Do pension funds managers display stock-picking and market timing ability? Evidence from the United Kingdom and Spain *

¿Muestran los gestores de fondos de pensiones habilidades de selección de valores y de sincronización con el mercado? Evidenia para Reino Unido y España

Mercedes Alda. Universidad de Zaragoza
Luis Ferruz. Universidad de Zaragoza
Fernando Muñoz **. Universidad de Zaragoza

ABSTRACT This paper examines the stock-picking and market timing abilities of pension funds managers in the UK and Spanish markets, analysing their use of privileged information to implement management strategies and considering the possible effects of portfolio size. We take the analysis further by correcting benchmark omission bias. Our results reveal some degree of stock-picking ability, but perverse market timing ability, as well as incorrect use of privileged information in timing strategies. These findings are consistent with the portfolio size effect, although they are influenced by benchmark omission bias. The results obtained are very similar for both UK and Spanish pensions funds managers.

KEYWORDS Market Timing; Stock-Picking; Size-Effect; Benchmark Omission; Pension Funds.

RESUMEN Este trabajo analiza las habilidades de selección de valores y de sincronización con el mercado de los gestores de planes de pensiones en los mercados británico y español. Además se analiza la utilización por parte de estos de información superior para llevar a cabo sus estrategias de gestión. Por otra parte, el análisis se completa corrigiendo el sesgo de omisión de *benchmarks*. Los resultados obtenidos muestran una ligera habilidad de selección de valores y una perversa habilidad de sincronización con el mercado así como un inadecuado uso de información superior en estrategias de sincronización. Los resultados son consistentes considerando el efecto tamaño, aunque se ven influenciados por la omisión de *benchmarks*. Los resultados alcanzados son muy similares tanto para gestores británicos como españoles.

PALABRAS CLAVE Sincronización con el Mercado; Selección de valores; Efecto tamaño; Omisión de Índices de Referencia; Fondos de pensiones.

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** ** Corresponding Author. Full postal address: Facultad de Ciencias Económicas y Empresariales. Departamento de Contabilidad y Finanzas. Gran Vía 2, 50005 Zaragoza, Spain. E-mail: fmunoz@unizar.es.

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1. INTRODUCTION

The role of the manager has always occupied pride of place in the analysis of portfolio management, and this is especially so in the investment funds industry. The behaviour of managers has been assessed using performance measures to observe management efficiency.

Traditionally, attention has focused on the ability of fund managers to pick stocks that outperform others at the same level of non-diversifiable risk. To put this another way, what has been assessed is the ability to implement a successful stock-picking strategy. However, the fund manager's ability to obtain results by changing exposure to the market at the right moment is also important. This means anticipating market movements through a market timing strategy.

Various methodologies have been applied in the financial literature to capture managers' market timing ability, but the most widely used models are those proposed by Treynor & Mazuy (1966) (TM) and Merton & Henriksson (1981) (MH).

Authors such as Ferson & Schadt (1996) and Ferson & Quian (2004) have since proposed conditional versions of the conventional models in order to distinguish market timing ability based on public information available to the whole market from timing based on privileged information, which represents the fund manager's true contribution.

The study of performance and, specifically, of timing in the conditional and unconditional versions is especially interesting in investment fund portfolios, as this industry is one of the bases for savings in developed economies and represents a significant part of the welfare system in Europe.

The extensive financial literature examining the presence of timing ability, especially among mutual fund managers in different markets is a reflection of the interest aroused by this topic. Fewer studies have looked at pension fund managers, however. In general, the results obtained from these studies provide mixed evidence.

Some authors deny the presence of market timing, or find negative timing ability. This is the case in Lee (1999), Fung *et al.* (2002), Knigge *et al.* (2004), Christensen (2005), Boney *et al.* (2005), Woodward & Brooks (2006), Abdel-Kader & Qing (2007) and Elton *et al.* (2009), among other authors.

However, other scholars, including Glassman & Riddick (2006), Jiang *et al.* (2007), Amman & Zingg (2008), Raju & Rao (2009), and Neuhierl & Schlusche (2009), find positive empirical evidence for market timing ability.

Focusing basically on market timing, this paper analyses the performance of Spanish and UK pension fund managers from a conditional/non-conditional standpoint. To this end, we use the conventional TM and MH models, as well as the conditional versions of the same proposed by Ferson & Schadt (1996) and Ferson & Quian (2004).

The analysis was carried out on a sample of pension funds with a European equity vocation registered for sale in the United Kingdom and Spain. The objective of the study is to

determine the presence or otherwise of stock-picking and market timing abilities among pension funds managers and to observe any differences that may exist between the managers of UK and Spanish registered pension funds.

We also perform various robustness tests to ensure the consistency of the results obtained. To begin with, we examine whether the size of the portfolio affects results. The portfolio size effect on financial performance has been widely analysed in the literature. Among others, we may cite Chen *et al.* (2004), Chan *et al.* (2005), Gallagher & Martín (2005) and Bauer *et al.* (2006). Meanwhile, Martí & Matallín (2008) and Ferruz *et al.* (2008) consider this effect specifically for investmen portfolios in the Spanish market.

However, the influence of portfolio size on stock-picking and market timing has rarely been examined. In this regard, we may mention Lhabitant (2005), who shows that the size of an investment portfolio affects the negative correlation between stock-picking and market timing; Jiang *et al.* (2007), who find that mutual funds that follow timing strategies are usually large; and Ferruz *et al.* (2010), who show, in the case of Spanish mutual funds, that it is the size of the mutual fund management company, rather than the portfolio itself, that conditions stock-picking and market timing abilities.

We also consider the possibility that the omission of *benchmarks* in the analysis causes bias in the results obtained. In this regard, Matallín (2006) shows the effect of benchmark omission on the evaluation of active management on the part of a mutual fund manager.

Interpretation of the results obtained from returns-based models, such as the TM and MH models, could be biased because the omission of *benchmarks* means the gamma parameter measuring market timing ability may not reflect the manager's actual timing ability, but rather asymmetry between *benchmarks*.

This study also demonstrates that the techniques used to analyse large markets can also be applied to others, which have been explored to a much lesser degree, like the Spanish market. As Hallahan & Faff (2001), and Ayadi & Kryzanowski (2004) argue, it is necessary to minimise the potential *data snooping* bias caused by repeated analysis of the same markets. The study of industries that have remained largely unexplored allows both academics and professionals to analyse results in markets with different institutional characteristics, making an original contribution to the financial literature.

One of the main reasons we have chosen to examine the pension funds markets in Spain and the United Kingdom, however, is the increasing importance of such savings products in recent years, given the delicate financial situation of public pension systems. It is therefore essential that pension funds be well managed in order to reassure savers and guarantee that they continue to invest in instruments of this kind. In this paper we analyse the performance of a sample of pension funds to establish whether British and Spanish managers are able successfully to implement stock-picking and market timing strategies.

The rest of this paper is organised as follows. The following section provides a brief description of the UK and Spanish pension funds markets, and of the sample of pension funds included in the study. We then go on to present the methodology used, and in the fourth

section we present the results of our analysis. The fifth section, meanwhile, presents the results of the robustness tests applied, and we end the paper with our main conclusions.

2. DATA

2.1. Brief description of the UK pension plans market (1)

The United Kingdom is a world leader in terms of investment in pension schemes, behind only the United States, it has been the pioneer in the European Union. Investment in financial instruments of this kind has grown inexorably from EUR 500 billion under management in 1987 to almost EUR 2 trillion in 2007.

This development is mainly a response to the low level of public sector pensions paid by government compared to earnings before retirement. This situation has stimulated the emergence of alternatives such as private pension schemes and occupational schemes offered by employers, who obtain tax breaks on their contributions, as is also the case in other countries. Occupational pension schemes in fact predominate over individual plans.

In the United Kingdom pension schemes may be managed either by the fund manager or by insurers, which accounted for some 45% of the total pensions schemes existing in 2007.

The priority investment assets are equities (basically shares) and (public and private) fixed-income securities. While equities remain dominant (over half), fixed-income has gathered strength in the last two years (2007 and 2008), accounting for close to 30% of investment flows. Also, investments in equity are split almost equally between domestic and foreign stocks.

2.2. Brief description of the spanish pension plans market (2)

Pensions funds are one of the main investment products in Spain, even ahead of mutual funds.

Though these instruments appeared late in the Spanish market compared to other European countries like the United Kingdom and Germany, they have grown constantly since the Pension Plans and Funds Regulation Act (Law 8/1987) first allowed their creation. Thus, the 57 pension plans existing in 1989 had increased to 3,293 with over 10.5 million members by 2008.

At the European level, investment by Spanish pension funds still lags behind countries such as the United Kingdom, the Netherlands, Switzerland, Germany and Denmark, despite constant, strong growth over the last twenty years. However, the assets managed increased from EUR 152 million in 1988 to over EUR 78.5 billion in 2008 between individual, occupational and associate schemes. Individual pension plans lead the field with over 62%

(1) Data obtained from the Spanish *Asociación de Instituciones de Inversión Colectiva y Fondos de Pensiones* (INVERCO) and the Association of British Insurers (ABI).
(2) Data obtained from the *Asociación de Instituciones de Inversión Colectiva y Fondos de Pensiones* (INVERCO).

of total investment, while occupational schemes come second with 36%. Associate pension schemes represent only a marginal share of the market.

Spanish pension funds have changed their investment strategy in recent years, reducing the level of cash and cash equivalents in favour of mainly domestic stocks and foreign assets. Meanwhile, the fixed-income vocation predominates over equity.

Concentration in the Spanish pensions market is considerable, and 83 financial groups manage all 3,293 funds marketed. Moreover, just five of these groups account for over half of the market. These are BBVA, La Caixa, Banco Santander, Ibercaja and Grupo Caser. This tells much about the influence of Spain's leading financial groups on this market.

2.3. Data base used in the study

All of the data were provided by Thomson Reuters. The data base comprises the monthly returns obtained by all of the private pension funds with a «European equity» investment vocation registered for sale in the United Kingdom (a total of 494) and in Spain (a total of 72) in the period from January 1999 to December 2007.

All of the pensions funds included in the sample were required to present data for at least 12 months to ensure the consistency of the analyses. The market benchmark used was the MSCI-Europe index, given the European equity vocation of the pension funds, and it was therefore necessary to use European benchmark portfolios to asses performance on an appropriate basis. The representative variable for risk-free assets was the 1-month Euribor rate. Finally, the data base was free of *survivorship bias*.

Table I is formed by two Panels, A and B, the first of which shows the maximum number of pension funds in the sample for each year of the study, as well as the maximum and minimum monthly returns, the mean monthly return and the standard deviation from the mean, obtained for each year based on the equally weighted portfolio formed by the monthly returns on the sample pension funds. Panel B includes exactly the same data for the sample of pension funds registered for sale in Spain.

TABLE I
PENSION FUND STATISTICS

PANEL A: UK EUROPEAN EQUITY PENSION FUNDS									
Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Pension Funds	203	234	299	350	433	460	468	468	466
Mean Monthly Return	0,011	-0,006	-0,012	-0,028	0,010	0,020	0,014	0,011	0,001
Maximum Monthly Return	0,104	0,095	0,049	0,064	0,078	0,027	0,047	0,029	0,032
Minimum Monthly Return	-0,052	-0,046	-0,102	-0,128	-0,050	-0,034	-0,033	-0,051	-0,036
Standard deviation	0,043	0,036	0,048	0,061	0,040	0,020	0,028	0,022	0,022
PANEL B: SPANISH EUROPEAN EQUITY PENSION FUNDS									
Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Pension Funds	16	31	38	44	49	63	68	72	72
Mean Monthly Return	0,031	-0,002	-0,019	-0,030	0,013	0,009	0,020	0,014	0,000
Maximum Monthly Return	0,133	0,121	0,055	0,062	0,099	0,046	0,058	0,041	0,047
Minimum Monthly Return	-0,035	-0,060	-0,137	-0,126	-0,063	-0,029	-0,042	-0,065	-0,049
Standard deviation	0,054	0,047	0,060	0,063	0,047	0,023	0,034	0,028	0,027

Table I is formed by two panels, A and B. Panel A presents the descriptive statistics for pension funds with European equity investment vocation registered for sale in the UK market for the years included in the sample (1999-2007). In order to obtain the descriptive statistics, we created an equally weighted portfolio formed by the returns on all of the portfolios existing each month over the course of the period considered in the data base. The information presented reflects the maximum number of funds in a given month in each year, the mean monthly return, the maximum monthly return, minimum monthly return and the standard deviation of monthly returns for each year comprised in the equally weighted portfolio. Panel B presents the same information as Panel A for pension funds with European equity investment vocation registered for sale in Spain for the years included in the sample (1999-2007).

Given the pension funds' European equity vocation, the MSCI Europe index, the 10-year EMU bond, 3-month Euribor and 1-month Euribor were used to construct the conditional variables used in the analysis to determine the use of privileged information by pension fund managers.

Finally, the robustness tests performed used the MSCI Europe Small Cap, MSCI Europe Growth, MSCI Europe Value indexes, as well as the assets managed by each of the pension funds considered.

3. METHODOLOGY

We have used both the conventional and conditional versions of the TM and MH models to measure stock-picking and market timing ability.

The Treynor & Mazuy model (1966) is based on the manager's ability to direct the funds towards equities or cash to capture gains in a bull market and minimise losses in a bear market. Consequently, the market fluctuates between high volatility and low volatility.

As a result, the line that beats the market is not straight but concave, following market volatility. The concavity of the curve is the manager's ability. This is included in Jensen's model by adding a quadratic term, which measures the variation in the exposure to risk inherent in the market predictions made. The model is expressed as follows:

$$r_{p,t} = \alpha_p + \beta_p r_{m,t} + \gamma_p r^2_{m,t} + \varepsilon_{p,t} \quad (1)$$

where $r_{p,t} = R_{p,t} - R_{f,t}$, and $r_{m,t} = R_{m,t} - R_{f,t}$ represent the surplus returns generated by the portfolio p, and the market on the risk-free asset f over the period t; β_p is the beta of portfolio p; α_p is the portfolio alpha representing the fund manager's stock-picking ability, which is to say the ability to choose securities that provide higher returns than others with the same level of non-diversifiable risk. Hence, if alpha is positive and significant, the manager has the ability to predict stock prices, but if it is negative and significant, the manager lacks this ability; γ_p is the gamma of portfolio p, determining market timing ability. If it is positive and significant the manager has superior market timing ability, but if it is negative and significant the manager's ability is perverse. If it is not significant, the quadratic term adds nothing to the model. Finally, $\varepsilon_{p,t}$ is the error in portfolio p over period t, and its expected value is zero.

This model is based on the existence of a convex relationship between the returns from the fund and from the market, so a manager will increase exposure to the market (specific risk) where the market return increases and, conversely, will reduce exposure where the market return declines. This is what is meant by *market timing*. However, this relationship may appear for reasons other than timing, and in view of this Ferson and Schadt (1996) and Ferson and Quian (2004) propose a different version of the model based on the possibility of changes over time in the portfolio beta and the risk premium expected by the market due to public information or the timing coefficient, a situation that is not envisaged in the conventional timing models.

Ferson and Schadt (1996) and Ferson and Quian (2004) incorporate these ideas to obtain the new model, in which beta and gamma may change over the economic cycle. To reflect conditional information, retarded information variables are included. The conditional version of the TM model is expressed as follows:

$$r_{p,t} = \alpha_p + \beta_p r_{m,t} + \beta'_p (z_{t-1}\, r_{m,t}) + \gamma_p r^2_{m,t} + \gamma'_p (z_{t-1} r^2_{m,t}) + \varepsilon_{p,t} \quad (2)$$

where $z_{t-1} = Z_{t-1} - E[Z]$, where Z_{t-1} is a vector of available public information variables concerning the economic cycle in the period t-1. These variables are used to predict the market risk premium. The coefficients β'_p,γ'_p have the same dimension as Z_{t-1}, so that $\beta'_p(z_{t-1} r_{m,t})$ controls for the variation of the risk premium and the portfolio beta due to public information over the same period of time. The term $\gamma'_p(z_{t-1}\, r^2_{m,t})$ reflects the variability of market timing ability due to the use of public information.

Merton and Henriksson (1981) and Henriksson (1984) proposed a different market timing model. This is based on the assumption that the fund manager seeks to predict whether the market will produce additional positive or negative returns. Hence, the fund manager will take on more systematic risk where it is believed returns will take a positive value, as compared to the risk position that would be adopted in the expectation of negative market returns. The model is as follows:

$$r_{p,t+1} = \alpha_p + b_p r_{m,t+1} + \gamma_{hmu}[r_{m,t+1}]^+ + \upsilon_{p,t+1} \quad (3)$$

Where $[r_{m,t+1}]^+ = Max[0, r_{m,t+1}]$, Merton and Henriksson interpret this as the payment for an option over the market portfolio with the strike price of which is equal to the risk free asset, and γ_{hmu} measures fund managers' market timing ability.

On this basis, the portfolio beta will be lower where a bear market is predicted and higher where a bull market is predicted. Consequently, if the fund manager is able to anticipate the market, the coefficient γ_{hmu} will be positive.

Ferson and Schadt (1996) and Ferson and Quian (2004) also propose a conditional version of this model, as they did for the TM model. Their basic reasons are the same: the MH model fails to take changing economic cycles into account, uses constant coefficients and does not consider the use of privileged information.

In this version, the fund manager seeks to predict $u_{m,t+1} = r_{m,t+1} - E(r_{m,t+1} \mid Z_t)$, which is the deviation in the surplus returns from the market from the expected conditional mean.

The model assumes that the conditional beta on the portfolio in the case of a predicted bull market would be: $\beta_{up}(Z_t) = b_{up} + B'_{up}\, z_t$. If a bear market is predicted, in contrast, the conditional beta would be $\beta_{down}(Z_t) = \beta_{down} + \beta'_{down} z_t$.

The conditional version of the MH model is expressed as follows:

$$r_{p,t+1} = \alpha_p + b_{down} r_{m,t+1} + B'_{down}[z_t r_{m,t+1}] + \gamma_{hmu}[r_{m,t+1}]^+ \Delta'[z_t r_{m,t+1}]^+ + \upsilon_{p,t+1} \quad (4)$$

where:

$$[r_{m,t+1}]^{+} = [r_{m,t+1}]xI\{[r_{m,t+1}E(r_{m,t+1} \mid Z_t)] > 0\} \quad (5)$$

$$\gamma_{hma} = b_{up} - b_{down} \quad (6)$$

$$\Delta = B_{up} - B_{down} \quad (7)$$

I is the binary function indicating the prediction of positive market returns. Positive market timing ability is present when $\gamma_{hma} = \Delta' z_t$ takes a positive value, which shows that the conditional beta is higher when the market is above its conditional mean, based on public information, than when it is below the conditional mean. This implies $E(\gamma_{hma} + \Delta' z_t)z > 0$, indicating that market timing is positive on the average. In the absence of market timing ability, γ_{hma} and Δ are equal to zero.

Three predetermined information variables representing the economic cycle are used to apply the conditional models set out in expressions (2) and (4):

- *Dividend yield:* calculated as the ratio of dividends paid out by the MSCI-Europe index in the previous twelve months to the current price of the index.
- *Time spread:* calculated as the annualised difference between the return on the 10-year EMU bond and three-month Euribor.
- *Short-term interest rate:* represented by the 1-month Euribor rate.

These three variables all figure prominently in the financial literature given their role in explaining the returns on shares and bonds [Ferson & Schadt (1996); Christopherson *et al.* (1998); Cortez & Silva (2002), and Roy & Deb (2004)].

As Matallín (2006) argues, the use of returns-based models (TM and MH) to measure market timing can result in biased estimates of the timing parameters, because the omission of *benchmarks* means the gamma parameter measuring market timing ability does not reflect the fund manager's actual ability to synchronise trading with the market, but rather an asymmetric relationship between *benchmarks*.

To confirm the absence of this bias in the results obtained, we shall apply the following regression, in line with Matallín (2006) and Ferruz *et al.* (2010):

$$r_{pt} = \alpha_p + \beta_{pm} r_{m,t} + \beta_{ps} r_{s,t} + \beta_{pg} r_{gt} + \beta_{pv} r_{v,t} + \gamma_{pm} r^2_{m,t} + \varepsilon_{pt} \quad (8)$$

As may be observed, regression (8) is based on the TM model but adds a series of *benchmarks* to capture the effect of the possible omission.

Specifically, the *benchmarks* used to reflect the different asset classes making up the pension fund portfolios analysed (pension funds with European equity vocation), are: MSCI Europe Small Cap *($r_{s,t}$)* for low market capitalisation shares; MSCI Europe Growth *($r_{g,t}$)* for stocks with low book-to-market ratios; and MSCI Europe Value *($r_{v,t}$)* for the universe of stocks with a high book-to-market ratio.

4. EMPIRICAL RESULTS

4.1. Results of Traditional Market Timing Models

Table II presents the results obtained from the conventional versions of the TM and MH timing models. Panel A presents the results for European equity-based UK pension funds and panel B the results for their Spanish peers [3].

Table II
Results obtained from the conventional timing models

Panel A: UK European Equity Pension Funds			
	α	γ	R^2
Conventional Treynor & Mazuy model	0,003 (0,00)***	-1,472 (0,00)***	0,542
Conventional Merton & Henriksson model	0,002 (0,00)***	-2,444 (0,00)***	0,54
Panel B: Spanish European Equity Pension Funds			
	α	γ	R^2
Conventional Treynor & Mazuy model	0,001 (0,038)**	-1,520 (0,00)***	0,495
Conventional Merton & Henriksson model	0,00 (0,501)	-2,589 (0,00)***	0,492

Table II is formed by two Panels, A and B. Panel A presents the results from the OLS estimation of the conventional market timing models for pension funds with a European equity investment vocation registered for sale in the UK market. The coefficients are estimated on a pool basis. The table shows the results obtained from the estimation of the alpha coefficient, representing stock-picking ability, and the gamma coefficient, which reflects market timing ability. The associated p-values are shown beneath the coefficients estimated in brackets. The R-squared coefficient is also included for each of the models estimated. Panel B presents the same information as Panel A for pension funds with a European equity investment vocation registered for sale in the Spanish market for the years included in the sample (1999-2007).

* Significant at 10%.
** Significant at 5%.
*** significant at 1%.

In the case of the UK fund managers some degree of stock-picking ability is observable, as the α coefficient displays slightly positive and significant values, although these are very close to zero. However, their market timing ability is negative, as the γ coefficient obtained was negative and significant, which is to say market timing is erroneous.

The Spanish fund managers, meanwhile, obtain very similar results to their British peers, showing a small degree of stock-picking ability (almost zero, in fact) and perverse market timing ability.

(3) The results obtained are very similar for the conventional versions of the TM and MH models in the case of both UK and Spanish fund managers.

4.2. Results of Conditional Market Timing Models

Table III presents the results obtained from the conditional versions of the TM and MH timing models. Panel A presents the results for European equity-based UK pension funds and Panel B the results for the Spanish funds [4].

Table III

Results obtained from the conditional timing models

Panel A: UK European Equity Pension Funds			
	α	γ	R^2
Conditional Treynor & Mazuy model	0,005	-4,001	0,584
	(0,00)***	(0,00)***	
Conditional Merton & Henriksson model	0,004	-7,179	0,575
	(0,00)**	(0,00)**	
Panel B: Spanish European Equity Pension Funds			
	α	γ	R^2
Conditional Treynor & Mazuy model	0,002 (0,00)***	-3,039 (0,00)***	0,522
Conditional Merton & Henriksson model	0,002 (0,00)***	-5,492 (0,00)***	0,518

Table III is formed by two panels, A and B. Panel A presents the results from the OLS estimation of the conditional market timing models for pension funds with European equity investment vocation registered for sale in the UK market. The coefficients are estimated on a pool basis. The table shows the results obtained from the estimation of the alpha coefficient, representing stock-picking ability, and the gamma coefficient, which reflects market timing ability. The associated p-values are shown beneath the coefficients estimated in brackets. The R-squared coefficient is also included for each of the models estimated. Panel B presents the same information as Panel A for pension funds with European equity investment vocation registered for sale in Spain for the years included in the sample (1999-2007).

* significant at 10%.
** significant at 5%.
*** significant at 1%.

The UK fund managers show some degree of stock-picking ability, with positive and significant α coefficients, although these are close to zero. Nevertheless, the scores are higher than in the conventional timing models, indicating that the British fund managers make some use of privileged information to implement their stock-picking strategies.

Meanwhile, their market timing abilities are even more negative than in the conventional models, as the γ coefficients are both negative and significant. This suggests that the UK fund managers do not make good use of the privileged information available in their market timing strategies.

The results obtained for the Spanish fund managers are again very similar to those of their UK-based peers. Thus, they display some use of privileged information in stock-picking strategies and inadequate use of the privileged information to implement market timing strategies.

(4) The results obtained are very similar for the conditional versions of the TM and MH models in the case of both UK and Spanish fund managers.

5. ROBUSTNESS TESTS

5.1. Fund size effect

In this section, we consider whether the size of the fund influences stock-picking and market timing abilities. To this end, we compare the results obtained from an equally weighted portfolio and a size-weighted portfolio formed by the UK and Spanish European equity pension funds.

Table IV presents the results for the British portfolios.

Table IV
Size effect in UK pension funds

Equally weighted UK portfolio			
	α	γ	R^2
Conventional TM	0,004 (0,213)	-1,10 (0,182)	0,584
Conditional TM	0,006 (0,098)*	-4,479 (0,00)***	0,657
Conventional MH	0,004 (0,253)	-1,9312 (0,284)	0,583
Conditional MH	0,006 (0,084)*	-8,62 (0,005)***	0,644
Size-weighted UK portfolio			
	α	γ	R^2
Conventional TM	0,004 (0,214)	-1,209 (0,097)*	0,671
Conditional TM	0,005 (0,122)	-3,92 (0,00)***	0,718
Conventional MH	0,003 (0,352)	-1,518 (0,329)	0,667
Conditional MH	0,005 (0,134)	-7,18 (0,011)**	0,711

Table IV presents the results from the OLS estimation of the conventional and conditional market timing models for the equally weighted and size-weighted portfolios formed by pension funds with European equity investment vocation registered for sale in the United Kingdom. The table shows the results obtained from the estimation of the alpha coefficient, representing stock-picking ability, and the gamma coefficient, which reflects market timing ability. The associated p-values are shown beneath the coefficients estimated in brackets. The R-squared coefficient is also included for each of the models estimated.

* significant at 10%.
** significant at 5%.
*** significant at 1%.

Both the equally weighted and the size-weighted portfolios show very similar results. On the one hand, we may observe the absence of stock-picking ability, as the α values are very close to zero and are scarcely significant in either the equally weighted or in the size-weighted portfolio. On the other, market timing is again found to be perverse, displaying significant and negative γ coefficients for the conditional versions of the timing models.

On the question of whether the size of a fund affects the use of privileged information by its managers, there is scarcely any observable difference in the α values obtained for the conventional and conditional versions of the timing models. However, the γ timing coefficient is even more negative and significant in the conditional versions of the timing models than in the conventional versions, both for the equally weighted and for the size-weighted portfolios.

These results indicate that the size of the portfolio does not affect either stock-picking or market timing ability in the case of the UK pension fund managers, and it likewise has no effect on the use of privileged information.

Table V presents the results for the Spanish portfolios.

TABLE V

SIZE EFFECT IN SPANISH PENSION FUNDS

EQUALLY WEIGHTED SPANISH PORTFOLIO			
	α	γ	R^2
Conventional TM	0,001 (0,741)	-1,126 (0,046)**	0,591
Conditional TM	0,001 (0,633)	-2,967 (0,00)***	0,636
Conventional MH	0,000 (0,897)	-1,811 (0,113)	0,588
Conditional MH	0,002 (0,613)	-5,87 (0,004)***	0,635
SIZE-WEIGHTED SPANISH PORTFOLIO			
	α	γ	R^2
Conventional TM	0,002 (0,363)	-1,079 (0,037)**	0,626
Conditional TM	0,003 (0,318)	-2,756 (0,00)***	0,668
Conventional MH	0,002 (0,48)	-1,758 (0,105)	0,623
Conditional MH	0,003 (0,298)	-5,65 (0,002)***	0,669

Table V presents the results from the OLS estimation of the conventional and conditional market timing models for the equally weighted and size-weighted portfolios formed by pension funds with European equity investment vocation registered for sale in Spain. The table shows the results obtained from the estimation of the alpha coefficient, representing stock-picking ability, and the gamma coefficient, which reflects market timing ability. The associated p-values are shown beneath the coefficients estimated in brackets. The R-squared coefficient is also included for each of the models estimated.

* significant at 10%.
** significant at 5%.
*** significant at 1%.

The results are very similar for both the equally weighted and the size-weighted portfolios. A general absence of stock-picking ability may be observed, as the α coefficients are very close to zero and are not significant. Meanwhile, timing ability is perverse, given the signifi-

cant, negative γ coefficients obtained, and these values are more negative in the conditional than in the conventional versions of the timing models. This indicates that the use made of privileged information to implement market timing strategies is erroneous.

As in the case of the UK pension fund managers, these results indicate that the size of the portfolio does not affect either stock-picking or market timing ability, or the use of privileged information.

5.2. Omission of benchmark portfolios

In this section we examine whether the omission of benchmark portfolios leads to bias in the results obtained from the timing models. For this purpose, we include market indexes representing small cap, growth and value stocks in the conventional TM and MH timing models. The results are shown in Table VI (5).

Table VI

Impact of benchmark omission on timing parameters

Panel A: UK European Equity Pension Funds						
	α_p	$\beta_{p,s}$	$\beta_{p,g}$	$\beta_{p,v}$	γ_{pm}	R^2
TM benchmarks	0,001 (0,00)***	0,28 (0,00)***	0,629 (0,00)***	0,218 (0,00)***	0,312 (0,00)***	0,802
MH benchmarks	0,001 (0,00)***	0,28 (0,00)***	0,629 (0,00)***	0,211 (0,00)***	0,254 (0,01)**	0,802
Panel B: Spanish European Equity Pension Funds						
	α_p	$\beta_{p,s}$	$\beta_{p,g}$	$\beta_{p,v}$	γ_{pm}	R^2
TM benchmarks	0,000 (0,349)	0,114 (0,00)***	0,461 (0,00)***	0,357 (0,00)***	0,04 (0,827)	0,715
MH benchmarks	0,001 (0,04)**	0,11 (0,00)***	0,459 (0,00)***	0,357 (0,00)***	-0,393 (0,206)	0,715

Table VI presents the results obtained from the OLS estimation of Equation (8), which includes various benchmarks. *Panel A* reports the results for pension funds with European equity investment vocation registered for sale in the UK market, and *Panel B* presents the results for the pension funds registered for sale in Spain. The coefficients are estimated on a pool basis. Each panel shows the estimates for the following parameters: α, which represents stock-picking ability; $\beta_{p,s}$, $\beta_{p,g}$ y $\beta_{p,v}$, which measure the sensitivity of the portfolio to the representative benchmarks for small cap, growth and value stocks, respectively; γ_{pm}, which represents market timing ability, and the R^2 coefficient for each of the models estimated. The associated p-value is shown beneath each coefficient in brackets.

* significant at 10%.
** significant at 5%.
*** significant at 1%.

Panel A reflects the results obtained for the UK European equity pension funds. Significant and positive values may be observed for the coefficients accompanying the three indexes included in the model. The α coefficient takes a significant, slightly positive value, although it remains very close to zero. The value of γ, meanwhile, is positive and significant, indicating the ability of the fund managers to implement market timing strategies. These results

(5) The results are very similar for both TM and MH.

are not in line with those obtained above, which suggests the presence of a benchmark omission effect among the UK fund managers.

Panel B shows the results for the Spanish European equity pension funds, which are very similar to those obtained for the UK funds.

6. CONCLUSIONS

This paper examines the presence of stock-picking and market timing ability among British and Spanish pension fund managers. To this end, we have analysed a sample of pension funds with European equity investment vocation registered for sale in the United Kingdom and Spain.

Our results indicate some degree of stock-picking ability but negative market timing ability in both the UK and the Spanish case. We also find that both British and Spanish fund managers make poor use of privileged information to carry out timing strategies, but that such information is successfully applied to some degree in stock-picking strategies.

Various robustness tests were performed on the results. On the one hand, we examined the portfolio size effect. In both the UK and the Spanish case, the size of the portfolio does not affect stock-picking and market timing abilities, or the use of privileged information by the pension fund managers.

On the other, we have looked at the effect of benchmark omission, including representative indexes for different investment styles (small cap, growth and value) in the model. Upon doing this, we were able to observe that the omission of *benchmarks* does influence the results obtained, as the timing coefficients turned positive, or at least were less negative, in both the UK and the Spanish case.

REFERENCES

Abdel-Kader, M. G., and Qing, K. Y. 2007. Risk-Adjusted Performance, Selectivity, Timing Ability and Performance Persistence of Hong Kong Mutual Funds. *Journal of Asia-Pacific Business* 8(2): 25-58.

Ammann, M., and Zingg, A. 2008. Investment Performance of Swiss Pension Funds and Investment Foundations. *Swiss Journal of Economics and Statistics* 144(II): 153-195.

Ayadi, M. A., and Kryzanowsky, L. 2004. Performance of Canadian fixed-income mutual funds. *3rd Portuguese Finance Network,* Lisbon, July.

Bauer, R.; Otten, R., and Rad, A. T. 2006. New Zealand mutual funds: measuring performance and persistence in performance. *Accounting and Finance* 46: 347–363.

Boney, V.; Comer, G., and Kelly, L. 2005. High quality bond funds: market timing ability and performance. *Working Paper SSRN,* Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=680681.

Christensen, M. 2005. Danish mutual fund performance-selectivity, market timing and persistence. *Working Paper SSRN*. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=670701.

Chan, H.; Faff, R. W.; Gallagher, D. R., and Looi, A. 2005. Fund size, fund flow, transaction costs and performance: size matters. *Working Paper SSRN*. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=697581 [Accessed 25 March 2009].

CHEN, J. S.; HONG, H. G.; HUANG, M., and KUBIK, J. D. 2004. Does fund size erode mutual fund performance? *The role of liquidity and organization. American Economic Review* 94(5): 1276-1302.

CHRISTOPHERSON, J. A.; FERSON, W. E., and GLASSMAN, D. A. 1998. Conditioning Manager Alpha on Economic Information: Another Look at the Persistence of Performance. *Review of Financial Studies* 11: 111-142.

CORTEZ, M. C., and SILVA, F. 2002. Conditioning Information on Portfolio Performance Evaluation: A Re-examination of Performance Persistence in the Portuguese Mutual Fund Market. *Finance India* 16: 1393-1408.

ELTON, E. J.; GRUBER, M. J., and BLAKE, C. R. 2009. An Examination of Mutual Fund Timing Using Monthly Holdings Data. *Working Paper SSRN*. Available at: http://ssrn.com/abstract=1343246 (Accessed 25 March 2009).

FERRUZ, L.; VARGAS, M., and VICENTE, L. 2008. Size and experience effects on global fund performance. 2008 European Financial Management Annual Meeting, Athens, June.

FERRUZ, L.; VARGAS, M. and MUÑOZ, F. 2010. Does the size of a fund family matter when choosing an investment strategy? Evidence from Spain. *Review of Quantitative Finance and Accounting, forthcoming,* DOI 10.1007/s11156-009-0106-2.

FERSON, W. E., and SCHADT, R. W. 1996. Measuring fund strategy and performance in changing economic conditions. *The Journal of Finance* 51(2): 425-461.

FERSON, W. E., and QUIAN, M. 2004. Conditional Performance Evaluation, Revisited. Research Foundation Monograph of the CFA Institute (formerly AIMR), ISBN 0 943205-69-7, 84 pages.

FUNG, H. G.; XU, X., and YAU, J. 2002. Global hedge funds: risk, return and market timing. *Financial Analyst Journal* 58(6): 19-30.

GALLAGHER, D. R., and MARTIN, K. M. 2005. Size and investment performance: a research note. *Abacus* 41(1), 55 – 65.

GLASSMAN, D. A., and RIDDICK, L. A. 2006. Market timing by global fund managers, *Journal of International Money and Finance* 25(7): 1029-1050.

HALLAHAN, T. A., and FAFF, R. W. 2001. Induced persistence or reversals in fund performance?: the effect of survivor bias. *Applied Financial Economics* 11: 119-126.

HENRIKSSON, R. D. 1984. Market timing and mutual fund performance: an empirical investigation. *The Journal of Business* 57: 73–96.

JIANG, G. J.; YAO, T. and YU, T. 2007. Do mutual funds time the market? Evidence from portfolio holdings. *Journal of Finance Economics* 86(3): 724–758.

KNIGGE, A.; NOWAK, E., and SCHMIDT, D. 2004. On the performance of private equity investments: does market timing matter?. *Working Paper SSRN*. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=492982 [Accessed 25 March 2009].

LHABITANT, F. S. 2005. On Swiss timing and selectivity: in the quest of alpha. *Financial Markets and Portfolio Management* 15(2): 154-172.

LEE, S. L. 1999. The conditional performance of UK property funds. *15th American Real Estate Society Meeting,* Tampa, April.

MARTÍ, C. P., and MATALLÍN, J. C. 2008. Spanish pension plans performance and persistence. *2008 European Financial Management Annual Meeting,* Athens, June.

MATALLÍN, J. C. 2006. Seasonality, market timing and performance amongst benchmarks and mutual fund evaluation. *Journal of Business Finance and Accounting* 33(9 and 10): 1484-1507.

MERTON, R. C., and HENRIKSSON, R. D. 1981. On market timing and investment performance II: statistical procedures for evaluating forecasting skills. *The Journal of Business* 54: 513–534.

NEUHIERL, A., and SCHLUSCHE, B. 2009. Data Snooping and Market-Timing Rule Performance. *Working Paper SSRN*, Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1343896 (Accessed 25 March 2009).

RAJU, B. P., and RAO, K. M. 2009. Market Timing Ability of Selected Mutual Funds in India: A Comparative Study. *The Icfai Journal of Applied Finance* 15(3): 34-48.

ROY, B., and DEB, S. S. 2004. The conditional performance of Indian mutual funds: an empirical study. *Working Paper SSRN*. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=593723 (Accessed 25 March 2009).

TREYNOR, J., and MAZUY, K. 1966. Can mutual funds outguess the market?. *Harvard Business Review* 44: 131-136.

WOODWARD, G., and BROOKS, R. 2006. The market timing ability of Australian superannuation funds: nonlinearities and smooth transition models. *Working Paper SSRN*. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=885975 (Accessed 25 March 2009).