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Mutual fund performance and benchmark choice: the Spanish case

Jorge Sainz*, Pilar Grau and Luis Miguel Doncel

*Universidad Rey Juan Carlos, Department of Applied Economics,
Madrid, Spain*

This study deals with the relevance of benchmark choice for mutual fund performance behaviour, completing previous research on the Spanish Mutual Fund Market. Using Jensen's and Treynor–Mazuy's measures, the study highlights the relevance of style analysis for benchmark election in order to evaluate fund managers.

I. Introduction

Some recent papers have focused on the behaviour of Spanish Mutual Funds (2005) analysing its performance persistence and management style. The present study deepens these previous analyses, focusing on the question on what benchmark would be the relevant on determining both the performance and the style analysis of mutual funds, key for future inflows of cash into the funds (Spitz, 1970).

To evaluate this Jensen's α (Jensen, 1969) will be used, a performance measure, that although is highly dependent on the asset pricing model chosen, is still widely used in the industry. Traynor and Mazuy's (1966) market timing measure will also be used to study the ability of managers and the relevance of benchmark choice.

The aim of this study is to follow on the analysis of Ferruz and Vicente (2005) and, using similar data, analyse and compare the performance and market timing, testing whether both depend on the benchmark used and the relation on investment style and benchmark choice. These results are relevant to further shed light over a market that is still relatively unexplored, opening new areas of analysis for research.

II. Data and Methodology

Mutual Fund Data were purchased from the Spanish Securities and Exchanges Commission (CNMV) and consist of monthly returns for the class denominated 'Renta Variable Nacional' (local equities), comprising a survivorship bias free sample of 23 funds dating from April 1991 to September 2003. They represent, approximately, 5% of the total funds investment in Spain for that period.

As benchmarks, the study uses, for fixed income bond indexes from Global Financial and for equity the Ibex35, the Spanish selective index, and the EMU and US total return indexes from MSCI.

To calculate the performance, the intercept of the model, the Jensen α , is therefore interpreted as a measure of the performance of the funds with respect to the market benchmark used. The CAPM security line regression general expression is:

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + \varepsilon_{it} \quad (1)$$

where R_{it} represents the return on the month t of the fund i , R_{ft} is the return on a 3-month T-bill for the same month, R_{mt} is the return of the benchmark for the t and ε_{it} is the error term. As has been pointed out before, this kind of model results rest on the idea that the behaviour of the mutual fund can be

*Corresponding author. E-mail: Jorge.sainz@urjc.es

Table 1. Descriptive statistics and Pearson correlations for the benchmarks

| | Ibex35 | MSCI EMU | MSCI USA | Bonds | Bills | Current | Mean (Std.dev) |
|--------------------------|--------|----------|----------|--------|--------|---------|-------------------|
| Ibex35 | 1.000 | | | | | | 0.837 (6.43) |
| (<i>p</i> -value) | | | | | | | |
| MSCI EMU | 0.798 | 1.000 | | | | | 0.683 (5.57) |
| (<i>p</i> -value) | (0.00) | | | | | | |
| MSCI USA | 0.604 | 0.728 | 1.000 | | | | 0.764 (4.12) |
| (<i>p</i> -value) | (0.00) | (0.00) | | | | | |
| Total return bonds index | 0.300 | 0.166 | 0.077 | 1.000 | | | 0.821 (0.00) |
| (<i>p</i> -value) | (0.00) | (0.00) | (0.05) | | | | |
| Total return bills index | 0.013 | 0.011 | 0.049 | 0.226 | 1.000 | | 0.358 (0.19) |
| (<i>p</i> -value) | (0.87) | (0.90) | (0.55) | (0.01) | | | |
| Current account | 0.024 | 0.014 | 0.049 | 0.247 | 0.986 | 1.000 | 0.358 (0.19) |
| (<i>p</i> -value) | (0.77) | (0.86) | (0.55) | (0.00) | (0.00) | | |

Table 2. Results for Jensen and Treynor–Mazuy measures

| | Jensen | | | Treynor–Mazuy | | | |
|--------------------------|-----------------------|----------------------|-----------|-----------------------|----------------------|-------------------|-----------|
| | α Distribution | | | α Distribution | | | |
| | α | β_1 | (+)/0/(−) | α | β | β_2 | (+)/0/(−) |
| Ibex35 | 0.041 (0.32) | −0.216** (−10.88) | 3/20/0 | 0.072 (0.47) | −0.215** (−10.83) | −0.001 (0.71) | 3/19/1 |
| MSCI EMU | −0.121 (−0.75) | −0.118** (−4.04) | 2/21/0 | −0.135 (−0.69) | −0.117** (−3.93) | 0.000 (0.12) | 1/21/1 |
| MSCI USA | −0.069 (−0.4) | −0.096* (−2.36) | 0/21/2 | −0.321 (−1.58) | −0.106* (−2.62) | 0.005* (2.19) | 1/18/4 |
| Total return bonds index | 0.255 (1.35) | −0.481** (−4.06) | 5/18/0 | 0.290 (1.45) | −0.426* (−2.77) | −0.031 (−0.55) | 4/19/0 |
| Total return bills index | 0.042 (0.11) | −0.330 (−0.56) | 0/23/0 | 0.449 (0.14) | −0.617 (−0.25) | −0.149 (−0.18) | 0/23/0 |
| Current account | −0.014 (−0.06) | −0.168 (−0.66) | 0/23/0 | −0.112 (−0.32) | 0.253 (0.24) | −0.215 (−0.42) | 0/22/1 |

Notes: *Significant at 0.05 level and **significant at 0.01 level.
Figures in parenthesis denote *t* statistic.

approximated by just one benchmark. Traynor and Mazuy (1966) show that if mutual fund managers are able to time the market, i.e., they are capable of reduce the beta of their portfolio on bear markets, they will be hedging against the market.

Managers can adjust their portfolio β according to the market portfolio, which will depend on the market portfolio (i.e., on the benchmark used):

$$\beta_{it} = \beta_{i1} + \beta_{i2}(R_{mt} - R_{ft}) \quad (2)$$

from substitution of Equation 2 in Equation 1 one obtains:

$$R_{it} - R_{ft} = \alpha_i + \beta_{i1}(R_{mt} - R_{ft}) + \beta_{i2}(R_{mt} - R_{ft})^2 + \varepsilon_{it} \quad (3)$$

Compared with the previous equation one obtains an additional term (the excess market return squared) that will allow one to value the market timing abilities of the managers. Now, if α is positive and significantly different from 0 then, as in the previous case, it shows selection skills. If β_{i2} is also positive and statistically significant, the manager has timing ability. Table 1 summarizes the descriptive statistics of the benchmarks and its Pearson's correlations.

III. Empirical Results

In order to test the abilities of the managers an equally weighted portfolio is formed containing all

Table 3. *F* test for Jensen and Treynor–Mazuy analysis

| | IBEX | | | MSCI EMU | | | MSCI USA | | | Total bond return | | | Total bill return | | | Current account | | |
|--------------------|------------|---------------|---------|----------|---------------|--|----------|---------------|--|-------------------|---------------|--|-------------------|---------------|--|-----------------|---------------|--|
| | Jensen | Treynor–Mazuy | | Jensen | Treynor–Mazuy | | Jensen | Treynor–Mazuy | | Jensen | Treynor–Mazuy | | Jensen | Treynor–Mazuy | | Jensen | Treynor–Mazuy | |
| IBEX | γ_1 | | | 0.133 | 0.161 | | 0.113 | 0.300 | | –0.127 | –0.169 | | 0.037 | 0.085 | | 0.037 | 0.086 | |
| | γ_2 | | | 0.741 | 0.644 | | 0.940 | 0.711 | | 0.637 | 0.794 | | –0.087 | 0.113 | | 0.017 | 0.166 | |
| | <i>F</i> | | | 2.59 | 9.58** | | 1.72 | 3.45 | | 5.95* | 0.96 | | 29.13** | 19.03** | | 41.81** | 26.53** | |
| MSCI EMU | γ_1 | –0.155 | –0.211 | | | | –0.074 | 0.141 | | –0.267 | –0.323 | | –0.131 | –0.117 | | –0.124 | –0.101 | |
| | γ_2 | 0.678 | 0.930 | | | | 0.690 | 0.879 | | 0.528 | 0.584 | | 0.013 | 0.186 | | 0.213 | 0.374 | |
| | <i>F</i> | 0.162 | 0.180 | | | | 5.42 | 0.45 | | 9.02** | 1.90 | | 12.16** | 8.7* | | 32.56** | 11.84** | |
| MSCI USA | γ_1 | –0.119 | –0.378 | 0.024 | –0.243 | | | | | –0.231 | –0.423 | | –0.081 | –0.331 | | –0.080 | –0.346 | |
| | γ_2 | 1.013 | 0.700 | 0.814 | 0.599 | | | | | 0.578 | 0.303 | | –0.059 | 0.013 | | 0.076 | –0.088 | |
| | <i>F</i> | 4.79 | 3.82 | 1.41 | 10.43** | | | | | 6.17 | 7.06 | | 11.28** | 12.51** | | 34.63** | 44.21** | |
| Total bond return | γ_1 | 0.231 | 0.261 | 0.344 | 0.332 | | 0.307 | 0.359 | | | | | 0.258 | 0.317 | | 0.259 | 0.326 | |
| | γ_2 | 0.731 | 0.509 | 0.663 | 0.259 | | 0.616 | 0.197 | | | | | –0.039 | 0.130 | | 0.071 | 0.241 | |
| | <i>F</i> | 0.07 | 13.23** | 2.93 | 30.54** | | 4.52 | 22.09** | | | | | 9.57** | 17.65** | | 32.77** | 38.63** | |
| Total bills return | γ_1 | 0.032 | –0.234 | 0.025 | –0.071 | | –0.006 | –0.163 | | 0.060 | –0.552 | | | | | 0.064 | 0.020 | |
| | γ_2 | –0.435 | 0.691 | 0.071 | 0.785 | | –0.275 | 0.082 | | –0.169 | 1235 | | | | | 1489 | 1523 | |
| | <i>F</i> | 8.97 | 0.36 | 3.31 | 0.27 | | 7.46 | 2.87 | | 6.62 | 0.15 | | | | | 14.28** | 26.11** | |
| Current account | γ_1 | –0.034 | –0.156 | 0.030 | –0.070 | | –0.021 | –0.189 | | –0.065 | –0.328 | | –0.042 | –0.056 | | | | |
| | γ_2 | 0.034 | 0.286 | 0.480 | 0.448 | | 0.144 | –0.154 | | 0.128 | 0.650 | | 0.611 | 0.432 | | | | |
| | <i>F</i> | 9.53 | 6.5 | 2.81 | 6.43 | | 8.15* | 16.16** | | 8.99* | 1.13 | | 8.14* | 9.81* | | | | |

Notes: *Significant at 0.05 level and **significant at 0.01 level.

funds within the investment definition. This only provides an aggregate picture of the mutual fund performance, as both equations are also estimated for each fund individually, showing in the last column of Table 2 the distribution of the α for each benchmark between positive, negative or those that were not significantly different from 0.

It can be noticed that there are not significant results on the weighted average performance measures. Outcomes on the individual funds differ, depending on the benchmark, with some positive and negative results. Most funds have performed neutrally; they are able to cover the expenses with returns that are not significantly different from the passive benchmark. These results are similar to those obtained for the USA and other European countries.

If one checks market timing, results are quite similar. t statistics are corrected using Newey–West to avoid heteroscedasticity issues derived from the quadratic term of the equation, but the results are quite similar to those obtained using the previous method, funds have performed neutrally. None of the weighted portfolios showed a value significantly different from 0 and on the market timing values, the result is, somehow, striking: the only market that fund managers are able to time is the US. The results are similar to those obtained for Spain (Ferruz and Vargas, 2005), other European countries (Otten and Bams, 2002), and the USA.

To test the relevancy of the benchmarks the study has used the method proposed by Grinblatt and Titman (1994). If two benchmarks have similar relevancy for a mutual fund one expects the Jensen's α from both to be similar. Let α_1 and α_2 be the two vectors of performance for benchmarks 1 and 2 within the mutual class funds. If one cross-sections α_1 on α_2 an intercept (γ_1) of 0 and a slope coefficient (γ_2) of 1 show that α_2 is an unbiased estimator of α_1 . This also holds if regressing α_2 on α_1 . Both performance measures will only be identical if they are adopted in both cases, that is, one can only accept that both benchmarks are identical if it holds in the straight and in the reverse. Thus, one cannot reject the joint hypothesis that γ_1 is equal to 0 and γ_2 is equal to 1. Table 3 shows the results for both the Jensen and the Treynor–Mazuy methods: equities benchmarks do matter, which is consistent with the Grinblatt and Titman results. Results on fixed income are diverse, being less relevant on the Jensen measure than on Traynor–Mazuy.

IV. Conclusions

Ferruz and Vicente (2005) showed that style analysis has to be carefully used in small markets. Their research is furthered by studying how this style of analysis may affect the relevancy of the choice of benchmark. Using the same fund style definition and similar benchmark choices, the analysis shows that mutual funds managers are not able to outperform, on average and for two different measures, any of the passive benchmarks chosen, neither are able to market time them, except in the case of the US market. These results are similar to those found for Spain, other European countries and the US markets. Second, one finds that equity benchmark choice is relevant both for performance analysis and market timing, which is consistent with the fact that equity represents the more relevant strategic choice of mutual fund managers in this particular class of funds. On the contrary, the choice of a fixed income benchmark does not seem to be that relevant, which can be explained for the small part of the strategy devoted to fixed income.

Passive benchmark choices are one of the main issues on the evaluation of fund managers and, as the result shows, the choice of benchmark can affect the results obtained, making style definition and analysis relevant for the election within funds groups.

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