Centre for International Capital Markets

Discussion Papers
ISSN 1749-3412

Measuring Alpha in the Fund Management Industry: Do Gender and Investment Strategies Matter?

Vassilis Babalos, Guglielmo Maria Caporale, Nikolaos Philippas

No 2014-02

Measuring Alpha in the Fund Management Industry: Do Gender and Investment Strategies Matter?

Vassilis Babalos[1], Guglielmo Maria Caporale[2*], Nikolaos Philippas[3]

[1]Department of Finance and Auditing, School of Management and Economics, Technological Educational Institute of Kalamata, Greece

[2]Department of Economics and Finance, Brunel University, London, UK

[3]Department of Business Administration, University of Piraeus, Greece

Abstract

This paper examines the performance of 358 European diversified equity mutual funds controlling for gender differences. Fund performance is evaluated against funds' designated market indices and representative style portfolios. Consistently with previous studies, proper statistical tests point to the absence of significant differences in performance and risk between female and male managed funds. However, perverse market timing manifests itself mainly in female managed funds and in the left tail of the returns distribution. Interestingly, at fund level there is evidence of significant overperformance that survives even after accounting for funds' exposure to known risk factors. Employing a quantile regression approach reveals that fund performance is highly dependent on the selection of the specific quantile of the returns distribution; also, style consistency for male and female managers manifests itself across different quantiles. These results have important implications for fund management companies and for retail investors' asset allocation strategies.

JEL Classification: G11,G23

Keywords: Mutual funds, performance, timing, gender difference, quantile regression

*Corresponding author. E-mail: Guglielmo-Maria.Caporale@brunel.ac.uk

1. Introduction

Since their launch towards the end of the 19th century mutual funds have been acting as financial intermediaries channelling savings to the most profitable investments, thereby promoting financial stability and social welfare. Designed to provide liquidity, they are the preferred investment vehicle for retail investors mainly because of the benefits of risk diversification and professional management that are not otherwise easily accessible. Mutual funds' shareholders benefit when fund managers search for the most attractive investments, which in turn results in maximization of the shareholders' expected return. However, it is not so rare for fund managers to act in a self-interested manner seeking to maximize their compensation through the adoption of gambling strategies (Chevallier & Ellison 1997). A fundamental question that naturally arises is whether active fund managers add value to their portfolios. Their ability to enhance portfolio returns is measured by the so-called alpha (Jensen 1968). The search for a reliable estimate of alpha in the delegated active management industry still continues.

Following the seminal work of Treynor (1965), Sharpe (1966) & Jensen (1968) most papers have been striving to determine whether actively managed funds are able to deliver superior risk-adjusted returns with respect to a benchmark portfolio. Traditional performance measures compare the return of the portfolio of interest with that of a properly defined unmanaged portfolio (benchmark return) after accounting for all aspects of investment risk. The evolution of financial theory has contributed substantially to the proper definition of systematic risk sources that should be accounted for when evaluating the performance of active fund managers. In this context, the single factor evaluation model introduced by Jensen (1968) has been replaced by multi-factor models (Fama & French 1993, Carhart 1997) motivated mainly by asset pricing studies and others that stress the importance of incorporating economic indicators in predicting future market movements (Ferson & Schadt 1996, Kosowski, 2006, Jha et al., 2009). Their main finding is that actively managed funds do not systematically generate higher returns than a passive benchmark on a risk – adjusted basis after deducting various expenses and charges (Fama & French 2010).

In the last fifty years the mutual fund industry has been the subject of extensive research both by academics and practitioners. Sirri & Tufano (1998) in their influential study pointed out the importance of mutual funds as a laboratory where

one can study the actions of retail investors who buy fund shares. Investors usually base their selection on past performance information but invest asymmetrically, i.e. more in funds that performed very well in the near past. It is generally agreed that actively managed mutual funds, on average, fail to outperform the market or any combination of passively managed portfolios. However, there is evidence that some predetermined variables such as past performance have predictive power for future investment performance. Performance either measured in an absolute way or on a risk-adjusted basis is related to past performance, managerial characteristics including manager age, education etc. (Chevallier & Ellison 1999) and fund characteristics such as expenses, turnover and size (Prather et al, 2004); investors seem to recognize this to a certain extent and chase past winners (Gruber 1996). Similarly, funds that attract more money subsequently perform significantly better than those that lose money. This effect, known as smart money effect, is short-lived and is largely but not completely explained by a strategy of betting on winners (Gruber 1996, Zheng 1999).

Our study is strongly related to the research conducted in other disciplines such as psychology or game theory. The reason is that fund performance evaluation should explicitly allow for the behavioural dimension of managers' decision making. In particular, well documented differences between men and women in terms of investment behaviour and/or risk-taking that have attracted the research interest of other social sciences and economics literature should be addressed. For example, previous studies have shown that men are more confident (Barber & Odean 2001) and/or less risk averse than women (Sunden & Surette 1998). However, the latter was disputed by Schubert et al. (1999), who attributed women's higher levels of risk aversion to the use of survey data and their inability to capture adequately differences in other relevant factors such as the investment opportunity set. Professional money management provides the perfect setting to explore stereotyped behavioural issues mainly because it includes a homogeneous group of individuals with comparable levels of financial expertise. It allows to capture differences in wealth and knowledge in a more effective manner than in an experimental setting. Both Atkinson et al. (2003) and Niessen & Ruenzi (2013), using a sample of US bond and equity funds respectively, reached the conclusion that there are no significant differences in the risk-adjusted performance of male and female managers. In a related study Beckmann & Menhoff (2008) analyzed the survey responses of 649 fund managers in the US,

Germany, Italy and Thailand and confirmed that female fund managers are more risk averse and less overconfident than men.

There are a number of important contributions to the literature. First, we compare the performance of male and female managed equity funds employing a novel and comprehensive sample of European diversified equity funds which includes one of the largest proportions of female professionals in studies in this field. Second, for the first time in the literature we compare the ability of managers to predict not only market portfolio returns but also the size and growth of portfolios. To this end, we apply the approach of Treynor & Mazuy (1966) to the multi-factor Fama & French model (1996) in the spirit of Lu (2005). Third, we control for differences in style since funds are classified into fourteen investment categories and their performance is measured against a proper benchmark for each category. This ensures that we mitigate any of the biases related to inappropriate benchmarking that have been thoroughly examined by Lehmann & Modest 1987, Elton et al. 1993, and Sensoy 2009 inter alia. Fourth, owing to the considerable heterogeneity in returns both at fund and portfolio level we employ a quantile approach to explore fund performance and style consistency across various pre-specified regions of the returns distribution. Finally, we address the need highlighted by Banegas et al. (2013) for a more comprehensive research on European funds and especially for funds that invest across Europe.[1]

To preview our results, we find that gender does not influence fund performance and more interestingly women are not more risk averse than men. However, at fund level we detect statistically and economically significant alphas, mainly in the Eurozone Large Cap investment category. The documented over-performance of many individual funds gains importance in the light of the turbulence experienced by financial markets resulting from the global financial crisis and the ensuing Eurozone debt crisis. In terms of market timing we document that women exhibit worse record than men in market timing. In particular, half of women in our sample exhibit perverse market timing. Although female managers are in charge of larger funds and shareholders in female managed funds pay on average lower management fees, these differences are not significant. The only significant difference is located in the purchase fee investors pay that is substantially higher for male managed funds. However, one should bear in mind that purchase and sales fees are usually determined

[1] A widely known study that examines more than one European fund market is that by Otten and Bams (2002).

by a management company's sales policy and therefore any differences should be interpreted with caution. We also observe a marginally significant difference in the trading behaviour of the managers in the sample, a finding that points explicitly to the overconfidence hypothesis (Barber & Odean 2001) and we believe it requires further research. With respect to portfolio quality, both female and male managed funds appear to be sufficiently diversified. As for investment strategies, male managers seem to favour small size stocks whereas female managers prefer more growth-oriented strategies. Meaasuring fund performance by means of the quantile regression method provides more insights into the fund management process as we move from the left to the right of the conditional returns distribution. Performance appears to be highly dependent on the selection of a specific quantile of the returns distribution. Perverse market timing is still present and more intense in the left tail of the distribution. Finally, there is decreasing market exposure as one moves to the right of the returns distribution irrespective of the gender.

The remainder of the paper is organised as follows. The next section outlines the data selection process and some preliminary results while section 3 describes the employed performance models and the robust quantile regression approach. The empirical results are presented in section 4 and section 5 concludes.

2. Mutual funds data and preliminary analysis

We collect monthly returns of European diversified equity mutual funds with a European equity investment focus that are domiciled in one of the four largest European fund markets, namely France, Germany, Italy and Spain[2]. The data source is the Morningstar Direct comprehensive database covering the period from January 2006 to December 2011. Mutual fund returns are calculated by computing the change in monthly net asset value (NAV), reinvesting all income and capital gains during the month, and dividing by the NAV at the beginning of the month. Returns are not adjusted for sales charges (such as front-end or deferred loads and redemption fees), since we are only concerned with fund manager's skills and investment strategy. Excess returns have been calculated with respect to the 3-month Euribor rate. Monthly prices of the relevant benchmark indices and the Euribor rate were obtained from Thomson Reuters (Datastream).

[2] Except for the fund markets of Luxembourg, Ireland and the United Kingdom.

We apply a preliminary filter on all available funds offered in the four markets excluding funds that are team managed. Next, the gender of each fund manager is identified from the manager profile data. In this way we are able to gather data on fifty-nine female-managed mutual funds and two hundred and ninety-nine male-managed funds as reported in the last row of Table 1. It should be noted that the proportion of females to total population in our study is larger than in most previous studies in this area of the literature. For example, Chevallier & Ellison (1997) reported a 7% share of women in their sample, in Atkinson et al. (2003) females constituted 5.6% of the total sample, while Niessen & Ruenzi (2013) performed their analysis with a share of female professionals of approximately 10%. Only the survey response study of Beckmann & Menkhoff (2008) has a 19% share of female managers which is larger than ours. Sample funds are then classified into fourteen different categories on the basis of their investment objective. Following Golec (1996), who concluded that manager tenure is associated with future fund performance, we match tenure to fund performance in order to ensure comparability of funds' realized performance. Index funds and exchange traded funds are both excluded since we are interested in active management.

-Insert Table 1 here-

Table 2 reports some useful statistics for male and female managed equity funds. Average values for both groups as well as the statistical significance of the difference between the female and male managed equity funds are presented. It appears that there are only minor differences. The only significant one is observed in the column max front load. Investors preferring a male managed fund are faced with a substantially higher sales fee than if they had invested in a female managed fund. Moreover, the turnover ratio is substantially different in the two samples, although the difference is only marginally significant. This finding could be explained by the argument of Barber & Odean (2001), who claimed that overconfident investors such as male investors might engage into more frequent trading, which is confirmed in our case by the substantially higher turnover ratio for male managers. Finally, female managers are in charge of larger funds while shareholders in female managed funds pay lower management fees. The latter might be due to behavioural factors in professional money management. As stated previously, male managers might have

more confidence in their management skills, which leads them to claim higher compensation than female managers.

Table 3 presents some descriptive statistics for the employed series. The last column implies non-normality of the returns of male and female managed portfolios across the majority of investment styles. This is an important finding that motivates the use of the more robust quantile regression method as a tool for exploring the behaviour of the conditional returns distribution. A comparison of the two portfolios in terms of the median return and variability of returns provides some preliminary evidence on the performance of male and female managers. In particular, in general there are no statistically significant[3] differences either in the average return or in the total riskiness of the two portfolios. The latter sheds light on managers' attitude towards risk, allowing us to conclude that male and female managers exhibit similar risk appetite as in Atkinson et al. (2003). For better comparisons a synthetic portfolio that goes long in male managers and simultaneously short in female managers has been constructed and monitored across the various investment categories. Return statistics of the synthetic portfolio are reported in the row labelled Male vs. Female. Interestingly, we do not detect any evidence of significant over- or under- portfolio performance, which reinforces the evidence that male and female managers perform similarly. As a robustness test we have regressed the return difference between male and female managed funds for each investment style on an intercept. Results of the estimated OLS regressions which are available from authors upon request confirm the absence of a statistically significant difference between the performance of male and female managed funds.

-Insert Table 2 here-

-Insert Table 3 here-

3. Methodology

Accurate performance evaluation is crucial in the fund management industry. There is an ongoing debate in the literature on whether mutual fund managers should be evaluated against the benchmark reported in their prospectus or with respect to a

[3] For the comparison of the portfolio medians we have employed the Wilcoxon/Mann-Whitney non-parametric test while an F-test has been carried out for the variance comparison.

broad market-based passive portfolio of comparable risk (see, inter alia, Cremers and Petajisto, 2009, Sensoy, 2009, Hsu et al., 2010, Cremers, et al., 2010, Angelidis et al. 2012). Benchmark mismatches may result in severe misconceptions regarding funds' risk exposures or funds' superior skills at generating abnormal returns. In the context of the present study, we address this issue by relying on the benchmarks officially assigned by Morningstar to each fund category, which are presented in Table 4.

-Insert Table 4 here-

3.1 Security selection models

3.1.1. Single factor model

The first performance measure employed here is the well-known Jensen's alpha (1968), that is rooted in the CAPM theory. It measures the additional return generated by a fund over and above that justified by market risk, thereby conveying information on security selection or selectivity skills of a fund manager. Formally, the single factor performance measure is the intercept (α_p) in the regression of the fund excess returns on the excess returns of a representative market index:

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_{p,1}(R_{m,t} - R_{f,t}) + \varepsilon_{p,t} \quad (1)$$

where $R_{p,t}$ is the return of fund p in period t; $R_{f,t}$ is the short term risk-free rate in period t; $R_{m,t}$ is the return of the proper market portfolio of each fund in period t.

3.1.2 Multi-factor model

We then employ a modified version of the Fama & French (1993) three factor model. In particular, we follow Elton et al. (1996, 1999), who used an overall market index, a size index and a growth versus value index that are readily available to investors via passive investment products such as index funds or exchange traded funds. This allows for direct comparisons of active fund managers with comparable passive strategies. Specifically, we opt for a multi-factor performance evaluation model that includes the STOXX Size and Style Indices tracking equity investments in Europe and the Eurozone respectively. We also employ the Barclays Corporate & Government Total Return fixed income index in order to account for European funds' non-stock holdings. Fund overperfomance (underperformance) manifests itself as a significantly positive (negative) intercept (α_p) in the four-factor model that compares

the realized returns of the fund against the returns of risk-bearing, passive investment strategies as follows:

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_{p,1}(R_{m,t} - R_{f,t}) + \beta_{p,2}SMB_t + \beta_{p,3}HML_t + \beta_{p,4}(R_{B,t} - R_{f,t}) + \varepsilon_{p,t} \quad (2)$$

where $\beta_{p,1}$, $\beta_{p,2}$, $\beta_{p,3}$ and $\beta_{p,4}$ are funds' exposures to the relevant risk factors; $R_{p,t}$ is the return of fund p in period t; $R_{f,t}$ is the short term risk-free rate in period t; $R_{m,t}$ is the return of the proper market portfolio of each fund in period t; SMB (Small minus Big) stands for the returns of a size strategy and is constructed as the difference between the returns of the STOXX Europe Total Market Small Index and those of the STOXX Europe Total Market Large Index; HML (High minus Low) stands for the returns of the STOXX Europe Total Market Value Index minus those of the STOXX Europe Total Market Growth Index, and $R_{B,t}$ is the return of the comprehensive fixed income index.

For funds investing mainly in the Eurozone we modify the benchmark portfolios accordingly, i.e. SMB is computed by taking the difference between the returns of the EURO STOXX Total Market Small Index and those of the EURO STOXX Total Market Large Index, while the HML benchmark factor is calculated as the difference between the returns of the EURO STOXX Total Market Value Index and those of the EURO STOXX Total Market Growth Index.

3.2. Factor timing models

Market timing manifests itself as the ability of a fund manager to shift successfully its portfolio systematic risk in response to market movements. Traditional market timing models hypothesize that a skilled fund manager increases (decreases) its average market exposure when the market experiences positive (negative) returns, and therefore assume that fund returns are a convex function of benchmark returns in an attempt to quantify managers' timing skills. In the present study we employ the well-known Treynor & Mazuy (1966) (TM hereafter) model that assumes a time-varying market beta which in effect depends linearly on the market return. Therefore, market timing ability is captured by the coefficient c_p in the non-linear regression of the TM model. Positive and significant values of c_p indicate managers' successful market timing ability.

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_{p,1}(R_{m,t} - R_{f,t}) + c_p(R_{m,t} - R_{f,t})^2 + \varepsilon_{p,t} \quad (3)$$

The model above can be easily extended to include the benchmark portfolios of Fama & French (1993) as well as two additional regressors that measure potential style timing in the spirit of Lu (2005), Benos et al. (2012) and Chen et al. (2013). In particular, we assume that the coefficients $\beta_{p,2}$ and $\beta_{p,3}$ of Eq. (2) are linearly related to the relevant benchmark returns, which yields the following factor timing model:

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_{p,1}(R_{m,t} - R_{f,t}) + \beta_{p,2}SMB_t + \beta_{p,3}HML_t + c_{p,1}(R_{m,t} - R_{f,t})^2 + c_{p,2}SMB^2{}_t + c_{p,3}HML^2{}_t + \varepsilon_{p,t} \quad (4)$$

where $c_{p,1};c_{p,2};c_{p,3}$ measure the ability of fund managers to time successfully the market, size and growth style respectively. Eq (4) enables us to disentangle more accurately the effect of each timing skill on fund performance.

3.3 Quantile regression

In this section we describe the quantile regression method proposed by Koenker and Bassett (1978) and Koenker (2005) employed here to explore the asymmetric behaviour of European fund returns. Quantile regression is a very robust tool in cases of non-symmetric distributions. It can provide extra information on the relationship between returns and the various risk factors, not only in the median return but across different, prespecified areas of the returns distribution. In particular, it overcomes the limitations of the traditional conditional-mean regression models and permits the estimation of various quantile functions, shedding light on the exposure of funds' returns to the various risk factors in the tails of the distribution.[4] Given that quantile analysis does not rely on any assumption with respect to the conditional distribution of funds' performance, it is particularly suited to our data with significant heterogeneity in returns.

The τ-th conditional quantile function of a distribution is defined as:

$$Q_{y_i}(\tau / x) = x_i^T \beta \quad (5)$$

where y_i is the dependent variable, in our case fund returns, x_i is a vector of independent variables including various benchmark portfolio returns, and β is a vector

[4] Generally, each quantile regression defines a particular, centre or tail, point of a conditional distribution. This approach also allows the estimation of the median (0.5^{th} quantile) function as a special case, which can be thought of the mean function of the conditional distribution of funds' returns.

of risk loadings to be estimated. The estimator of $\hat{\beta}(\tau)$ is obtained by solving the following weighted minimization problem:

$$\hat{\beta}(\tau) = \arg\min_{\beta \in R^p} \sum_{i=1}^{n} \rho_\tau (y_i - x_i{}^T \beta) \tag{6}$$

where ρ_τ is a weighting function. For any $\tau \in (0,1)$ this takes the form:

$$\rho_\tau (u_i) = \begin{cases} \tau u_i & \text{if } u_i \geq 0 \\ (\tau - 1) u_i & \text{if } u_i < 0 \end{cases} \quad \text{where } u_i = y_i - x_i{}^T \beta \tag{7}$$

Combining equations (6) and (7) we get the following expression:

$$\hat{\beta}(\tau) = \arg\min \{ \sum_{i=1}^{n} \tau \left| y_i - x_i{}^T \beta \right| + \sum_{i=1}^{n} (1-\tau) \left| y_i - x_i{}^T \beta \right| \} \tag{8}$$

$$i: y_i \geq x^T \beta \qquad\qquad i: y_i < x^T \beta$$

Equation (8) shows that the quantile regression estimator is obtained by minimizing the weighted sum of the absolute errors, where the relative weights depend on the specified quantile.

4. Results

4.1 Fund by fund analysis

We first explore fund managers' skills in terms of selectivity and timing employing the entire fund universe described above. Tables 5 to 8 report the estimation results of Eq. (1)-(4) using the OLS method adjusted with the Newey-West (1987) procedure. We divide our dataset into male and female managers and according to the investment strategy adopted in order to capture potentially different skills. The results for the single factor model are reported in Table 5. Panel A reveals significant managerial talent for 120 funds while 9 appear to lack managerial skills. Panel B suggests that female managers are slightly superior to male managers in terms of performance. In particular, 37% of female managers have stock picking ability whereas almost 33% of male managers achieve a higher risk-adjusted return. As for the distribution of significant single-factor alphas across investment styles, Panel C highlights over-performance for eight of the fourteen investment categories. The majority of significantly positive single-factor alphas are concentrated in the Eurozone Large-Cap category.

However, the results for the more representative factor model reported in Table 7 provide a different performance picture. Specifically, Panel A shows that the number of funds with statistically significant positive alphas is slightly lower than according to the single factor model estimates (116 instead of 120) while the number of funds that underperform is higher (12 as opposed to 9). This finding is consistent with the vast literature suggesting that the omission of known risk factors that are priced in financial markets (Fama & French 1993) can severely bias inference during the fund performance evaluation process, as well as with the results of Cuthbertson & Nitzsche (2013) for the German market. Interestingly, Panel A of Table 8, where the estimated parameters of Eq. (2) are presented, indicates that almost half of the male managers have tilted towards small size stocks as revealed by their significant positive exposure to the SMB factor, whereas a substantial portion of female managers (36%) favour a growth-oriented strategy. Again, the best performance is found for the funds belonging to the Eurozone Large-Cap category.

-Insert Table 5 here-

Market timing abilities of fund managers are investigated using the classical market timing model of Treynor & Mazuy (1966). The results of the favourable and unfavourable values for the estimated parameters are reported in Table 6. Panel A shows that only a small number (13) of managers possess significant market timing abilities. Moreover, the gender analysis presented in Panel B shows that half of the female managers are poor market timers. By contrast, male managers dominate as successful market timers with twelve of the thirteen positive market timing coefficients. In terms of investment style, three fund styles, namely Europe Large-Cap Value, Europe Large-Cap Blend and Eurozone Large Cap, offer the strongest evidence of perverse market timing.

Next, we opt for an augmented Treynor & Mazuy (1966) model to test for size and growth timing skills of fund managers in the spirit of Lu (2005). Three main points arise from Panel B of Table 8. First, we document substantial size and growth timing skills for European fund managers, which is consistent with the findings of Lu (2005). Second, male managers appear slightly superior to their female counterparts in terms of factor timing. Third, the results confirm that, as in the case of the simple TM

model, female managers exhibit poor size and growth timing abilities: one out of five failed to adjust successfully her portfolio exposure to the growth factor.

-Insert Table 6 here-

-Insert Table 7 here-

-Insert Table 8 here-

4.2 Analysis at portfolio level

In this section we repeat the analysis conducted above on two equally-weighted portfolios composed of male and female managers respectively. The results of the estimated single-factor model are presented in Table 9. We document statistically significant positive alphas in six[5] out of the fourteen investment styles, the strongest performance being observed for the Italy Equity style. The aggregate results reinforce the earlier finding that female managers have an insignificant advantage over male managers: they are found to outperform their male counterparts in four (Europe Large-Cap Blend, Eurozone Large-Cap, France Large-Cap, Europe Large-Cap Value) out of the six investment styles that exhibit significant positive performance. With a few exceptions, male and female portfolios exhibit comparable exposures to market movements and sufficient levels of diversification as revealed by the values of the Adjusted R^2s.

The results of the estimated four factor model are presented in Table 10. A few findings are noteworthy. First, this model explains the variability of fund returns better than the single factor one: the average adjusted R^2 for the former across all investment categories is 0.94 compared to 0.92 for the latter. Although there are no significant differences across genders and models we document some substantial deviations for two styles (Europe Large Cap Growth, Spain Equity). Second, the estimated positive alphas are significantly lower. Examples include the France Large Cap category where the statistically significant coefficient for abnormal performance for male managers falls from 0.20% to 0.14%. For female managers the adjustment in the documented performance resulting from the use of the multi factor model is not negligible and amounts to five basis points (0.05%). Interestingly, German fund

[5] The Eurozone Mid-Cap investment style is not included in the calculations owing to the absence of female managers in that category.

managers have adopted a positive and significant exposure to the corporate and sovereign bond market, in contrast to their fellow managers in the South (Italy Equity & Spain Equity). This finding may be related to the recent Eurozone debt crisis and the subsequent response of fixed income markets.

Table 11 reports the estimated coefficients of Eq. (3) for the two equally-weighted portfolios. Overall, the results at portfolio level confirm the poor market timing abilities documented earlier at fund level. In particular, perverse market timing characterizes both female and male managers for six of the fourteen investment styles, especially in the case of the former. For example, in the Europe Large-Cap Blend category the estimated negative value of the timing coefficient for female managers is twice as big as that for male managers and strongly significant (at the 1% significance level). Finally, Table 12 reports the estimated coefficients of Eq. (4) for the case of the two equally-weighted portfolios. The results indicate differences in timing behaviour for the two genders: there is weak evidence of size and growth timing ability of male managers for four investment categories (Eurozone Small Cap, Europe Mid-Cap, Europe Small Cap, France Small/Mid Cap), whilst female managers appear to have adopted a perverse growth timing strategy in the case of two investment styles (Europe Mid Cap, Europe Large-Cap Value).

4.3 Quantile regression results

Given the non-Gaussian nature of portfolio returns for male and female managers documented earlier we also investigate how the conditional dependence between fund returns and benchmark returns may vary across the entire range of their conditional distributions. Tables 13 and 14 report the estimation results for models (2) and (3) respectively employing the quantile regression approach. The multi-factor estimates of the alphas in the former are negative and statistically significant in the lower part of the conditional return distribution, i.e. for quantiles 0.05 and 0.25, for all investment categories. On the other hand, they are positive and statistically significant in the right tail of the distribution. This implies that fund performance is highly dependent on the selection of a specific region of the returns distribution. Moreover, many investment styles (e.g. Eurozone Small Cap and Europe Large Cap-Value) are characterised by decreasing market exposure as one moves to the right of the returns distribution irrespective of the gender. This finding is consistent with those of Högholm et al. (2011) for 65 European large-cap mutual equity funds. Finally, the estimated

exposures to the style benchmark indices across various quantiles allows us to draw conclusions regarding the style consistency of European fund managers. In particular, they suggest that they maintain the same exposure to known risk factors regardless of the return distribution area.

The quantile regression results of the TM model are reported in Table 14. The inference regarding market timing skills does not vary substantially compared to the OLS results. Both male and female managers exhibit negative timing skills concentrated mainly in the left tail of the returns distribution. Therefore, this approach provides the extra information that European fund managers lack market timing skills mostly in situations with low returns. Moreover, as in the OLS case, the majority of statistically significant negative coefficients is comparatively higher for female managers.

5. Conclusions

Fund managers' skills have been extensively investigated in the literature for almost five decades. In this study, using a large sample of European equity funds we have examined the possible effect of gender on the security selection and timing skills of active fund managers. Specifically, we have carried out a peer-group analysis based on fourteen investment categories in order to address some key issues in the active management evaluation process. Funds within each category have been evaluated against the relevant market benchmark index, thus ensuring more informative comparisons. In particular, we have employed the Fama & French (1996) three-factor model augmented with a fixed-income securities index. Further, in the spirit of Lu (2005) we have followed the Treynor & Mazuy (1966) timing approach to capture the potential size and growth timing skills of European fund managers. Our analysis has been conducted on a fund-by-fund basis and at the aggregate level.

Some preliminary evidence on funds' portfolio characteristics indicates that, although female managers are in charge of larger funds and shareholders in female managed funds pay on average lower management fees, these differences are insignificant. This also applies to the trading behaviour of the managers in our sample, a finding that can be interpreted in terms of the overconfidence hypothesis (Barber & Odean 2001).

As for gender analysis, we have documented the absence of significant differences in the performance of male and female fund managers. The multi-factor model estimates

shed light on the security selection skills of fund managers. In particular, at fund level we detect statistically and economically significant alphas mainly in the Eurozone Large-Cap investment category. Female managers appear to be only slightly superior to their male counterparts in terms of their alphas but to possess perverse market timing skills. As for investment strategies, male managers seem to favour small size stocks whereas female managers prefer more growth-oriented strategies. Related to the above, there is weak evidence of positive size and growth timing for male managers whereas female managers generally fail to predict the movements of the growth factor.

Finally, given the skewness of the fund returns distributions we take a quantile regression approach to deal with the possible bias resulting from heterogeneity in returns. Fund performance indeed appears heavily sensitive to the choice of the distribution quantile, with the results being qualitatively the same for male and female managers, both categories displaying a persistent lack of market timing skills, especially for lower returns.

References

Angelidis T., Giamouridis D., Tessaromatis N.,2013, Revisiting mutual fund performance evaluation, Journal of Banking & Finance 37, 1759-1776

Atkinson S.M., Baird S.B., Frye M.B., 2003, Do female mutual fund managers manage differently?, The Journal of Financial Research 26, 1-18

Banegas A., Gillen B., Timmermann A., Wermers R., 2013, The cross section of conditional mutual fund performance in European stock markets , Forthcoming in the Journal of Financial Economics

Barber B.M., Odean T., 2001, Boys will be boys: Gender, overconfidence, and common stock investment, Quarterly Journal of Economics 116, 261-292

Beckmann D., Menkhoff L., 2008,Will Women Be Women? Analyzing the Gender Difference among Financial Experts, Kyklos 61, 364–384

Benos E., Jochec M., Nyekel V., 2010, Can mutual funds time risk factors?, The Quarterly Review of Economics and Finance 50, 509–514

Chen L.W, Adams A., Taffler R., 2013, What style-timing skills do mutual fund "stars" possess? Journal of Empirical Finance 21, pp. 156-173

Chevalier J., and Ellison G., 1997, "Risk taking by mutual funds as a response to incentives", Journal of Political Economy 105,1167-1200

Chevallier, J. and Ellison G., 1999, "Are some mutual fund managers better than others? Cross-sectional patterns in behaviour and performance ",Journal of Finance 54, 875-999

Cremers, K.J.M. and A. Petajisto, 2009, How active is your fund manager? A new measure that predicts performance, Review of Financial Studies 22, 3329-3365.

Cremers, M., A. Petajisto, and E. Zitzewitz, 2010, Should benchmark indices have alpha? Revisiting Performance Evaluation. Available at SSRN: http://ssrn.com/abstract=1108856.

Elton, E. Gruber M., Blake C., 1996, The persistence of risk-adjusted mutual fund performance, Journal of Business 69, 133-157

Elton, E. Gruber M., Blake C., 1999, Common factors in active and passive portfolios, European Financial Review 3, 53-78

Fama, E. and K. French 1993, 'Common risk factors in the returns on bonds and stocks,' Journal of Financial Economics 33, 3–56.

Fama, E. F. and French, K. R., 1996, "Multifactor explanations of asset pricing anomalies", Journal of Finance 51, 55-84

Fama E & French K., 2010, "Luck versus Skill in the Cross Section of Mutual Fund Returns", Journal of Finance 65, 1915-1947

Ferson, W. and Schadt R., 1996, "Measuring fund strategy and performance in changing economic conditions", Journal of Finance 51, 425-461.

Gruber, M. J., 1996, "Another puzzle: The growth in actively managed mutual funds," Journal of Finance 51, 783-810.

Högholm K., Knif J. , Pynnonen S., 2011, Fund Performance Robustness: An Evaluation Using European Large-Cap Equity Funds, Frontiers in Finance and Economics 8, 1-26

Hsu, J. C., V. Kalesnik, and B.W. Myers, 2010, Performance attribution: Measuring dynamic allocation skill, Financial Analysts Journal, 66, 6, 17-26.

Golec, J.H., 1996. The effects of mutual fund managers' characteristics on their portfolio performance, risk and fees. Financial Services Review 5, 133–148.

Jensen, M. C., 1968, The performance of mutual funds in the period 1945-1964, Journal of Finance 23: 389-416.

Jha, R., Korkie, B., Turtle, H. J., 2009. Measuring performance in a dynamic world: conditional mean-variance fundamentals. Journal of Banking and Finance 33, 1851-1859.

Koenker, R., 2005, Quantile Regression, Cambridge Books, Cambridge University Press, Cambridge.

Koenker, R. and Bassett Jr, G. 1978, Regression quantiles, Econometrica, 46, 33–50.

Kosowski, R., 2006. Do mutual funds perform when it matters most to investors? Mutual fund performance and risk in recessions and expansions. Working paper, INSEAD.

Lehmann, B. N. & Modest, D. M, 1987, Mutual fund performance evaluation: A comparison of benchmarks and benchmark comparisons, Journal of Finance 42, 233-265

Lu, J., 2005, 'What is the Wind behind This Sail? Can fund managers successfully time their investment styles?' Ph.D. Thesis (Cranfield School of Management).

Newey, W. K. and West, K. D., 1987, A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix, Econometrica, 55, 703–8.

Niessen A., Ruenzi S., 2013,Sex Matters: Gender and Prejudice in the Mutual Fund Industry, SSRN Working paper

Otten R., Bams D., 2002, "European mutual fund performance," European Financial Management 8, 75-101.

Prather, L., Bertin W.J & Henker T., 2004, " Mutual fund characteristics, managerial attributes, and fund performance", Review of Financial Economics 13, 305-326

Sensoy, B., 2009, Performance evaluation and self-designated benchmarks in the mutual fund industry, Journal of Financial Economics, 92, 25–39.

Sharpe, W. F. 1966, "Mutual fund performance", Journal of Business 39, 119-138.

Sirri R., & Tufano P., 1998, "Costly search and mutual fund flows", Journal of Finance 53, 1589-1622

Sunden A. E., Surette B.J., 1998, Gender differences in the allocation of assets in retirement savings plans, American Economic Review 88, 207-211

Treynor, J. and K. Mazuy, 1966, 'Can mutual funds outguess the market?' Harvard Business Review, 44, 131–36.

Treynor J., 1965, "How to rate management of Investment Funds;", Harvard Business Review 43, 63-75.

Zheng L., 1999, "Is money smart? A study of mutual fund investors' fund selection ability", Journal of Finance 54, 901-933

APPENDIX

Table 1: Female fund managers

Category	Male	Female	Number of Funds	Percentage of female
Eurozone Small-Cap	8	1	9	11.11%
Eurozone Mid-Cap	9	-	9	0.00%
Eurozone Large-Cap	78	18	96	18.75%
Europe Small-Cap	2	-	2	0.00%
Europe Mid-Cap	10	2	12	16.67%
Europe Large-Cap Value	30	7	37	18.92%
Europe Large-Cap Growth	2	4	6	66.67%
Europe Large-Cap Blend	52	10	62	16.13%
France Large-Cap	49	5	54	9.26%
France Small/Mid-Cap	33	8	41	19.51%
Germany Large-Cap	7	-	7	0.00%
Germany Small/Mid-Cap	1	-	1	0.00%
Italy Equity	4	1	5	20.00%
Spain Equity	14	3	17	17.65%
Total	299	59	358	16.48%

Note: This table shows the allocation of funds that are managed by female managers as a percentage of the total funds by Morningstar investment category. Funds are classified by Morningstar into investment categories on the basis of the underlying portfolio holdings.

Table 2:Funds' operational & cost variables

	Assets under management (millions €)	**Age (in years)**	**Expense ratio (%)**	**Turnover ratio (%)**	**Management Fee (%)**	**Max front load (%)**	**Morningstar 5-star ratings**
Male	93.80	12.91	2.10	120.57	1.42	2.95	26 out of 288 (9.03%)
Female	136.94	12.97	1.84	67.12	1.31	2.51	5 out of 57 (8.77%)
p-value	0.15	0.95	0.18	0.11	0.26	0.06	–

Note: This table shows the average assets under management, age, expense ratio, turnover ratio, management fee, max front load and Morningstar 5-star ratings for male and female managed equity funds. Assets are expressed in millions of euros while fund age is measured in years. The expense ratio is the percentage of fund assets paid for operating expenses and management fees, including 12b-1 fees, administrative fees and all other asset-based costs incurred by the fund. Management fee is also reported in a separate column. Turnover ratio measures trading activity of the portfolio manager and is computed as the lesser of purchases or sales divided by average monthly assets. Max front load denotes the max of the purchase fees deducted from the amount of the investment. The Morningstar 5-star rating denotes funds that receive the highest ranking among their peer group according to Morningstar risk-return analysis. The p-value indicates the significance of the difference between the sample means. Data are from Morningstar as of December 2011.

Table 3:Summary statistics for European equity funds and their benchmarks

Category	Median	Std. Dev.	Jarque Bera	Category	Median	Std. Dev.	Jarque Bera
Eurozone Small-Cap				**Europe Large-Cap Value**			
Male	0.69%	5.61%	0.00	Male	0.03%	4.95%	0.03
Female	0.62%	5.58%	0.00	Female	0.06%	4.78%	0.03
Male vs. Female	-0.45%	1.42%	0.59	Male vs. Female	-0.10%	0.64%	0.00
R_m	0.73%	8.47%	0.05	R_m	-0.71%	5.75%	0.10
SMB	0.25%	2.42%	0.71	SMB	0.50%	2.72%	0.06
HML	-0.35%	2.66%	0.00	HML	-0.35%	2.16%	0.00
R_B	0.06%	1.05%	0.35	R_B	0.06%	1.05%	0.35
France Large-Cap				**Europe Large-Cap Growth**			
Male	0.02%	5.12%	0.27	Male	0.09%	5.01%	0.00
Female	0.24%	5.50%	0.44	Female	0.03%	4.98%	0.00
Male vs. Female	0.08%	0.61%	0.76	Male vs. Female	-0.23%	1.63%	0.77
R_m	-0.37%	5.55%	0.49	R_m	0.68%	4.38%	0.03
SMB	0.25%	2.42%	0.71	SMB	0.50%	2.72%	0.06
HML	-0.35%	2.66%	0.00	HML	-0.35%	2.16%	0.00
R_B	0.06%	1.05%	0.35	R_B	0.06%	1.05%	0.35
Eurozone Large-Cap				**Europe Large-Cap Blend**			
Male	0.24%	5.27%	0.05	Male	0.19%	4.81%	0.02
Female	0.09%	5.14%	0.05	Female	0.57%	4.77%	0.00
Male vs. Female	-0.03%	0.47%	0.00	Male vs. Female	-0.15%	0.66%	0.51
R_m	-0.29%	5.65%	0.18	R_m	-0.10%	4.91%	0.19
SMB	0.25%	2.42%	0.71	SMB	0.50%	2.72%	0.06
HML	-0.35%	2.66%	0.00	HML	-0.35%	2.16%	0.00
R_B	0.06%	1.05%	0.35	R_B	0.06%	1.05%	0.35
Europe Small-Cap				**Eurozone Mid-Cap**			
Male	0.18%	5.26%	0.00	Male	0.17%	5.46%	0.05
R_m	0.22%	6.31%	0.00	R_m	0.24%	6.13%	0.04
SMB	0.50%	2.72%	0.06	SMB	0.25%	2.42%	0.71
HML	-0.35%	2.16%	0.00	HML	-0.35%	2.66%	0.00
R_B	0.06%	1.05%	0.35	R_B	0.06%	1.05%	0.35

Note: This table reports summary statistics for the two equally-weighted portfolios of male and female managers respectively. Table also reports returns statistics for a strategy that is long in male managers and short in female managers (Male vs. Female) along with the statistics of the employed benchmark portfolios. R_m is the market portfolio return defined for each investment category, SMB is the small vs. large strategy portfolio returns whereas HML is the value vs. growth strategy portfolio returns properly constructed for each investment category. R_B is the returns of the Barclays Corporate & Government Total Return fixed income index. The Jarque-Bera test statistic reported in the last column measures the degree of normality for the returns distribution.

Table 3 cont.:Summary statistics for European equity funds and their benchmarks

Category	Median	Std. Dev.	Jarque Bera	Category	Median	Std. Dev.	Jarque Bera
Europe Mid-Cap				**France Small/Mid-Cap**			
Male	0.15%	5.60%	0.01	Male	0.53%	5.10%	0.00
Female	0.53%	5.54%	0.01	Female	0.66%	5.31%	0.01
Male vs. Female	-0.37%	1.27%	0.76	Male vs. Female	-0.07%	0.97%	0.65
R_m	0.52%	5.62%	0.01	R_m	0.64%	6.04%	0.03
SMB	0.50%	2.72%	0.06	SMB	0.25%	2.42%	0.71
HML	-0.35%	2.16%	0.00	HML	-0.35%	2.66%	0.00
R_B	0.06%	1.05%	0.35	R_B	0.06%	1.05%	0.35
Germany Small/Mid-Cap				**Germany Large-Cap**			
Male	1.25%	6.76%	0.00	Male	0.99%	6.43%	0.00
R_m	0.56%	6.95%	0.00	R_m	1.12%	6.12%	0.01
SMB	0.25%	2.42%	0.71	SMB	0.25%	2.42%	0.71
HML	-0.35%	2.66%	0.00	HML	-0.35%	2.66%	0.00
R_B	0.06%	1.05%	0.35	R_B	0.06%	1.05%	0.35
Italy Equity				**Spain Equity**			
Male	-0.79%	5.74%	0.41	Male	0.18%	5.58%	0.31
Female	-0.64%	5.94%	0.55	Female	-0.20%	5.70%	0.29
Male vs. Female	0.04%	0.51%	0.72	Male vs. Female	0.16%	1.21%	0.48
R_m	-1.04%	6.25%	0.60	R_m	0.03%	6.36%	0.31
SMB	0.25%	2.42%	0.71	SMB	0.25%	2.42%	0.71
HML	-0.35%	2.66%	0.00	HML	-0.35%	2.66%	0.00
R_B	0.06%	1.05%	0.35	R_B	0.06%	1.05%	0.35

Note: This table reports summary statistics for the two equally-weighted portfolios of male and female managers respectively. Table also reports returns statistics for a strategy that is long in male managers and short in female managers (Male vs. Female) along with the statistics of the employed benchmark portfolios. R_m is the market portfolio return defined for each category, SMB is the small vs. large strategy portfolio returns whereas HML is the value vs. growth strategy portfolio returns properly constructed for each investment category. R_B is the returns of the Barclays Corporate & Government Total Return fixed income index. The Jarque-Bera test statistic reported in the last column measures the degree of normality for the returns distribution.

Table 4: Designated benchmarks per investment style

Investment Category	Benchmark Index
Eurozone Small-Cap Equity	MSCI EMU Small Cap
Eurozone Mid-Cap Equity	MSCI EMU Mid
Eurozone Large-Cap Equity	MSCI EMU
Europe Small-Cap Equity	MSCI Europe Small Cap
Europe Mid-Cap Equity	Stoxx Europe Mid 200
Europe Large-Cap Value Equity	MSCI Europe Value
Europe Large-Cap Growth Equity	MSCI Europe Growth
Europe Large-Cap Blend Equity	MSCI Europe

France Large-Cap Equity	Euronext Paris CAC 40
France Small/Mid-Cap Equity	Euronext Paris CAC Mid 100
Germany Large-Cap Equity	DAX
Germany Small/Mid-Cap Equity	MSCI Germany Small Cap
Italy Equity	MSCI Italy
Spain Equity	MSCI Spain

Note: This table reports the most suitable market benchmarks across investment categories defined by Morningstar.

Table 5:Single factor model regression estimates

Panel A: Number of significant 1 factor alphas		
No. of significantly positive	120	
No. of significantly negative	9	
Panel B: Analysis by gender		
No. of significantly positive 1 factor alphas		**No. of funds in the category**
Male	98	299 (33%)
Female	22	59 (37%)
No. of significantly negative 1 factor alphas		
Male	6	299 (2%)
Female	3	59 (5%)
Panel C: Analysis by investment objective		
No. of significantly positive 1 factor alphas	*120*	
Eurozone Mid-Cap	4	9
Eurozone Large-Cap	37	96
Europe Large-Cap Value	15	37
Europe Large-Cap Blend	21	62
France Large-Cap	28	54
France Small/Mid-Cap	3	41
Italy Equity	3	5
Spain Equity	9	17
No. of significantly negative 1 factor alphas	*9*	
Eurozone Small-Cap	1	9
Eurozone Large-Cap	1	96
Europe Small-Cap	1	2
Europe Large-Cap Growth	2	6
France Small/Mid-Cap	4	41

Note: This table reports overall OLS estimation results from the single factor securities selection model in Eq. (1) employing the Newey-West (1987) method for robust standard errors. Panel A of the table reports the number of significant positive and negative single factor alphas whereas Panel B

presents the results grouped by manager gender. Panel C reports the significant alphas broken down by investment category.

Table 6: Timing model I regression estimates

Panel A: Number of significant timing coefficients		
No. of significantly positive	13	
No. of significantly negative	123	
Panel B: Analysis by gender		
No. of significantly positive timing coefficients		**No. of funds in the category**
Male	12	299 (4%)
Female	1	59 (2%)
No. of significantly negative timing coefficients		
Male	94	299 (31%)
Female	29	59 (49%)
Panel C: Analysis by investment objective		
No. of significantly positive timing coefficients		
Eurozone Mid-Cap	3	9
Eurozone Large-Cap	5	96
Europe Mid-Cap	1	12
Europe Large-Cap Value	1	37
Europe Large-Cap Blend	1	62
France Small/Mid-Cap	1	41
Germany Large-Cap	1	7
No. of significantly negative timing coefficients		
Eurozone Small-Cap	2	9
Eurozone Mid-Cap	3	9
Eurozone Large-Cap	22	96
Europe Small-Cap	2	2
Europe Mid-Cap	4	12
Europe Large-Cap Value	30	37
Europe Large-Cap Growth	1	6
Europe Large-Cap Blend	26	62
France Large-Cap	9	54
France Small/Mid-Cap	17	41
Germany Large-Cap	1	7
Germany Small/Mid-Cap	1	1
Italy Equity	3	5
Spain Equity	2	17

Note: This table reports overall OLS estimation results from the estimation of the Treynor & Mazuy (1966) market timing model in Eq. (2) employing the Newey-West (1987) method for robust standard errors. Panel A of the table reports the number of significant positive and negative timing coefficients whereas Panel B presents the results grouped by manager gender. Panel C reports the significant timing coefficients broken down by investment category.

Table 7:Four factor model regression estimates

Panel A: Number of significant 4F alphas		
No. of significantly positive	116	
No. of significantly negative	12	
Panel B: Analysis by gender		
No. of significantly positive 4F alphas		**No. of funds in the category**
Male	96	299 (32%)
Female	20	59 (34%)
No. of significantly negative 4F alphas		
Male	9	299 (3%)
Female	3	59 (5%)
Panel C: Analysis by investment objective		
No. of significantly positive 4F alphas		
Eurozone Mid-Cap	4	9
Eurozone Large-Cap	47	96
Europe Large-Cap Value	10	37
Europe Large-Cap Blend	17	62
France Large-Cap	24	54
France Small/Mid-Cap	4	41
Italy Equity	3	5
Spain Equity	7	17
No. of significantly negative 4F alphas		
Eurozone Small-Cap	1	9
Eurozone Large-Cap	2	96
Europe Small-Cap	1	2
Europe Large-Cap Growth	2	6
France Large-Cap	1	54
France Small/Mid-Cap	4	41
Germany Large-Cap	1	7

Note: This table reports overall OLS estimation results from the four factor securities selection model in Eq. (2) employing the Newey-West (1987) method for robust standard errors. Panel A of the table reports the number of significant positive and negative four factor alphas whereas Panel B presents

the results grouped by manager gender. Panel C reports the significant multi factor alphas broken down by investment category.

Table 8:Fund exposures to risk factors

Panel A: Sensitivity to risk factors	**SMB**		**HML**	
Number of significantly positive coefficients	143	**% of funds in the category**	28	**% of funds in the category**
Male	125	42%	23	8%
Female	18	31%	5	8%
Number of significantly negative coefficients	45		102	
Male	35	12%	81	27%
Female	10	17%	21	36%
Panel B:Timing of risk factors	**SMB^2**		**HML^2**	
Number of significantly positive coefficients	43	**% of funds in the category**	41	**% of funds in the category**
Male	39	13%	37	12%
Female	4	7%	4	7%
Number of significantly negative coefficients	27		38	
Male	20	7%	26	9%
Female	7	12%	12	20%

Note: Panel A of the table reports the estimated fund loadings to the SMB & HML factors derived from the four factor securities selection model in Eq. (2). Model has been estimated under the OLS method and the Newey-West (1987) method for robust standard errors. Panel B of the table reports the number of significant positive and negative factor timing coefficients derived from the factor timing model in Eq. (4). Model has been estimated using the OLS method and the Newey-West (1987) method for robust standard errors.

Table 9:Securities selection model I

Category	Intercept	$\beta_{p,1}$	Adj. R^2	Category	Intercept	$\beta_{p,1}$	Adj. R^2
Eurozone Small-Cap				**Europe Large-Cap Blend**			
Male	-0.33%	0.60***	0.80	Male	0.15%**	0.97***	0.98
Female	-0.10%	0.58***	0.77	Female	0.24%**	0.94***	0.94
Eurozone Mid-Cap				**France Large-Cap**			
Male	0.25%*	0.87***	0.96	Male	0.20%**	0.91***	0.98
Female	–	–	–	Female	0.22%**	0.98***	0.97
Eurozone Large-Cap				**France Small/Mid-Cap**			
Male	0.15%**	0.93***	0.99	Male	-0.10%	0.82***	0.94
Female	0.17%**	0.90***	0.98	Female	-0.03%	0.86***	0.97
Europe Small-Cap				**Germany Large-Cap**			
Male	-0.40%	0.76***	0.84	Male	-0.04%	1.02***	0.94
Female	–	–	–	Female	–	–	–
Europe Mid-Cap				**Germany Small/Mid-Cap**			
Male	0.05%	0.97***	0.94	Male	0.13%	0.91***	0.88
Female	0.20%	0.97***	0.96	Female	–	–	–

Category	Intercept	$\beta_{p,1}$	Adj. R^2	Category	Intercept	$\beta_{p,1}$	Adj. R^2
Europe Large-Cap Value				**Italy Equity**			
Male	0.22%**	0.84***	0.96	Male	0.31%**	0.90***	0.96
Female	0.24%*	0.80***	0.93	Female	0.28%*	0.93***	0.96
Europe Large-Cap Growth				**Spain Equity**			
Male	-0.27%	1.05***	0.83	Male	0.26%*	0.86***	0.95
Female	-0.26%	1.08***	0.91	Female	0.05%	0.83***	0.86

Note: This table reports the OLS estimation results from the single factor securities selection model in Eq. (1) employing the Newey-West (1987) method for robust standard errors for the two equally-weighted portfolios of male and female managed equity funds. * , ** and *** respectively denote statistical significance at the 10%, 5% and 1% levels.

Table 10:Securities selection model II

Category	Intercept	$\beta_{p,1}$	$\beta_{p,2}$	$\beta_{p,3}$	$\beta_{p,4}$	Adj.R^2	Category	Intercept	$\beta_{p,1}$	$\beta_{p,2}$	$\beta_{p,3}$	$\beta_{p,4}$	Adj.R^2
Eurozone Small-Cap							**Europe Large-Cap Blend**						
Male	-0.37%	0.57***	0.19	0.02	-0.28	0.80	Male	0.11%*	0.95***	0.10***	-0.02	-0.06	0.98
Female	-0.13%	0.59***	0.10	-0.13	-0.37	0.77	Female	0.17%*	0.93***	0.14***	-0.08	-0.11	0.95
Eurozone Mid-Cap							**France Large-Cap**						
Male	0.21%*	0.87***	0.11**	-0.09**	-0.17	0.96	Male	0.14%**	0.92***	0.15	-0.07**	0.07	0.98
Female	–	–	–	–	–	–	Female	0.17%**	0.99***	0.10*	-0.06	0.11	0.98
Eurozone Large-Cap							**France Small/Mid-Cap**						
Male	0.13%**	0.93***	0.05*	-0.04*	0.03	0.99	Male	-0.05%	0.83***	-0.13	0.04	-0.11	0.95
Female	0.19%***	0.92***	-0.05	-0.08***	-0.08	0.98	Female	0.01%	0.88***	-0.10	-0.02	-0.15	0.97

Europe Small-Cap							**Germany Large-Cap**						
Male	-0.31%	0.90***	-0.38***	-0.12	0.11	0.85	Male	-0.18%	1.04***	0.33***	-0.03	0.46*	0.96
Female	–	–	–	–	–	–	Female	–	–	–	–	–	–
Europe Mid-Cap							**Germany Small/Mid-Cap**						
Male	0.05%	0.91***	0.15*	0.10	-0.28*	0.95	Male	0.22%	0.94***	-0.27*	0.09	0.18	0.88
Female	0.19%	0.94***	0.08	-0.01	-0.40***	0.96	Female	–	–	–	–	–	–

Category	**Intercept**	**$\beta_{p,1}$**	**$\beta_{p,2}$**	**$\beta_{p,3}$**	**$\beta_{p,4}$**	**Adj. R^2**	**Category**	**Intercept**	**$\beta_{p,1}$**	**$\beta_{p,2}$**	**$\beta_{p,3}$**	**$\beta_{p,4}$**	**Adj. R^2**
Europe Large-Cap Value							**Italy Equity**						
Male	0.12%	0.92***	0.04	-0.34***	-0.07	0.97	Male	0.27%**	0.92***	0.16***	-0.08**	-0.25**	0.97
Female	0.10%	0.89***	0.09	-0.42***	-0.19*	0.96	Female	0.22%*	0.95***	0.22***	-0.09**	-0.25**	0.97
Europe Large-Cap Growth							**Spain Equity**						
Male	-0.31%	0.92***	0.38***	0.22***	0.12	0.87	Male	0.18%	0.85***	0.27***	0.01	-0.24	0.96
Female	-0.29%**	0.96***	0.37***	0.21***	-0.11	0.95	Female	-0.10%	0.86***	0.50***	-0.14*	-0.44**	0.91

Note: This table reports the OLS estimation results from the four factor securities selection model in Eq. (2) employing the Newey-West (1987) method for robust standard errors for the two equally-weighted portfolios of male and female managed equity funds. * , ** and *** respectively denote statistical significance at the 10%, 5% and 1% levels.

Table 11:Timing model I

Category	**Intercept**	**β_p**	**c_p**	**Adj. R^2**	**Category**	**Intercept**	**β_p**	**c_p**	**Adj. R^2**
Eurozone Small-Cap					**Europe Large-Cap Blend**				

Male	-0.17%	0.58***	-0.23	0.80	Male	0.26%***	0.95***	-0.51**	0.98
Female	0.20%	0.56***	-0.43***	0.78	Female	0.47%***	0.91***	-1.02***	0.95
Eurozone Mid-Cap					**France Large-Cap**				
Male	0.29%*	0.87***	-0.10	0.96	Male	0.30%***	0.90***	-0.33	0.98
Female	-	-	-	-	Female	0.23%***	0.98***	-0.04	0.97
Eurozone Large-Cap					**France Small/Mid-Cap**				
Male	0.22%**	0.92***	-0.25**	0.99	Male	0.09%	0.80***	-0.54**	0.95
Female	0.29%***	0.89***	-0.40***	0.98	Female	0.08%	0.85***	-0.29	0.97
Europe Small-Cap					**Germany Large-Cap**				
Male	-0.04%	0.74***	-0.92***	0.85	Male	0.07%	1.01***	-0.29	0.94
Female	-	-	-	-	Female	-	-	-	-
Europe Mid-Cap					**Germany Small/Mid-Cap**				
Male	0.07%	0.97***	-0.06	0.94	Male	0.43%*	0.89***	-0.62***	0.88
Female	0.32%**	0.95***	-0.39**	0.96	Female	-	-	-	-

Table 11 (Cont.):Timing model I

Category	**Intercept**	**β_p**	**c_p**	**Adj R2**	**Category**	**Intercept**	**β_p**	**c_p**	**Adj R2**
Europe Large-Cap Value					**Italy Equity**				
Male	0.49%***	0.83***	-0.85***	0.97	Male	0.45%***	0.89***	-0.36	0.96
Female	0.57%***	0.79***	-1.05***	0.95	Female	0.43%***	0.93***	-0.41*	0.96

Europe Large-Cap Growth					Spain Equity				
Male	-0.12%	1.02***	-0.81	0.83	Male	0.31%*	0.85***	-0.13	0.95
Female	-0.14%	1.06***	-0.64	0.91	Female	0.15%	0.83***	-0.26	0.86

Note: This table reports the OLS estimation results from the Treynor & Mazuy (1966) market timing model in Eq. (3) employing the Newey-West (1987) method for robust standard errors for the two equally-weighted portfolios of male and female managed funds. * , ** and *** respectively denote statistical significance at the 10%, 5% and 1% levels.

Table 12: Timing model II

Category	Intercept	$\beta_{p,1}$	$\beta_{p,2}$	$\beta_{p,3}$	$c_{p,1}$	$c_{p,2}$	$c_{p,3}$	Adj. R^2	Category	Intercept	$\beta_{p,1}$	$\beta_{p,2}$	$\beta_{p,3}$	$c_{p,1}$	$c_{p,2}$	$c_{p,3}$	Adj. R^2
Eurozone Small-Cap									**Europe Large-Cap Blend**								
Male	-0.59%	0.56***	0.04	-0.10	-0.66***	7.38*	3.71***	0.82	Male	0.26%***	0.93***	0.12***	0.01	-0.48*	0.21	-1.39	0.98
Female	-0.17%	0.58***	-0.03	-0.22**	-0.72***	6.53	2.38*	0.78	Female	0.48%***	0.90***	0.18***	-0.04	-0.72	-0.12	-3.21	0.95
Eurozone Mid-Cap									**France Large-Cap**								
Male	0.25%	0.88***	0.11	-0.10**	0.04	-0.78	-0.22	0.96	Male	0.19%**	0.90***	0.14***	-0.05	-0.49***	0.69	0.85	0.98
Female	–	–	–	–	–	–	–	–	Female	0.10%	0.98***	0.08	-0.06	-0.25	1.73	0.76	0.98
Eurozone Large-Cap									**France Small/Mid-Cap**								
Male	0.20%**	0.92***	0.06*	-0.02	-0.27**	-0.13	0.18	0.99	Male	0.01%	0.80***	-0.13	0.04	-0.78**	2.05	1.31**	0.95
Female	0.31%***	0.91***	-0.03	-0.06	-0.21	-1.19	0.03	0.98	Female	0.05%	0.87***	-0.10	-0.03	-0.30	-0.26	1.08	0.97
Europe Small-Cap									**Germany Large-Cap**								
Male	0.14%	0.83***	-0.27***	0.01	-1.23***	4.93*	-6.49***	0.87	Male	0.08%	0.99***	0.37***	0.05	-0.55	-1.40	0.83	0.96
Female									Female	–	–	–	–	–	–	–	–

Europe Mid-Cap									**Germany Small/Mid-Cap**									
Male	0.10%	0.91***	0.15	0.07	-0.66	4.58**	-4.50**	0.95	Male	0.41%	0.87***	-0.23	0.16	-0.87*	2.08	1.77	0.89
Female	0.35%**	0.95***	0.10	-0.04	-0.46	2.36	-4.94**	0.96	Female	–	–	–	–	–	–	–	–

Table 12 (Cont).: Timing model II

Category	**Intercept**	$\beta_{p,1}$	$\beta_{p,2}$	$\beta_{p,3}$	$c_{p,1}$	$c_{p,2}$	$c_{p,3}$	**Adj. R^2**	**Category**	**Intercept**	$\beta_{p,1}$	$\beta_{p,2}$	$\beta_{p,3}$	$c_{p,1}$	$c_{p,2}$	$c_{p,3}$	**Adj. R^2**
Europe Large-Cap Value									**Italy Equity**								
Male	0.35%***	0.90***	0.07*	-0.29***	-0.60***	0.36	-1.40	0.98	Male	0.41%**	0.90***	0.17***	-0.07*	-0.47**	-0.49	0.68	0.97
Female	0.43%***	0.88***	0.13***	-0.39***	-0.37	-1.31	-2.67*	0.97	Female	0.41%***	0.93***	0.24***	-0.07	-0.44**	-1.25	0.36	0.97
Europe Large-Cap Growth									**Spain Equity**								
Male	-0.19%	0.88***	0.35***	0.25**	-0.96	-1.05	3.51	0.87	Male	0.31%*	0.84***	0.28***	0.03	-0.12	-1.46	-0.23	0.96
Female	-0.15%	0.94***	0.37***	0.21***	-1.02	2.04	-2.13	0.95	Female	0.11%	0.84***	0.52***	-0.12	-0.26	-2.92	0.42	0.91

Note: This table reports the OLS estimation results from the augmented Treynor & Mazuy (1966) factor timing model in Eq. (4) employing the Newey-West (1987) method for robust standard errors for the two equally-weighted portfolios of male and female managed funds. * , ** and *** respectively denote statistical significance at the 10%, 5% and 1% levels.

Table 13:Multi factor securities selection model: Quantile regression

			Intercept	$\beta_{p,1}$	$\beta_{p,2}$	$\beta_{p,3}$	$\beta_{p,4}$				Intercept	$\beta_{p,1}$	$\beta_{p,2}$	$\beta_{p,3}$	$\beta_{p,4}$
Eurozone Small-Cap	Male	q05	-5.13%***	0.66***	-0.24	0.46	-1.43*	**Europe Small-Cap**	Male	q05	-3.30%***	0.93***	-0.54***	-0.06	0.28
		q25	-1.58%**	0.57***	0.20	0.20	-0.35			q25	-1.75%***	0.98***	-0.52***	-0.18	0.16
		q50	-0.49%	0.53***	0.29*	0.10	-0.04			q50	-0.27%	0.83***	-0.24	0.06	-0.18
		q75	1.19%***	0.52***	0.33***	-0.02	-0.10			q75	0.75%**	0.82***	-0.26	-0.10	0.21
		q95	2.71%***	0.52***	0.28	0.04	0.06			q95	3.35%***	0.95***	-0.67	0.23	0.61
	Female	q05	-5.28%***	0.68***	-0.09	-0.35	-1.23		Female	q05	–	–	–	–	–
		q25	-1.52%**	0.61***	-0.12	-0.08	-0.76			q25	–	–	–	–	–
		q50	0.26%	0.58***	0.07	-0.04	-0.53			q50	–	–	–	–	–
		q75	1.45%***	0.55***	0.16	-0.09	0.15			q75	–	–	–	–	–
		q95	3.79%***	0.46***	0.38*	0.36	0.11			q95	–	–	–	–	–
Eurozone Mid-Cap	Male	q05	-1.56%***	0.95***	0.16	-0.18	-0.25	**Europe Mid-Cap**	Male	q05	-2.36%***	1.02***	0.16	0.03	0.04
		q25	-0.48%***	0.89***	0.10	-0.10*	-0.11			q25	-0.68%***	0.88***	0.14	0.01	-0.05
		q50	0.27%	0.86***	0.10	-0.09*	-0.16			q50	0.08%	0.87***	0.14	0.11	-0.20
		q75	0.85%***	0.81***	0.16	0.02	-0.20*			q75	0.93%***	0.92***	0.15	0.09	-0.44***
		q95	1.92%***	0.76***	0.41***	-0.22**	-0.15			q95	2.65%***	0.89***	-0.09	0.46**	-0.55**
	Female	q05	–	–	–	–	–		Female	q05	-1.52%***	0.98***	0.07	-0.04	-0.88***
		q25	–	–	–	–	–			q25	-0.48%***	0.95***	0.04	-0.08	-0.41***
		q50	–	–	–	–	–			q50	0.21%*	0.90***	0.12	0.05	-0.37***
		q75	–	–	–	–	–			q75	0.71%***	0.92***	0.09	0.07	-0.21

		q95	–	–	–	–	–			q95	2.10%***	0.85***	0.09	0.33	-0.70
Eurozone Large-Cap	Male	q05	-0.91%***	0.94***	0.06	0.02	0.04	**Europe Large-Cap Value**	Male	q05	-1.50%***	0.93***	0.06	-0.37***	-0.17
		q25	-0.20%***	0.95***	0.05**	-0.06**	-0.08			q25	-0.38%**	0.96***	0.03	-0.35***	-0.16
		q50	0.12%	0.94***	0.03	-0.04	-0.04			q50	0.14%	0.91***	0.06	-0.37***	-0.07
		q75	0.42%***	0.93***	0.00	-0.03	0.10			q75	0.58%***	0.88***	0.02	-0.29***	-0.10
		q95	1.23%***	0.96***	0.13*	0.01	0.39			q95	1.82%***	0.77***	0.01	0.11	-0.33
	Female	q05	-0.85%***	0.93***	0.05	-0.09*	-0.33**		Female	q05	-1.96%***	1.08***	-0.05	-0.89***	-0.04
		q25	-0.24%**	0.96***	-0.08*	-0.13***	-0.13			q25	-0.42%***	0.95***	0.12	-0.47***	-0.28*
		q50	0.12%	0.94***	-0.05	-0.07	-0.12			q50	0.16%	0.90***	0.08	-0.39***	-0.21
		q75	0.59%***	0.91***	-0.08***	-0.04	-0.05			q75	0.73%***	0.84***	0.10	-0.28**	-0.20
		q95	1.59%***	0.94***	0.19	-0.04	0.29			q95	1.74%***	0.78***	0.10	-0.03	-0.53***

			Intercept	**$\beta_{p,1}$**	**$\beta_{p,2}$**	**$\beta_{p,3}$**	**$\beta_{p,4}$**				**Intercept**	**$\beta_{p,1}$**	**$\beta_{p,2}$**	**$\beta_{p,3}$**	**$\beta_{p,4}$**
Europe Large-Cap Growth	Male	q05	-2.92%***	0.96***	0.43	0.12	-0.59	**France Small/Mid-Cap**	Male	q05	-1.88%***	0.92***	-0.09	0.01	-0.44*
		q25	-1.33%***	0.96***	0.35***	0.23	0.07			q25	-0.73%**	0.81***	-0.14	0.00	-0.17
		q50	-0.16%	0.85***	0.35***	0.37***	-0.06			q50	0.00%	0.82***	-0.11	-0.03	-0.05
		q75	1.14%***	0.97***	0.29***	0.18	0.44			q75	0.71%***	0.81***	-0.11	0.04	0.06
		q95	2.66%***	1.07***	0.17	0.08	0.78***			q95	1.50%***	0.73***	-0.16	0.14	-0.20
	Female	q05	-2.62%***	1.04***	0.56***	0.25**	-0.63**		Female	q05	-1.64%***	0.87***	-0.06	0.12	-0.12
		q25	-0.97%***	1.01***	0.33***	0.17*	0.04			q25	-0.64%***	0.91***	-0.12	0.00	-0.24
		q50	-0.14%	0.92***	0.37***	0.27***	-0.05			q50	0.04%	0.86***	-0.03	-0.04	-0.26

		q75	0.50%***	0.92***	0.38***	0.23	0.04			q75	0.65%***	0.89***	-0.14**	-0.06	-0.10
		q95	1.48%***	0.90***	0.41***	0.19	-0.25			q95	1.61%***	0.96***	-0.15	0.01	0.04
Europe Large-Cap Blend	Male	q05	-0.83%***	0.99***	0.09	-0.02	-0.29	**Germany Large-Cap**	Male	q05	-2.38%***	1.04***	0.63***	-0.04	0.20
		q25	-0.26%***	0.96***	0.07*	-0.04	-0.13			q25	-0.93%***	1.05***	0.32***	-0.01	0.40
		q50	0.03%	0.98***	0.04	-0.08	-0.13			q50	-0.11%	0.98***	0.29***	0.03	0.37
		q75	0.54%***	0.94***	0.11***	-0.03	-0.06			q75	0.57%***	1.03***	0.26***	-0.06	0.32
		q95	1.09%***	0.96***	0.14*	-0.04	0.44			q95	1.82%***	1.05***	0.15	-0.17	1.29***
	Female	q05	-1.87%***	1.15***	0.11	-0.47**	-0.04		Female	q05	–	–	–	–	–
		q25	-0.47%***	0.95***	0.16**	-0.09	-0.34*			q25	–	–	–	–	–
		q50	0.14%	0.91***	0.10*	-0.16*	-0.09			q50	–	–	–	–	–
		q75	0.73%***	0.89***	0.09	-0.14	-0.16			q75	–	–	–	–	–
		q95	1.56%***	0.83***	0.01	-0.20*	-0.08			q95	–	–	–	–	–
France Large-Cap Blend	Male	q05	-0.91%***	0.99***	0.19***	-0.04	0.03	**Germany Small/Mid-Cap**	Male	q05	-3.46%***	0.93***	-0.25*	0.24	0.03
		q25	-0.19%**	0.91***	0.19***	-0.04	-0.03			q25	-1.16%***	0.97***	-0.43**	0.14	-0.32
		q50	0.07%	0.90***	0.16***	-0.07	-0.04			q50	0.10%	0.98***	-0.30	-0.05	0.11
		q75	0.55%***	0.88***	0.17***	-0.04	0.13			q75	1.57%***	0.96***	-0.23	0.07	0.35
		q95	1.14%***	0.85***	0.27***	-0.05	-0.07			q95	4.10%***	0.77***	0.01	0.32	0.57
	Female	q05	-1.10%***	1.03***	0.07	0.01	0.21		Female	q05	–	–	–	–	–
		q25	-0.35%**	1.02***	0.07**	-0.11**	-0.01			q25	–	–	–	–	–
		q50	0.09%	0.98***	0.07	-0.07	-0.07			q50	–	–	–	–	–
		q75	0.68%***	0.94***	0.10	0.01	-0.02			q75	–	–	–	–	–
		q95	1.50%***	0.96***	0.21*	-0.07	0.26			q95	–	–	–	–	–

			Intercept	$\beta_{p,1}$	$\beta_{p,2}$	$\beta_{p,3}$	$\beta_{p,4}$				Intercept	$\beta_{p,1}$	$\beta_{p,2}$	$\beta_{p,3}$	$\beta_{p,4}$
Italy Equity	Male	q05	-1.13%***	0.98***	0.16	-0.12	-0.17	**Spain Equity**	Male	q05	-1.29%**	0.84***	0.24	0.10	-0.31
		q25	-0.33%***	0.92***	0.20**	-0.10	-0.11			q25	-0.25%	0.84***	0.25***	-0.02	-0.16
		q50	0.25%*	0.90***	0.20***	-0.06	-0.24*			q50	0.22%**	0.82***	0.29***	0.03	-0.18
		q75	0.84%***	0.89***	0.13*	-0.04	-0.39**			q75	0.91%***	0.88***	0.29***	-0.02	-0.42***
		q95	1.55%**	0.96***	0.12	-0.24	-0.47			q95	1.99%***	0.84***	0.03	0.11	-0.20
	Female	q05	-1.20%***	0.96***	0.33***	-0.09	-0.38**		Female	q05	-2.62%***	0.93***	0.30*	-0.19	-0.68
		q25	-0.46%***	0.97***	0.23***	-0.15***	-0.08			q25	-1.12%***	0.82***	0.52***	-0.19	-0.49*
		q50	0.15%	0.93***	0.19**	-0.10	-0.20			q50	0.02%	0.85***	0.49***	-0.11	-0.40**
		q75	0.88%***	0.94***	0.17**	-0.10	-0.32			q75	0.95%***	0.85***	0.56***	-0.10	-0.30
		q95	2.20%***	1.05***	0.15***	-0.45**	-0.73**			q95	2.22%***	0.92***	0.62***	-0.19	-0.55***

Note: This table reports the estimations of the multi factor performance evaluation model in Eq. (2) under the quantile regression method for the two equally-weighted portfolios of male and female managed funds. Results are presented for five different quantiles namely q05,q25,q50,q75 and q95. * , ** and *** respectively denote statistical significance at the 10%, 5% and 1% levels.

Table 14: Market timing model:Quantile regression

			Intercept	β_p	c_p				Intercept	β_p	c_p
Eurozone Small-Cap	Male	q05	-3.30%***	0.72***	-0.90	**Europe Small-Cap**	Male	q05	-3.08%***	0.80***	-0.87
		q25	-1.34%***	0.57***	-0.14			q25	-1.47%***	0.81***	-1.03*
		q50	-0.05%	0.58***	-0.09			q50	0.01%	0.74***	-1.01
		q75	1.59%**	0.52***	-0.53			q75	1.17%***	0.70***	-0.88**
		q95	3.12%***	0.54***	-0.11			q95	3.85%***	0.69***	-1.58*

	Female	q05	-3.61%***	0.64***	-2.44**		Female	q05	–	–	–
		q25	-1.29%*	0.59***	0.01			q25	–	–	–
		q50	0.72%	0.55***	-0.39			q50	–	–	–
		q75	2.10%***	0.56***	-0.50			q75	–	–	–
		q95	4.08%***	0.50***	-0.72			q95	–	–	–
Eurozone Mid-Cap	Male	q05	-1.54%***	0.94***	-0.02	**Europe Mid-Cap**	Male	q05	-2.12%***	1.02***	0.00
		q25	-0.42%**	0.88***	-0.04			q25	-0.72%**	0.90***	-0.16
		q50	0.35%	0.87***	-0.26			q50	-0.06%	0.96***	-0.08
		q75	1.16%***	0.83***	-0.29			q75	0.91%**	0.99***	-0.04
		q95	1.90%***	0.84***	1.44			q95	2.23%***	0.97***	-0.32
	Female	q05	–	–	–		Female	q05	-1.26%***	1.02***	-1.21**
		q25	–	–	–			q25	-0.23%	0.97***	-0.48
		q50	–	–	–			q50	0.47%**	0.92***	-0.44
		q75	–	–	–			q75	0.94%***	0.93***	-0.40**
		q95	–	–	–			q95	2.61%***	0.93***	-0.87
Eurozone Large-Cap	Male	q05	-0.57%**	0.91***	-0.24	**Europe Large-Cap Value**	Male	q05	-0.68%	0.79***	-1.24*
		q25	-0.09%	0.93***	-0.32**			q25	0.04%	0.83***	-1.05**
		q50	0.18%***	0.94***	-0.22*			q50	0.39%***	0.87***	-0.83**
		q75	0.46%***	0.92***	-0.19			q75	0.99%***	0.80***	-0.62
		q95	1.42%***	0.86***	-0.22			q95	2.06%***	0.85***	-0.98
	Female	q05	-0.68%***	0.88***	-0.53**		Female	q05	-1.26%*	0.75***	-1.30
		q25	-0.12%	0.90***	-			q25	0.03%	0.79***	-

					0.52***						1.15***
		q50	0.16%	0.91***	-0.26			q50	0.62%***	0.81***	-1.16**
		q75	0.70%***	0.87***	-0.24			q75	1.25%***	0.78***	-1.18
		q95	1.76%***	0.88***	-0.89			q95	2.45%***	0.73***	-0.76

			Intercept	β_p	c_p				Intercept	β_p	c_p
Europe Large-Cap Growth	Male	q05	-3.36%***	1.05***	-0.43	**France Small/Mid-Cap**	Male	q05	-1.82%***	0.90***	-0.74
		q25	-1.46%***	1.02***	-0.37			q25	-0.41%	0.82***	-1.17
		q50	-0.25%	1.01***	-1.40			q50	0.07%	0.80***	-0.33
		q75	1.38%***	0.88***	-2.38			q75	0.70%***	0.77***	-0.39
		q95	2.91%***	1.07***	0.82			q95	1.85%***	0.77***	-0.68*
	Female	q05	-2.29%***	1.01***	-1.40		Female	q05	-1.44%***	0.86***	-0.45
		q25	-0.87%***	1.03***	-2.30**			q25	-0.56%**	0.89***	-0.29
		q50	-0.12%	0.99***	-0.73			q50	0.19%	0.85***	-0.30
		q75	0.40%	1.01***	0.76			q75	0.77%***	0.86***	-0.11
		q95	1.99%***	1.20***	1.37			q95	1.37%***	0.84***	-0.38
Europe Large-Cap Blend	Male	q05	-0.41%	0.94***	-1.17*	**Germany Large-Cap**	Male	q05	-1.75%***	1.07***	-1.51*
		q25	-0.10%	0.98***	-0.87			q25	-0.69%**	0.96***	-0.30
		q50	0.20%*	0.98***	-0.27			q50	0.12%	0.97***	-0.24
		q75	0.56%***	0.94***	-0.19			q75	0.99%***	1.01***	-0.20
		q95	1.41%***	0.86***	-0.07			q95	2.17%***	0.91***	0.54

		q05	-0.97%*	1.00***	-1.14**			q05	–	–	–
		q25	-0.18%	0.96***	-1.69***			q25	–	–	–
		q50	0.50%***	0.90***	-0.79			q50	–	–	–
		q75	0.93%***	0.88***	-0.47			q75	–	–	–
	Female	q95	2.14%***	0.85***	-0.42		Female	q95	–	–	–
France Large-Cap Blend		q05	-1.07%***	0.93***	0.18	**Germany Small/Mid-Cap**		q05	-2.63%***	0.91***	-1.72**
		q25	-0.14%	0.92***	-0.41			q25	-1.01%	0.88***	-0.82
		q50	0.31%**	0.89***	-0.51			q50	0.42%	0.87***	-0.40
		q75	0.83%***	0.88***	-0.88			q75	2.04%***	0.86***	-0.69**
	Male	q95	1.76%***	0.90***	-0.07		Male	q95	4.24%***	0.83***	-1.00*
		q05	-1.32%***	0.99***	0.28			q05	–	–	–
		q25	-0.31%**	0.99***	-0.16			q25	–	–	–
		q50	0.27%**	0.97***	-0.29			q50	–	–	–
		q75	0.94%***	0.96***	-0.54			q75	–	–	–
	Female	q95	1.31%***	0.94***	0.91		Female	q95	–	–	–

			Intercept	**β_p**	**c_p**				**Intercept**	**β_p**	**c_p**
Italy Equity		q05	-0.86%	0.88***	-0.83	**Spain Equity**		q05	-1.45%**	0.86***	0.21
		q25	-0.19%	0.86***	-0.71*			q25	-0.36%	0.86***	-0.16
		q50	0.46%***	0.87***	-0.54			q50	0.56%***	0.84***	-0.45
	Male	q75	1.10%***	0.89***	-0.07		Male	q75	1.01%***	0.83***	0.05

		q95	2.19%***	0.92***	-0.51			q95	2.21%***	0.85***	-0.29
		q05	-1.25%***	0.89***	-0.59*			q05	-3.80%***	1.12***	-1.50
		q25	-0.19%	0.92***	-0.77			q25	-0.98%**	0.84***	-0.31
		q50	0.49%*	0.93***	-0.18			q50	0.55%**	0.84***	-0.57
		q75	1.08%***	0.92***	-0.21			q75	1.42%***	0.76***	-0.38
	Female	q95	2.21%***	0.91***	-0.46		Female	q95	3.26%***	0.74***	-0.54

Note: This table reports the estimations of the Treynor & Mazuy (1966) market timing model in Eq. (2) under the quantile regression method for the two equally-weighted portfolios of male and female managed equity funds. Results are presented for five different quantiles namely q05,q25,q50,q75 and q95. * , ** and *** respectively denote statistical significance at the 10%, 5% and 1% levels.