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Seasonality and idiosyncratic risk in mutual fund performance

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ABSTRACT

This paper examines the relationship between seasonality, idiosyncratic risk and mutual fund returns using multifactor models. We use a large sample containing the return histories of 728 UK mutual funds over a 23-year period to measure fund performance. We present evidence that idiosyncratic risk cannot be eliminated, we also find evidence of seasonality in all fund categories. Specifically, we find a close relation between the seasonality and the end of the tax-year. We document that the idiosyncratic risk puzzle cannot explain seasonality in fund performance in the UK. Although, we do find that idiosyncratic risk can account for the seasonality in the month of April. Thus, the results show a link between the tax-loss selling hypothesis in April and idiosyncratic risk in that month. Finally, we report evidence that idiosyncratic risk is negatively related to expected returns for most fund classes.

1. Introduction and literature review

The aim of this paper is to contribute to our understanding of fund return seasonality, the idiosyncratic risk puzzle in mutual funds, and the relationship between returns and idiosyncratic risk in fund performance. The motivation is that there are calendar anomalies that affect stock returns and it does not seem unreasonable to suppose that they might affect returns on mutual funds in a similar way. In this paper we empirically test whether there is monthly seasonality as well as idiosyncratic risk in fund performance, and their relationship.

Despite idiosyncratic risk in stock returns has been widely tested, there have been few papers that use idiosyncratic risk to explain the cross-sectional differences in expected returns among fund categories. The empirical literature has not examined general idiosyncratic risk across funds. Investors usually consider that a mutual fund is a well-diversified portfolio in which all idiosyncratic risk is eliminated.

After the finding of seasonality in stock returns in the mid-seventies there have been several papers that explain calendar and size effects. In one of the early papers, Gultekin and Gultekin (1983) found a January effect in sixteen countries, even if the tax-year-end was not December. Since returns are affected by systematic and idiosyncratic risk, idiosyncratic risk may provide meaningful information on the observed seasonality of returns.

Most studies examining seasonality or idiosyncratic risk are based on USA data. Studies of the UK market are more limited and have mainly focused on the analysis of stock returns. This paper aims to add to the existing literature about mutual funds, looking at the relationship between idiosyncratic risk and seasonality with regard to performance of UK mutual funds, using a larger data set than previous studies on UK mutual funds. Furthermore, the issue of fund classification is taken into consideration.

The motivation behind fund classification is that the fund category is also an important component of stock returns. Investors who cannot diversify their stocks are influenced by industry-specific and idiosyncratic volatilities, as well as market volatility. The price of a fund depends on the total volatility of the fund return, including industry-specific and idiosyncratic volatility, in addition to market volatility.

The study reports the following results. First, idiosyncratic risk cannot be eliminated for most funds categories. Second, idiosyncratic risk can explain the seasonality in the month of April for all fund categories for which this month presents seasonal effects. Thus, the results show a link between the tax-loss selling hypothesis and idiosyncratic risk in April. Third, idiosyncratic risk is negatively significant in predicting market returns in most fund categories. We also document no evidence that funds with high idiosyncratic risk have higher returns. Finally, we find that idiosyncratic risk can forecast fund returns after controlling for macroeconomic variables.

1.1. Idiosyncratic risk

The risk-return relation is an important topic in asset pricing. Merton (1973) showed a positive relation between risk and return in the stock market. However, after a long empirical literature, there is no a clear consensus about the tradeoff for stock market indices.

The capital asset pricing model (CAPM) assumes that all investors hold the market portfolio. Then, only systematic risk is

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considered. For several reasons, investors may not hold perfectly diversified portfolios. There are various asset pricing models in the literature that consider idiosyncratic risk. Some theories predict that idiosyncratic risk is positively related to expected stock returns. Levy (1978) and Malkiel and Xu (2006) state that the idiosyncratic risk is important as many investors do not hold diversified portfolios. Similar to Merton (1987), they create a CAPM model where investors hold undiversified portfolios. The new model relates the beta of the stock to the market and with a measure of idiosyncratic risk. Mayers (1976) incorporates a human capital factor in a CAPM and reaches a similar pricing model.

Campbell, Martin, Malkiel, and Xu (2001) study long-term trends in firm and market volatility in United States stock markets from 1962 to 1997. They find a significant positive trend in idiosyncratic firm-level volatility, while market volatility has no significant trend using monthly data from 1926 to 1997. The authors argue that the correlations among individual stock returns have declined in the last decades, as the trend in idiosyncratic volatility has increased relative to market volatility. They suggest several causes, like the preference for firms to access the stock market earlier, executive compensation schemes that reward stock volatility, and large conglomerates broken into smaller corporations. In contrast, Bekaert, Hodrick, and Zhang (2012) show that there is no upward trend in idiosyncratic volatility anywhere in the developed world. They find that idiosyncratic volatility is well described by a stationary regime-switching, mean reverting process with occasional shifts to a higher-mean, higher-variance regime. They point that idiosyncratic variability is highly correlated across countries, and this correlation has increased over time. Brandt, Brav, Graham, and Kumar (2013) present new evidence about the idiosyncratic volatility puzzle, they show that by 2003 volatility falls back to pre-1990s levels. They also find that the increase and subsequent reversal is concentrated among firms with low share prices. They suggest that the increase in idiosyncratic volatility through the 1990s was an episodic phenomenon rather than a time trend, and was partially associated with the trading of retail investors.

Goyal and Santa-Clara (2003, hereafter GS) find a new approach to test the relevance of a time-series relationship between risk and return in the aggregate stock market. Their relevant contribution is to consider average stock risk for predictability. They compute average stock risk for each month as the cross-sectional average of the variances of all the stocks traded in that month. Consistent with some previous studies, they show that the lagged variance of the market has no predictive power for the market return. However, GS find a relevant positive relation between the equal-weighted average stock volatility and the value-weighted portfolio returns.

Many authors do not agree with CAPM or Merton (1973), among them Campbell (1987), Glosten, Jagannathan, and Runkle (1993), and Whitelaw (1994) discover that there is no relation between risk and return or exist a negative tradeoff in the time-series data. Early empirical research that rejected the model include Lintner (1965), Douglas (1969), Miller and Scholes (1972). Douglas (1969) argues that residual variance is also priced according to average returns in a single cross-sectional regression. Fama and MacBeth (1973) create a new cross-sectional test and reject the role of idiosyncratic risk in the CAPM. Miller and Scholes (1972) find that different bias may exist, like errors in measuring beta, correlation between betas and residual variances, and omitting the risk free rate. King, Sentana, and Wadhwani (1994) study the volatility relation among national stock markets, they find that idiosyncratic economic shocks are priced and that the price of risk differs across stock markets. Falkenstein (1996) provides evidence that idiosyncratic volatility influenced the equity holdings of mutual fund managers.

Wei and Zhang (2005) have re-examined the result of GS in an extended sample period from 1963 to 2002, an additional three years, and in contrast with GS, they did not find significant positive relationship between average returns and pre-determined average return volatility measures. Another study by Bali, Cakici, Yan, and Zhang (2005) find that GS results are not robust for different stock portfolios and sample periods. They find that GS result is due to small stocks traded on the Nasdaq, and is partly driven by liquidity premium.

Guo and Savickas (2006) argue that idiosyncratic risk, jointly with stock market risk and liquidity risk, is a significant determinant of the equity premium. Furthermore, they show that idiosyncratic volatility is negatively related to future stock returns. Similarly, Easley, Hvidkjaer, and O'Hara (2002) and Ang, Hodrick, Xing and Zhang (2006), Ang, Hodrick, Xing and Zhang (2009) find that stocks with high past idiosyncratic volatility have lower future returns compared to stock with relatively low past idiosyncratic volatility. Chen, Huang, and Jha (2012) show that the variation in idiosyncratic return volatility from 1978 to 2009 is attributable to managerial discretion in accruals after controlling for operating uncertainty. They state that the findings hold during various subperiods, including the recent financial crisis, and after controlling for a number of alternative explanations.

Ang et al. (2006) provide empirical evidence suggesting that US stocks returns are negatively related to lagged idiosyncratic volatility. They find a large difference in average returns between stocks with low and high idiosyncratic volatility. Another paper of Ang et al. (2009) show that the negative relation between lagged idiosyncratic volatility and future average returns exists in a sample of international markets. Strong negative relation between lagged idiosyncratic volatility and average excess returns is observed in each of the largest seven equity markets (Canada, France, Germany, Italy, Japan, the US and UK) and also in a larger sample of 23 developed markets. They point out that the idiosyncratic volatility effect strongly co-moves with the low returns earned by stocks with high idiosyncratic volatility around the world. Hueng and Yau (2013) find that lagged idiosyncratic volatility is a better proxy for expected idiosyncratic risk in the country-level data than in the firm-level data. They point that, in the case of global equity indices, past idiosyncratic volatility is a good predictor of expected idiosyncratic volatility.

Eiling (2013) relates human capital to the premium for idiosyncratic risk that is shown in several empirical papers. She shows that when (industry-specific) human capital is excluded from the benchmark used to measure systematic risk, the resulting residual risk affects the cross-section of expected returns. Furthermore, the importance of the idiosyncratic risk premium depends on the exposure to human capital returns. Panousi and Papanikolaou (2012) show that the negative effect of idiosyncratic risk on investment is stronger when executives own a larger part of the company's shares, they point that this negative effect arises from poor managerial diversification. Although, the effect of insider ownership on the investment–uncertainty relation disappears if institutional investors form a large part of the shareholder base, possibly due to more effective monitoring of managerial decisions.

1.2. Seasonality in equity returns

Seasonality in equity returns results from a seasonality effect in the action of investors. A growing number of authors suggest that share turnover may have a relevant role in determining assets price movement. Many studies, including Karpoff (1987), state that turnover and return are positively correlated using daily or monthly data and that past turnover have predicting power for future returns (see Baker and Stein (2004) or Piqueira (2005)).

The three most common explanations found in the literature for seasonality are holiday effect, window dressing, and tax-loss