressing strategies by Spanish equity funds persistent? And, have window-dressed portfolios some common characteristics?

The results suggest that the window-dressing practice is not very common in Spanish equity funds during the period analyzed. This perception is confirmed in the study of common characteristics of window-dressed portfolios because the results do not reveal signs of clustering around funds and fund management companies. However, the findings also show that mutual funds might use window-dressing practices to mitigate past losses. Finally, the

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results confirm that window-dressed portfolios are clustered over bear market periods.

The rest of the paper is organized as follows: Section 2 reviews the literature, Section 3 describes the databases used in the analysis. Section 4 explains the methodology. Section 5 shows the main empirical results, and Section 6 presents the main conclusions of the research.

## 2. Literature review and research questions

In an attempt to find evidence of window dressing in mutual funds, several studies have employed the traditional approach of analyzing the trading activity of mutual funds through the comparison of portfolio holdings (Lakonishok et al., 1991; Basarrate and Rubio, 1994; Eakins and Sewell, 1994; Musto, 1997, 1999; He et al., 2004; Ng and Wang, 2004). However, this approach presents major limitations to capturing interim trades and detecting the dates when securities were bought or sold. In addition, most of these studies analyze quarterly or semi-annual portfolios, which provides misleading conclusions due to unobservable trades between disclosed reports (Elton et al., 2010).

As an alternative methodology to test window dressing, there is an emerging research line that attempts to study anomalies in fund returns as a mechanism to identify portfolio manipulation (O'Neal, 2001; Torre-Olmo and Fernández, 2002; Meier and Schaumburg, 2006; Morey and O'Neal, 2006). The first two above-cited studies examine daily returns of mutual funds to understand the behaviour of this variable throughout the year, especially around portfolio reporting dates. O'Neal (2001) finds atypical return patterns that suggest that mutual funds window dress their portfolios around fiscal year-ends. Similarly, Torre-Olmo and Fernández (2002) find that mutual funds obtain higher returns around quarterly disclosure dates than during the rest of the year. Although this result is explained by window-dressing practices, the authors do not directly prove this hypothesis.

Some years later, Morey and O'Neal (2006) and Meier and Schaumburg (2006) introduce the use of portfolio holdings for the identification of window dressing through fund returns analysis. Morey and O'Neal (2006) evaluate window dressing in a large sample of US bond mutual funds. Examining changes in quarterly portfolio holdings, they find that, consistent with window-dressing strategies, funds clearly tend to hold more government bonds and increase the quality of holdings at disclosure than at non-disclosure dates. The authors then perform a return analysis using daily data of net asset values (NAV) and find atypical return patterns around reporting dates that allow them to confirm the first result.

On the other hand, the study of Meier and Schaumburg (2006) represents a relevant contribution to the study of window-dressing practices. They propose a methodology to identify window-dressed portfolios that combines the use of portfolio holdings and mutual fund returns, comparing the realized daily fund return with the daily return on the hypothetical buy-and-hold strategy around reporting dates. The study focuses on the difference between these returns given that it captures possible portfolio manipulation by fund managers prior to disclosure. Nevertheless, the database contained only semi-annual portfolio holdings, what, as mentioned above, could draw misleading conclusions.

Our study improves the approach of Meier and Schaumburg (2006) with additional tests further developed in the methodology section. We correct possible variance problems in return data, such as heteroscedasticity and autocorrelation. On the other hand, to avoid the problem of low data frequency present in the Meier and Schaumburg's results, we use a monthly portfolio database, which allows further analyses around disclosure and non-disclosure months.

The daily analysis of the return differences tries to overcome the problem of the impossibility of capturing interim fund trades with the final aim to better understand fund management behaviour in between reporting dates. In addition, we examine window dressing for each mutual fund separately and not from an aggregate perspective as the analyses based on trading activities. Therefore, this paper fills an important gap in the literature.

The window-dressing hypothesis states that fund managers are mostly motivated to improve their portfolio's image when they must disclose their portfolio holdings to clients. We would then expect that this trading strategy only appears before mandatory reports, which are reported quarterly in the Spanish market. According to the methodology applied in this paper, the observed fund return is calculated from the daily net asset values (NAV), while the return of the fund portfolio holdings is the hypothetical return the fund would have earned if it had held the disclosed portfolio around the reporting date. In the case that a fund manager plans her investment decisions according to the reporting schedule, the disclosed portfolios would significantly differ to the actual management strategy. If a fund manager buys recently winner stocks and sells loser stocks just before disclosing the portfolio, the hypothetical returns on the portfolio outperforms the realized fund returns.

On the other hand, once detected manipulated portfolios we carry out further analyses. We first hypothesize that window-dressing practices could be a widespread phenomenon within the fund management company. Secondly, we analyze whether window dressing practices are related to past performance. Poor past performers may be more prone to window dress to offer a good portfolio image. Finally, we test for time periods when portfolio manipulation is present at large in the fund industry.

The daily return analysis identifies a low percentage of filings in the sample that have a positive return difference before the reporting date and that coincide with mandatory reports, which suggest portfolio manipulation by fund managers. Moreover, our monthly database allows for the comparison of return patterns between disclosed and non-disclosed portfolios, showing that the average daily return difference is higher in portfolios reported on quarter-ends than in portfolios reported in other months, especially in June and September. These results are consistent with the window-dressing hypothesis.

## 3. Data

Several data sets were employed in this study. The first set consists of the monthly portfolio holdings of all Spanish domestic equity funds from December 1999 to December 2006, provided by the CNMV (Spanish Securities Exchange Commission). The initial sample included 163 funds that have at least 12 portfolio reports during the sample period. Funds that did not meet the official investment requirements of domestic equity funds were eliminated from the sample to ensure that all portfolios analyzed are appropriately classified in this category.<sup>2</sup> Therefore, the final database consists of 6914 reported portfolios of 125 funds.

The removal of these funds does not imply a look-ahead bias in the sample because discarded funds seemed to be misclassified as not meeting the investment requirements established for domestic equity funds. This monthly information was provided to us by the

<sup>2</sup> The CNMV establishes in the CNMV Circular 1/2009, of February 4, that domestic equity funds are those that invest more than 75% of the portfolio in equities listed in Spanish stock exchange markets, including assets from Spanish issuers listed in other markets. The investment in stocks issued in Spain must be at least 90% of the equity portfolio, that is, at least 67% of the total portfolio. In addition, assets must be denominated in Euros, with a 30% limit in a non-Euro currency.

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