Cuadernos de Investigación UCEIF
Número 5/2012

MANAGEMENT FEES OF THE SPANISH MUTUAL FUND INDUSTRY

2011 Accésit premio tesis doctoral

Ana Carmen Díaz Mendoza

Fundación UCEIF

CANTABRIA CAMPUS INTERNACIONAL
Banca, Finanzas y Actividad Empresarial

PUbliCan Ediciones
Universidad de Cantabria

Cuadernos de Investigación UCEIF Número 5/2012

MANAGEMENT FEES OF THE SPANISH MUTUAL FUND INDUSTRY

2011 Accésit premio tesis doctoral

Ana Carmen Díaz Mendoza

CANTABRIA CAMPUS INTERNACIONAL
Banca, Finanzas y Actividad Empresarial

PUbliCan Ediciones
Universidad de Cantabria

Díaz Mendoza, Ana Carmen
Management fees of the Spanish mutual fund industry / Ana Carmen Díaz Mendoza. – Santander : Editorial de la Universidad de Cantabria, D.L. 2013.
67 p. : il. ; 24 cm. – (Cuadernos de investigación UCEIF ; 5/2012)

"2011 Accésit Premio Tesis Doctoral"
En la port.: Cantabria Campus Internacional, Banca, Finanzas y Actividad Empresarial.
D.L. SA. 116-2013. – ISBN 978-84-86116-71-2

1. Sociedades de inversión – España. 2. Inversiones – España. I. Fundación de la Universidad de Cantabria para el Estudio y la Investigación del Sector Financiero.

330.322(460)

Avda. de los Castros s/n - 39005 Santander, Cantabria (España)
Teléf.-Fax +34 942 201 087
www.editorialuc.es

Promueve: Fundación de la Universidad de Cantabria para el Estudio y la Investigación del Sector Financiero (UCEIF)
Coordinadora: Ana Fernández Laviada
Secretario: Evan Brock Gray

ISBN: 978-84-86116-71-2
Depósito Legal: SA 116-2013
Impreso en España. *Printed in Spain*

FUNDACIÓN DE LA UNIVERSIDAD DE CANTABRIA PARA EL ESTUDIO Y LA INVESTIGACIÓN DEL SECTOR FINANCIERO (UCEIF)

La Fundación de la Universidad de Cantabria para el Estudio y la Investigación del Sector Financiero (UCEIF) se constituye en 2006, bajo el patronazgo de la Universidad de Cantabria y el Santander, con el propósito de convertirse en una institución de referencia en la generación, difusión y transferencia del conocimiento sobre el sector financiero en todas sus facetas. Mediante la identificación, desarrollo y promoción del talento y la innovación, apoya el liderazgo sostenible y socialmente responsable de las instituciones que la patrocinan y de aquellas con las que establece alianzas, como contribución al bienestar, desarrollo y progreso de los pueblos.

Sus principales objetivos y actividades son: ofrecer estudios avanzados en banca y mercados financieros para la promoción del talento de las nuevas generaciones, impulsar la investigación, promover eventos de interés nacional e internacional y cuantas acciones se encaminen a la difusión y transferencia del conocimiento financiero y económico, así como al reconocimiento y apoyo a estudiantes e investigadores interesados en el sector.

La Fundación ha consolidado el nivel y prestigio internacional de los programas formativos de postgrado, reconocidos por la Universidad de Cantabria y desarrollados con la colaboración del Santander. Entre ellos, el Máster en Banca y Mercados Financieros que se imparte en España desde 1996, en la sede operativa de la Fundación (distinguido con el Premio AUIP a la Calidad del Postgrado en Iberoamérica), en México, desde 1999 con la Universidad Anáhuac y el Santander México (primero

en el ranking de Expansión-CNN como el más innovador de su especialidad en México) y en Marruecos, desde 2008 con la Universidad Hassan II de Casablanca, el Attijariwafa Bank y el Santander España (primero del Magreb y segundo de África, según el ranking sobre los Máster en Finanzas realizado por la Revista *Jeune Afrique*).

En su reconocimiento del talento y apoyo a investigadores y estudiantes la Fundación convoca becas, premios y ayudas a la investigación, promoviendo también la edición de libros, cuadernos de investigación y revistas especializadas.

Asimismo la Fundación gestiona el Archivo Histórico del Banco Santander (www.archivohistoricosantander.com), cuyos fondos son referencia a nivel mundial para la investigación de la historia financiera y bancaria, y ha sentado las bases de un proyecto de educación financiera por medio del portal creado al efecto: www.finanzasparamortales.com. La integración de sus actividades bajo el Santander Financial Institute (SanFI) como centro generador y transmisor de conocimiento de vanguardia será una realidad en 2012.

En el marco del *Campus de Excelencia Internacional* la Fundación organiza periódicamente diversos cursos y encuentros con la UIMP y la UC, así como los "*Encuentros de Economistas Especialistas en Iberoamérica*" convocados por la SEGIB anualmente.

Finalmente destacar su participación como patrono en la creación, en alianza con las Universidades de Murcia, Politécnica de Cartagena y Cantabria, de la Fundación para el Análisis Estratégico y Desarrollo de la Pyme, en cuyo seno se crea la Red Internacional de Investigadores en Pymes. Fruto de esta actuación se elaboran diversos Informes sobre la Pyme en Iberoamérica, tanto a nivel de la región en su conjunto como en los distintos países.

FRANCISCO JAVIER MARTÍNEZ GARCÍA
Director de la Fundación UCEIF

ÍNDICE

BRIEF SUMMARY

This dissertation analyses the management fees paid by investors of the mutual fund industry. Especially it focuses on the type of management fees charged by the Spanish mutual fund industry. We propose three essays with a common objective: we aim to compare the group of mutual funds which charge management fees total or partially on returns (performance-based fee) with those which charge management fees exclusively on assets under management (asset-based fee). The essays are self-contained and we use different data frequencies, samples, models and estimation methodologies. Essay 1 studies the characteristics of mutual funds that determine the choice of a performance-based fee. Essay 2 focuses on studying changes in the type and magnitudes of management fees. Finally, Essay 3 studies whether the way that management fees are charged to investors is relevant regarding mutual fund performance evaluation and performance-expenses relationship.

Each essay is summarized below.

Essay 1. The Choice of Performance-Based Fees In The Mutual Fund Industry: The Case Of Spain

This study analyses the attributes of a sample of mutual funds that determine the choice of a performance-based fee as opposed to an asset-based fee. According to theoretical literature, performance-based fees are the most appropriate way of solving agency problems between investors and managers; however, only a minority of mutual funds charge management fees tied total o partially to returns. In This study we investigate a cross-sectional regression of the type of management fee chosen on a set of fund characteristics including investment objective, fund size, experience in the industry, the type of the financial group to which the fund belongs, return-risk profile, fees and expenses for a sample of Spanish mutual funds in 2002-2007. In particular, we find that the likelihood of charging such an incentive fee significantly increases

for funds that invest largely in equities and have little experience in the industry. By contrast, funds that manage large volumes of assets and funds owned by banking and financial groups are less likely to establish performance-based fees. These results are robust to very different market scenarios for mutual fund performance.

Essay 2. The Dynamic of Management Fees in the Mutual Fund Industry

The aim of this study is to analyse the dynamics of price-setting (through changes in management fees) in the Spanish mutual fund industry. The study is applied to a sample of Spanish mutual funds from 2002 to 2007. Management fee changes account for only 4% of observations, but they are economically significant. A substantial 29% of the total number of funds undergoes management fee changes during the sample period, with the average change being more than 50 base points. Results seem to reveal that small and poor-performing funds (and also management companies) have decreased asset-based management fees as a way to become more competitive in the industry. However, no significant subsequent effects of such changes are found in The study. Small funds with low excess returns and high quarterly returns which are owned by good-performing management companies have decreased performance-based management fees. These performance-based management fee decreases seem to have had a negative effect on subsequent returns and on net excess returns and a positive impact on the market share of the funds in question. It seems that the decrease in performance-based fees causes the manager to make some slight effort, because a performance-based fee is an explicit incentive for a manager.

Essay 3. The Efficiency of Performance-based-fee Funds

This study compares the performance of mutual funds which charge management fees total or partially on returns with those which charge management fees exclusively on assets under management. Despite the conclusions from agency theory, which advocates the use of performance-based management fees in order to mitigate the investor-manager agency problems, only a minority of mutual funds worldwide

tie the managers' remuneration to the fund performance. In particular, we study mutual fund efficiency through the comparative analysis of the risk-adjusted measures and the performance-expenses relationship. We apply our study to a sample of Spanish mutual funds, from 1999 to 2009, where both type of management fees are authorized. In short, we find that funds with performance-based management fees perform significantly better than the other risky funds considered. Moreover, we have found a strong positive performance-expenses relationship for these funds and negative for the remaining. These results seem to point to more efficient management in the performance-based fees funds, contrasting with their low presence in the fund industry.

GENERAL INTRODUCTION

According to a recent report by International Financial Services, London (IFSL, 2008), total asset volume in the global fund management industry increased 15% in 2006 to nearly double the figure for 2002, reaching a record $61.9 trillion at year-end 2006, with a further $21.8 trillion invested in mutual funds. The Investment Company Institute, ICI, (2008) reports an additional 20% increase in total worldwide mutual fund assets in the course of 2007.

This impressive growth in the delegated fund management industry, and especially in the volume of assets under management by mutual funds, has attracted the interest of the financial academic community and practitioners. The professionalism of management companies, the possibilities of portfolio diversification and cost savings for investors are some of the most frequently cited reasons driving this increasing trend towards delegated portfolio management.

First, since the seminal paper by Jensen (1968), literature on mutual fund performance evaluation generally concludes that, on average, equity mutual funds underperform the appropriate benchmark return. One of the more recurrent arguments is the high level of fees charged; in fact, fund performance is not significantly negative when before-expenses returns are considered. In particular, Grinblatt and Titman (1989), Malkiel (1995), Droms and Walker (1996), Gruber (1996) and Cesari and Panetta (2002), among others, find that mutual funds do not underperform the market when gross returns (before-expenses) are considered. A similar result is found by Martínez (2003) for the Spanish market. Therefore, the amount of expenses charged to investors appears to be a key element in mutual fund performance evaluation.

Annual operating expenses include management fees, which investors have to pay to managers for portfolio supervision services; custody fees, paid for asset administration and custody, and other distribution, legal

and administrative costs. Management fees are the main component of expenses, usually accounting for 90-95% of them.

Second, considering mutual fund fees as the price that investors have to pay to participate in this industry, management fee studies point to price-setting here. In addition, these studies could throw some light on competition in this sector. Coates and Hubbard (2007) draw up an excellent analysis of that issue. Gil-Bazo and Ruiz-Verdú (2008) present another recent theoretical contribution to the relevant literature.

Third, the mutual fund management industry accounts nowadays for a non-negligible share of national financial statements. For instant, ICI (2008) reports $12 trillion managed by US mutual funds, and an asset-weighted average 0.86% of fees and expenses at the end of 2007, representing more than 0.75% of US GDP. Moreover, more than 44% of US households own mutual funds.

Finally, investors have recently become much more cost-conscious than previously. Thus, a survey conducted by ICI in 2006 found that 74% of investors reviewed or asked questions about fund fees and expenses before purchasing, even over and above the historical performance of the fund. Recent studies also show that individual investors are paying attention to fund expenses and that net fund flows are influenced by fund costs. See Sirri and Tufano (1998), Khorana and Servaes (2004), Barber, Odean, and Zheng (2005) and Woodrow (2007).

Although investors have to pay different fees (the custody fee, paid for asset administration and custody; the front-end load, charged to investors at the time of the share purchase; and the redemption fee, paid by investors when fund shares are redeemed), This study focuses on the fees that investors have to pay to managers for portfolio supervision services, i.e. management fees. The main reason is that management fees are the largest component of fund operating expenses[1].

1 Khorana *et al* (2008) report the level of management fees, total expense ratios and total shareholder costs (adding annualised loads) for 18 countries in December 2002. With substantial differences across countries and fund investment objectives, management fees account for an average of 70% of total expense ratios.

A considerable number of topics have been analysed by academic literature on management fees[2]. Following the initial paper by Bhattacharya and Pfleiderer (1985), several authors have studied the optimal structure of management fees both theoretically and empirically, either as a simple percentage of the total assets managed or tied to the returns obtained by the management. Modigliani and Pogue (1975), Starks (1987), Grinblatt and Titman (1989), Golec (1992), Roll (1992), Das and Sundaram (1998a, b and 2002), Ou-Yang (2003), Palomino and Prat (2003) and Dybvig et al (2004) are some of the most significant[3].

Other empirical papers focus on the determinants of management fees. Ferris and Chance (1987), Malhotra and McLeod (1997), Tufano and Sevick (1997), Luo (2002), and more recently Prather et al (2004) and Malhotra et al (2007) are illustrative examples of this literature[4].

Another related issue analysed in the relevant literature is the relationship between management fees and fund performance (a non-exhaustive list includes Ippolito (1989), Golec (1996), Gruber (1996), Carhart (1997), Chevallier and Edison (1999), Elton et al (2003)), volatility (Chevallier and Edison (1999), Cremers and Petajisto (2007) and Kaniel and Hugonnier (2008) among others) and flows, (Sirri and Tufano (1998), Khorana and Servaes (2004) and Barber et al (2005)).

In a recent paper Khorana et al (2008) provide extensive research on the differences in mutual fund fees worldwide, focusing on funds themselves, management companies and national characteristics.

The relationship between final investors and managers established by this delegated management can be considered as part of "agency theory". Conflicts of interests can clearly arise between the aims of managers and investors: investors usually look for maximum return on investment

2 An elaborate review of the most relevant theoretical literature on delegated portfolio management can be found in Stracca (2006).

3 The choice between linear and piecewise-linear management fees is analysed in Coles *et al* (2000), Deli (2002), Deli and Varma (2002), Warner and Wu (2006) and Massa and Patgiri (2007) among others. Academic literature has also analysed a wide range of issues related to performance-based fees. For instance, the convenience of establishing a reference portfolio is analysed in Admati and Pfleiderer (1997), Basak *et al* (2007) and Garvey and Milbourn (2006); Starks (1987), Das and Sundaram (2002) and Ross (2004) study the desirability of asymmetry; and Brennan (1993), Cornel and Roll (2004) and Cuoco and Kaniel (2006) focus on the effect on asset prices.

4 See Gil-Bazo and Martínez (2004) for the Spanish market.

at minimum risk, whereas managers may try to maximize their own income or that of their management company so as to maintain a good reputation in the industry (Gibbons and Murphy (1992)), and/or to maximize the time that they remain at the company, which does not always line up with the aims of investors (Kempf *et al* (2007)).

The relationship is also characterized by asymmetry of information between the two parties as regards both the quality of managers (adverse selection) and the effort put into their activities (moral hazard).

This conflict of interests can result in inefficient allocation of resources and, especially, suboptimal investment decisions. As a way of alleviating such agency problems, economic theorists have proposed the establishment of contracts (capable of generating suitable incentives for managers) for the proper management of delegated portfolios[5]. In our context, these contracts are the management fees that investors have to pay to managers for portfolio supervision services. These management fees are the focal point of the present study.

Mutual fund management fees are generally charged to investors as a fixed percentage of total assets under management (*asset-based fee*); thus, asset growth, instead of returns, appears to be a desirable objective from a fund-manager perspective. However, as the asset volume increases with capital inflows and asset appreciation, an implicit incentive to managers to achieve good performance could also be recognized in this fee structure.

Additionally, current worldwide mutual fund regulations usually allow management fees to be charged total o partially on returns obtained (*performance-based fee*)[6]. In fact, all the country members of the International Organization of Securities Commissions, IOSCO, envisage this type of management fee. In spite of this legal possibility, only a minority of mutual funds in practice uses remuneration structures tied to the attained fund returns. For instance, research from Lipper (2007) shows

5 See for instance Bhattacharya and Pfleiderer (1985) and Holmstrom and Milgrom (1987). See also Core *et al* (2003) for a comprehensive survey of literature on executive remuneration. Bebchuk and Fried (2004) argue that managerial power is the most relevant determinant of executive remuneration.

6 Thus, mutual funds could charge both a fee based on the asset volume and an incentive fee based on the fund's performance.

that the overall proportion of U.S. open-end funds using such structures remains at just over 2%. In the case of the major European fund markets, between 10% and 20% of funds use performance-fee management fees.

From both the theoretical and empirical points of view it is important to distinguish whether management fees are charged as a percentage of the total assets managed (henceforth referred as an *asset-based fee*), tied to the returns obtained by management (*performance-based fee*), or made a mixture of the two. Moreover, performance-based fees can be established according to absolute return or to the excess return on a reference portfolio, symmetrically for positive and negative returns or for positive ones only.

Many academic articles have theoretically analysed the optimality of this fee structure. Grinblatt and Titman (1989), Golec (1992), Roll (1992), Das and Sundaram (1998a, b and 2002), Palomino and Prat (2003) and, recently, Li and Tiwari (2009) are some of the most significant. The prevailing conclusion is that performance-based fees seem to be more appropriate. Thus, Das and Sundaram (1998b) conclude that if risk aversion is assumed in the preferences of investors and managers, the optimal contract has to be linear, and must include a base fee for the amount of assets under management and an additional remuneration depending on returns above those of a benchmark portfolio. The reason put forward is that this type of fee best aligns the interests of managers and investors, with managers encouraged to obtain high returns as their remuneration depends on them.

Academic literature has also analysed a wide range of issues related to performance-based fees. For instance, the convenience of establishing a reference portfolio is analysed in Admati and Pfleiderer (1997), Basak *et al* (2007) and Garvey and Milbourn (2006); Das and Sundaram (2002) and Ross (2004) study the desirability of asymmetry; and Cornel and Roll (2004) and Cuoco and Kaniel (2006) focus on the effect on asset prices[7].

The International Organization of Securities Commissions, IOSCO (2003), gives a comprehensive overview of management fee regulations

7 An elaborate review of the most relevant theoretical literature on delegated portfolio management can be found in Stracca (2006).

across its member countries. All of them except the United Kingdom allow this type of fee. A great variety of types is observed, ranging from total absence of restrictions on application (Australia, Japan, Mexico, Netherlands and Portugal) to rules affecting the type of mutual funds which can apply fees, the requirement for a reference portfolio, the calculation method and payment frequency.

Although performance-based fees are common in venture capital (Gompers and Lerner (1999)), real estate, private equity, and hedge funds (Agarwal *et al* (2007)), they are not used so widely by mutual funds. According to Lipper Inc., only 350 American mutual funds (about 4% of all stock funds) had performance-linked fees as of October 31st 2005, accounting for 12.7% of total investment in stock funds at the time[8]. Furthermore around 85% of those assets were managed by just two fund companies, Fidelity Investments and Vanguard Group Inc. Similar figures can be found in other economic areas.

There is currently an interesting debate at practitioner level as to whether or not this type of remuneration for managers is advisable (see Arnott (2005)). Proponents of performance-based fees assert that they best align the interests of managers and investors, reward successful managers more than unsuccessful ones and at the same time reduce the aggregate fees paid by investors, as most managers cannot add value to a portfolio. By contrast, opponents argue that performance-based fees encourage managers to take excessive risks with their portfolios (due to the option-like compensation scheme they suppose), allow managers to gamble with the fee by keeping the fund's beta above that of the benchmark index, are opaque and difficult to design and measure (see Damato (2005)), fail to take into account other desirable components of management, such as portfolio diversification, risk management, stable net asset value and portfolio turnover (see Bines and Thel (2004)) and, more importantly, fail to provide additional incentives to managers paid on increased assets (produced in many cases by good performance).

Taking into account the theoretical results, which present performance-based fees as the most appropriate way of solving agency problems

8 Golec (2003) and Golec and Starks (2004) discuss the reasons for the prevalence of asset-based management fees in the US industry.

between investors and managers, this study empirically analyses the reasons behind the worldwide decision to charge asset-based fees. One objective of the study is therefore to empirically identify the fund attributes that determine the choice of a performance-based fee. To that end we employ a bias-free dataset of Spanish mutual funds supplied by the industry supervisor. In this sample we investigate the cross-sectional regression of the type of management fee chosen on a set of fund characteristics (explanatory variables) including investment objective, fund size, experience in the industry, the type of financial group to which the fund belongs, return-risk profile and fees and expenses for 2002-2007.

Mutual funds which choose to charge management fees on returns are in fact linking the manager's remuneration to his/her effort and to the performance obtained. So, according to agency theory literature, they should be understood as a commitment to the interest of investors. Thus, smaller, younger funds would supposedly be more likely to charge performance-based fees as a way of increasing their market share. Also, risky, good-performing funds would seem *a priori* to be more likely to establish management fees of this kind purely to obtain greater remuneration than is forthcoming from fees tied only to volume of assets.

To the best of our knowledge, this is the first study to analyse this specific issue, and we believe that it provides new empirical evidence in this regard. Since management fees have an economically significant impact on investors' assets over time, this analysis might be interesting from the investor's perspective. Additionally, management fees, as the price investors have to pay, convey valuable information regarding the economic nature of the industry. Finally, management fee studies can improve the regulatory authorities' understanding of price competition in the mutual fund industry.

The study is related to other strands of literature on mutual fund ownership costs. Thus, Deli (2002), Deli and Varma (2002), Warner and Wu (2006) and Massa and Patgiri (2008) among others, analyse the choice between linear and piecewise-linear management fees on total assets. Size and age, at both fund and family level, are found to be negatively related to the likelihood of adopting a linear management fee. Additionally, Warner and Wu (2006) show that the likelihood of a switch from a linear contract to a concave one increases with fund growth and age.

Also closely related are those papers that analyse the determinants of the (asset-based) management fee amounts[9]. Results confirm significant differences in fees across funds with different investment objectives. Also, both fund assets under management and management company assets appear to have a negative impact on mutual fund fees. Finally, funds managed by companies belonging to banking groups seem to be associated with significantly higher fees. Evidence for other explanatory variables, however, is mixed.

Some other articles focus on the risk-taking behaviour of the managers paid on performance. For instance, Brown *et al* (1996), Chevalier and Ellison (1997), Elton *et al* (2003), Golec and Starks (2004), and Low (2006) conclude that performance-based fees may encourage risk-taking by managers as increases in stock return volatility make for bigger fees. However, since they can increase the sensitivity of the manager's portfolio to firm stock price movements, little risk can be assumed (Carpenter (2000); Ross, (2004)).

In a related article, Massa and Patgiri (2009) also analyse the impact of the incentives on the manager's remuneration on the risk and performance obtained for U.S. mutual funds. Instead of a performance-based management fee, they consider the shape of the asset-based fee structure as the incentive component, with the fee percentage being usually diminished as the managed asset volume increases. In our opinion, the existence of a performance-based fee may be able to capture in a more direct way the incentive for the fund manager than the shape in the asset-based fee[10].

Therefore, in our opinion, this type of mutual funds appears as a very interesting subgroup which deserves separate analysis from the aggregate mutual fund industry. Unfortunately, financial literature has devoted little attention to these funds mainly motivated by their low quantitative

9 Malhotra and McLeod (1997), Tufano and Sevick (1997), Luo (2002) and Gil-Bazo and Martínez (2004) for the Spanish market are illustrative examples of this literature.

10 Some words of caution should be included here. The ideal way to deal with the manager's incentives must consider the final remuneration paid to the manager from the management company. Unfortunately, this information is not always available to researchers. This is also the case in the present paper. Instead of that, we use the costs that management companies charge to investors in order to compensate for management and other services. We suppose that the way investors are charged by the management companies is closely related to the way that fund managers are compensated from the management companies.

relevance (both in number of funds and asset volume under management). This study focuses on this small but promising group of mutual funds. In particular, The study seeks to investigate the extent to which these funds are more efficient than the remainders, mainly through the analysis of its performance evaluation and the performance-expenses relationship. Our main concern is that these performance-based-fee funds are more efficient than the ones which charge management fees only on the asset volume under management.

Regarding performance issues, Volkman (1999), Elton *et al* (2003) and Giambona and Golec (2007) agree to show that U.S. mutual funds with performance-based fees perform relatively better than other actively managed funds.

From the efficiency point of view, higher expenses should be linked to better performance and/or services (Grossman and Stiglitz (1980)). Thus, in an empirical setting we would expect a cross-sectional positive relationship between fund expenses and before-expenses risk-adjusted fund returns. Funds which incur high costs, and translate them to investors as high total expenses, could only survive in the market if their performance (or other services) compensates such overheads. So, we expect that fund expenses adjust to make after-expenses risk-adjusted returns very similar across funds.

Contrary to these theoretical implications, Gil-Bazo and Ruiz-Verdú (2009) has recently found a robust negative relation between raw risk-adjusted performance and expenses in a comprehensive sample of U.S. equity mutual funds. Nevertheless, that seems not to be the case for the best-governed funds, which appear to charge fees more in line with performance. This study seeks to empirically analyse this performance-expenses relationship separately for funds charging the management fee total or partially on returns. Given the special features of this type of funds, we hypothesize a different behaviour of these funds in this regard.

The rest of The study is organized as follows: Section 3 describes the data and variables employed in the analysis; the empirical models estimated and the main results are discussed in Section 4 and Section 5 concludes.

DATA AND VARIABLES

In accordance with current Spanish legislation, management fees can be charged on the basis of the total volume of assets managed, the returns obtained or a combination of the two. In fact only a minority of Spanish mutual funds tie the remuneration of managers to returns: almost all of them combine the two types of fee by charging a base fee proportional to the assets managed plus an additional fee dependent on performance.

It must be emphasized that Spanish legislation only stipulates the annual maximum permissible for each type of fee (see Appendix). It says nothing about the symmetry of the performance-based fee, and establishes no requirement for a reference portfolio. Regarding this point, a detailed reading of the prospectus of a large number of performance-based fee funds reveals that the expression most often found after the fee percentage is "of the positive annual returns of the fund". This, along with private discussions with several asset managers, allows us to conclude that performance-based fees are usually asymmetric in the Spanish fund industry. In addition, very few fund prospectuses describe the management fee as a percentage of the return on the fund in excess of a reference portfolio. In such cases it is expressly indicated that the annual management fee chargeable may not exceed the upper limit of the annual positive returns on the fund.

In the first two chapters, the dataset was obtained from Comisión Nacional del Mercado de Valores (CNMV), the body that supervises and inspects Spanish stock markets, and therefore mutual funds. We initially collected information on all the open-end funds that were operated in the six-year period from 2002 to 2007. Guaranteed funds were excluded from the analysis because of their specific investor remuneration policy (in fact, only one of them used performance-based fees), and funds less than one year old were also eliminated. This leaves a final sample of 1,638 mutual funds in 2002, rising to 1,832 in 2007, accounting for an average of 65% of the Spanish mutual fund industry. This six-year period covers very different scenarios in the behaviour of the Spanish stock market and in the performance of the mutual fund industry, and thus enables us to conduct a very interesting comparative analysis.

As mentioned above, the study is conducted separately for each year, using the information available in the last quarter to capture possible time differences in the results.

We then describe the set of fund attributes considered as explanatory variables in the empirical model characterising the decision as to what type of management fee to use. Basically, these are the attributes previously considered in empirical literature as determinants of the amounts of mutual fund fees. Since they are available in the dataset, we suggest them also as potential determinants of the decision on the type of management fee.

We first consider the type of financial group to which mutual funds belong. Three associate dummy variables are created for funds managed by companies owned by banks (B), savings banks (S) and independent financial groups (I). This distinction allows us to analyse the possibility that managers of funds belonging to independent financial groups may have more incentive to implement performance-based fees as a way of attracting investors, to counteract the greater marketing capacity of banks and savings banks.

Another potentially interesting characteristic is the investment objective of each fund. Funds are classified into three groups, each associated with a corresponding dummy variable: Equity funds (EFunds), which invest mainly in equities; Bond funds (BFunds), more than 70% of the money in which is invested in fixed-income assets; and finally Global funds (GFunds), a group which contains those funds whose investment policy is not precisely defined and which do not belong to any other category. It seems reasonable to assume that those funds which invest most in equities will be more inclined to charge management fees on performance, given the greater possibility of obtaining high returns.

The number of years since the last modification in the investment objective of the fund (ANTIQ) is also available in the dataset provided by CNMV, and is considered here in order to examine the choice of the type of management fee as a way of competing with longer-established funds. Note that this variable does not therefore represent exactly the number of years since the creation of the fund, which is a more common variable in the relevant literature but is unfortunately not available in

this dataset; however, it does capture the same idea of experience in portfolio management.

Volatility of performance (VOLAT) is measured by the standard deviation of the twelve previous monthly returns of the fund, in percentage terms, as supplied by CNMV. The more volatile a fund is, the more likely it is expected to be to charge a performance-based fee, because of the greater expected return. The asymmetry of the management fee charged by Spanish funds (which encourages managers to take high risks as they do not have to assume responsibilities in case of negative returns) reinforces this argument.

Fund size is another attribute that could well be relevant in deciding what type of management fee to charge. It seems reasonable to assume that the smallest funds (which are the easiest to manage) have more incentives to charge a performance-based fee. To analyse this issue empirically, the total volume of assets managed in thousands of Euros (ASSETS) is used to measure fund size. In the empirical analysis this variable is measured as its neperian logarithm. The number of shareholders in the fund was also considered as a measure of fund size, but results were not affected when this variable was considered instead of ASSETS; in fact the average correlation between them over the sample period is 0.76.

Annual fund returns, net of all expenses, are also considered (NRET). The well-known risk-adjusted return known as the Sharpe ratio (SHARPE) is also calculated: $SHARPE = \frac{NRET - R_f}{VOLAT}$, with R_f being the risk-free return (the one-year Spanish Treasury bill). Funds with high levels of past performance are expected to be likely to be tempted to link management fees totally or partially to performance.

Quarterly and annual fund returns, net of all expenses, are also available in the dataset (QNRET and ANRET, respectively). We also computed the quarterly fund excess returns over the average in the same investment objective, EXCQNRET.

Finally, fund fees are also considered. Thus, we collect information about management fees, termed ASSETMF or PERFORMF depending on

whether they are based on assets or returns, respectively; the custody fee paid for asset administration and custody, CUSTFEE; the front-end load charged to investors for the purchase of shares in funds, FRONTLOAD; and the redemption fee paid by investors when shares are redeemed, REDFEE. The discount that the management company occasionally applies to the fund is referred to as DISC. In the empirical application, one-off fees (the front-end load and the redemption fee, net of the discount) are joined together in a non-annual fee termed NONAFEE. As an aggregate measurement of annual fees we also collect information on total expenses borne by the fund (adding in the management fee, custody fees, and other operating costs) as a percentage of the average volume of assets during the year. This is termed EXPENSES.

To investigate whether the fund price policy is implemented at family level, some additional information for the management company the fund belongs to is also collected. Thus, the total volume of assets under management (MC-ASSETS), equally-weighted quarterly fund returns (MC-QNRET), annual fund returns (MC-ANRET) and market share (MC-MSASSETS) are computed and used in the empirical analysis.

In chapter 3, the dataset was obtained from Comisión Nacional del Mercado de Valores (CNMV), the body that supervises and inspects Spanish stock markets and mutual funds. It initially comprised monthly information regarding all the Spanish open-end funds that existed during the ten-year period from June 1999 to June 2009. Since the dataset includes all funds that existed during this period, our data are free of the survivorship-bias documented by Brown *et al.* (1992) and Brown and Goetzmann (1995). The proportion of *mixed* funds in the Spanish fund industry is limited: only an average 7.6% of the open-end funds charge management fees on performance, accounting for a reduced 4.7% of the volume of assets.

The study is focus on the funds investing mainly on risky assets: Equity funds (EFunds) and Global funds (GFunds), according to the Spanish fund classification.[11] For each mutual fund in the sample, the dataset includes

11 Bond funds (BFunds), which invest more than 70% in fixed income assets, Guaranteed funds (GUARANT), and others funds (OTHERS) were excluded from the analysis. The first and second ones are removed because of their limited use of performance-based management fees; the third one because of its

the date of the inception in the CNMV registers, the investment objective, and monthly information regarding the net (after-expenses) asset value, the total volume of assets under management, and the performance-based and the asset-based management fee charged. Finally, the total annual expenses are also provided and monthly expenses are computed just by dividing annual expenses by 12.

Net asset values allow us to compute the net fund returns (NRET), which is the figure usually displayed to investors; gross (before-expenses) fund returns (GRET) are obtained adding monthly expenses to the net fund returns. Additionally, given the empirical evidence that incentives affect fund returns and risk-taking, we construct alternative risk-adjusted performance measures.

recent emergence in the Spanish fund industry. When all said and done, risky funds are the most analysed in the literature on mutual funds.

MAIN RESULTS OF THE CHAPTERS

Essay 1. The Choice of Performance-Based Fees In The Mutual Fund Industry: The Case Of Spain

For the three fund groups established above according to the type of management fee chosen, the two panels in Table 1.1 report the number of funds of each type and the average values of their attributes, respectively, for each year in the sample period, and for the entire period.

Panel A highlights that at year-end 2007 only 256 out of the sample of 1,832 Spanish mutual funds (14%) used performance-based fees, and even then they are almost all *mixed*. However, there is a notable increase from year 2002, when just 7% of the funds in the sample tied management fees to performance. It is also confirmed that this market is dominated by funds belonging to banks and savings banks: only an average of 27.97% belong to independent financial groups.

However, independent funds account for a significantly higher average percentage of *mixed* funds than of *asset* funds: of the aggregate of 1,128 files of *mixed* funds in the total sample, 425 (37.7%) correspond to independent funds, while for *asset* funds the figure is just 26.6%[12]. These percentages remained essentially constant throughout the sample period. These findings are consistent with the idea that independent funds are the most inclined to charge a performance-based fee. Note moreover that almost all the *performance* funds are independent. By contrast, funds belonging to banking groups only account on average for 29.4% of the *mixed* funds, with a notable decrease from the beginning of the period.

12 The asterisk stands for 5% significance in the test of differences in the proportions of the total number of *asset* funds and *mixed* funds accounted for by each type of fund.

A similar conclusion can be drawn for Global funds, which account for a significant, and fast increasing, average of 42% of the *mixed* fund group but just 10.36% of *asset* funds. It is also remarkable that more than 34% of Global funds charge their management fees totally o partially on returns. These data, along with the fact that 44.965% of *mixed* funds are Equity funds, lead us to confirm that funds which tie management fees to performance invest mainly in equity assets.

Panel B Table 1.1 shows very interesting differences between the attributes of *mixed* funds and *asset* funds over the sample period: the former are significantly younger, more volatile and smaller, although a noteworthy increase in assets managed is reported between 2002 and 2007.

Remarkably, average management fees for *mixed* funds are very close to the legal limit at 8.26% of performance (the limit is 9%) and 1.09% of volume of assets (the limit is 1.35%), whereas for *asset* funds they are just 1.38%, with the limit being 2.25%. So average total expenses are significantly higher for *mixed* funds (1.87%) than for *asset* funds (1.57%). In addition, *mixed* funds seem to charge significantly higher front and redemption fees.

Panel B in Table 1.1 reports that for *mixed* funds total management fees average 1.87%, significantly higher than the 1.38% for *asset* funds. Moreover, note that in 2005 this figure is 2.38%, above the legal maximum for asset-based fees (2.25%), which reveals that managers are able to use performance-based fees as a way of increasing earnings from management.

Finally, *mixed* funds obtain significantly higher net and risk-adjusted returns than *asset* funds, so they seem to have offset their higher cost and greater volatility[13]. It should be noticed that net fund returns range from –16.67% in 2002 to 13.14% in 2005, embracing very different market conditions, thus enhancing the scope of the analysis and, at the same time, increasing the reliability of findings.

13 A quite large number of funds with negative excess returns and low volatility explain the negative average Sharpe ratios.

To sum up, during the period from 2002 to 2007 Spanish *mixed* funds invested for the most part in equity assets, a significant percentage of them belonged to independent financial groups and, on average, they were more volatile, younger, smaller and more expensive to investors than *asset* funds. In spite of this higher cost they obtained higher returns.

In this chapter, funds are classified into three groups according to the type of management fee charged. We use the term "asset funds" for those that establish a fee on volume of assets alone; funds that tie management fees exclusively to returns are referred to as "performance funds", and those that combine the two criteria are "mixed funds". Since the main objective of this chapter is to analyse the choice of the type of management fee, a binary variable - MFC - is created as the dependent variable in the empirical model. It takes a value of one for funds that tie fees totally or partially to returns (mixed and performance funds) and zero otherwise (asset funds).

A probit model is estimated in order to examine the main determinants of the type of management fee charged by Spanish mutual funds. The analysis is carried out separately for each year in the 2002-2007 period, and also for the complete period. As mentioned above, the endogenous variable is the binary variable MFC, which takes a value of one for *mixed* and *performance* funds and zero for *asset* funds, while the fund attributes are considered as explanatory variables[14].

For the estimation, we assume the existence of an unobserved latent variable, y_i^*, which determines the value of the binary variable that we observe. Formally:

$$\left.\begin{array}{ll} y_i = 1 & if = X_i\beta + u_i > 0 \\ y_i = 0 & otherwise \end{array}\right\} \quad (1)$$

where β is the vector of the parameters, X_i the matrix of the explanatory variables, and u_i the residuals, which we assume to have mean zero and standard deviation one.

14 Pure *performance* funds, which establish management fees exclusively on the basis of returns obtained, are removed from the empirical analysis because of their limited presence in the sample.

We apply the maximum likelihood estimation via the iterative scoring algorithm. The percentage of correct predictions and the so-called pseudo R^2 are used as the adjustment kindness of the model. In probit models the coefficients of the variables are not directly interpretable, so we take the partial effects of the explanatory variables, which represent their marginal impact on the likelihood of observing a value of one in the dependent variable when the fund charges management fees on returns.

Estimation results are reported in Table 1.2. The six first columns report the results for each year separately, and the last that of the entire period. The control group included in the constant term comprises Bond funds belonging to a savings bank financial group.

The table shows that, jointly for the whole period, the likelihood of the management fee being charged partially on returns (*mixed* funds) is significantly greater for Equity (EFunds) and Global funds (GFunds), for the youngest funds (ANTIQ), for the most profitable (NRET) and for the most expensive in terms of custody and non-annual fees (CUSTFEE and NONAFEE, respectively). By contrast, it is lower for funds belonging to banking financial groups (BANKS). Focusing on the yearly regressions, it must be highlighted that the negative effect of this last variable is only found at the end of the sample period. On the other hand, it is also interesting to observe that a higher volume of assets managed (ASSETS) significantly reduces the probability of management fees being on performance at the very beginning of the period, but that effect disappears with time (when mixed funds are larger in size). All these results confirm the main ideas derived from the descriptive analysis in this chapter.

The lack of explanatory power of the fund risk (VOLAT) may seem surprising. However, although the VIF test fails to identify collinearity problems, the high correlation between this variable and EFunds (0.65) could cause the risk effect picked up by this investment objective. Finally, the variable representing the independent funds does not significantly affect the choice of the management fee type, once the effect of the other variables is considered.

From these results, it seems reasonable to conclude that managers who charge their management fees partially on performance are more involved

in finding high future returns (through greater knowledge or effort). From previous results, these are funds that invest mainly in risky assets (EFunds and GFunds), and have less experience (ANTIQ) and a smaller market share (ASSETS) in the industry. Thus, the choice of a performance-based fee could to some extent be understood as a sign of commitment to the interests of investors, through the incentives that it generates in portfolio managers. In addition, this sort of fund charges higher one-off fees (front and redemption fees), which reinforces the argument of commitment and permanence in the manager-investor relationship.

Essay 2. The Dynamic of Management Fees in the Mutual Fund Industry

This section briefly describes the main characteristics of the sample analysed in this study. 710 mutual funds are studied on a semi-annual basis from the second quarter of 2003 to the second quarter of 2007, which provides a total of 6,390 fund-semester items. Around 50% of the funds in the sample are Equity funds, 10% Global funds and the remaining 40% Bond funds. Only around 9% are mixed funds.

Table 2.1 characterizes the time-series distribution of the number of management fee changes according to the fund investment objective and the type of management fee charged. Panel A reports information on changes in asset-based fees and panel B in performance-based fees.

The number of changes in asset-based management fees ranges from 50 in the second quarter of 2003 to 12 in the fourth of 2005. In the course of the period considered there are 143 decreases and 102 increases in all, accounting for 2.24% and 1.6%, respectively, of the total number of observations[15]. No clear time pattern in the number of this kind of management fee changes is observed in the sample, although a slight increase can be observed in the last part. Only 38% of the changes affect Equity funds, although those funds account for 50% of the sample. More interestingly, almost 61% of those changes are increases in management fees. By contrast, 74% of the changes affecting Bond funds are decreases. Global funds seem (relatively) to change asset-based management fees

15 These figures are slightly higher than those in Warner and Wu (2006) for the advisory contract changes in the US market for 1995-2001.

twice as often as other funds, with a slight preference for decreases. On the contrary, mixed funds show a relatively high proportion of management fee changes (17%) given that they on average account for 9% of the sample, with those changes being clearly dominated by decreases.

The distribution of the number of changes in performance-based management fees is reported in Panel B. It is obvious that, unlike asset-based management fees, performance-based fees are charged only by mixed funds, which on average account for just 9% of the sample. Thus, Panel B reinforces the idea that mixed funds change management fees more often than others. The total number of changes is 70: 34 decreases and 36 increases. These changes affect 6% and 6.3%, respectively, of mixed fund items, roughly above the changes in asset-based fees. Surprisingly, Equity mixed funds decreased management fees more often than they increased them, whereas the contrary was the case for the funds with other investment objectives.

Table 2.2 describes the number of funds involved in management fee changes in the sample period. 143 decreases in asset-based management fees were made by 121 different funds, with eighteen of them changing fees twice during the sample period and two funds decreasing them three times. There were 102 increases, affecting 97 funds, five of which changed fees twice. Regarding price policy, 27 funds varied their fees in opposite directions during the period considered.

Changes in performance-based management fees affected 55 funds: 30 decreased their fees (with two funds making three changes) and 34 funds increased them (two of them changing twice), with 9 funds varying fees in opposite directions.

Also in terms of pricing policy, we have found simultaneous opposite variations in asset-based and performance-based management fees. 23 of the 36 performance-based fee increases coincided with simultaneous decreases in asset-based fees; all these increases actually result in the introduction of performance-based fees, turning the relevant funds into mixed funds. Also, 15 out of the 34 performance-based fee decreases coincided with an opposite variation in asset-based fees, all but one of which entailed conversion to asset funds.

Since the main objective of the chapter 2 is to analyse increases and decreases in management fees, we collect information about these fees, referred to here as asset-based management fees (AMF) or performance-based management fees (PMF), depending on the variable on which they are based, being ΔAMF and ΔPMF each respective change. Two dummy variables, INC and DEC, are created as the dependent variables for the empirical model which studies the decision to change the management fee. INC (DEC) takes a value of one for quarter-fund observations that increase (decrease) management fees, and zero if no change occurs.

We now provide an empirical analysis of their determinants and consequences. In order to investigate differences between changes in asset-based management fees and performance-based fees, we analyse each type separately. In addition, alternative price policies (e.g. management fee increases and decreases) are independently analysed.

In this empirical application, we sort funds in each quarter into terciles based on the variables ANRET, MC-ASSETS, MC-QNRET and MC-ANRET, denoted as large, medium and small. We also transform the total volume of assets managed by each fund and by each management company by its neperian logarithm.

Determinants of management fee changes

Firstly, we estimate the main determinants of the changes in the management fees charged by the funds in our Spanish sample. As mentioned above, in this analysis the endogenous variables are the dummy variables INC and DEC, which take a value of one for quarter-fund observations in which fees increase or decrease and zero when no change occurs. The two-quarter lagged fund attributes selected in the previous section are considered as explanatory variables, along with the current investment objective.

For the logit estimation, we assume the existence of an unobserved latent variable, y_i^*, which determines the value of the binary variable that we observe. Formally:

$$\left.\begin{array}{ll} y_i = 1 & if = X_i\beta + u_i > 0 \\ y_i = 0 & otherwise \end{array}\right\} \quad (2)$$

where β is the vector of the parameters, X_i the matrix of the explanatory variables and u_i the residuals, which we assume to have mean zero and standard deviation one.

We apply the maximum likelihood estimation the iterative scoring algorithm. The pseudo R^2 is used as the adjustment kindness of the model. In logit models the coefficients of the variables are not directly interpretable, so we take the partial effects of the explanatory variables, which represent their marginal impact on the likelihood of observing a value of one in the dependent variable when the fund charges management fees on returns.

The results of our estimation are reported in table 2.3; Panel A is for the changes in the asset-based management fees and Panel B for performance-based ones. Note the reader that the number of observations varies for each case. Thus, the sample in the first column of Panel A (when decreases in asset-based management fees are analysed) has 6,288 items, equivalent to the total number of observations (6,390) minus the number of increases (102); the dummy variable DEC accounts in this case for 143 observations.

As can be deduced from the table, an increase in asset-based management fees is significantly more likely for small, Global and funds with high annual previous returns which belong to large and profitable management companies.

By contrast, fee decreases are more likely to occur in small, Global, secure, poor-performing funds (in terms of EXCQNRET) which are managed by management companies with low returns, as can be deduced from the table. Moreover, funds belonging to large management companies are relatively less inclined to decrease that kind of fee.

To sum up, it appears that successful funds and management companies have been able to exploit that advantage to go through with a high-price policy, while unsuccessful ones have decreased management fees as a way to become more competitive in the industry.

Asset-based management fees

As can be deduced from the table, an increase in asset-based management fees is significantly more likely for funds with high annual returns which are Global funds and for those belonging to large, profitable management companies. By contrast, it is lesser for big funds.

By contrast, fee decreases are more likely to occur in small, secure, poor-performing funds (in terms of EXCQNRET) which are managed by management companies with low volumes of assets and annual returns, as can be deduced from the table. Moreover, Global funds are relatively more inclined to decrease that kind of fee.

To sum up, it appears that successful funds and management companies have been able to exploit that advantage to go through with a high-price policy, while unsuccessful ones have decreased management fees as a way to become more competitive in the industry.

Performance-based management fees

As regards as the results for performance-based management fees changes, Panel B in table 2.3 illustrates that the likelihood of a fee increase is significantly greater for cheap, small, Global funds and for those belonging to management companies with low quarter return. We have not found any effect of previous fund returns to the probability of increase the performance-based management fees. Readers should remember that such changes are usually simultaneous with others in the opposite direction for asset-based management fees.

Performance-based management fee decreases are inversely related to size and fund excess-return[16]. Thus, small funds with low excess returns were more inclined to decrease these fees. Rather surprisingly, funds with high quarterly returns owned by good-performing management companies also decreased performance-based management fees more often.

16 Note the reader that the possibility of decrease the performance-based management fee is limited to the mixed funds.

Effects of management fee changes

This section analyses the effects of management fee changes on relevant fund characteristics. In particular, the consequences of these fee variations for quarterly returns, excess quarterly returns and market shares are estimated in the quarter when funds change their management fees and in the four quarters thereafter. Thus, the variables QNRET, EXCQNRET and MSASSETS are used respectively as dependent variables in OLS with heteroscedasticity correction regressions, while the dummies INC and DEC (and others used as control variables) aim to capture the effects of management fee increases and decreases on the former. Thus, we run the following OLS regression for the whole 6,390 observations:

$$DP_i = \lambda_0 + \lambda_1 INC + \lambda_2 DEC_i + \Gamma CV_i + \upsilon_i \qquad (3)$$

where DP_i are the alternatives variables we are interested on (QNRET, EXCQNRET and MSASSETS), INC (DEC) is the dummy variable representing the increase (decrease) in the management fee, CV_i is the set of control variables, and, finally, υ_i is the error term.

Table 2.4 shows the results; Panel A is for the changes in the asset-based management fees and Panel B for those in performance-based fees.

Asset-based management fees

Management fee increases seem to have a cuasi-permanent negative effect on quarterly net returns, especially relevant in the third subsequent quarter. These findings allow us to conclude that there is not an incentive effect on the manager effort related to the increase in the asset-based management fees. Surprisingly, also management fee decreases seem to decrease contemporaneous and posterior returns. In this case, the negative incentives that fee reduction may provoke in the manager activity could explain these findings. Fund market share is not significantly affected by asset-based fee changes.

To conclude, the price policy implemented by Spanish funds through asset-based management fee variations does not seem to have been as effective as anticipated, at least in terms of fund performance and market share.

Performance-based management fees

Panel B shows that a fee decrease has a significant, negative effect on fund's quarterly returns in the quarter when the change happens and in the third subsequent quarter. However, it must be highlighted that the coefficients are very much larger (in absolute value) than in the case of asset-based management decreases. Therefore, decreases in the performance-based management fees seem to have a stronger effect on posterior returns that the reduction in the asset-based management fees, pointing to a more incentive related of the former. Additionally, market share is significantly positively affected by decreases in performance-based management fees in the quarter when the change happens and in the two subsequent ones.

When we analyse the effects of increasing performance-based management fees, a positive (although not statistically different from zero) effect on returns is found in the sort run (in the quarter the fee increase occurs and the next one). Note the reader that fund returns in the dataset are measured after the fund expenses are paid; so, the positive effect of performance-based management fee increases on (after-expenses) returns can be thought to be in line with the incentive arguments regarding this type of fee; especially when the effect is negative (although not statistically significant) when asset-based management fee increases are considered.

In conclusion, the price policy implemented by Spanish funds through performance-based management fee decreases seem to have had a negative effect on subsequent returns and on net excess returns and a positive impact on the market share of funds, as anticipated above in the hypothesis. Decreasing performance fees seems to make managers put in some slight effort because performance-based fees are an explicit incentive for managers. Also the effects found regarding fee increases could be explained by the previous incentive arguments.

Essay 3. The Efficiency of Performance-based-fee Funds

In order to estimate the risk-adjusted fund excess returns (Jensen's alpha), CAPM, Fama and French (1993) and Carhart (1997) multifactor models are used. So, we need to construct the hedge portfolios that underlie market (MKT), size (SMB), Book-to-Market (HML) and momentum (WML) factors. We use the Factset-JCF database to extract, for the period June 1999-June 2009 the following information for the Spanish Stock Market: i) monthly returns (adjusted for dividends, capital increases, splits and reverse splits), ii) the average return of the three-month interest rate of government bonds as the proxy for the return of the risk-free asset, iii) the Book-to-Market ratio is calculated by dividing the book value of the equity per share by the closing stock price, iv) the market value we consider is the product of the closing stock price and the number of shares. The alpha from CAPM is called α_{CAPM}, the corresponding to the three-factor Fama and French model is α_{FF}, and, finally, the alpha for the four-factor model of Carhart is denoted as α_{FFM}. In order to gain robustness in results, all the risk-adjusted returns are estimated separately both with net returns (after-expenses, α^{N}_{CAPM}, α^{N}_{FF} and α^{N}_{FFM}) and gross returns (before-expenses, α^{G}_{CAPM}, α^{G}_{FF} and α^{G}_{FFM}).

Thus, we estimate the alphas of the mutual funds of the excess returns on the risk-free rate with respect to the risk factors. Therefore, the following evaluation models are estimated with a rolling time-series ordinary least squares (OLS) regression:

$$MODEL\ 1: R_{pt} - r_{ft} = \alpha_{pCAPM} + (R_{mt} - r_{ft})\,\beta_{mp} + u_{pt}$$

$$MODEL\ 2: R_{pt} - r_{ft} = \alpha_{pFF} + (R_{mt} - r_{ft})\,\beta_{mp} + SMB_t\beta_{SMBp} + HML_t\beta_{HMLp} + \varepsilon_{pt}$$

$$MODEL\ 3: R_{pt} - r_{ft} = \alpha_{pFFM} + (R_{mt} - r_{ft})\,\beta_{mp} + SMB_t\beta_{SMBp} + HML_t\beta_{HMLp} + WML_t\beta_{WMLp} + \pi_{pt}$$

where R_{pt} is the (after or before-expenses) return on fund p in month t; r_{ft} is the return on the risk-free asset in month t; R_{mt} is the return on the value-weighted market portfolio proxy in t; SMB_t and HML_t are the Fama-French factors to capture the effects of size and Book-to-Market, respectively; WML_t is the price momentum in t, calculated as the difference in month t between the returns on the portfolios of winners and losers. The portfolio of winners (losers) is the equally weighted portfolio containing the 30% of the stocks with the highest (lowest) returns in the

previous period beginning in month t-12 and ending in t-2[17]. Finally, u_{pt}, ε_{pt}, and ϖ_{pt} are the error terms.

The constant term in each previous time series regression, the so-called Jensen alpha, measures the monthly risk-adjusted fund return. The alternative slope coefficients (β_p) capture the sensitivity of fund excess returns to the corresponding factor; so, they measure the fund exposure to the alternative risk factors.

The first alphas (and betas) are estimated with a set of 36 observations, corresponding to our first 36 months in the sample and they are assigned to May 2002 for the subsequent cross-section estimation. Next, the alphas corresponding to June 2002 are estimated with the first 37 observations of the sample. We continue successively up to a total of 60 months. From here, the set of observations for the alpha estimation remains constant, incorporating an additional observation as it eliminates the first one. In the end, we have for each fund a series of 86 alphas relative to the three alternative models which refer to every month from May 2002 to June 2009. These risk-adjusted fund returns will be used to separately assess the performance of the *asset* funds versus the *mixed* funds ones, and, of course, in the cross-sectional performance-expenses relationship estimation. We analyse whether there is a dissimilar relationship between the ability to generate abnormal returns and the fund expenses charged to investors.

According to economic efficiency principles, funds charging high expenses to investors should provide them with valuable services in term of returns, risk and others.

Data on costs translated to investors are easily available for researchers as the fees paid to the management company. Regarding fund services, the fund return-risk profile is likewise accessible to empirical analysis. Other fund services are more difficult to measure or estimate; fund services are therefore usually approximated through the (risk-adjusted) return provided to investors. This subsection deals with the cross-sectional estimation of the performance-expenses relationship in order

17 See Fama and French (1993) for details regarding the construction of the SMB and HML factors, and Carhart (1997) and Jegadeesh and Titman (1993) for the construction of the momentum factor.

to empirical assess the economic efficiency of the fund industry. Our aim is to investigate the existence or not of a distinct behaviour depending on the way the management fee is established, this is to say, for *mixed* and for *asset* funds.

Efficiency requires fund services to compensate costs, and consequently, once expenses are deducted, net performance should not be as diverse between funds. Alternatively, a close one-to-one relationship connecting expenses and gross performance should be present in the mutual fund industry. In contrast to this prediction, Gil-Bazo and Ruíz-Verdú (2009) recently found a puzzling and robust negative relation between gross performance and expenses in a sample of diversified U.S. equity mutual funds: funds with worse gross performance charge higher expenses[18]. Finally, they show that this relation may be explained as the outcome of strategic fee setting by mutual funds in the presence of investors with different degrees of sensitivity to performance.

Similar results are reported in a European study by Otten and Bams (2002), who find that the relationship between management expenses and risk-adjusted performance is significantly negative in Germany, Netherlands and UK over the period 1991-1998.

In keeping with the main objective of the study, this subsection tries to contrast if the results obtained by the literature are driven by asset-based fee funds. Taking into account that the vast majority of funds belong to this type, the results could be explained by the high proportion of *asset* funds. In order to do so, we will analyse the relation performance-expenses in both groups of funds, *asset* funds and *mixed* funds, separately. We hope that this relation is not as negative, at least in the group of funds with performance-based fees. This would mean that m*ixed* funds are more efficient than *asset* funds, confirming previous conclusions. Therefore, the following model is estimated with a cross-sectional OLS regression for each of the 80 months from May 2002 until December 2008:

$$\text{MODEL 4:PERFORMANCE}_{pt} = \lambda_0 + \lambda_1 \text{EXPENSES}_{pt} + \Gamma \text{CV}_{pt} + \upsilon_{pt}$$

18 Previously, Elton *et al* (1993) and Carhart (1997) had shown similar results. However, Ippolito (1989) found that risk-adjusted returns are unrelated to expense ratio for U.S. funds.

where $PERFORMANCE_{pt}$ are the alternatives measures of fund performance: net return (NRET), gross return (GRET), and the estimations of the risk-adjusted excess returns, according to the CAPM (α_{CAPM}), the Fama and French (1993) (α_{FF}) and the Carhart (1997) (α_{FFM}) multifactor models, both with net and raw returns; $EXPENSES_{pt}$ is the total expenses over assets; and CV_{pt} is a set of control variables which includes age (AGE), volatility (VOLAT), and the neperian logarithm of assets under management in thousands of Euros (lnASSETS), with Γ being the 3x1 vector of parameters. Finally, υ_{pt} is the error term.

Results in table 3.1 show the average of the cross-section 80 monthly estimates, over the period May 2002 to December 2008, for the previous model[19]. Once again, we report separately the results for the *asset* funds and the *mixed* ones. We will focus mainly on the coefficient of the expenses variable.

The results are very revealing. Let us first examine the case of the risk-adjusted performance measures. For the total sample, the performance-expenses relationship is clearly negative, even for the before-expenses case. Similar to previous studies for U.S. and European mutual fund markets, we find that the Spanish risky funds with relatively bad risk-adjusted performance do not charge the lowest management fees or expenses. On the contrary, they seem to charge higher than the average expenses. That is, in a cross-sectional analysis funds which incur in relatively high (low) expenses perform relatively badly (well), contrary to the suggestions of the efficiency principle.

When the *mixed* and *asset* funds are considered separately, we find significant economic and statistic differences. For the *asset* funds, the slope of the performance-expenses estimation is significantly negative, irrespective of the risk-adjusted performance measure considered, as for the whole sample. The cross-sectional relation of fund expenses and the risk-adjusted performance is very close to -1 for the gross measures and to an average of -1.7 for the after-expenses ones. Nevertheless, the group of *mixed* funds seems to conduct in a remarkably contrasting way. Irrespective of the performance measure, fund expenses vary cross-

19 We choose this two-step procedure instead of a pooled regression in order to better capture the performance-expenses relationship. Results from the pool regression are similar and are available upon request.

sectionally in the same direction as risk-adjusted performance; better (worse) funds translate into higher (lower) costs to investors. Thus, it seems there be a positive relationship between risk-adjusted returns offered to the investors by *mixed* funds and the costs they have to pay for them. The high values of the slope of this relation is also remarkable, reaching, for instance in the case of the net and gross Carhart four-factor alphas, coefficients of 1.03 and 1.41, respectively. It is also interesting to note that the performance of *mixed* funds is to some extent better estimated (in terms of the explained variance, R square) in the models of table 3.1 than the *asset* ones.

Regarding the non-risk-adjusted returns, the average coefficient of the cross-section performance-expenses estimation to the *mixed* funds is 5.89 for the net returns, and -1.15 to the *asset* ones. When before-expenses returns are considered (GRET), all the coefficients are (obviously) increased by +1, resulting in a non significant relation for the *asset* funds. It should be emphasized that the non-adjusted performance-expenses relationship for the whole sample of Spanish risky funds is very close to zero (+0.08) for the net returns and very close to one (1.08) for the before-expenses returns.

Table 3.1 also allows us to analyse the effects of other fund characteristics, such as size, age and volatility, to explain risk-adjusted returns separately for *mixed* and *asset* funds[20].

Irrespective of the way the management fees are charged, and contrary to previous findings of related literature, older funds in our sample obtained higher performance than younger ones. Regarding the effect of fund volatility on performance, a positive relationship is reported, although lower for the *mixed* funds than for the *asset* ones. Finally, a robust positive relation is found between performance and total fund assets, but only for the *asset* funds[21]. Concerning *mixed* funds, however, larger funds do not seem to achieve better performance.

20 See Ferreira, Freitas and Ramos (2009) and references herein for a recent comprehensive study on this issue.
21 Otten and Bams (2002) likewise found a significantly positive relationship between the log of fund assets and risk-adjusted performance in the European industry, contrary to the negative size effect reported in the U.S. market.

Several additional analyses have been performed to check the robustness of previous findings regarding the performance-expenses relationship. In this section, we present each of them separately.

Firstly, we use the novel multi-way clustering econometric methodology outlined by Petersen (2009) –in a Finance context– and by Gow *et al.* (2009) –in Accounting– in order to control for cross-sectional and time-series dependence. We use as clusters the investment fund and the date to correct for cross-sectional and time-series dependence simultaneously. We likewise develop a SAS program to estimate three-way cluster-robust standard errors, following the theoretical derivation in Cameron *et al.* (2009). This allows us to simultaneously correct for within-date (time-series) dependence, within-investment funds (cross-sectional) dependence and within-investment style (cross-sectional) dependence. The results clearly show a negative relation between before-fee performance and expenses for *asset* funds but this is not the case for the *mixed* ones. The R-squared values of these pooled time-series cross-sectional (Model 4) regressions are lower than those obtained with cross-sectional regressions.

Second, net and gross no risk-adjusted fund returns (NRET and GRET, respectively) are available from June 1999 to June 2009. We estimate the regressions from June 1999 to December 2008 and results remain unaltered.

Third, we also estimated the performance-expenses relationship by the quantile regressions (Koenker and Bassett, 1978). table 3.2 and Figure 3.1 show the results for the four-factor Carhart risk-adjusted performance estimates, both with net and gross (α^{N}_{FFM} and α^{G}_{FFM}, respectively), but similar results are found for the alternative performance measures considered. For the sake of concision, only the coefficients for the EXPENSES variable in Model 4 are reported. An interesting pattern across the quantiles is found, with the effect of the expenses being non uniform along the quantile regressions. In fact, a monotonic increase in the effect of expenses on performance is reported when we move to higher quantiles of performance. Therefore, fund expenses are charged to investors more in line with performance the more performance the fund obtains. In addition to this (increasing-with-performance) expected pattern in the effect

of fund expenses on performance, the most interesting issue in the table 3.2 is the sign of these effects. Thus, regarding the *asset* funds, the negative global coefficient of expenses on performance displayed in table 3.1 is shown now to be motivated mainly for the first quantiles. In fact, when gross four-factor Carhart risk-adjusted performance measure is analysed, the coefficients for the higher three quantiles are significant positives; nevertheless, they are smaller in economic significance than the negative ones from the first quantiles. As a consequence, *asset* funds in the best performance ranking charged costs to investors directly related to the performance offered to them. When we look at the after-expenses risk-adjusted performance measures, all the coefficients are significantly negatives, except the last one. On the contrary, *mixed* funds in the (four) worst quintiles of performance charged higher expenses the lower risk-adjusted performance they achieved. Accordingly, these results in table 3.2 allow us to conclude that the positive performance-expenses relationship reported previously in table 3.1 for *mixed* funds is exclusive to the funds in the highest quantiles of performance[22].

22 Although not reported in the Table, a monotonic increasing (decreasing) pattern is also found in the effects of volatility (age) on performance along the quantile regressions, for *asset* and *mixed* funds. However, the pattern for the fund size effect is increasing for the *asset* funds, but decreasing for the *mixed* ones.

CONCLUDING REMARKS

The first chapter of this thesis studies the fund attributes which determine the decision as to what type of management fee is implemented, on the basis of assets managed (asset-based fee), returns (performance-based fee), or both. While academic literature tends to conclude that the performance-based fee best aligns the interests of managers and investors, in practice the industry tends for the most part to favour asset fee schemes.

During the period from 2002 to 2007 Spanish *mixed* funds invested for the most part in equity assets, a significant percentage of them belonged to independent financial groups and, on average, they were more volatile, younger, smaller and more expensive to investors than *asset* funds. In spite of this higher cost they obtained higher returns.

Our findings allow us to conclude that from 2002-2007 the likelihood of the management fee for a sample of Spanish funds being charged on returns is significantly greater for equity-oriented funds and for the youngest funds. By contrast, it is lower for funds owned by banking financial groups and those that manage large volumes of assets. These results are confirmed in very different economic scenarios for the market and mutual funds over the period 2002-2007. Thus, Spanish funds implementing performance-based fees seem to be the most dynamic and the most involved in good management, as might be expected.

The predominant practice in the fund industry of establishing asset-based management fees could be interpreted as a consequence of the lack of competition; the usual asset-based scheme might therefore be understood as merely a way of guaranteeing a fixed amount of earnings on the part of asset management services, with no commitment to investors' interests.

The second chapter of this thesis empirically analyses the determinants and consequences of changes in management fees in a sample of Spanish mutual funds for 2003-2007.

The average equally-weighted management fee remained in the same range of magnitude over the sample period. However, price-setting affected a significant proportion (29%) of funds, with the average change being greater than 50 basis points.

Results seem to reveal that small, poor-performing funds (and management companies) decreased asset-based management fees in an attempt to become more competitive in the industry. Nevertheless, after the variations there was no significant enhancement of performance or market share.

Small funds with low excess returns and high quarterly returns, owned by good-performing management companies decreased performance-based management fees. These decreases seem to have had a negative effect on subsequent returns and on net excess returns and a positive impact on the market share of funds. Decreasing performance-based management fees seems to make managers put in some slight effort because performance-based fees are an explicit incentive for managers.

In the third chapter of this thesis the efficiency of Spanish mutual funds which charge management fees total or partially on returns (*mixed* funds) is analysed in detail.

We have found strong cross-section evidence that for *mixed* funds, expenses affect performance positively, once the effect of volatility, age and size is controlled for; whereas this effect is negative for the rest of funds. Although a performance-increasing pattern is found in the performance-expenses relationship for the whole sample, the aggregate differences found between *mixed* and the remainder funds are very appealing from an academic and a practical point of view. As a negative relation is the most common result in the literature of equity mutual funds, our findings identify a particular group of funds, which deserve, in our opinion, additional academic attention. In short, our results seem to point to a greater efficiency of *mixed* funds, according to the Grossman and Stiglitz's efficiency criterion.

The implications of our findings are several. First, aggregate fund performance evaluation studies may hide particularly well-managed funds. So, investors would be grateful for academic research identifying fund characteristics which determine performance. According to our results, the way the management fee is charged to investors seems to be one of them. Second, the incentives that the performance-based fees trigger among fund managers are shown to be strong enough

to improve the return-risk profile of the management. Thus, agency theory suggestions seem to be corroborated with our findings. Finally, the limited appliance of the performance-based fees in the mutual fund industry contrasts with the performance evaluation results of the funds using it. Further in-depth academic research seems to be needed in order to clarify the reasons behind this puzzling behaviour.

REFERENCES

Admati, A.R., and P. Pfleiderer, 1997, "Does it all add up? Benchmarks and the compensation of active portfolio managers", *Journal of Business*, 70, 323-350.

Barber, B., T. Odean and L. Zheng, 2005, "Out of Sight, Out of Mind. The Effects of Expenses on Mutual Fund Flows", *Journal of Business*, 78, 6, 2095-2119.

Basak, S., A. Pavlova, and A. Shapiro, 2007, "Offsetting the Implicit Incentives; Benefits of Benchmarking in Money Management". *Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=924768.*

Bhattacharya, S., and P. Pfleiderer, 1985, "Delegated Portfolio Management". *Journal of Economic Theory*, 36, 1-25.

Brennan, M., 1993, "Agency and asset pricing", Working Paper, University of California, Los Angeles.

Carhart, M., 1997, "On Persistence in Mutual Fund Performance." *Journal of Finance* 52, 57-82.

Cesari, R. and F. Panetta, 2002, "The Performance of Italian Equity Funds", *Journal of Banking and Finance*, 26, 99-126.

Chevalier, J., and G. Ellison, 1997, "Risk Taking by Mutual Funds as a Response to Incentives" *Journal of Political Economy*, 105, 1167-1200.

Choi, J., D. Laibson and B. Madrian, 2008, "Why Does the Law of One Price Fail? An Experiment on Index Mutual Funds," Levine's Bibliography 122247000000002014, UCLA Department of Economics.

Coates IV, J. C. and R. G. Hubbard, 2007, "Competition in the Mutual Fund Industry: Evidence and Implications for Policy" Harvard Law and Economics Discussion Paper No. 592 Available at SSRN: http://ssrn.com/abstract=1005426.

Coles J, J. Suay and J. Woodbury, 2000, "Fund advisor compensation in closed-end Funds." *Journal of Finance* 55, 1385-1414.

Cornel, B., and R. Roll, 2004, "A delegated agent asset pricing model", *Working Paper, University of California, Los Angeles.*

Cremers, M. and A. Petajisto, 2007, "How active is your fund manager? A new measure that predicts performance". Working paper, Yale School of Management.

Cuoco, D., and R. Kaniel, 2006, "Equilibrium Prices in the presence of Delegated Portfolio management", *Working Paper The Wharton School.*

Das, S., and R. K. Sundaram, 1998a, "Fee Speech: Adverse Selection and the regulation of mutual fund fees" *NBER Working Paper 6644*.

Das, S., and R. K. Sundaram, 1998b, "On the regulation of fee structures in mutual funds", *NBER Working Paper 6639*.

Das, S., and R. K. Sundaram, 2002, "Fee Speech: Signalling, Risk-Sharing and the Impact of Fee Structures on Investor Welfare", *Review of Financial Studies*, 15(5), 1465-1497.

Deli D., 2002, "Mutual fund advisory contracts: an empirical investigation". *Journal of Finance* 57, 109-133.

Deli. D., and R. Varma, 2002, "Contracting in the investment management industry: evidence from mutual funds", *Journal of Financial Economics*, 63, 79-98.

Dellva, W and G. Olson, 1998, "The relationship between mutual fund fees and expenses and their effects on performance" The Financial Review, 33, 1, 85-104.

Droms, W. and D. Walker, 1996, "Mutual Fund Investment Performance", *Quarterly Review of Economics and Finance* 36, 347-363.

Dybvig, P., H. Farnsworth, and J. Carpenter, 2004, "Portfolio Performance and Agency", W*orking Paper, Washington University*.

Elton, E., M. Gruber, and C. Blake, 2003, "Incentive Fees and Mutual Funds". *Journal of Finance*, 58(2), 779-804.

Ferris, S., and Chance, M.,1987, "The Effect of 12b-1 Plans on Mutual Fund Expense Ratios: A note" *Journal of Finance*, 42, 1077-1082.

Garvey, G., and T. Milbourn, 2006, "Asymmetric benchmarking in compensation: Executives are rewarded for good luck but not penalized for bad", *Journal of Financial Economics*, 82, 197-225.

Gil-Bazo, J., and M. A. Martínez, 2004, "The black box of mutual fund fees", *Revista de Economía Financiera*, 4, 54-82.

Gil-Bazo, J., and P. Ruiz-Verdú, 2008, "When cheaper is better: Fee determination in the market for equity mutual funds", *Journal of Economic Behaviour & Organization*, doi:10.1016/j.jebo.2007.04.003.

Gil-Bazo, J., and P. Ruiz-Verdu, (2009); "The Relation between Price and Performance in the Mutual Fund Industry", *Journal of Finance,* 64 (5), 2153-2183.

Golec, J.,1992, "Empirical tests of a principal-agent model of the investor-investment advisor relationship", *Journal of Financial and Quantitative Analysis*, 27, 81-95.

Golec, J.H., 1996, ''The effect of mutual fund managers' characteristics on their portfolio performance, risk and fees'', *Financial Services Review*, 5(2), 133-48.

Grinblatt, M., and Titman, D., 1989, "Adverse Risk Incentives and the Design of Performance-Based Contracts", *Management Science*, 35, 807-822.

Grossman, S. and J. Stiglitz, (1980); "On the Impossibility of Informationally Efficient Markets", *American Economic Review*, 70, 393-408.

Gruber, M., 1996, "Another Puzzle: The Growth in Actively Managed Mutual Funds", *Journal of Finance*, 52, 783-810.

Heinkel, R., and N. Stoughton, 1994, "The dynamics of portfolio management contracts", *Review of Financial Studies* 7, 351-387.

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

Kaniel, R. and J. N. Hugonnier, 2008, "Mutual Fund Portfolio Choice in the Presence of Dynamic Flows", Available at SSRN: http://ssrn.com/abstract=343720.

ICI, 2008, *Investment Company Fact Book*, 48th Edition.

IFSL, 2008, International Financial Markets in the UK.

INVERCO. (2008). Ahorro Financiero de las Familias. Instituciones de Inversión Colectiva y Fondos de Pensiones. Informe 2007 y Perspectivas 2008.

Ippolito, R., 1989, "Efficiency with costly information: a study of mutual fund performance, 1965-1984", *Quarterly Journal of Economics* 104, 1-23.

Khorana, A., and H. Servaes, 2004, "Conflicts of interest and competition in the mutual fund industry" Working paper, Georgia Tech University, GA.

Khorana, A., H. Servaes, and P. Tufano, 2008, "Mutual Funds Fees Around the World" *Review of Financial Studies*, doi:10.1093/rfs/hhn042.

Kuhnen, C., 2005, "Dynamic Contracting in the Mutual Fund Industry", WP Standford Graduate School of Business.

Luo, G.,2002, "Mutual Fund Fee-setting, Market Structure and Mark-ups", *Económica*, 69, 245-271.

Malhotra, D., and R. McLeod, 1997, "An Empirical analysis of Mutual Fund Expenses and Returns", *Journal of Financial Research*, 25(1), 81-98.

Malhotra, D.K., R. Martin and P. Russel, 2007, "Determinants of cost efficiencies in the mutual fund industry" *Review of Financial Economics* 16, 323-334.

Martínez, M. A., 2003, "Legal Constraints, Transaction Costs, and the Evaluation of Mutual Funds", *European Journal of Finance*, 9(3), 199-218.

Massa, M., and R. Patgiri, 2008, "Incentives and mutual fund performance: higher performance or just higher risk taking?", *Review of Financial Studies*, doi:10.1093/rfs/hhn023.

Modigliani, F., and G. Pogue, 1975, "Alternative Investment Performance Fee Arrangements and Implications for SEC Regulatory Policy", *Bell Journal of Economics*, 6, 127-160.

Nanda, V., J. Wang and L. Zheng, 2004, "Family Values and the Star Phenomenon: Strategies of Mutual Fund Complexes", *Review of Financial Studies,* 17, 667-698.

Ou-Yang, H., 2003, "Optimal Contracts in Continuous-Time Principal-Agent Problems", *Review of Financial Studies*, 16, 173-208.

Palomino, F., and A. Prat, 2003, "Risk taking and optimal contracts for money managers", *Rand Journal of Economics*, 34(1), 113-137.

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

Roll, R., 1992, "A Mean/Variance Analysis of Tracking Error". *Journal of Portfolio Management*, 18, 13-22.

Ross, S.A., 2004, "Compensation, incentives, and the duality of risk aversion and riskiness", *Journal of Finance*, 59, 207-225.

Sirri, E. and P. Tufano, 1998, "Costly Search and Mutual Fund Flows", *Journal of Finance*, 53, 1589-1622.

Starks, L., 1987, "Performance Incentive Fees: An Agency Theoretic Approach", *Journal of Financial and Quantitative Analysis*, 22(1), 17-32.

Stracca, L., 2006, "Delegated Portfolio Management: A Survey of the Theoretical Literature", *Journal of Economic Surveys*, 20 (5), 823-848.

Tufano, P., and M. Sevick, 1997, "Board Structure and Fee-setting in The U. S. Mutual Fund Industry", *Journal of Financial Economics*, 46, 321-355.

Warner, J. B. and J. S. Wu, 2006, "Why do Mutual Funds Advisory Contract Change? Fund versus Family Influences", available in http://papers.ssrn.com/sol3/papers.cfm?abstract_id=937952.

Woodrow, J. T., 2007, "Who Monitors the Mutual Fund Manager, New or Old Shareholders?" Available at SSRN: http://ssrn.com/abstract=687547.

APPENDIX: LEGAL MAXIMUM FEES IN SPAIN

The table shows the upper limits set by Spanish regulations for management fees, custody fees, front-end, and redemption loads.

Fund type	Management fee	Custody fee	Front-end and Redemption loads
MUTUAL FUNDS	If based on assets managed: 2.25%	0.2% of custodial assets	5% of assets purchased or redeemed
	If based on fund performance: 18%		
	If based on assets and performance: 1.35% of assets and 9% of performance		
MONEY MARKET FUNDS	If based on assets managed: 1%	0.15% of custodial assets	1% of assets purchased or redeemed
	If based on fund performance: 10%		
	If based on assets and performance: 0.67% of assets and 3.33% of performance		

TABLE I.I. DESCRIPTIVE STATISTICS OF THE SPANISH FUND SAMPLE

Panel A shows the distribution of the Spanish fund sample for each year in the 2002-2007 period, grouped according to the type of management fee charged. *Asset* funds charge management fees on the basis of the total assets managed, *Performance* funds on the returns obtained and *mixed* funds on a combination of the two. Funds are classified depending on the financial group to which they belong: Independent, I; Savings Banks, S; and Banks, B; and their investment objectives: equities, EFunds; fixed-income assets, BFunds; and global, GFunds. The number of funds of each type is reported. An asterisk stands for 5% significance in the differences in proportions test between *asset* funds and *mixed* funds.
Panel B shows the average age of the investment objective (ANTIQ), volatility (VOLAT), assets managed in thousands of Euros (ASSETS), net return (NRET), Sharpe ratio (SHARPE), management fee on assets (ASSETMF), on performance (PERFORMF), total management fee (TOTALMF), custody fee (CUSTFEE), front-end loads (FRONTLOAD), redemption fee (REDFEE), discount (DISC) and total expenses over assets (EXPENSES). In this case, an asterisk stands for 5% significance in the differences in averages test between *asset* funds and *mixed* funds.

Panel A

		2002	2003	2004	2005	2006	2007	TOTAL	%
		1,638	1,643	1,682	1,747	1,712	1,832	10,254	
I	*mixed*	39*	39	62*	95*	101*	89*	425*	37.68
	asset	387	386	406	428	409	411	2,427	26.66
	performance	1	1	4	4	3	3	16	76.19
S	*mixed*	24*	39	58	74	80	96	371	32.89
	asset	497	521	537	540	526	602	3,223	35.40
	performance	0	0	0	0	0	0	0	0.00
B	*mixed*	48	59	46*	51*	61*	67*	332*	29.43
	asset	639	598	569	555	531	563	3,455	37.95
	performance	3	0	0	0	1	1	5	23.81

EFunds	*mixed*	66*	83*	83*	98	91	85*	506	44.86
	asset	697	640	608	607	644	650	3,846	42.24
	performance	1	0	0	0	0	0	1	4.76
BFunds	*mixed*	20*	23*	22*	25*	29*	30*	149*	13.21
	asset	757	772	772	748	602	665	4,316	47.40
	performance	1	0	1	0	0	0	2	9.52
GFunds	*mixed*	25*	31*	61*	97*	122*	137*	473*	41.93
	asset	69	93	132	168	220	261	943	10.36
	performance	2	1	3	4	4	4	18	85.71

Panel B

		2002	2003	2004	2005	2006	2007	TOTAL
ANTIQ	*mixed*	2.49*	3.06*	3.48*	3.86*	4.18*	4.45*	3.78*
	asset	3.01	3.71	4.42	5.09	5.45	5.81	4.59
	performance	3.24	2.99	2.74	2.99	2.99	3.99	3.18
VOLAT	*mixed*	4.71*	2.90*	1.64*	1.87*	1.65*	1.62	2.14*
	asset	3.06	1.92	1.05	1.39	1.41	1.49	1.72
	performance	1.95	0.44	0.64*	2.00	0.91	1.26	1.31
ASSETS	*mixed*	18,897.90*	25,354.97*	71,278.53	77,172.20	84,463.40	79,498.91	66,361.07*
	asset	83,729.74	94,738.69	99,481.62	110,100.80	94,251.54	84,157.59	94,344.53
	performance	12,185.75	6,197.00	13,817.25	7,616.00	17,721.25	13,444.25	12,635.00
NRET	*mixed*	-16.67*	10.01	5.08	13.14*	8.54	3.07*	5.40*
	asset	-11.60	8.60	4.89	10.14	8.42	2.07	3.70
	performance	-7.11	3.05	1.47	5.09	6.85	3.41	1.99

		2002	2003	2004	2005	2006	2007	TOTAL
SHARPE	*mixed*	-5.75	1.52*	0.54*	1.47*	0.37*	-4.34*	-0.91*
	asset	-9.60	-1.00	-8.53	-9.56	-2.28	-7.51	-6.45
	performance	-4.54	1.91	-0.83	1.75	2.75	-0.75	-0.22
ASSETMF	*mixed*	1.13*	1.14*	1.10*	1.05*	1.09*	1.03*	1.08*
	asset	1.43	1.40	1.36	1.35	1.39	1.36	1.38
	performance	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PERFORMF	*mixed*	8.27*	8.36*	8.42*	8.35*	8.27*	8.00*	8.26*
	asset	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	performance	11.25	18.00	12.75	16.00	15.25	15.25	14.29
TOTALMF	*mixed*	1.24*	2.20*	1.74*	2.38*	2.00*	1.49*	1.87*
	asset	1.44	1.40	1.36	1.35	1.39	1.35	1.38
	performance	0.22	0.70	0.29	1.05	1.37	0.51	0.69
CUSTFEE	*mixed*	0.13	0.12	0.12*	0.12	0.12	0.11	0.12
	asset	0.12	0.12	0.11	0.11	0.11	0.11	0.11
	performance	0.05	0.20	0.14	0.17	0.14	0.14	0.13
FRONTLOAD	*mixed*	0.07	0.08	0.12	0.26*	0.45*	0.41*	0.27*
	asset	0.03	0.03	0.03	0.03	0.06	0.06	0.04
	performance	0.00	0.00	0.00	0.00	0.00	0.00	0.00
REDFEE	*mixed*	0.42	0.47	0.38*	0.33	0.45*	0.41*	0.41*
	asset	0.38	0.36	0.29	0.30	0.31	0.30	0.32
	performance	0.03	0.00	0.25	0.13	0.38	0.38	0.22
DISC	*mixed*	0.00	0.01	0.01	0.01	0.02	0.01	0.01
	asset	0.01	0.01	0.01	0.01	0.02	0.01	0.01
	performance	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EXPENSES	*mixed*	1.79	2.29*	1.69*	2.26*	1.83*	1.48	1.87*
	asset	1.65	1.56	1.54	1.51	1.60	1.53	1.57
	performance	0.88	0.83	0.59	1.21	1.36	0.80	0.96

TABLE I.2. PROBIT ESTIMATION

The table shows the results of the probit estimation separately for each year and for the whole period 2002-2007:

$y_i = 1 \qquad if\ y_i = X_i\,\beta + u_i > 0$

$y_i = 0 \qquad otherwise$

with β being the vector of the parameters, X_i the matrix of the explanatory variables, and u_i the residuals, which we assume to have mean zero and standard deviation one. The explanatory variables are the financial group to which the funds belong (Independent, I and Banks, B), investment objective (equities, EFunds and global, GFunds), average age of the investment objective (ANTIQ), volatility (VOLAT), neperian logarithm of assets managed in thousands of Euros (ASSETS), net return (NRET), Sharpe ratio (SHARPE), custody fee (CUSTFEE), and non-annual fee (NONAFEE). The asterisk stands for 5% significance. The two last rows exhibit the percentage of cases correctly predicted by the model and the pseudo R^2, respectively.

	2002	2003	2004	2005	2006	2007	TOTAL
I	0.0247	0.0068	-0.0131	0.0010	0.0189	0.0131	0.0052
B	0.0194	0.0166	-0.0267*	-0.0416*	-0.0478*	-0.0384*	-0.0231*
EFunds	0.0254	0.0602*	0.0675*	0.0895*	0.0767*	0.1055*	0.0822*
GFunds	0.2128*	0.2344*	0.2698*	0.3036*	0.2854*	0.2937*	0.3158*
ANTIQ	-0.0084	-0.0095*	-0.0140*	-0.0151*	-0.0135*	-0.0149*	-0.0089*
VOLAT	0.0034	0.0089*	0.0072	0.0049	0.0098	-0.0080	0.0003
ASSETS	-0.0089*	-0.0139*	-0.0058	-0.0095*	-0.0019	0.0009	-0.0068*
NRET		-0.0019*	-0.0006		-0.0009	0.0028*	0.0008*
SHARPE	0.0001	0.0001	0.0009*	0.0001	0.0001	0.0006	0.0002
CUSTFEE	0.1574	0.0829	0.1503	0.2092	0.3617*	0.1654*	0.1782*
NONAFEE	0.0024	0.0060	0.0025	0.0146*	0.0133	0.0146*	0.0107*
%	93.20	91.70	90.00	87.60	86.20	86.70	88.90
R2	0.10	0.11	0.15	0.16	0.14	0.15	0.14

TABLE 2.I. DISTRIBUTION OF MANAGEMENT FEE CHANGES

This table shows the semi-annual time-series distribution of the number of changes in asset-based (Panel A) and performance-based management fees (Panel B), separately for increases and decreases (INC and DEC, respectively), according to fund investment objectives (equities, EFunds; fixed-income assets, BFunds; and global, GFunds), and the type of management fee charged (asset funds, AFunds, if based exclusively on assets under management, and mixed funds, MFunds, if also charged on returns obtained).

Panel A: Asset-based management fees

	2º -2003		4º -2003		2º -2004		4º -2004		2º -2005		4º -2005		2º -2006		4º -2006		2º -2007		TOTAL	
	DEC	INC	DEC	INC	DEC	INC	DEC	INC	DEC	INC	DEC	INC	DEC	INC	DEC	INC	DEC	INC	DEC	INC
	33	17	13	12	13	13	9	4	16	9	4	8	17	13	22	12	16	14	143	102
BFunds	21	7	7	5	7	3	3	1	5	4	3	1	8	3	17	1	7	3	78	28
EFunds	7	9	3	7	4	6	5	2	3	2	0	5	6	10	3	7	6	9	37	57
GFunds	5	1	3	0	2	4	1	1	8	3	1	2	3	0	2	4	3	2	28	17
MFunds	2	1	2	1	1	5	4	1	7	2	1	1	3	3	5	2	1	0	26	16
AFunds	31	16	11	11	12	8	5	3	9	7	3	7	14	10	17	10	15	14	117	86

Panel B: Performance-based management fees

	2º -2003		4º -2003		2º -2004		4º -2004		2º -2005		4º -2005		2º -2006		4º -2006		2º -2007		TOTAL	
	DEC	INC	DEC	INC	DEC	INC	DEC	INC	DEC	INC	DEC	INC	DEC	INC	DEC	INC	DEC	INC	DEC	INC
	1	2	0	3	8	3	0	6	1	8	0	3	10	2	2	8	12	1	34	36
BFunds	0	2	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	1	5
EFunds	1	0	0	2	8	1	0	6	1	2	0	2	8	1	2	2	9	0	29	16
GFunds	0	0	0	1	0	2	0	0	0	6	0	0	1	1	0	4	3	1	4	15
MFunds	0	2	0	3	1	3	0	6	0	8	0	3	1	2	0	8	0	1	2	36
AFunds	1	0	0	0	7	0	0	0	1	0	0	0	9	0	2	0	12	0	32	0

TABLE 2.2. NUMBER OF FUNDS INVOLVED IN MANAGEMENT FEE CHANGES

This table reports the number of funds involved in management fee increases and decreases from 2-2003 to 2-2007; Panel A is for asset-based management fees and Panel B for performance-based fees.

Panel A: Asset-based management fees

Nº of increases\ Nº of decreases	0	1	2	3	Total
0	519	78	16	0	613
1	66	23	2	1	92
2	4	0	0	1	5
Total	589	101	18	2	710

Panel B: Performance-based management fees

Nº of increases\ Nº of decreases	0	1	2	3	Total
0	655	21	0	0	676
1	25	7	0	0	32
2	0	0	0	2	2
Total	680	28	0	2	710

TABLE 2.3. LOGIT ESTIMATION FOR THE DETERMINANTS OF MANAGEMENT FEE CHANGES

Panel A is for asset-based management fees changes and Panel B is for performance-based management fees changes. lnASSETS and lnMC-ASSETS are the neperian logarithm of assets managed by the fund and the management company, respectively. The remaining variables are defined in Appendix 2. Coefficients and marginal effects are given for each variable. The asterisk stands for 5% significance. The last two files of the table show the unconditional probability and the pseudo R^2 of Logit model, respectively.

	Panel A: Asset-based management fees				Panel B: Performance-based management fees			
	decrease		increase		decrease		increase	
Dependent variable	Y= 1 if decrease AMF Y= 0 if no changing AMF		Y= 1 if increase AMF Y= 0 if no changing AMF		Y= 1 if decrease PMF Y= 0 if no changing PMF		Y= 1 if increase PMF Y= 0 if no changing PMF	
	coefficient	marginal effect	coefficient	marginal effect	coefficient	marginal effect	coefficient	marginal effect
MC-ANRET(t-2)	-0.062*	-0.09%	-0.026	-0.04%	0.128*	0.01%	0.017	0.00%
EXPENSES(t-2)	-0.227	-0.33%	0.123	0.17%	0.140	0.01%	-0.742*	-0.21%
ANTIQ(t-2)	0.065	0.09%	0.003	0.00%	0.155	0.01%	-0.097	-0.03%
EXCQNRET(t-2)	-0.103*	-0.15%	-0.014	-0.02%	-0.150*	-0.01%	-0.104	-0.03%
MC-QNRET(t-2)	-0.111*	-0.16%			-0.240	-0.02%	-0.207*	-0.06%
VOLAT(t-2)	-0.368*	-0.53%	-0.021	-0.03%	0.166	0.01%	-0.214	-0.06%
QNRET(t-2)	0.081	0.12%	-0.027	-0.04%	0.190*	0.01%	0.089	0.02%
ANRET(t-2)	-0.016	-0.02%	0.002*	0.00%	0.014	0.00%	-0.005	0.00%
lnASSETS(t-2)	-0.130*	-0.19%	-0.225*	-0.31%	-0.727*	-0.06%	-0.432*	-0.12%
smallMC-ASSETS(t-2)	-0.270	-0.37%			-0.128	-0.01%	-0.572	-0.15%

	Panel A: Asset-based management fees				Panel B: Performance-based management fees			
	decrease		increase		decrease		increase	
Dependent variable	Y= 1 if decrease AMF Y= 0 if no changing AMF		Y= 1 if increase AMF Y= 0 if no changing AMF		Y= 1 if decrease PMF Y= 0 if no changing PMF		Y= 1 if increase PMF Y= 0 if no changing PMF	
	coefficient	marginal effect	coefficient	marginal effect	coefficient	marginal effect	coefficient	marginal effect
largeMC-ASSETS(t-2)	-0.418*	-0.56%			-1.505	-0.10%	0.255	0.08%
EFunds	-0.468	-0.68%	0.472	0.66%	0.047	0.00%		
GFunds	0.894*	1.88%	0.992*	2.12%			1.565*	0.91%
BFunds					-1.602	-0.12%	-0.981	-0.26%
smallMC-QNRET(t-2)			-0.136	-0.19%				
largeMC-QNRET(t-2)			0.542*	0.84%				
lnMC-ASSETS(t-2)			0.148*	0.21%				
constant	-1.557		-4.244		-0.438		0.304	
N	6,288		6,247		6,354		6,356	
Y=1	143		102		34		36	
uncondicional probability	2.24%		1.60%		0.53%		0.56%	
pseudo-R^2	8.17%		3.15%		21.00%		12.73%	

TABLE 2.4. OLS ESTIMATION FOR THE CONSEQUENCES OF MANAGEMENT FEE CHANGES

The table reports the estimation results of the following OLS regression: $DP_i = \lambda_0 + \lambda_1 INC + \lambda_2 DEC_i + \Gamma CV_i + \upsilon_i$, where DP_i are the alternatives variables we are interested on (QNRET, EXCQNRET and MSASSETS), INC (DEC) is a binary variable which takes a value of one for quarter-fund observations when there is an increase (decrease) in management fees and zero when no change occurs, CV_i is the set of control variables, and, finally, υ_i is the error term. Panel A is for asset-based management fee changes, and Panel B for the performance-based ones. The asterisk stands for 5% significance. The last row of the table shows the R^2 of the OLS model.

Panel A: Asset-based management fee changes Panel A: Asset-based management fee changes

Dependent variable	*QNRET*					*EXCQNRET*					*MSASSETS*				
QUARTER	T	T+1	T+2	T+3	T+4	T	T+1	T+2	T+3	T+4	T	T+1	T+2	T+3	T+4
QNRET(t-2)	0.128*	0.128*	0.128*	0.128*	0.210*	0.135*	0.028*	0.093*	0.032	0.098*	0.000*	0.000*	0.000	0.000*	0.000*
smallANRET(t-2)	1.155*	0.006	-0.014	-0.682*	-0.642*	-0.082	0.014	-0.002	-0.107	-0.402*	0.000	0.000	-0.001	0.000	0.000
largeANRET(t-2)	-0.502*	1.527*	0.495*	2.340*	0.515*	0.599*	1.326*	0.741*	1.289*	0.626*	-0.002*	-0.001*	-0.002*	-0.001*	-0.001*
AMF(t-2)	0.182	-0.001	0.138	0.200*	-0.097	0.163	0.045	-0.015	0.049	-0.132	0.000*	-0.001	-0.001	-0.001*	-0.001*
DEC	-0.044	-0.320	0.084	-0.486	-0.661*	-0.044	-0.215	-0.268	-0.274	-0.511*	0.002	0.003	0.004	0.004	0.004
INC	-0.225	-0.183	0.440	-0.902*	-0.032	-0.027	-0.105	0.289	-0.422	-0.313	-0.001	-0.001	0.000	0.000	0.000
lnASSETS(t-2)	0.105*	-0.096*	0.130*	-0.007	-0.032	0.055	-0.066	0.030	-0.038	-0.010	0.004*	0.004*	0.004*	0.004*	0.004*
lnMC-ASSETS(t-2)	-0.055	0.052*	-0.022	0.021	0.056*	0.009*	0.032*	0.018	0.014	0.035	0.000	0.000*	0.000*	0.000*	0.000*
EFunds	3.231*	2.253*	2.824*	3.137*	1.166*	-1.575*	-1.305*	-1.151*	-1.286*	-1.217*	0.002*	0.002*	0.002*	0.002*	0.002*
GFunds	1.611*	1.471*	1.504*	1.971*	0.786*	1.676*	1.519*	1.332*	1.696*	0.936*	0.015*	0.015*	0.014*	0.014*	0.013*
ANTIQ(t-2)	-0.489*	0.300*	-0.292*	0.133*	0.073*	0.115*	-0.049	0.085*	-0.010	-0.005	-0.001*	-0.001*	-0.001*	-0.001*	-0.001*
constant	2.293*	-0.988*	0.828	-0.329	-0.211	-1.710*	0.193	-1.207*	-0.075	-0.190	-0.042*	-0.040*	-0.039*	-0.038*	-0.037*
R^2	21%	18%	13%	30%	15%	11%	10%	8%	11%	9%	31%	30%	29%	29%	29%

Panel B: Performance-based management fee changes

Dependent variable	*QNRET*					*EXCQNRET*					*MSASSETS*				
QUARTER	T	T+1	T+2	T+3	T+4	T	T+1	T+2	T+3	T+4	T	T+1	T+2	T+3	T+4
QNRET(t-2)	0.130*	0.082*	-0.098*	-0.214*	0.210*	0.135*	0.029*	0.092*	0.032	0.097*	0.000*	0.000*	0.000	0.000*	0.000*
smallANRET(t-2)	1.143*	-0.002	-0.008	-0.697*	-0.632*	-0.089	0.010	0.000	-0.111	-0.396*	0.000	0.000	-0.001	0.000	0.000
largeANRET(t-2)	-0.487*	1.530*	0.491*	2.335*	0.516*	0.605*	1.327*	0.746*	1.287*	0.632*	-0.002*	-0.002*	-0.002*	-0.001*	-0.001*
PMF(t-2)	-0.030	0.044	-0.059	0.008	0.003	-0.003	0.010	-0.020	-0.003	0.000	0.000	0.000	0.000	0.000	0.000
DEC	-4.718*	-1.528	1.416	-2.317*	0.986	-1.860*	-0.506	-0.924	-0.658	-0.428	0.002*	0.003*	0.003*	0.002	0.002
INC	0.355	0.280	-0.444	-0.145	-0.540	0.124	0.416	-0.285	-0.749	-0.234	0.002	0.002	0.002	0.001	0.001
lnASSETS(t-2)	0.082*	-0.095*	0.119*	-0.019	-0.023	0.040	-0.067*	0.028	-0.042	-0.001	0.004*	0.004*	0.004*	0.004*	0.004*
lnMC-ASSETS(t-2)	-0.056	0.050	-0.015*	0.022	0.053	0.012	0.032	0.018	0.015	0.030	0.000*	0.000*	0.000*	0.000*	0.000*
EFunds	3.370*	2.232*	2.932*	3.244*	1.125*	-1.480*	-1.285*	-1.133*	-1.251*	-1.271*	0.002*	0.002*	0.002*	0.002*	0.002*
GFunds	1.690*	1.361*	1.659*	1.947*	0.771*	1.693*	1.484*	1.379*	1.708*	0.918*	0.015*	0.015*	0.014*	0.014*	0.013*
ANTIQ(t-2)	-0.481*	0.305*	-0.294*	0.144*	0.072	0.122*	-0.046	0.083*	-0.007	-0.007	-0.001*	-0.001*	-0.001*	-0.001*	-0.001*
constant	2.712*	-1.016*	1.044*	-0.057	-0.402	-1.437*	0.234	-1.183*	0.001	-0.380	-0.042*	-0.041*	-0.040*	-0.039*	-0.038*
R^2	21%	18%	13%	30%	15%	11%	10%	9%	11%	8%	31%	30%	29%	28%	28%

TABLE 3.I. FUND PERFORMANCE-EXPENSES RELATIONSHIP

The Table shows the time average of the cross-section performance-expenses relationship estimates for each of the 80 months from May 2002 until December 2008:

$$PERFORMANCE_{pt} = \lambda_0 + \lambda_1 EXPENSES_{pt} + \Gamma CV_{pt} + \upsilon_{pt}$$

where $PERFORMANCE_{pt}$ are the alternatives measures of performance: net return (NRET), gross return (GRET), and the estimations of the risk-adjusted returns, according to the CAPM (α_{CAPM}), the FF (α_{FF}) and the Carhart (α_{FFM}) multifactor models, both with net and raw returns; $EXPENSES_{pt}$ is the total expenses over assets; and CV_{pt} is a set of control variables which includes age (AGE), volatility (VOLAT), and the neperian logarithm of assets under management in thousands of Euros (lnASSETS), with Γ being the 3x1 vector of parameters. Finally, υ_{pt} is the error term. Results for *asset* funds and *mixed* funds are reported separately. The symbols ***, **, and * denote that the coefficient is statistically significant at the 1%, 5% and 10% significance levels, respectively.

		TOTAL		*Asset* funds		*Mixed* funds	
		Coef.	t	Coef.	t	Coef.	t
NRET	Intercept	-0.16	-1.27	-0.08	-0.58	-0.75***	-4.61
	EXPENSES	0.08	0.24	-1.15***	-3.54	5.89***	6.35
	VOLAT	0.01	0.09	0.04	0.40	-0.13	-1.38
	AGE	0.01**	2.22	0.01***	2.72	0.00	0.27
	lnASSETS	0.02	1.62	0.02*	1.68	0.02	1.38
	R^2 (%)	24.93		25.01		34.54	
GRET	Intercept	-0.16	-1.27	-0.08	-0.58	-0.75***	-4.61
	EXPENSES	1.08***	3.10	-0.15	-0.48	6.89***	7.43
	VOLAT	0.01	0.09	0.04	0.40	-0.13	-1.38
	AGE	0.01**	2.22	0.01***	2.72	0.00	0.27
	lnASSETS	0.02	1.62	0.02**	1.68	0.02	1.38
	R^2 (%)	25.15		25.05		35.46	

		TOTAL		*Asset* funds		*Mixed* funds	
		Coef.	t	Coef.	t	Coef.	t
a^{N}_{CAPM}	Intercept	-0.38***	-26.11	-0.37***	-24.87	-0.53***	-7.05
	EXPENSES	-0.91***	-13.31	-1.67***	-21.56	1.51***	6.37
	VOLAT	0.03**	2.15	0.05***	2.97	0.00	-0.35
	AGE	0.01***	7.91	0.01***	8.43	0.00***	2.11
	lnASSETS	0.02***	9.91	0.02***	11.77	0.00	0.12
	R^2 (%)	18.21		22.64		28.83	
α^{G}_{CAPM}	Intercept	-0.35***	-22.55	-0.36***	-24.55	-0.58***	-6.45
	EXPENSES	-0.26***	-3.68	-0.87***	-11.06	1.92***	8.93
	VOLAT	0.03**	2.22	0.05***	3.03	0.00	-0.23
	AGE	0.01***	9.65	0.01***	9.42	0.00***	3.06
	lnASSETS	0.02***	9.32	0.02***	11.78	0.01*	1.78
	R^2 (%)	18.15		21.29		33.10	
a^{N}_{FF}	Intercept	-0.38***	-26.30	-0.37***	-22.36	-0.49***	-6.74
	EXPENSES	-1.07***	-15.96	-1.80***	-20.56	1.06***	4.72
	VOLAT	-0.01	-0.46	0.01	0.48	-0.02*	-1.90
	AGE	0.01***	8.07	0.01***	8.32	0.00***	2.26
	lnASSETS	0.01***	4.47	0.02***	6.92	-0.01	-1.10
	R^2 (%)	17.89		21.79		25.91	

		TOTAL		*Asset* funds		*Mixed* funds	
		Coef.	t	Coef.	t	Coef.	t
α^{G}_{FF}	Intercept	-0.34***	-22.81	-0.35***	-21.63	-0.53***	-5.99
	EXPENSES	-0.43***	-6.23	-1.01***	-11.24	1.43***	7.00
	VOLAT	0.00	-0.35	0.01	0.59	-0.02	-1.61
	AGE	0.01***	9.94	0.01***	9.29	0.00***	3.18
	lnASSETS	0.01***	4.07	0.02***	6.40	0.01	0.69
	R^2 (%)	17.44		20.05		29.45	
a^{N}_{FFM}	Intercept	-0.34***	-24.37	-0.33***	-17.52	-0.43***	-6.20
	EXPENSES	-1.03***	-15.76	-1.76***	-23.28	1.03***	3.55
	VOLAT	0.04***	3.81	0.06***	4.11	0.02**	2.06
	AGE	0.01***	11.05	0.01***	10.90	0.01***	4.62
	lnASSETS	0.01***	6.66	0.02***	8.70	-0.01	-1.63
	R^2 (%)	12.94		16.77		26.04	
α^{G}_{FFM}	Intercept	-0.30***	-24.24	-0.31***	-18.31	-0.50***	-5.91
	EXPENSES	-0.39***	-5.88	-0.97***	-12.80	1.41***	5.51
	VOLAT	0.04***	3.90	0.06***	4.20	0.02***	2.07
	AGE	0.01***	13.50	0.01***	12.30	0.01***	5.22
	lnASSETS	0.01***	6.37	0.02***	8.39	0.01	0.90
	R^2 (%)	12.75		15.02		30.74	

TABLE 3.2. FUND PERFORMANCE-EXPENSES RELATIONSHIP QUANTILE REGRESSION

The Table shows the results from the quantile regression of the model :

$$PERFORMANCE_{pt} = \lambda_0 + \lambda_1 EXPENSES_{pt} + \Gamma CV_{pt} + \upsilon_{pt}$$

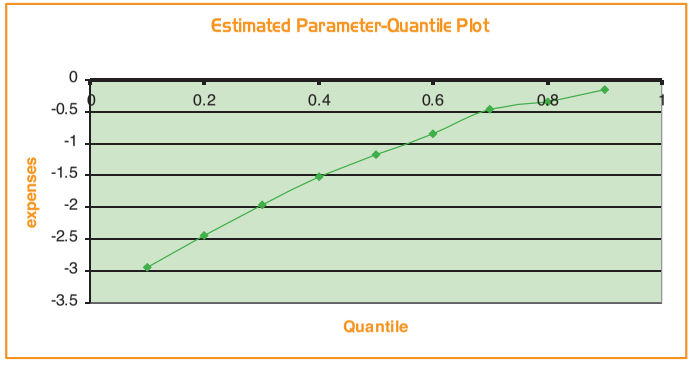
where $PERFORMANCE_{pt}$ are the risk-adjusted performance measures according to the Carhart (α_{FFM}) multifactor model, both with net and raw returns; $EXPENSES_{pt}$ is the total expenses over assets; and CV_{pt} is a set of control variables which includes age (AGE), volatility (VOLAT), and the neperian logarithm of assets under management in thousands of Euros (lnASSETS), with Γ being the 3x1 vector of parameters. Finally, υ_{pt} is the error term. Only results for the coefficient of EXPENSES (and the Objective function and Predicted Value at Mean) are shown, separately for *asset* funds and *mixed* funds. The symbols ***, **, and * denote that the coefficient is statistically significant at the 1%, 5% and 10% significance levels, respectively.

		Asset funds				*Mixed* funds			
	Quantile	objective function	predicted Value at Mean	expenses estimate	t	objective function	predicted Value at Mean	expenses estimate	t
a^N_{FFM}	0.1	3,677.15	-0.79	-2.93***	-33.35	540.38	-0.83	-1.82***	-13.19
	0.2	5,777.69	-0.57	-2.44***	-43.26	866.49	-0.59	-1.27***	-7.99
	0.3	7,206.70	-0.43	-1.97***	-35.84	1,072.77	-0.40	-0.98***	-6.94
	0.4	8,092.71	-0.30	-1.52***	-32.54	1,188.90	-0.25	-0.58***	-5.12
	0.5	8,513.97	-0.19	-1.18***	-23.65	1,229.62	-0.12	-0.07	-0.56
	0.6	8,474.23	-0.06	-0.85***	-15.11	1,200.56	0.00	0.28***	2.60
	0.7	7,894.43	0.08	-0.47***	-6.96	1,106.55	0.13	0.60***	4.88
	0.8	6,649.18	0.28	-0.35***	-4.09	926.39	0.33	0.98***	5.14
	0.9	4,341.82	0.63	-0.15	-1.35	610.24	0.64	1.93***	7.63

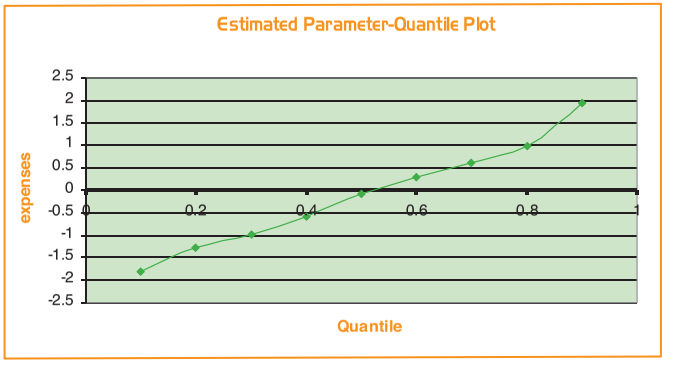
		Asset funds				*Mixed* funds			
	Quantile	objective function	predicted Value at Mean	expenses estimate	t	objective function	predicted Value at Mean	expenses estimate	t
α^{G}_{FFM}	0.1	3,604.86	-0.63	-2.08***	-23.16	518.84	-0.67	-1.66***	-12.00
	0.2	5,662.90	-0.42	-1.52***	-27.53	839.87	-0.43	-1.14***	-6.54
	0.3	7,067.13	-0.27	-1.06***	-19.31	1,044.06	-0.23	-0.72***	-4.61
	0.4	7,938.92	-0.15	-0.64***	-12.94	1,158.91	-0.08	-0.33***	-2.42
	0.5	8,356.43	-0.03	-0.32***	-5.98	1,201.53	0.05	0.21*	1.73
	0.6	8,311.73	0.09	0.05	0.89	1,178.14	0.18	0.46***	3.67
	0.7	7,743.01	0.24	0.29***	4.24	1,084.87	0.33	0.88***	6.34
	0.8	6,520.72	0.44	0.46***	5.46	902.38	0.53	1.75***	9.44
	0.9	4,258.08	0.79	0.52***	4.57	591.48	0.84	2.44***	9.54

FIGURE 3.I. QUANTILE REGRESSION. EXPENSES COEFFICIENT AND PERFORMANCE QUANTILE

Panel A: α^{N}_{FFM}

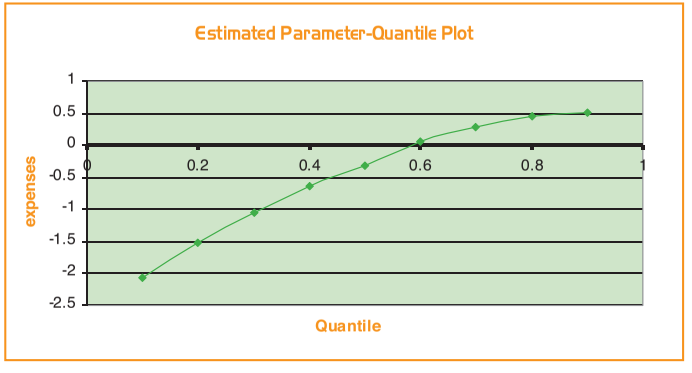


Asset funds

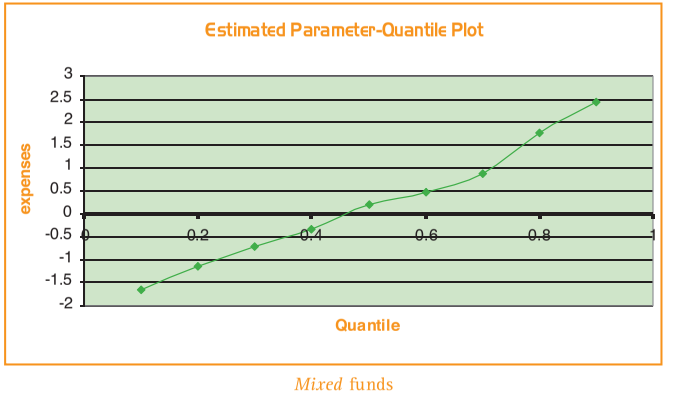


Mixed funds

Panel B: α^{G}_{FFM}



Asset funds



Mixed funds

PUbliCan
Ediciones
Universidad de Cantabria

Enero 2013

Esta tesis titulada *Management Fees Of The Spanish Mutual Fund Industry* analiza las comisiones de gestión pagadas por los partícipes de la industria de fondos de inversión españoles. Dado que estas comisiones influyen directamente en la rentabilidad final obtenida por los partícipes y son, por otro lado, la principal fuente de ingresos de las Sociedades Gestoras de los fondos de inversión, su determinación adquiere una gran relevancia para los inversores, gestores y compañías gestoras y también para los reguladores de estos activos financieros.

La tesis está estructura en tres capítulos que tienen un objetivo común: comparar el grupo de fondos de inversión que cobran comisiones de gestión total o parcialmente en función de los resultados obtenidos por el fondo (en este caso hablamos de la comisión de gestión sobre rendimiento) con los que establecen las comisiones de gestión exclusivamente en función del activo gestionado por el fondo (comisión de gestión sobre rendimiento). Los capítulos utilizan diferentes frecuencias de datos, muestras, modelos y metodologías de estimación. El capítulo 1 estudia las características de los fondos de inversión que determinan la elección de una comisión de gestión sobre rendimiento. El capítulo 2 se centra en estudiar los cambios en el tipo y la magnitud de las comisiones de gestión. Por último, el capítulo 3 estudia si la forma en que las comisiones de gestión se cobran al inversor es relevante con respecto a la evaluación del rendimiento de los fondos y respecto a la relación que se da entre los rendimientos ofrecidos al partícipe y los gastos que se le cobran.

En este documento se presenta un resumen de los principales resultados obtenidos a lo largo de los tres capítulos.

Promotora editorial:

Fundación UCEIF
Fundación de la Universidad de Cantabria para el Estudio y la Investigación del Sector Financiero

UC UNIVERSIDAD DE CANTABRIA

Santander

ISBN 978-84-86116-71-2 8 €
9 788486 116712
www.libreriauc.es