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The Persistence of European Bond Fund Performance: Does Conditioning Information Matter?

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ABSTRACT

In this paper we investigate if past performance can be used to predict future performance in the European bond fund market. Both unconditional and conditional measures of performance are considered. To our knowledge, this is the first study, which directly analyses the impact of conditioning information in assessing the persistence phenomenon in relation to bond funds.

We find empirical evidence that indicates consistency of European bond performance. This evidence is particularly strong for the case of Spanish bond funds. Some evidence of persistence is also found for French and German bond funds. Additionally, it seems that the persistence is concentrated mainly in the poor performing funds. The results were similar whatever methodology, cross-sectional regression analysis or contingency tables, is used for assessing performance persistence. Our findings indicate that the evidence of performance persistence decreases when we consider conditional alphas, particularly for the multi-index model, which suggests that some of the persistence phenomenon is driven by time-varying betas.

JEL: *G11, G12, G14*

Keywords: *Performance persistence; Performance evaluation; Conditional models; Bond funds*

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I. INTRODUCTION

The capacity of mutual fund managers to present consistently superior performance has been an important issue along with overall performance and, more recently, some studies have concentrated specifically on this issue. Performance persistence means that a fund with a good performance in the past is also likely to have a good performance in the future, or that a fund that in the past was a bad performing fund is likely to continue as a poorly performing fund in the future. Evidence of performance persistence represents not only a violation of the efficient market hypothesis but also suggests that investors may realise abnormal returns by purchasing recently good performing funds and selling recently bad performing funds.

Empirical evidence on this issue is mixed. Some studies have found evidence of fund performance persistence while others have not. Also, in some cases, the conclusion is different depending on the evaluation horizon. Hendricks, Patel and Zeckhauser (1993) found persistence only in the short run while Elton, Gruber and Blake (1996) found evidence of long-term persistence. Others found that it is dependent on the period of the study. For example, Malkiel (1995) found evidence of persistence in the 1970s but not during the 1980s. Finally, some studies have found evidence of persistence mainly in the best performing funds (Elton, Gruber and Blake, 1996) while others have found evidence of persistence for the poorly performing funds (Christopherson, Ferson and Glassman, 1998).

The use of conditioning information is one of the most recent developments on mutual fund performance. As there is now widespread empirical evidence suggesting that predetermined information variables (related to economic conditions) are useful in predicting stock and bond returns, measures of performance should take this information into account and, consequently, assume that expected returns and risks are time-varying (conditional) instead of constant (unconditional). Previous empirical findings on fund performance and on the persistence of performance which are based on unconditional measures may be biased due to the covariance between expected market returns and the conditional measure of risk. Recent studies seem to suggest that conditional performance measures make fund performance look better (e.g. Ferson and Schadt, 1996; Chen and Knez, 1996; Dahlquist and Söderlind, 1999) and might have better capacity to detect persistence of performance (e.g.: Christopherson, Ferson and Glassman 1998; Christopherson, Ferson and Turner, 1999). The underlying argument is that evidence of persistence of performance using unconditional measures may reflect the persistence of the confounding co-movement between risk and expected returns, rather than "true" persistence of performance. Hence, it is important to control for this possibility before reaching any conclusion regarding the predicting capacity of past performance.

On the other hand, the majority of the empirical studies that use conditional measures in portfolio performance evaluation involve mainly the US market[1] and refer almost exclusively to stock funds or pension funds (composed mostly by stocks), in spite of the great importance that bond funds assume in some markets, particularly in the European market[2]. We contributed to this literature in a recent paper where we have addressed the impact of conditioning information on the measured performance of a large sample of European bond funds (Silva, Cortez and Armada, 2003a). Furthermore, instead of assuming a set of variables or just using the same variables commonly used as conditioning information for the stock market, we first started by investigating the predictive ability of some variables, motivated by economic reasons (Silva, Cortez and Armada, 2003b). This procedure allowed us to incorporate, in the performance evaluation models, the information variables which previously appeared as significant. Thus, this study is a natural extension of those two papers. The objective is to evaluate the persistence phenomenon in the European bond fund market and, in particular, to investigate the extent to which conditional measures lead to different inferences on performance persistence. The results show that the evidence in favour of performance persistence decreases when we consider conditional measures. However, we still find that in some cases past performance may be used to predict future performance. This is the case of Spanish bond funds and, to a less extent, of French and German bond funds.

The remaining of the paper is organised as follows. In the next section we review the existing evidence on fund performance persistence, particularly for bond funds. In Section III we present the measures used to evaluate bond fund performance. In Section IV we describe our database. In Section V we provide evidence on the performance persistence over a period of three years, considering several performance measures. Finally, in Section VI we summarise the results and present the main conclusions.

II. REVIEW OF THE LITERATURE

Studies on performance persistence differ on the return measure used: raw returns, net returns and risk-adjusted returns. Those that use risk-adjusted returns, in most cases, consider unconditional measures alone. As mentioned before, however, evidence of persistence of performance using unconditional measures may simply reflect the persistence of the confounding co-movement between risk and expected returns, rather than "true" persistence of management. Therefore, before reaching any conclusion regarding the predicting capacity of past performance it is important to control for this possibility. Studies on persistence also differ on the methodology used: cross-sectional regressions (Kahn and Rudd, 1995), contingency tables (Khan and Rudd, 1995; Malkiel, 1995) and performance-ranked portfolios (Elton, Gruber and Blake, 1996).

For the specific case of the persistence on bond fund performance, Kritzman (1983), using ranking percentiles for the period of 1972 to 1981, found no evidence of persistence. Considering fund returns for two 5-year periods each manager's percentile ranking for both 5-year periods was computed and a cross-sectional regression analysis using the percentile ranking in the first 5-year period as the independent variable and the percentile ranking in the subsequent 5-year period as the dependent variable was performed.

Considering risk-adjusted returns, Blake, Elton and Gruber (1993) also investigated the forecasting ability of past performance for bond funds. They use two different samples: a small sample, including funds that ceased to exist, and a second one which is larger, but biased[3]. Their 10-year sample period (1979 to 1988) was divided into two 5-year periods and in 3-year periods. Alphas from both a single-index and a multi-index model were calculated for these subperiods, as well as rank correlations across the adjacent periods. The results showed no forecasting ability. For the larger biased sample they found, however, some evidence of predictability, evidence that could be due either to the larger size of the sample or to survivorship bias. Brown, Goetzmann, Ibbotson and Ross (1992) have shown that this type of bias can induce a correlation between past and future performance measures.

Kahn and Rudd (1995) evaluated the persistence phenomenon both on equity and fixed income funds over the period 1986 to 1993. As performance measures they consider cumulative total returns, cumulative selection returns (resulting from style analysis) and information ratios (ratio of selection return and selection risk). They used both regression analysis and contingency tables. The evidence supported persistence only for fixed income fund performance. However, the persistence benefits could not cancel out the average underperformance of the fixed income funds resulting mainly from expenses.

Philpot, Hearth, Rimbey and Schulman (1998) also found no evidence of persistence of bond fund performance. Persistence inferences were based on the Sharpe measure for a five-year holding period and using the regression based approach for the sample period 1982 to 1993. Moreover, they argue that the evidence of no persistence is consistent with the fact that bond funds are characterised by a relative homogeneity and, consequently, bond fund managers have little opportunity to consistently outperform one another and thus differentiate themselves. Considering more heterogeneous bond funds, designated by nonconventional bond funds (high-yield, global and convertible bond funds), Philpot, Hearth and Rimbey (2000) reached similar conclusions: nonconventional bond funds do not show evidence of management skill or performance persistence.

For other markets, Maag and Zimmermann (2000), using the Spearman rank correlation coefficient as in Blake, Elton and Gruber (1993), also find no clear evidence for or against performance persistence in German bond funds for the period 1987 to 1996. Dahlquist, Engström and Söderlind (2000), reported similar evidence for Swedish bond funds. The latter study uses a cross-sectional regression approach to detect the persistence phenomenon.

In general, the results of empirical studies seem to indicate that there is less evidence of performance persistence on bond funds than on stock funds. On the other hand, despite the major developments on conditional performance evaluation, already mentioned in the previous section, until date, we do not have knowledge of any study which uses both unconditional and conditional measures to evaluate the performance persistence of bond funds[4]. Conditioning information should also impact inferences on fund managed performance persistence. It is expected that the confounding co-movement induced by the time variation in returns expectations may lead to incorrect conclusions. The scarce existing evidence for stock funds and pension funds on this issue is not consensual.

The results in Ferson and Schadt (1996) seem to suggest that the persistence concentrated in the extreme performers may be more easily detected by conditional models. Christopherson, Ferson and Glassman (1998) and Christopherson, Ferson and Turner (1999) examine the performance of pension funds and conclude that conditional measures are better able to detect the persistence of performance. The former uses cross-sectional regression analysis considering alternative measures of performance and different predicting time horizons over the period 1979-1990. The latter is an extension of the first study (with a broader sample and extended period 1980-1996) and uses rank portfolios based on quintiles of the forecasted alphas. Two portfolio management techniques are followed: equal-weighted portfolios of managers in each quintile and also weighted portfolios based on the information ratio (in order to include the quality of fit information to refine the ranks, as suggested in Elton, Gruber and Blake, 1996). In their study on the European equity fund market, Otten and Bams (2002) also find that the evidence of persistence in mean returns for funds investing in the UK is even stronger when conditional models are considered.

The results obtained by Cortez and Silva (2002) point in another direction. By investigating the persistence in a small sample of Portuguese equity funds, over the period 1994-1998, and using the two-way contingency tables methodology, they found that empirical evidence on persistence is not changed when conditional measures are considered. Similar evidence, using the Spearman rank correlation coefficient for consecutive periods, was found by Sawicki and Ong (2000) for Australian equity funds. Another type of evidence was found by Basarrate and Rubio (1999) for the Spanish market. When evaluating the performance of a sample of Spanish equity and balanced funds, they found that the predicting ability of past performance is not as strong when conditional models are used. To detect persistence, the authors use a procedure based on the behaviour of extreme winners and losers.

Although there seems to be no general consensus on the size of the change, most of the empirical research suggests that incorporating information variables does indeed change inferences on the persistence of performance, in this way challenging the evidence found in the previous literature.

III. PERFORMANCE MEASURES: UNCONDITIONAL AND CONDITIONAL MODELS

To obtain an unconditional risk-adjusted measure we use the single index model, which regresses portfolio excess returns on a benchmark portfolio excess returns, usually a market index. The coefficient, beta, is assumed to be constant and the intercept, alpha, measures average performance (as Jensen's (1968) measure). So, we have:

$$r_{p,t} = \alpha_p + \beta_p r_{m,t} + \varepsilon_{p.t} \tag{1}$$

where $r_{p,t}$ represents the excess return of portfolio p at period t, $r_{m,t}$ represents the market's excess return at period t and α_p represents the measure of unconditional performance of portfolio p.

Although initially applied to stocks funds, this measure has also been extended to bond funds (as in Gudikunst and McCarthy, 1992; Blake, Elton and Gruber, 1993; Gallo, Lockwood and Swanson, 1997; and Detzler, 1999). Aside from the traditional criticisms of estimation errors and appropriateness of the benchmark, equation (1) assumes that beta is constant. In the case of bond portfolios this assumption can be even more critical as bond fund managers are more market timers than security pickers, namely for funds that include mostly Government bonds. Their performance depends heavily on the ability to predict future interest rates and on adjusting the duration of the fund accordingly. If they predict an increase (decrease) on interest rates they should decrease (increase) the duration. As duration is closely related to beta, equation (1) may not be appropriate due to beta instability (e.g. Bildersee and Roberts, 1981; and Jarrow, 1978).

Several studies have shown that Jensen's alpha is biased when portfolio managers follow dynamic strategies (among others Jensen, 1972; and Dybvig and Ross, 1985). These studies argue that if performance is measured by alpha, portfolio managers that correctly anticipate the market and act accordingly can appear as bad performers, while portfolio managers that do not show that capacity or act wrongly can appear as good performers. In order to allow time-varying returns and risk we assume that beta is a linear function of a vector $\mathbf{Z}_{t-1}$ of predetermined information variables, as in Ferson and Schadt (1996):

$$\beta_p(Z_{t-1}) = \beta_{0p} + \beta_p' z_{t-1} \tag{2}$$

where $z_{t-1} = Z_{t-1} - E(Z)$ represents the vector of deviations of Z_{t-1} from the average vector, β_{0p} is the average beta (the unconditional mean of the conditional beta) of portfolio p and the vector β_p' measures the response of the conditional beta of portfolio p to the information variables. Substituting beta in equation (1) by the conditional beta, it follows that:

$$r_{p,t} = \alpha_p + \beta_{0p} r_{m,t} + \beta_p'(z_{t-1} r_{m,t}) + \varepsilon_{p,t} \tag{3}$$

with α_p being now the measure of conditional performance of portfolio p. A portfolio manager that only uses public information contained in Z_{t-1} should present an alpha equal to zero. This model can also be seen as an unconditional multi-factor model, with market excess return as the first factor and the cross products of market excess return with each lagged information variable as additional factors capturing the covariance between the expected market return and the conditional beta (Jagannathan and Wang, 1996).

As the selection of only one index may fail in considering alternative investments, several multiple index models have been developed and applied to fund performance evaluation. Empirical research seems to indicate that no more than a small of easily identifiable factors/indices are enough to explain the returns of stock and bond portfolios (see Blake, Elton and Gruber, 1993; and Elton, Gruber and Blake, 1999). The conditional approach can easily be extended to multiple index models (and to an APT context), by including the cross products of each factor with the predetermined information variables. That is, we replace equation (2) with a similar equation for each of the K factor-betas of the managed portfolio. Thus, the regression equation of our conditional K-factor model will have (L+1)*K+1 regressors: a constant, the K factor-portfolios and the product of the L information variables in Z_{t-1} with the K factor-portfolios.

IV. THE DATA

A. Predetermined Information Variables

As predetermined information variables we consider the term spread, the inverse relative wealth and a dummy variable for the month of January which we have found to be useful in predicting European bond market returns (Silva, Cortez and Armada, 2003b). The variable inverse relative wealth, used as a proxy for time-varying risk aversion, is defined as the "exponentially weighted average of past real wealth to current real wealth"[5]. As a proxy for aggregate wealth we use a stock index for each country. Although stock markets represent only a small part of the world wealth, they probably represent the most volatile segment and are positively correlated with other segments of wealth. We use the MSCI stock indices for each country (from Datastream) deflated by the Consumer Price Index (CPI). The CPI data is obtained from the International Monetary Fund. We have taken into account the publication lag of about two or three weeks in order to consider only publicly available information. The term spread is the difference between the yield of a long-term bond and the yield of a short-term bond (a short-term nominal rate). As the long-term bond yield we consider the yield on a 10-year Government bond (or approximately), information that we obtained through the Central Banks[6]. It would be more appropriate to use also a Government bond rate as the short-term rate. However, for the majority of the countries we do not have a liquid Treasury bill market. For the countries which we could not obtain that rate we use the 3-month Interbank offered rate[7]. Finally, the dummy for the month of January: it takes a value of 1 if the next month is the month of January and 0 otherwise.

We tested the stationarity of these variables using the Augmented Dickey-Fuller (ADF) test and concluded that in most of the cases we cannot reject the null hypothesis of a unit root. Thus, we followed the suggestion of Ferson, Sarkissian and Simin (2003) and used the variables subtracted by the 12-month moving average, in order to reduce the problem of spurious regression, a problem that may be found when persistent regressors are used.[8] After applying this procedure the new series present, in general, relatively lower values for the first-order autocorrelation. Another issue that can be raised is related with the scale of these variables. This specific point is not specified by theory but it can affect the results. Usually, the solution is to use mean zero variables (see Bernhardt and Jung, 1979), a procedure that we also followed.

B. Bond Fund Returns

Our sample includes a total number of 638 bond funds from Italy (58), Spain (157), France (266), Germany (90), UK (45) and Portugal (22). The first five countries represent the most important mutual fund markets in Europe (with the exception of Luxembourg which is the major market but on the basis of being a distribution centre)[9]. We select bond funds that invest mainly in the domestic market and/or in the European market with monthly data at least since January 1994. We evaluate the performance of these bond funds for the period February 1994 to December 2000. For Portugal we consider the shorter period, January 1995 to December 2000, due to the availability of the index used as benchmark.

The data on Portuguese bond funds was obtained from the Portuguese Association, APFIN. The information on Spanish and French bond funds is from Micropal[10]. The data on bond funds for Germany, UK and Italy are obtained from Datastream. As this database does not provide the classification of the funds, we previously contacted the domestic associations of investment funds in order to obtain the list and respective classification of bond funds[11]. With that information, we then collected the end of month total return index for each of the funds. Since Datastream, however, does not have historical records for all funds, our sample is composed by bond funds with available data (both in Datastream and Micropal) and with historical series at least since January 1994. Thus, our sample may be affected by survivorship bias, as we do not have data on nonsurviving funds. However, previous research suggests that survivorship bias has a less impact on bond funds compared to stock funds (Blake, Elton and Gruber, 1993; Dahlquist, Engström and Söderlind, 2000). According to Blake, Elton and Gruber (1993) this may be due to the stability of the performance of bond funds.

All fund returns are continuously compounded monthly returns, with dividends and income distributions reinvested, and in local currency. These returns are net of management expenses but not of load charges. In order to obtain excess returns we subtract from this return the risk free rate. For the latter we use the 3-month Interbank offered rate. Table 1 reports the summary statistics for our bond fund sample. As it can be observed, the average bond fund size is highest in Italy, with a value of about 990 millions Euro, and far distant from that of the other countries. At the bottom we have Spain with an average bond fund size of about 96 millions Euro. With respect to management fees, the countries with the lowest average fees are Germany and Portugal, deducting about 0.5% annually. This value rises to almost 1% for bond funds in Italy, UK and France and to about 1.4% for Spanish bond funds. Considering the overall period of February 1994 to December 2000, the average of monthly excess returns is positive for bond funds in Germany and France but negative for bond funds in UK, Spain, Italy and Portugal, being statistically different from zero in the last three cases. Italian and Spanish bond funds present the most negative mean excess returns: –0.13% and –0.10%, respectively. With respect to the variability of the monthly excess returns, UK bond funds present clearly the highest standard deviation. Considering the last six years of the sample and analysing the two consecutive 3-year, we observe that the first subperiod is characterised by higher mean excess returns (with the exception of Portuguese bond funds all the others present positive values) and also slightly higher volatility.

Table 1

Summary statistics for equally-weighted portfolios of bond funds

This table reports, for each country, the summary statistics on the equally-weighted portfolio of bond funds that compose our sample. Average size in million Euros and management fees in annual percentage of the assets invested as of 31/12/2000. Mean excess return and standard deviation are statistics for the period February 1994 to December 2000 and also for the two consecutive 3-year subperiods January 1995 to December 1997 and January 1998 to December 2000.

				February 1994 to December 2000		January 1995 to December 1997		January 1998 to December 2000	
	Nº. of Funds	**Average Size** (Millions Euro)	**Management Fees** (annual %)	**Mean Excess Return** (Monthly %)	**St. Deviation**	**Mean Excess Return** (Monthly %)	**St. Deviation**	**Mean Excess Return** (Monthly %)	**St. Deviation**
Germany	90	284	0.46	0.115	0.831	0.435 ***	0.744	0.062	0.699
France (1)	266	128	1.01	0.030	0.776	0.308 **	0.678	0.019	0.652
UK	45	0	0.95	-0.019	1.437	0.388 *	1.333	-0.004	1.125
Spain	157	96	1.39	-0.101 **	0.454	0.107	0.401	-0.115 **	0.294
Italy (2)	58	990	0.98	-0.129 **	0.586	0.035	0.559	-0.084	0.347
Portugal	22	159	0.53	-0.074 ***	0.194	-0.054 *	0.177	-0.094 **	0.211

(1) The average size for France includes mainly French SICAVs as we could not obtain the information on the majority of the French FCPs that compose our sample.
(2) The management fees are the average for the categories of Italian funds as reported by Assogestioni.

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

C. Market indices

To evaluate the performance of the bond funds that compose our sample we consider both models used in Silva, Cortez and Armada (2003a): a single index model and a 3-index model. As benchmark for the single index model we use the Salomon Smith Barney WGBI all maturities for each country. For the multiple benchmarks we use two more factors in addition to the market index: the excess return on a stock market index (the MSCI stock index for each country) and a default spread. We use the stock index as it can be viewed as a measure of expectations about general economic conditions (see Elton, Gruber and Blake, 1995; and Cornell and Green, 1991) and also because some of the funds can hold a small percentage of stocks. The default spread is a measure of the default risk that may affect corporate bond returns. As we do not have information in local spreads (for most European countries the corporate bond market is still a market with a low degree of liquidity) we decided to use a spread for the aggregate Euro zone. Thus, this spread is calculated as the difference between the MSCI Euro Credit Index BBB rated and the MSCI Euro Credit Index AAA rated[12].

The correlations between these indices in each country are relatively low, suggesting that multicollinearity should not be a problem. The correlation between the bond index and the default spread is negative in most of the countries, while those between the bond index and the stock index and between the stock index and the default spread are always positive.[13]

In the conditional single-index and multi-index models we incorporate the three variables described in Section IV.A (term spread, inverse relative wealth and the dummy for the month of January).

VI. EMPIRICAL RESULTS

We have previously found (Silva, Cortez and Armada, 2003a) that the results on the performance of bond funds for the European market, over the period 1994-2000, are consistent with previous findings not only with respect to the evidence of neutral or even negative performance but also in relation to the impact of conditioning information on the performance measures. When we incorporate the predetermined information variables we observe a slight tendency towards a better performance. This evidence is consistent with other studies on stock funds, such as Ferson and Schadt (1996), Chen and Knez (1996), Kryzanowski, Lalancette and To (1997) and Dahlquist and Söderlind (1999), which also found that the distribution of alphas shifts to the right region of superior performance when conditional models are used.

Although overall fund performance indicates negative or neutral performance, it may happen that some funds present consistently higher performance, while others present consistently poor performance. Furthermore, it is important to ask if conditional models will be better able to detect this persistence phenomenon. In this section we test the hypothesis of no performance persistence in our sample of European bond funds. Our approach to measure persistence is based on cross-sectional regressions of a future performance measure on the past performance measure, and also on two-way contingency tables. The persistence is assessed on the basis of the performance evaluation models from the previous section. We consider the last six years of our sample period: January 1995 to December 2000[14]. This period is divided in two consecutive subperiods of three years (January 1995 to December 1997 and January 1998 to December 2000). For each one of these subperiods we calculate both fund excess returns and alphas.

Table 2 reports the cross-sectional regressions statistics, resulting from regressing the alphas for the second subperiod on the alphas for the first subperiod, for the unconditional and conditional models (single-index and multi-index models). A significant positive t-statistic for the slope coefficient rejects the null hypothesis that past performance is unrelated to future performance and consequently is evidence of persistence.

The coefficients of the cross-section regressions are always positive. Using the unconditional alphas we find strong evidence in favour of performance persistence for Spanish, French and German bond funds, both in relation to single and multiple index models. For these funds, the regressions coefficients are statistically significant at the 5% level. This evidence is maintained (and is even slightly stronger) when conditional single-index alphas are used, but it decreases when we consider conditional multi-index alphas. For the French bond funds the regression coefficient is no longer statistically significant, while the statistically significance of the regression coefficient for the German bond funds has decreased from the 1% level to the 5% level. UK bond funds show statistically significant coefficients when single-index alphas are used, either unconditional or conditional, but they become not statistically different from zero with multiple index alphas.

Overall, it seems that some of the persistence found using single-index alphas is driven by the two additional factors considered in the multi-index models and also that some of the persistence found with the multi-index alphas is driven by time-varying betas (the latter is similar to what was found, in some extent, by Otten and Bams, 2002).

Table 2

Persistence of bond fund performance: cross-sectional regression analysis for unconditional and conditional alphas

This table reports the statistics for the cross-section regression of the alphas for the subperiod January 1998 to December 2000 on the alphas for the January 1995 to December 1997 subperiod considering both unconditional and conditional single and multi-index models for each European country.

	Unconditional Single-index				**Unconditional multi-index**			
	constant	t-stat	coefficient	t-stat	constant	t-stat	coefficient	t-stat
Germany	-0.043	-6.169	0.328	7.830 ***	-0.050	-7.061	0.241	2.844 ***
France	-0.055	-9.178	0.197	3.109 ***	-0.075	-10.926	0.171	2.575 **
UK	-0.121	-5.903	0.190	2.198 **	-0.135	-5.752	0.104	0.908
Spain	-0.088	-7.223	0.418	5.703 ***	-0.089	-6.504	0.435	5.417 ***
Italy	-0.096	-4.151	0.115	1.202	-0.103	-5.358	0.125	1.641
Portugal	-0.070	-2.150	0.252	1.320	-0.055	-1.825	0.324	1.913 *
	Conditional Single-index				**Conditional multi-index**			
	constant	t-stat	coefficient	t-stat	constant	t-stat	coefficient	t-stat
Germany	0.007	0.630	0.396	8.648 ***	0.014	1.825	0.177	2.537 **
France	-0.031	-4.974	0.312	4.954 ***	-0.070	-14.148	0.014	0.453
UK	-0.062	-2.403	0.390	3.190 ***	-0.046	-1.532	0.065	0.465
Spain	-0.070	-6.007	0.478	6.820 ***	-0.084	-5.464	0.496	5.507 ***
Italy	-0.093	-5.033	0.124	1.674 *	-0.128	-7.519	0.047	0.693
Portugal	-0.111	-12.858	0.026	0.658	-0.082	-4.534	0.156	1.805 *

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Although frequently adopted, this procedure of using the alpha for a future subperiod as the dependent variable can be problematic since most of the likely sources of bias in alphas are correlated over time (due to missing priced factors, for example), which can generate spurious evidence of persistent performance. An alternative approach consists of using, as the dependent variable, the future excess return. Christopherson, Ferson and Glassman (1998) argue that, besides avoiding this problem, with this alternative approach "the regressions focus directly on the question of the most practical: to what extent can the past alpha be used to predict future relative returns?" (Christopherson, Ferson and Glassman, 1998, p.131). We repeated the cross-sectional regression analysis considering this alternative approach.

Table 3 presents the statistics of the cross-section regressions of future excess returns on past alphas. The results are not much different. The regression coefficients, with the exception of the Portuguese bond funds when we consider conditional multi-index alphas, are also positive. German, Spanish and French bond funds present, once again, statistically significant coefficients at the 1% level.[15]

Table 3

Persistence of bond fund performance: cross-section regressions of excess returns on unconditional and conditional alphas

This table reports the statistics for the cross-section regression of the excess returns for the subperiod January 1998 to December 2000 on the alphas for the January 1995 to December 1997 subperiod considering both unconditional and conditional single and multi-index models for each European country.

	Unconditional Single-index				**Unconditional multi-index**			
	constant	t-stat	coefficient	t-stat	constant	t-stat	coefficient	t-stat
Germany	0.045	7.051	0.319	8.322 ***	0.071	8.377	0.266	2.596 ***
France	0.024	3.280	0.063	0.826	0.035	4.528	0.197	2.597 ***
UK	0.000	-0.023	0.056	0.627	-0.002	-0.070	0.015	0.124
Spain	-0.041	-3.146	0.494	6.258 ***	-0.038	-2.786	0.505	6.278 ***
Italy	-0.057	-2.629	0.121	1.350	-0.051	-2.859	0.143	1.999 *
Portugal	-0.083	-2.515	0.067	0.344	-0.089	-2.854	0.028	0.158
	Conditional Single-index				**Conditional multi-index**			
	constant	t-stat	coefficient	t-stat	constant	t-stat	coefficient	t-stat
Germany	0.038	5.837	0.224	8.753 ***	0.068	9.496	0.320	4.972 ***
France	0.033	5.020	0.203	3.020 ***	0.031	5.260	0.122	3.311 ***
UK	-0.003	-0.164	0.052	0.523	0.009	0.300	0.081	0.607
Spain	-0.035	-2.432	0.526	6.118 ***	-0.043	-3.192	0.469	5.944 ***
Italy	-0.055	-2.900	0.127	1.675 *	-0.064	-4.071	0.094	1.503
Portugal	-0.085	-10.867	0.072	1.960 *	-0.112	-5.170	-0.092	-0.879

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

Moreover, comparing these results with those of Table 2, it appears that unconditional alphas from the single-index model are less useful in predicting future performance as measured by excess returns than by their own future values. In contrast, the alphas from conditional multi-index models seem to be more useful in predicting future excess returns than their own future values. This may be an indication of biases in the alphas.

Table 4
Persistence of bond fund performance: contingency tables based on funds' unconditional and conditional alphas

In this table we report the number of funds that were winners in the two subperiods (WW), winners then losers (WL), losers then winners (LW) and losers in both periods (LL). WW correspond to funds with alphas>median, repeated subsequent period; LL correspond to funds with alphas<median, repeated subsequent period; WL and LW are funds with performance reversals. Panel A and Panel B present the contingency tables based on unconditional single-index and multi-index alphas and Panel C and Panel D the contingency tables based on conditional alphas. The Chi-square statistic and the corresponding p-value are also reported. The last two columns present the same Chi-square statistic and the corresponding p-value considering the Yates correction for continuity.

	Subperiods: 1/95 to 12/97 and 1/98 to 12/00						Yates	
	WW	WL	LW	LL	CHI-Square	p-value	Correction	p-value
Panel A - Unconditional SI Alphas								
Germany	31	14	14	31	12.844 ***	0.000	11.378 ***	0.001
France	81	52	52	81	12.647 ***	0.000	11.789 ***	0.001
UK	13	9	9	14	1.793	0.181	1.083	0.298
Spain	52	26	26	53	17.889 ***	0.000	16.564 ***	0.000
Italy	19	10	10	19	5.586 **	0.018	4.414 **	0.036
Portugal	7	4	4	7	1.636	0.201	0.727	0.394
Panel B - Unconditional MI Alphas								
Germany	29	16	16	29	7.511 ***	0.006	6.400 ***	0.011
France	83	50	50	83	16.376 ***	0.000	15.398 ***	0.000
UK	15	7	7	16	6.412 **	0.011	4.990 **	0.025
Spain	50	28	28	51	20.691 ***	0.000	19.265 ***	0.000
Italy	18	11	11	18	3.379 *	0.066	2.483	0.115
Portugal	8	3	3	8	4.545 **	0.033	2.909 *	0.088
Panel C - Conditional SI Alphas								
Germany	35	10	10	35	27.778 ***	0.000	25.600 ***	0.000
France	88	45	45	88	27.805 ***	0.000	26.526 ***	0.000
UK	16	6	6	17	9.789 ***	0.002	8.011 ***	0.005
Spain	53	25	25	54	20.691 ***	0.000	19.265 ***	0.000
Italy	18	11	11	18	3.379 *	0.066	2.483	0.115
Portugal	7	4	4	7	1.636	0.201	0.727	0.394
Panel D - Conditional MI Alphas								
Germany	28	17	17	28	5.378 **	0.020	4.444 **	0.035
France	77	56	56	77	6.632 **	0.010	6.015 **	0.014
UK	12	10	10	13	0.551	0.458	0.197	0.657
Spain	53	25	25	54	20.691 ***	0.000	19.265 ***	0.000
Italy	16	13	13	16	0.621	0.431	0.276	0.599
Portugal	7	4	4	7	1.636	0.201	0.727	0.394

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

For the contingency tables analysis we sort the funds into winners and losers in the first subperiod and winners and losers in the second subperiod. Funds are categorised as winners and losers by ranking fund performance according to whether they are above or below median performance. If we find statistical evidence that winners in one period remain winners in the subsequent period the null hypothesis of no persistence will be rejected. To test this hypothesis we calculate the Chi-square statistic and its p-value.[16] We also provide the Chi-square statistic considering Yates's continuity correction, a recommended correction particularly when sample size is small (Cortez, Paxson and Armada, 1999). This may be a problem for the case of Portugal, as our sample is relatively small (22 bond funds), or in the case of contingency tables considering only funds with positive (or negative) performance.

In Table 4 we report the contingency table of winners and losers based both on unconditional and conditional alphas. Considering unconditional alphas, the statistical significance of the Chi-square test statistic indicates the existence of persistence. Similarly to the results obtained with the cross-section regressions, this evidence is strong for German, French and Spanish bond funds (with significant Chi-square statistics at the 1% level). Furthermore, that evidence is slightly stronger when we consider the unconditional multi-index alphas. In this case, we also find some evidence of persistence for UK, Italian and Portuguese bond funds.

Based on conditional alphas, we also find evidence of performance persistence, although this evidence decreases when we use conditional multi-index alphas instead of using conditional single-index alpha, similarly to the results from the cross-sectional regression analysis. The statistical significance of the Chi-square test, considering either conditional single-index or multi-index alphas, confirms the persistence found previously for German, French and Spanish bond funds.[17]

By comparing the results, we can observe that, in the context of the single index model, when conditional alphas are considered instead of unconditional alphas, the evidence of performance consistency increases slightly. The inverse occurs in the context of the multi-index model. Hence, it seems that time-varying betas together with the additional factors considered in the multi-index model drive some of the evidence that there is a relationship between past and future performance.

Although evidence in favour of performance persistence is found for German, French and Spanish bond funds, we are not capable of identifying if this persistence is due to good performing funds or to poor performing funds. A common conclusion of previous studies is that persistence is concentrated in the extreme performing and mainly in the poorly performing funds (e.g. Gruber, 1996; Christopherson, Ferson and Glassman, 1998). In order to investigate this issue, we repeat the two-way contingency tables considering only funds with negative performance measures in the first period. The results obtained from the contingency tables based on alphas, reported in Table 5, seem to indicate that persistence is more evident for the poor performing funds, particularly for the case of Spanish bond funds. This is not surprising given the strong evidence of underperformance we found previously for the Spanish funds. In the case of German and French bond funds, it seems that some funds are also persistently poor performers.[18]

Table 5
Bond fund performance persistence: contingency tables considering only funds with negative alphas in the first subperiod

The tables report the number of funds that were winners in the two subperiods (WW), winners then losers (WL), losers then winners (LW) and losers in both periods (LL). WW correspond to funds with alphas >median, repeated subsequent period; LL correspond to funds with alphas<median, repeated subsequent period; WL and LW are funds with performance reversals. Panel A and B present the results for the unconditional models and Panel C and Panel D present the results for the conditional models. The Chi-square statistic and the corresponding p-value are also reported. The last two columns present the same Chi-square statistic and the corresponding p-value considering the Yates correction for continuity.

	Subperiods: 1/95 to 12/97 and 1/98 to 12/00						Yates	
	WW	WL	LW	LL	CHI-Square	p-value	Correction	p-value
Panel A - Unconditional SI Alphas								
Germany	8	5	5	9	1.801	0.180	0.915	0.339
France	67	51	51	68	4.594 **	0.032	4.054 **	0.044
UK	7	8	8	8	0.034	0.853	0.030	0.862
Spain	51	26	26	51	16.234 ***	0.000	14.961 ***	0.000
Italy	18	10	10	19	5.063 **	0.024	3.941 **	0.047
Portugal	7	4	4	7	1.636	0.201	0.727	0.394
Panel B - Unconditional MI Alphas								
Germany	23	8	8	23	14.516 ***	0.000	12.645 ***	0.000
France	75	47	47	75	12.852 ***	0.000	11.951 ***	0.001
UK	11	7	7	12	2.179	0.140	1.316	0.251
Spain	50	27	27	51	14.249 ***	0.000	13.062 ***	0.000
Italy	17	11	11	18	2.959 *	0.085	2.117	0.146
Portugal	8	3	3	8	4.545 **	0.033	2.909 *	0.088
Panel C- Conditional SI Alphas								
Germany	4	5	5	4	0.222	0.637	0.000	1.000
France	78	39	39	79	26.556 ***	0.000	25.228 ***	0.000
UK	8	6	6	9	0.852	0.356	0.304	0.581
Spain	52	26	26	52	17.333 ***	0.000	16.026 ***	0.000
Italy	17	11	11	18	2.959 *	0.085	2.117	0.146
Portugal	7	3	3	7	3.200 *	0.074	1.800	0.180
Panel D - Conditional MI Alphas								
Germany	19	12	12	19	3.161 *	0.075	2.323	0.128
France	68	50	50	68	5.492 **	0.019	4.898 **	0.027
UK	9	9	9	10	0.026	0.873	0.029	0.866
Spain	52	25	25	52	18.935 ***	0.000	17.558 ***	0.000
Italy	16	12	12	16	1.143	0.285	0.643	0.423
Portugal	7	4	4	7	1.636	0.201	0.727	0.394

*** Statistically significant at 1% ** Statistically significant at 5% * Statistically significant at 10%

In summary, our results concerning the capacity of past performance to predict future performance suggest that performance persistence is more sensitive to the performance measure considered than to the methodology used to assess this phenomenon. By comparing the results from unconditional and conditional alphas, we conclude that in the case of the single-index model it seems that conditional alphas lead to stronger evidence of performance persistence. On the other hand, in the case of the multi-index model, conditional alphas lead to a lower evidence of persistence. Furthermore, considering only conditional alphas, we conclude that the persistence is reduced when using conditional multi-index alphas instead of conditional single-index model alphas. This suggests that the additional factors considered in the multi-index model and, in particular, the time-varying betas related with those additional factors drive some of the evidence that there is a relationship between past and future performance. A somewhat similar conclusion was reached by Basarrate and Rubio (1999) for the case of Spanish stock funds. This contrasts, however, with most of the previous studies (on stock funds only and mainly for the US market) which find that performance persistence seems to be more significant when conditional measures are used.

Notwithstanding, whatever measure of performance used and considering both cross-sectional regression analysis and contingency tables methodologies, a robust result is that consistency in performance is found for Spanish, French and German bond funds, although mainly concentrated in the poor performing funds.[19] Thus, it seems somewhat puzzling that investors still remain in these funds. However, possible explanations for this phenomenon have been reported. For example, Gruber (1996) argues that it can be due to the existence of two groups of investors: a sophisticated clientele and a disadvantaged clientele. While the first group makes investing decisions based on fund performance, the second group does not. In several European countries (mostly Continental countries) banks dominate the mutual fund industry so the second group constitutes probably an important one. Banks usually market more to individual investors than to institutional investors and individual investors may be less likely to monitor abnormal performance and invest based on marketing efforts or the general reputation of the bank.

VII. SUMMARY AND CONCLUSIONS

In this paper we investigate the performance persistence of European bond funds and in particular, we analyse the impact of conditioning information on persistence inferences. To our knowledge this is the first study on this issue. Furthermore, although a very few studies used conditional measures to evaluate bond fund performance, usually a set of information variables are assumed as having predictive ability without any previous analysis of that capacity for a specific market. This is not the case of our study. In a previous analysis we had found that variables such as term spread, inverse relative wealth and a January dummy are useful predictors of bond excess returns. We incorporated these variables in the conditional evaluation of bond fund performance.

The persistence is assessed on the basis of both cross-sectional regression analysis and two-way contingency tables. The overall sample period (January 1995 to December 2000) is divided in two consecutive subperiods of three years (January 1995 to December 1997 and January 1998 to December 2000). For each one of these subperiods we calculate both fund excess returns and alphas resulting from four alternative models: unconditional single and multiple index models versus conditional single and multiple index models.

We find empirical evidence suggesting consistency in European bond fund performance, particularly in the case of Spanish, French and German bond funds. The results were similar whatever methodology, cross-sectional regression analysis or contingency tables, we use. This evidence is consistent with that of Kahn and Rudd (1995), who also found strong evidence of persistence for US fixed-income funds. In addition, we observe that the evidence in persistence decreases when we consider conditional alphas, particularly for the multi-index model, which indicates that some of the persistence phenomenon is driven by time-varying betas. This type of evidence is consistent with that obtained for stock funds, since they indicate that incorporating conditioning information indeed changes inferences on European bond fund performance persistence. Furthermore, we find evidence in favour of persistence concentrated mainly in the poor performers.

Overall, our findings are consistent with the hypothesis that markets are efficient, and come in support of passive management strategies. We should note, however, that we have not taken into account the effect of management fees in bond fund performance, a fact that could explain the consistent underperformance of bond funds in some European markets, as it does in the US. This issue, as well as the investigation of the performance flow relationship in the European bond fund industry would be natural extensions of this research and might provide us some insights to some unanswered questions.

ENDNOTES

1. In a recent study, Gallagher and Jarnecic (2002) examined security selection and market timing performance of Australian bond funds using both unconditional and conditional performance evaluation techniques. However, they used predetermined information variables similar to those used for US stock funds without any previous analysis of their predictive ability for the Australian bond market.
2. This type of funds represented, at the end of 2000, 24% of the market. The proportion of bond funds is even higher in such markets as the Portuguese, Spanish and Italian market (source: FEFSI).
3. The objective of considering two samples was to control for survivorship bias, a problem that can significantly influence the results on the average levels of performance and, particularly, on the persistence of performance.
4. In their study on Swedish managed funds, Dahlquist, Engström and Söderlind (2000) analyse the performance persistence of bond funds using conditional alphas only.
5. We used a 36-month window and a smoothing coefficient of 0.9 as in Ilmanen (1995).
6. For Portugal we used the yield on Treasury bonds with remaining maturity between 108 and 126 months, for Spain the yield on a 10-year government bond, for Italy the yield on the 10-year BTP (Buoni Poliennali del Tesoro), for France the "taux de l`emprunt phare a 10 ans", for Germany the yield on listed Federal securities with a residual maturity of 9-10 years (only bonds eligible as underlying

instruments for futures contracts are included) and for UK the yield on a 10-year bond.

7. Which was the case for Portugal, Italy, UK and Germany. For France, we used the "taux de référence des bons de trésor à 3 mois" from the Bank of France, and for Spain the rate on 34 to 94 days Treasury bill secondary market from the Bank of Spain.
8. This simple form of stochastic detrending does not require any parameter estimation, so it is an appealing alternative to using time series models or time trends to deal with near nonstationarity This procedure is equivalent to a triangular weighted average of changes in the variable, so it is stationary even if there is a unit root in the variable (Campbell, 1996).
9. The weight of these six markets in the European bond fund market, excluding Luxembourg, is 76.5% (Source: FEFSI and APFIN).
10. "Source Standard & Poor`s Fund Services SARL © [2001]". We are extremely grateful to Jorge O´Neill, from Difdata (Standard & Poor`s Fund Services Exclusive Representative in Portugal) for his efforts in providing the data on French and Spanish bond data.
11. BVI for Germany, INVERCO for Spain, AUTIF for UK, AFG-ASFFI for France, and ASSOGESTIONI for Italy.
12. Although these indices do not include the UK bond market this variable is expected to be correlated with the default spread for the UK domestic market. We thank Laura Kellie at MSCI London for providing the data on MSCI bond indices.
13. The table with these results are available, from the authors, upon request.
14. In the case of Portugal this coincides with the overall sample period; for all other countries we exclude the period February to December 1994.
15. We have also considered the cross-section regressions of future information or appraisal ratios (defined as alpha divided by the standard error of the regression used to estimate alpha) on past appraisal ratios. This measure accounts for the differences in volatility. Managers following high volatility strategies but with no true skill will either by chance consistently show up as winners or be removed from the business through poor performance. Brown, Goetzmann, Ibbotson and Ross (1992) suggest that it might be possible to mitigate some of the survival effect by simply standardizing performance measures by the residual standard deviation. They argue that due to the existence of a distribution of strategies of different volatilities, even in the absence of any true persistence, survivorship bias will generate the appearance that winners repeat. The evidence of performance persistence is even stronger: all countries present statistically significant regression coefficients at the 5% level. The tables with the results are available, from the authors, upon request.
16. Carpenter and Lynch (1999) examined the specification and power of various persistence tests. They found that the Chi-squared test based on the number of winners and losers is well specified, powerful, and more robust to the presence of survivorship bias when compared to other test methodologies.

17. Although not reported, the contingency tables based on the appraisal ratios showed similar results to those obtained in the cross-sectional regression analysis. The persistence is stronger and generalizes to all countries.
18. In the case of Germany, France and UK, as we have a significant number of funds with positive performance measures, we also analysed the contingency tables including only funds with positive performance in the first subperiod. Our findings show slight evidence in favour of persistent positive performance for German and French bond funds, but not for UK bond funds.
19. It is important to note, however, that a possible explanation for the strong persistence found in these countries could be the high number of funds in the sample. It is probably easier to find a significant persistent pattern with a larger sample than with a small sample, a limitation inherent to the methodologies used to assess performance persistence.

REFERENCES

Basarrate, B., and G. Rubio, 1999, “Nonsimultaneous Prices and the Evaluation of Managed Portfolios in Spain”, *Applied Financial Economics*, 9, 273-281.

Bernhardt, I., and B. S. Jung, 1979, “The Interpretation of Least Squares Regression with Interaction or Polynomial Terms”, *The Review of Economics and Statistics*, 61, 481-483.

Bildersee, J. S., and G. S. Roberts, 1981, “Beta Instability When Interest Rate Levels Change”, *Journal of Financial and Quantitative Analysis*, 16, 375-380.

Blake, C. R., Elton, E. J. and M. J. Gruber, 1993, “The Performance of Bond Mutual Funds”, *The Journal of Business*, 66, 371-403.

Brown, S. J., Goetzmann, W., Ibbotson, R. G. and S. A. Ross, 1992, “Survivorship Bias in Performance Studies”, *The Review of Financial Studies*, 5, 553-580.

Campbell, J. Y., 1996, “Understanding Risk and Return”, *Journal of Political Economy*, 104, 298-345.

Carpenter, J. N., and A. W. Lynch, 1999, “Survivorship bias and Attrition Effects in Measures of Performance Persistence”, *Journal of Financial Economics*, 54, 337-374.

Chen, Z., and P. J. Knez, 1996, “Portfolio Performance Measurement: Theory and Applications”, *The Review of Financial Studies (Summer)*, 9, 511-555.

Christopherson, J. A., Ferson, W. E. and D. A. Glassman, 1998, “Conditioning Managers Alphas on Economic Information: Another Look at the Persistence of Performance”, *The Review of Financial Studies*, 11, 111-142.

Christopherson, J. A., Ferson, W. E. and A. L. Turner, 1999, “Performance Evaluation using Conditional Alphas and Betas”, *Financial Analysts Journal*, 26, 59-72.

Cornell, B., and K. Green, 1991, “The Investment Performance of Low-Grade Bond Funds”, *The Journal of Finance*, 46, 29-48.

Cortez, M.C., Paxson, D. and M.J.R. Armada, 1999,“Persistence in Portuguese mutual fund performance”, *European Journal of Finance,* 5, 342-365.

Cortez, M. C., and F. C. Silva, 2002, “Conditioning Information on Portfolio Performance Evaluation: A Reexamination of Performance Persistence in the Portuguese Mutual Fund Market”, *Finance India*, 16, 1393-1408.

Dahlquist, M., Engström, S. and P. Söderlind, 2000, “Performance and Characteristics of Swedish Mutual Funds”, *Journal of Financial and Quantitative Analysis*, 35, 409-423.

Dahlquist, M., and P. Söderlind, 1999, “Evaluating Portfolio Performance with Stochastic Discount Factors”, *The Journal of Business*, 72, 347-383.

Detzler, M. L., 1999, “The Performance of Global Bond Mutual Funds”, *Journal of Banking and Finance*, 23, 1195-1217.

Dybvig, P. H., and S. A. Ross, 1985, “Differential Information and Performance Measurement using a Security Market Line”, *The Journal of Finance*, 40, 383-399.

Elton, E. J., Gruber, M. J. and C. R. Blake, 1995, “Fundamental Economic Variables, Expected Returns, and Bond Fund Performance”, *The Journal of Finance*, 50, 1229-1256.

Elton, E. J., Gruber, M. J. and C. R. Blake, 1996, “The Persistence of Risk-Adjusted Mutual Fund Performance”, *The Journal of Business*, 69, 133-157.

Elton, E. J., Gruber, M. J. and C. R. Blake, 1999, “Common Factors in Active and Passive Portfolios”, *European Finance Review*, 3, 53-78.

Ferson, W. E., and R. W. Schadt, 1996, “Measuring Fund Strategy and Performance in Changing Economic Conditions”, *The Journal of Finance*, 51, 425-461.

Ferson, W. E., Sarkissian, S. and T. Simin, 2003, “Is Stock Return Predictability Spurious?”, *Journal of Investment Management*, 1, 1-10.

Gallagher, D. R., and E. Jarnecic, 2002, “The Performance of Active Australian Bond Funds”, *Australian Journal of Management*, 27, 163-185.

Gallo, J. G., Lockwood, L. J. and P. E. Swanson, 1997, “The Performance of International Bond Funds”, *International Review of Economics and Finance*, 6, 17-35.

Gruber, M. J., 1996, “Another Puzzle: The Growth in Actively Managed Mutual Funds”, *The Journal of Finance*, 51, 783-810.

Gudikunst, A., and J. Mccarthy, 1992, “Determinants of Bond Mutual Fund Performance”, *The Journal of Fixed Income*, 2, 95-101.

Hendricks, D., Patel, J. and R. Zeckhauser, 1993, “Hot Hands in Mutual Funds: Short-Run Persistence of Relative Performance, 1974-1988”, *The Journal of Finance*, 48, 93-130.

Ilmanen, A., 1995, “Time-Varying Expected Returns in International Bond Markets”, *The Journal of Finance*, 50, 481-506.

Jagannathan, R., and Z. Wang, 1996, “The Conditional CAPM and the Cross-Section of Expected Returns”, *The Journal of Finance*, 51, 3-53.

Jarrow, R. A., 1978, “The Relationship Between Yield, Risk, and Return of Corporate Bonds”, *The Journal of Finance*, 33, 1235-1240.

Jensen, M. C., 1968, “The Performance of Mutual Funds in the Period 1945-1964”, *The Journal of Finance*, 23, 389-416.

Jensen, M. C., 1972, “Optimal Utilization of Market Forecasts and the Evaluation of Investment Performance”, *Mathematical Methods in Investment and Finance*. Szego/Shell. North-Holland**:** 310-335.

Kahn, R. N., and A. Rudd, 1995, “Does Historical Performance Predict Future Performance?”, *Financial Analysts Journal*, 51, 43-52.

Kritzman, M., 1983, “Can Bond Managers Perform Consistently?”, *The Journal of Portfolio Management*, 9, 54-56.

Kryzanowski, L., Lalancette, S. and M. C. To, 1997, “Performance Attribution using an APT with Prespecified Macrofactors and Time-Varying Risk Premia and Betas”, *Journal of Financial and Quantitative Analysis*, 32, 205-224.

Maag, F., and H. Zimmermann, 2000, “On Benchmarks and the Performance of DEM Bond Mutual Funds”, *The Journal of Fixed Income*, 10, 31-45.

Malkiel, B. G., 1995, “Returns from Investing in Equity Mutual Funds 1971 to 1991”, *The Journal of Finance*, 50, 549-572.

Otten, R., and D. Bams, 2002, “European Mutual Fund Performance”, *European Financial Management*, 8, 75-101.

Philpot, J., Hearth, D. and J. Rimbey, 2000, “Performance Persistence and Management Skill in Nonconventional Bond Mutual Funds”, *Financial Services Review*, 9, 247-258.

Philpot, J., Hearth, D., Rimbey, J. N. and C. T. Schulman, 1998, “Active Management, Fund Size, and Bond Mutual Fund Returns”, *The Financial Review*, 33, 115-126.

Sawicki, J., and F. Ong, 2000, “Evaluating Managed Fund Performance using Conditional Measures: Australian Evidence”, *Pacific-Basin Finance Journal*, 8, 505-528.

Silva, F. C., Cortez, M. C. and M. J. R. Armada, 2003a, “Conditioning Information and European Bond Fund Performance”, *European Financial Management*, 9, 201-230.

Silva, F. C., Cortez, M. C. and M. J. R. Armada, 2003b, "Bond Return Predictability: An Investigation for the European Market", Working Paper, University of Minho, School of Management.