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Fund performance.

JEL Classification : G23, G28, G34

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Effectiveness of independent boards of Luxembourg funds

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Abstract

To protect fund investors against conflicting interests with fund management companies, U.S. mutual funds have mandatory independent directors. That is not the case for funds in Europe, set-up in accordance with the UCITS Directive. Benefitting from the cross-border distribution possibilities of this E.U. legislation, Luxembourg has developed into the second largest fund domicile globally. Although it is not mandatory, many Luxembourg fund boards do have independent members on a voluntary basis. Using a sample of Luxembourg UCITS, this paper finds no consistent evidence that more independent boards have lower costs or achieve better investment performance. However, there are consistent and significant differences between fund management companies that are part of banks or insurers and independent fund management companies. Funds of the latter category have higher costs, but perform better after costs.

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1. Introduction

Millions of investors worldwide have entrusted assets to investment funds as part of their financial planning, with the goal of securing a healthy financial future for themselves and their families. Assets under management of investment funds worldwide at the end of 2010 were estimated at USD 24.7 trillion. This makes the funds sector highly relevant, economically and socially. Between the primary stakeholders of an investment fund, the investors and the fund management company, there is a typical principal-agent problem. This can lead to suboptimal investment performance, either as a result of excessive management fees and other costs or as a result of behaviour by fund management companies that is in their benefit, but not that of the investors. Examples of such behaviour evidenced by empirical research are fund tournament (Brown, Harlow and Starks, 1996, and Chevalier and Ellison, 1997), leaning for the tape (Carhart, Kaniel, Musto and Reed, 2002) and favouritism (Gaspar, Massa and Matos, 2006). Fund boards have a role in avoiding these conflicts of interests. However, when it matters, dependent directors might prioritise the interests of the fund management company over the interests of the investors. Therefore, independent directors can be expected to be the most effective category of board members in pursuing the interests of investors. Fund costs can be used as a measure to evaluate board effectiveness. Fund directors have a direct influence on costs and it is an area where there is a clear potential conflict. Although the influence of directors on investment performance is less direct, it is also used as a measure for board effectiveness. Ultimately, performance is what investors are after when they invest in a fund. Performance is also where all possible agency costs converge, since, in the end, the cost of any conflict of interest goes at the expense of the performance achieved.

In the U.S., the largest fund domicile globally, the Investment Company Act of 1940 requires funds to have at least 40% of their board seats taken by independent directors. The U.S. fund association, ICI, recommends a two-third majority as best practice¹. One of the roles of the independent directors is to negotiate the advisory fee with the fund management company on behalf of fund investors.

¹ Investment Company Institute (ICI), 1999, Enhancing a culture of independence and effectiveness, Report of the advisory group on best practices for fund directors.

The results of empirical research into the effectiveness of independent governance analysing the situation in the U.S. are mixed. Tufano and Sevick (1997) find that funds with a larger proportion of independent directors charge lower fees. Similar results are found by Del Guercio, Dann and Partch (2003) for closed-end funds, but contradictory results are found by Kong and Tang (2008). Ferris and Yan (2007), Cremers, Driessen, Maenhout and Weinbaum (2009) and Adams, Mansi and Nishikawa (2010) fail to find a statistically significant relationship between the percentage in independent directors and costs, the latter for a sample of index funds. Analysing data over a longer period (1995-2004), Meschke (2007) finds that chair independence is associated with lower costs, but the results for the percentage of independent board members are inconsistent in different sub-periods. Contrary to expectations, he finds that both a higher percentage of independent board members and independent chairmen are associated with worse investment performance. Kong and Tang (2008) have similar results for the relationship between the percentage of independence and performance, but in case of Ferris and Yan (2007) and Cremers et al. (2009) the results are not statistically significant.

The UCITS Directive² is legislation of the European Union (E.U.) aimed at enhancing investor protection and creating a single market for investment funds in the E.U. The UCITS market is dominated by Luxembourg as fund domicile, making it the second largest fund domicile globally. Contrary to U.S. legislation, the UCITS Directive and Luxembourg laws and regulations do not require independent directors on fund boards. Whether or not the concept of mandatory independent directors should be introduced in Europe as well, has been a topic of debate. In 2006, in response to an IOSCO report on fund governance³, the European fund management association, EFAMA, did not agree with IOSCO's preference for oversight by independent board members and advocated the role of the auditor and depositary as independent

² UCITS stands for Undertakings for Collective Investment in Transferable Securities.

³ International Organization of Securities Commissions (IOSCO), 2006, Examination of governance for collective investment schemes; A report of the Technical Committee of the International Organisation of Securities Commissions.

oversight entities⁴. The Irish fund industry association, on the other hand, has recently published self-regulation for the industry, which requires funds to have at least one independent director⁵. This paper is the first to study in the UCITS regulatory context whether or not more independent boards are more effective for investors and associated with lower costs or better investment performance. The sample consists of 593 equity funds with UCITS status that are part of the fund ranges of 48 top cross-border fund management companies operating out of Luxembourg. Although it is not required, many of these funds have voluntarily appointed independent board members. Whereas in the U.S., the level of independence of fund boards is always above the regulatory minimum, in this Luxembourg fund sample, there are funds without and funds with independent directors on their board. This results in greater cross-sectional variation in the level of independence than in samples of U.S. funds. With this sample and a unique fund governance database covering the 2000-2009 period, this paper sheds light on a fund domicile that is of high economic importance, but that has received little academic attention to date.

Using the Total Expense Ratio and the Carhart alpha as the primary measures for costs and performance, the study does not find consistent evidence that more independent boards are more effective for investors. Both the level of costs and the performance achieved seem to be driven more by the distribution model of the promoter⁶ than by the governance model of the fund boards. Equity funds of promoters without affiliated distribution, as opposed to funds of promoters that are part of banks or insurers, are more expensive by approximately 16 basis points. However, after costs, these funds perform better by in excess of one percentage point.

The structure of this paper is as follows. Section 2 analyses earlier empirical studies into the effectiveness of governance by fund boards. Section 3 is dedicated to relevant aspects of the Luxembourg fund domicile, specifically regulations and governance requirements, and market developments. Section 4 describes the sample and defines dependence and independence for the

⁴ European Fund and Asset Management Association (EFAMA), 2006, Reply to IOSCO's report "Examination of governance for collective investment schemes".

⁵ Irish Funds Industry Association (IFIA), 2011, Corporate Governance Code for Collective Investment Schemes and Management Companies.

⁶ The term promoter in the Luxembourg fund industry is similar to the term sponsor used in the U.S. fund industry.

purpose of this study. A multiple regression analysis is used to investigate whether board characteristics explain variation in fund costs and performance. Section 5 is dedicated to the methodology and section 6 to the empirical results of this analysis. Section 7 provides the conclusions of the study.

2. Existing literature

There are several earlier empirical studies into the effectiveness of fund boards. Although the first of these dates from 1997, the U.S. late trading and market timing scandal of 2003 formed a trigger for academics to study whether boards can play a positive role in avoiding conflicts of interest. The published studies and working papers that are reviewed in this section investigate the relationship between governance characteristics on the one hand, and fund costs, performance and aspects of fund management company behaviour on the other hand. Except for Gemmill and Thomas (2006), all studies analyse funds domiciled in the U.S.

2.1. Board independence

The relationship found empirically between board independence, in regression analyses measured as the percentage of independent directors or with a dummy variable for whether or not the board has an independent chairman, and costs and performance is not consistent across the various studies. Tufano and Sevik (1997) find that funds with a larger proportion of independent directors charge lower fees. Meschke (2007) does not find a statistically significant relationship for the percentage of independent board members and fees for the entire period analysed (1995-2004). However, he does find that a higher percentage of independents is associated with higher fees in the first and second part of the period analysed, but with lower fees in the third part of the period. Chair independence is associated with lower fees for the entire period. Surprisingly, the study finds that both measures of board independence are associated with lower performance. Ferris and Yan (2007) find a statistically significant positive relationship between the percentage of independent directors and fees, but not in all model specifications. For the percentage of independence and performance, the relationship is not statistically significant. For the chair position, none of the relationships is statistically significant. Kong and Tang (2008) find that a higher percentage of independence is related to higher fees and lower performance. Their results for the chair position are not statistically significant. Cremers et

al. (2009) find no statistically significant relationship between the proportion of independent directors and fees or performance. Ding and Wermers (2005) analyse fund performance, not costs, and find no statistically significant relationship with the percentage of independent directors.

Adams et al. (2010) investigate the relationship between board characteristics and costs and performance of index funds. An interesting aspect of index funds is that they form a more homogeneous group than actively managed funds and that return differences versus their benchmarks are attributable to operational aspects. The study does not find a statistically significant relationship for the percentage of independent board members and the chair position with costs or with performance. Analysing closed-end funds in the U.K., Gemmill and Thomas (2006) find that boards with less outside influence are associated with higher costs, but they do not find a statistically significant relationship with the price discount or premium. For closed-end funds in the U.S., Del Guercio et al. (2003) find that boards with a higher percentage of independent directors have lower costs and are more likely to approve a share repurchase programme when discounts are large.

Other noteworthy empirical results for board independence are that Qian (2011), Meschke (2007) and Ferris and Yan (2007) find no evidence that boards with a higher percentage of independent directors or independent chairs were less likely to be involved in litigation for late trading or market timing. Ding and Wermers (2005) find that boards with more outside directors are more likely to replace managers with poor performance, which has a positive effect on subsequent returns. Khorana, Tufano and Wedge (2007) find that boards with a higher proportion of independent directors tolerate less underperformance before engaging in across-family mergers.

2.2. Span of control

Several studies use “span of control” type variables in their regression analyses, such as board size, the number of funds overseen and board concentration. Larger boards might suffer from the problems of managing and coordinating bigger teams, along with an increased risk of free riding, i.e., board members not putting in their fair share of effort, leading to less effective decision-making. Overseeing many funds of one fund management company or even of multiple fund management companies could lead to a board member being too busy to provide effective

oversight. Board concentration is a measure for the relative span of a director's or a board's oversight responsibility. At one extreme, each fund in a fund family can have a different board, whereas at the other extreme, all funds in a fund family can have boards of the same composition, a so called unitary board. A unitary board could have the advantage that it has more power and leverage in negotiations with the fund management company and other service providers. Furthermore, boards overseeing all funds in a fund family might be better able to monitor against family strategies, avoiding that one fund benefits at the expense of others, and evaluate benefits from economies of scale, making sure that these are reflected in the costs charged.

Where included, the coefficient for the number of funds overseen is generally not statistically significant, either for costs or performance. The results for board size are relatively consistent across the various studies, in line with the hypothesis that larger boards are weaker monitors and suffer from less effective decision-making. Kong and Tang (2008) and Adams et al. (2010) find that larger boards are associated with both higher costs and lower performance. Tufano and Sevick (1997) and Cremers et al. (2009) find the same relationship for board size and costs, but do not investigate the relationship with performance. Ferris and Yan (2007) find a positive relationship for board size and costs, but the result for performance is not statistically significant. For closed-end funds, Gemmill and Thomas (2006) find that larger boards go hand-in-hand with higher costs and Del Guercio et al. (2003) find that larger boards are associated with both higher costs and bigger discounts from net asset value. Meschke (2007), however, does not find statistically significant results for board size and costs or performance. The only contradictory result is that of Ding and Wermers (2005), who find that funds with larger boards perform better, are less tolerant of poor performance and more likely to replace poor performing managers. With regard to board concentration, Tufano and Sevick (1997) find that more concentration is associated with lower fees. Several later studies use a dummy variable to distinguish between unitary (100% concentration) and clustered boards (less than 100% concentration). Kong and Tang (2008) find that funds with a unitary board have lower costs, but the result for performance is not statistically significant. Adams et al. (2010) find for index funds in some model specifications that unitary boards are associated with lower costs and higher performance, but this finding is not consistent across all model specifications. The results of Del Guercio et al. (2003) for unitary boards in a sample of U.S. closed-end funds are also inconsistent. Kong and

Tang (2008) find that unitary boards are more effective in setting fee break-points. Although the results are not overwhelmingly convincing, unitary boards seem to be better for fund investors than less concentrated boards.

2.3. Compensation and ownership

High compensation might create a financial dependency for a director on his position, which can lead to a lesser alignment of his interests with investors, whereas investments in the funds overseen can help improve the alignment of interests. The various empirical studies that include measures for compensation and ownership generally confirm that a higher compensation is a negative factor for investors and higher investment by directors is a positive factor.

Tufano and Sevick (1997) pay significant attention to defining relative compensation in relationship to the number of funds and amount of assets overseen. Their measure for unexplained compensation is also used by Meschke (2007) and Ferris and Yan (2007). These three studies all find that greater unexplained compensation is associated with higher costs, although in the case of Ferris and Yan (2007), the relationship is not statistically significant in all model specifications. Meschke (2007) finds that higher unexplained compensation is associated with lower performance, but in the case of Ferris and Yan (2007), that relationship is not statistically significant. For U.S. closed-end funds, Del Guercio et al. (2003) find a positive relation between director compensation and the fund expense ratio.

For U.S funds, data on director ownership is available as of 2002. Different studies use different measures for director ownership. Meschke (2007) finds that funds charge lower fees when a larger fraction of independent directors hold at least US\$ 100,000 in the funds they oversee. For performance, the ownership coefficient is not statistically significant. Ferris and Yan (2007) find that the percentage of independent directors not invested in the fund has no statistically significant relationship with costs in practically all model specifications. For performance, the coefficient is also not statistically significant. Ferris and Yan (2009) find that ownership in funds by independent and especially interested directors is positively related to fund performance. Cremers et al. (2009) analyse average fund family and individual fund ownership by independent directors, as well as the average individual fund ownership by non-independent directors, in relationship to fees and performance. They find that all these variables are positively related to performance. The average ownership in individual fund shares by non-independent directors has

a statistically negative relationship to fees. In order to measure the relative size of the director investment, Kong and Tang (2008) use the percentage of independent directors whose investment in the fund complex is greater than his compensation for serving as a director, or US\$ 100,000, whichever is smaller. This variable has a statistically significant negative relationship with costs, but the relationship with performance is not significant. For a sample of index funds, Adams et al. (2010) analyse the percentage of directors who have ownership in funds in the fund family and find no statistically significant relationship with the funds' expense ratio, return versus the index return or alpha.

3. Luxembourg-domiciled funds

3.1. Regulatory aspects

Before 1985, the European fund industry was organised and regulated along national lines. The UCITS Directive, adopted in that year, aimed to harmonise European Union's (E.U.) national laws for investment funds and to create a single market for investment funds. The Directive laid down binding, harmonised rules for management companies and investment funds, which had to be, and were, transposed by the E.U. Member States into their national law. On 30 March 1988, Luxembourg was the first Member State to do this.

The UCITS Directive specifies the key features of these funds, such as the permitted legal forms, liquidity requirements and investment and borrowing rules. Also rules with regard to the role and duties of UCITS depositaries and management companies are included in the directive. A benefit for fund promoters is that the UCITS Directive allows a fund authorised as a UCITS in its home country, to be marketed in other Member States. This is often referred to as the funds having a "European Passport". Since the original UCITS Directive, there have been several updates and a further amendment is in preparation. UCITS IV, which came into force on 1 July 2011, introduced the mandatory Key Investor Information Document (KIID), which provides information on past performance, costs and risks in a standardised fashion. The KIID should increase transparency, facilitate comparisons between funds and help ensuring that investors can make informed investment decisions.

3.2. Oversight functions

Europe, in general, and Luxembourg, in specific, have implemented different oversight functions compared to the U.S. to mitigate conflicts of interest and protect fund investors. The UCITS Directive requires funds with UCITS status to have a depositary, which, in addition to its responsibility for the safekeeping of the assets of the fund, has several operationally oriented oversight functions. The general principle of a fiduciary responsibility towards investors applies; the depositary and the management company are required to act independently and in the interest of the unit-holders.

Regulated funds in Luxembourg can either be set up according to the corporate model (“Société d’Investissement à Capital Variable”, hereafter SICAV) or the contractual model (“Fonds Commun de Placement”, hereafter FCP). A SICAV has its own board of directors, whereas in case of an FCP, which is a co-proprietorship without legal personality, the board sits at the level of the management company. Luxembourg UCITS are typically set up as umbrella funds, where the different sub-funds have a different investment policy. The assets of a sub-fund are exclusively attributable to the investors in that sub-fund, so that each sub-fund can be considered as a separate entity from an economic perspective. Sub-funds in turn can have different share classes, targeting different client types, with different fee levels, dividend policies and base currencies. Since the umbrella forms the legal entity, all sub-funds and share classes in the umbrella are overseen by definition by one board and one depositary.

Boards of Luxembourg UCITS consist of at least three individuals, who must be approved prior to their appointment by the Luxembourg regulator, CSSF⁷. The UCITS Directive and Luxembourg laws and regulations do not require independent board members on fund boards. There are no specific qualifications required either, but the CSSF will assess whether a proposed director is suitable to perform the required duties. The policy of the CSSF has been to prefer fund boards to consist of a majority of representatives of the promoter, the organisation that initiates the fund and controls its operations. In the case where there are any issues with a fund, the Luxembourg regulator can, and does, turn to this promoter.

⁷ Commission de Surveillance du Secteur Financier.

The association of the Luxembourg fund industry, ALFI, has published a code of conduct that focuses on the role of fund boards⁸. It prescribes boards to act independently, but does not require or recommend board members to be independent according to a legal or regulatory definition. The code gives little to no guidance to boards with regard to what is expected in the area of costs and performance. Although it is not required on the basis of regulations or recommended on the basis of this industry code, many funds in Luxembourg have nevertheless appointed independent board members.

3.3. Market development

Before the UCITS Directive came into force in Luxembourg in 1988, the country was already a centre for private banking and some fund management companies had established investment funds there. The new legislation allowed many of these funds to convert to UCITS, in order to facilitate their cross-border distribution. Other fund management companies launched their international activities from Luxembourg in the period thereafter.

At the time the UCITS Directive became effective, the majority of European banks, which were and still are the main distributors of investment funds in continental Europe, only actively offered funds managed by their in-house fund management company. From the early years of this millennium however, less restricted distribution models have developed. This has created commercial opportunities for independent fund management companies, often firms from the U.S. or U.K., without an affiliated distribution network, offering UCITS on a cross-border basis. Meanwhile, fund management companies affiliated with banks or insurers have started offering their funds through non-affiliated distribution channels as well.

Today, Luxembourg UCITS are not only distributed in Europe, but also in countries in Asia, the Gulf region and Latin America. Luxembourg, as a fund domicile, has grown rapidly to become the number two fund domicile globally, only behind the U.S.

⁸ Association of the Luxembourg Fund Industry (ALFI), 2009, ALFI Code of Conduct for Luxembourg Investment Funds.

4. Sample

4.1. Fund promoters and funds

In Luxembourg, there is no academic-quality fund database available that is comparable to the CRSP Survivor-Bias Free U.S. Mutual Fund Database or a central source for fund governance data. The lack of data sources required the need find a balance between the ability to look up data manually and perform checks on data quality and having a sample of sufficient size, in order to come to meaningful and ideally statistically significant results.

The umbrella funds included in the sample are Luxembourg-domiciled UCITS, distributed on a cross-border basis. Their promoters were selected from the annual PwC top-50 leading cross-border fund promoters, on which they had to appear at least once in the period from 2003 until 2010⁹. In order not to double count promoters that have more than one umbrella, only each promoter's "flagship umbrella" was selected for the sample. This is the umbrella with the fund promoter's primary fund offering and usually has the largest number of funds and most assets under management. In total, the sample consists of 48 promoters and umbrellas (see appendix A). Five of these were launched in the course of the research period (2000-2009), whereas three umbrellas dropped from the sample due to merger activity. At the end of 2009, there were 45 umbrellas in the sample, with combined Total Net Assets (TNA) of EUR 545.8 billion, which is almost one-third of the TNA of all Luxembourg-domiciled funds.

To be able to analyse the relationship between governance characteristics, specifically the level of independence of boards, and costs and performance, a selection was made of the sub-funds that are part of these umbrella funds in the sample. The specific sub-funds analysed are those that are part of one of six main fund sectors: Global equity, Pan-European equity, Euroland equity, U.S. equity, Japan equity and Emerging Markets equity. Survivorship bias was avoided by selecting funds investing in these sectors from issues of the Lipper Luxembourg Funds Encyclopaedia for each of the years 2000 through 2010. This resulted in a sample of 593 sub-funds. For consistency reasons and because agency conflicts and information asymmetry can be expected to be larger for retail investors than for institutional investors, the cost and performance data collected and analysed concerned the standard retail share class of each of the sub-funds in

⁹ PricewaterhouseCoopers (PwC), 2003-2010, Global Fund Distribution (annual publication initially published under the title "Leading cross-border management groups").

the sample. The Total Net Assets of the sub-funds in the sample amounted to EUR 145.7 billion at the end of 2009, which is 27% of the assets of the umbrellas of which they are part.

4.2. Fund boards

Unlike the U.S., individual board members in Luxembourg have not been categorised as either dependent or independent, based on a legal or regulatory definition. In order to analyse whether more independent boards are more effective for investors, it was necessary to define dependence versus independence in a way that allowed the categorisation of the directors on the basis of publicly available information. For the purpose of this study, board members who are not currently or previously employed by the fund promoter or the promoter group and who are not currently employed by any of the umbrella's service providers are considered independent. This category of directors is the one whose interests should conflict the least with those of investors. Board members who are employees of the fund promoter or the promoter group are considered dependent board members. When it matters, it is questionable whether these board members, who earn a living working for the promoter or promoter group, are able to prioritise the interests of the investors above those of the promoter. A category of semi-independent board members is also distinguished. Such board members are either former employees of the fund promoter or promoter group, or are current employees of a service provider outside of the promoter group. Although these board members are not employed by the promoter or promoter group, the loyalty of board members in this category could, nevertheless, be with the promoter, due to their former employment, their provider-client relationship or otherwise.

A unique, proprietary fund governance database was developed containing governance data of all the umbrellas in the sample, covering the period from 1 January 2000 to 31 December 2009. The names of the chairmen and other directors were obtained from the umbrellas' annual reports for the period 2000-2010, together with their dependency status and dates of appointment and resignation. Any missing data was supplemented on the basis of the official publication of the Luxembourg government and other sources.

Out of the 911 board members in total, 755 (82.9%) are employees of the fund promoter or promoter group and are therefore classified as dependent, 100 (11.0%) are independent and 56 (6.1%) are semi-independent. The percentage of directors in the sample who are independent increased from 14.4% at the beginning to 18.2% at the end of the research period, primarily at

the expense of the dependent category. At the umbrella level, it turns out that the percentage of umbrellas with dependent board members only increased in the same period from 37.2% to 51.1%. These seemingly contradictory developments can be explained by different developments among the Anglo-Saxon than among the continental European promoters. For Anglo-Saxon promoters, it is more common to have boards with independent directors than for continental European promoters. At the end of 2009, the sample included the umbrella funds of 22 Anglo-Saxon promoters, out of which 15 (68.2%) had at least one independent board member. On the same date, there were 23 umbrella funds in the sample of continental European fund promoters, out of which only 3 (13.0%) had at least one independent board member. The Anglo-Saxon promoters have developed towards more independence in the last decade, with an increase in the percentage of independent board members from 25.0% to 31.7%. With a decrease from 6.5% to 5.5%, the opposite is true for the continental European promoters. There is a significant variation in the level of independence in the sample. At the end of 2009, it ranged between 0% and 80.0% for the Anglo-Saxon promoters and between 0% and 40.0% for the continental European promoters.

5. Methodology

The study uses a multiple regression analysis to investigate the relationship between fund costs and fund performance as dependent variables and the funds' governance characteristics as explanatory variables, while correcting for possible other influences, for example that of fund size, with several control variables.

5.1. Variables

5.1.1. Dependent variable: Fund costs

This study uses the Total Expense Ratio (TER) as the primary cost measure at the fund level. The TER is the total of the ongoing expenses, expressed as a percentage of the average net assets, comparable to the expense ratio or annual operating expenses used in U.S. fund studies. The regression analyses are also performed with the two components of the TER as dependent variables, specifically the Management Fee and the Other Costs. These analyses serve as robustness checks and clarify which of the two TER components is the driving force behind the relationships found between TER and different explanatory and control variables.

Management Fee is the fee for managing the fund portfolio, including any investment advisory expenses and represents the amount of wealth transferred from the fund investor to the fund promoter and is therefore the part of the total expenses where conflicts of interest can be expected between the promoter and the investor¹⁰. Other Costs includes costs for administration, custody, audit, tax¹¹ and other expenses. Since administration and custody are services that are often provided by companies within the promoter group, this category could still represent a wealth transfer from the investors in the fund to the promoter group and give rise to conflicts of interest.

The data for fund costs was obtained from Lipper, the leading provider of investment fund fees and expenses data in Europe. Lipper is independent from the promoter groups and calculates the TER and its components in a consistent manner through time and across fund promoters. This allows comparisons between funds of different fund promoters and at different moments in time.

The pricing strategy is often determined by the promoter at umbrella or fund range level, not per individual fund. The Relative Cost Indicator was developed as a measure for an umbrella's costs level relative to competitors.

The Relative Cost Indicator for fund i in period t can be calculated as follows¹²:

$$RCI_{i,t} = (TER\%_{i,t} - TER\%_{s,t}) / SD\%_{s,t} \quad (1)$$

where:

$TER\%_{i,t}$ is the TER for fund i in period t

$TER\%_{s,t}$ is the average TER level of funds in the same sector

$SD\%_{s,t}$ is the standard deviation of the TER of funds in the same sector

¹⁰ Fund distributors in Europe normally receive a retrocession, which is negotiated by the promoter with each distributor individually, that is paid from and therefore part of the management fee. In cases where separate distribution fee is charged to the fund, this is added to the management fee, in order to make a comparison between comparable items.

¹¹ Luxembourg funds have an annual subscription tax, "taxe d'abonnement", of 5 basis points (6 basis points before 1 January 2002).

¹² Because funds with a performance fee might have a lower TER, the Relative Cost Indicator for each umbrella is calculated excluding funds that had a performance fee schedule.

Relative Cost Indicator for umbrella u in period t , which is a measure for the average cost level of funds in that umbrella relative to competitors, is calculated as follows:

$$RCl_{u,t} = \sum_{i=1}^{n_u} RCl_{i,t} / n_u \quad (2)$$

where:

n_u = number of funds in umbrella u included in the sample

Table 1 displays the average fund costs in 2000 and 2008 by sector. In the period from 2000 until 2008, average Management Fees increased, but Other Costs decreased. In the case of the Emerging Markets sector, the net effect was a decrease of the TER. However, this decrease is not statistically significant. For all developed market sectors, the decrease of average Other Costs did not offset the increase of the average Management Fees, resulting in an increase of the TERs. For the U.S. equity and Pan-European equity sectors, the TER increase is statistically significant, in both cases at the level of 5%. Fund promoters generally explain the increase in management fees by the rising cost of distribution¹³.

[Table 1]

5.1.2. Dependent variable: Fund performance

The performance measures used to compare the performance of funds in the sample and evaluate the effectiveness of independent governance are Carhart alpha and the sector-adjusted return. The Carhart 4-factor model (Carhart, 1997) is an empirical extension of the Capital Asset Pricing Model and builds on work by Fama and French (1993):

$$r_{i,t}^e = \alpha_{i,t} + b_{i,t}RMRF_t + s_{i,t}SMB_t + h_{i,t}HML_t + p_{i,t}PR1YR_t + e_{i,t} \quad t = 1, 2, \dots, T \quad (3)$$

where:

$r_{i,t}^e$ is the return of fund i in month t in excess of the risk-free rate.

$\alpha_{i,t}$ is the monthly Carhart alpha of fund i in period t .

$RMRF_t$ is the return in excess of the risk-free rate on a value-weighted market proxy in month t .

SMB_t , HML_t and $PR1YR_t$ are a size, a book-to-market and a momentum factor, respectively.

¹³ See e.g., Lipper, 2008, Fee trends in European funds; Looking back through 15 years.

Academic studies using the Carhart model to evaluate fund returns, generally evaluate the performance of U.S.-based funds investing in the U.S. stock market. For this study of Luxembourg funds, in addition to funds investing in U.S. equity, performance of funds investing in the sectors Global equity, Japan equity, Pan-European equity, Euroland equity and Emerging Markets equity needs to be evaluated. In order to construct factors that reflect the investment opportunity set available to these funds, indices were used from MSCI for the entire 2000-2009 research period. The MSCI World index is a stock market index consisting of over 6,000 equities from 24 developed countries. This market capitalisation weighted index has been calculated since 1969 and is commonly used as benchmark by investment funds investing globally in developed markets. For this study relevant sub-indices for the U.S., Japan, Europe and European Monetary Union (EMU) are available as well. The MSCI Emerging Markets Index is a market capitalisation index that consists of 21 emerging market country indices. The monthly returns of these indices¹⁴ are used for the market proxy of the Carhart 4-factor model for each of the fund sectors. Combined with the risk free rates used – 3-month U.S. Treasury Bills for US\$ and 1-month Euro Libor and Japanese Yen Libor for EUR and JPY respectively – this allowed the calculation of the first factor (PMRF).

For all six MSCI indices used, sub-indices are available for growth and value stocks¹⁵, allowing the construction of the HML factors. MSCI small cap indices are available as well, constructed from small capitalisation companies from the same markets, which are not included in the broad indices. For each sector, HML is calculated as the return of the value minus the growth version of the index and SMB is the return of the small cap index minus the broad market index.

Momentum factors are not readily available from MSCI and are calculated following Carhart (1997). For each of the six broad MSCI indices mentioned above, the returns of the index constituents are calculated over the past 11 months, lagged one month, and then sorted. An equally weighted portfolio is formed with the 30% best performers and the 30% worst

¹⁴ The respective indices are MSCI World NR, MSCI USA NR, MSCI Europe NR, MSCI EMU NR, MSCI Japan NR and MSCI Emerging Markets NR.

¹⁵ MSCI constructs the value and growth indices using a style definition with eight fundamental data points for each security. Based on this data, the various broad indices are split into a value and growth index, each with one-half of the market capitalisation.

performers. The momentum factor is the return of the best performer portfolio in the subsequent month, minus the return of the worst performer portfolio. The list of index constituents is updated annually as of the end of the year.

MSCI provided these annual lists of index constituents upon request. Monthly fund returns and returns for the various MSCI indices, index constituents and risk-free rates, were obtained from Morningstar Direct. However, for the limited number of funds in the sample for which fund returns were not available from Morningstar Direct, these have been provided by Lipper. For the sectors Global, U.S. and Emerging Markets equity, the return currency is U.S. dollars. The returns for the sectors Pan-European and Euroland equity are in Euros, while for Japan equity, the returns are in Japanese Yen.

The factor returns for each of the six fund sectors thus calculated are used to estimate the Carhart model. The factor loadings and the Carhart 4-factor alpha of funds in the sample were estimated using Ordinary Least Squares (OLS) regressions. The monthly Carhart alpha is calculated for each calendar year in the 2000–2009 research period for funds that were active throughout the entire year. It is also estimated for the three-year periods 2000–2002, 2003–2005 and 2006–2008. In that case, the sample for each period includes funds that were active throughout the whole period as well as funds that either entered or exited the sample during the three-year interval, as long as at least 12 months of returns are available.

The method of constructing factors from market indices is unconventional, but allows the use of one approach for all fund sectors analysed in this study for the whole research period¹⁶.

Furthermore, Cremers, Petajisto and Zitzewitz (2010) show that a factor model whereby market indices are used to construct the factors is appropriate, and is preferred over commonly used factor models in performance evaluation applications. A disadvantage of using the Carhart alpha as a dependent variable in the regression analysis is that this measure is estimated and, as a

¹⁶ In order to check how the factors calculated with the MSCI indices compare to the traditional factors used in the Carhart model, correlations were calculated between the factors constructed for this study for the U.S. equity sector for the 2000–2009 period and those available on the website of Dr Kenneth French. The correlation between the factors for the excess market return is 0.977 and that for the risk-free rate 0.986. The correlations for the value, size and momentum factors are 0.747, 0.887 and 0.927, respectively. From these high correlations, it can be concluded that the factors used are similar to those of Dr Kenneth French.

result, uncertain. The two-step approach could lead to underestimated standard errors in the regression analysis. For this reason, the regression analysis is also performed with the Average Sector-Adjusted Return, which is observable and therefore does not have the same drawback. The Average Sector-Adjusted Return is the performance of a fund adjusted for the average performance of funds in the same sector.

5.1.3. Governance variables

In the regression analyses, various governance characteristics are used as explanatory variables. Formal definitions of the governance variables and the data sources used are provided in appendix B.

The hypothesis being tested in this study is that more independent governance is more effective from the viewpoint of the investor, in the sense that a higher degree of independence is associated with lower costs and better performance. Several measures of independence are used. The first is the percentage of independent board members. This category of directors is expected to be the most effective in pursuing the interests of the investors. The percentage of semi-independent board members is captured. The position of these directors is expected to be more independent than that of the dependent board members, although, when it matters, their loyalty might well be with the fund promoter, rather than with the investors. The position of the chair is captured by means of a dummy variable indicating whether it is held by an independent or semi-independent director. The chairman can be the most influential board member, for example, determining the meeting agendas and having the deciding vote when votes are tied between the other board members. Boards with a chairman who is not employed by the fund promoter might well be able to take a more independent stance towards the fund promoter, irrespective of the overall percentage of independent or semi-independent board members on the board. The status of the depositary is captured with a dummy variable as well, distinguishing between depositaries that are and are not part of the promoter group. Independent depositaries, which do not have an intra-group relationship with the fund promoter, might be more effective in exercising their oversight function. In its function as custodian of the fund assets, the depositary is also a service provider to the fund. Having a service provider from the same group can give rise to additional conflicts of interest, in particular with regard to the pricing of these services.

In addition to the various measures for independence, the board's size, the board's tenure and the legal form of the umbrella are used as governance variables as well. Larger boards may be less effective than smaller boards in monitoring and decision-making, potentially suffering from coordination problems and a higher risk of "free riding". Board members with more experience could be more effective in their oversight role. However, independent board members might lose their ability to act independently from the fund promoter when their tenure is longer. Because board data was collected for the 2000–2009 period, it is not known on which exact date directors in the sample on 1 January 2000 were appointed. For this reason, the exact tenure is not known for each director. As an alternative, board tenure is measured on the final day of a calendar year as the percentage of board members with at least three years experience in their position on the board. A dummy variable is used to distinguish between umbrellas with the legal form of an SICAV or an FCP. In the case of an FCP, contrary to the SICAV, the board of the management company is, at the same time, the board of the umbrella. Therefore, the board of the umbrella does not form an additional layer of oversight. Additionally, the FCP has no shareholders meeting where the investors can elect members of the board or vote on other matters affecting the fund. These differences imply that the fund promoter has stricter control over the umbrella and that there is a greater risk of conflicts of interest.

Because compensation and ownership data is not required to be disclosed for Luxembourg funds, it is not possible to include such variables in the analysis. No board concentration variable was included either. The fund ranges of the promoters in the sample usually span across various legal entities in Luxembourg and other European fund domiciles. It was not feasible to collect governance data for these funds in order to determine the directors' span of oversight on the fund ranges of the promoters in the sample.

5.1.4. Control variables

The first category of control variables relates to the fee structure of the fund. There are dummy variables for whether a fund has a performance-related fee or a fixed TER. Performance fees are not captured in the Total Expense Ratio. A performance fee schedule, where investors pay for performance, can potentially align interests of investors and fund managers. Increasingly, funds domiciled in Luxembourg have a fixed TER in basis points, either as a result of a so-called Fixed Service Fee or All-In Fee. The advantage is that it is clear beforehand what will be the total level

of costs in basis points. A disadvantage of such a fee structure is that it might result in higher costs for the investor. In the model for the analysis of performance, the TER per month is included as a control variable as well.

The second category of control variables are measures for scale. These measures capture possible economies of scale in the management of funds at three levels, specifically the fund, the umbrella and the promoter.

The third category of control variables contains different product and promoter characteristics. Dummy variables are used to capture the fund sector, emerging markets or developed markets equity, and whether a fund's promoter is part of a banking or insurance group, with a distribution network in Europe. Fund promoters without an affiliated distribution network need to rely on direct distribution and distribution via distribution channels owned by other companies. An affiliated distribution network could be associated with lower costs of distribution. Promoters with an affiliated distribution network could have a different pricing strategy for their funds. Finally, there is variable for the age of a fund.

Formal definitions of the control variables are provided in appendix C.

5.2. Regression models

The multiple regression analyses are performed with an individual fund model and a family-average model. The structure of the data is that of a typical panel dataset, with repeated observations for costs and performance as dependent variable and for the various governance and control variables. In the case of the cost analysis, there are observations for the calendar years 2000 to 2008. In the case of the performance analysis, there are also observations for the year 2009 as well as for three 3-year intervals.

5.2.1. Individual fund model

Two model variations are used. The first variation, referred to as Model I, has fixed effects per period, not per fund or umbrella, thereby focusing on cross-sectional variation. With the second variation, referred to as Model II, dummy variables per umbrella are added, thus focusing on variation within each umbrella. Because only one umbrella per promoter is included in the sample, this is equivalent to a dummy variable per promoter. In the case of Model II, the variables for the legal form of the umbrella and the promoter affiliation with a distribution

channel are excluded, because normally, these variables do not vary in time for a given umbrella or promoter.

With the analysis at fund level, the following equations are estimated:

Model I (time fixed effects):

$$\begin{aligned}
 DV_{i,t} = & c_t + \beta_1 T_{u,t} + \beta_2 I\%_{u,t} + \beta_3 S\%_{u,t} + \beta_4 CH_{u,t} + \beta_5 DEP_{u,t} + \beta_6 TEN3\%_{u,t} \\
 & + \beta_7 LEG_{u,t} + \beta_8 PF_{i,t} + \beta_9 FIX_{i,t} + \beta_{10} LTNA_{i,t} + \beta_{11} LTNA_{u,t} + \beta_{12} LTNA_{p,t} \\
 & + \beta_{13} EM_{i,t} + \beta_{14} LAGE_{i,t} + \beta_{15} AD_{p,t} + \beta_{16} TERM_{i,t} + \varepsilon_{i,t}
 \end{aligned} \tag{4}$$

Model II (time fixed effects and umbrella dummies):

$$\begin{aligned}
 DV_{i,t} = & c_t + \alpha_u + \beta_1 T_{u,t} + \beta_2 I\%_{u,t} + \beta_3 S\%_{u,t} + \beta_4 CH_{u,t} + \beta_5 DEP_{u,t} + \beta_6 TEN3\%_{u,t} \\
 & + \beta_8 PF_{i,t} + \beta_9 FIX_{i,t} + \beta_{10} LTNA_{i,t} + \beta_{11} LTNA_{u,t} + \beta_{12} LTNA_{p,t} \\
 & + \beta_{13} EM_{i,t} + \beta_{14} LAGE_{i,t} + \beta_{16} TERM_{i,t} + \varepsilon_{i,t}
 \end{aligned} \tag{5}$$

where:

$DV\%_{i,t}$ is the Dependent Variable of fund i in period t , which in case of the analysis of costs is measured as *TER%*, *Mgt%* or *Other%* and in the case of the analysis of performance is measured as the Carhart 4-factor alpha (*CFFA*) or as the Average Sector-Adjusted Return (*ASAR*).

c_t is the constant per calendar year t .

α_u is the dummy variable per umbrella u .

For the explanatory variables, refer to appendix B (governance variables) and C (control variables). Note that the variable *TERM* is included in the analysis of performance, not in the analysis of costs.

With the individual fund model, each fund is treated as a separate and independent observation.

This treatment is consistent with the fact that for each individual fund, the level of costs and performance has been determined. In addition, some of the control variables are fund specific, such as fund size and age.

5.2.2. Umbrella-average model

Because funds in the same umbrella share the same governance characteristics and have several identical control variables, treating each fund as an independent observation might not be justified. Standard errors for variables that are the same for various funds in the sample could be underestimated, overstating their statistical significance. To avoid this issue, the analyses are also performed at the umbrella level. These regression models can be seen as a variation on the

family-average model used by e.g., Ferris and Yan (2007). For the analysis of costs, the average Relative Cost Indicator (RCI) per umbrella is used as dependent variable. As a measure for excess return at umbrella level, the simple average of the excess returns of all funds included in a particular umbrella is calculated. As a result, each umbrella, and thus each promoter, is represented in the analysis only once each calendar year, ensuring that the observations are independent. While this approach avoids the pitfalls of the individual fund model of overstating statistical significance, the price is that valuable variation at the fund level is not used and thus, coefficients are estimated inefficiently.

Fund age and the performance fee dummy are not included in the analysis at umbrella level, because these are fund-specific variables and because for the calculation of the RCI, funds with a performance fee schedule are excluded from the sample. Fund size is, however, aggregated at umbrella level by taking the natural logarithm of the average total net assets ($LATNA_i$) of the funds included in the sample in a specific year. All governance variables, as well as the other control variables, are umbrella-specific and therefore, do not require any recalculation.

5.3. Descriptive statistics

Table 2 provides descriptive statistics of the funds in the sample for each of the ten years in the 2000–2009 period. The number of funds in the sample more than doubled during the research period, from 200 to 420 funds. The values of the maximum and minimum excess return in the different years show that there is a large difference each year between the performance of the most successful fund in that specific year and the least successful fund.

The mean number of board members was stable at approximately seven in each of the years. Both the mean and the maximum percentage of independent board members increased. In 2009, the representation of independent board members was 18.4% on average and maximum 80.0%, compared to an average of 15.0% and a maximum of 50.0% in 2000. The percentage of boards with an independent or semi-independent chair increased, while the percentage of funds with an independent depositary recovered at the end of the research period, after an initial decline.

Both the use of fixed TER schemes and performance fees increased. The size of the average fund fluctuated with the development of market valuations and investors' willingness to invest in equity funds. The size of the average umbrella and of the average promoter grew considerably in the research period. For all three measures for scale, there is a significant variation from small to

large in each year of the research period. The proportion of Emerging Markets funds in the sample declined slightly, while the proportion of funds of promoters with affiliated distribution declined more strongly.

[Table 2]

Table 3 provides the correlation coefficients for the two performance measures and the various explanatory and control variables used in the regression analysis for performance. The correlation between both performance measures and the different explanatory and control variables is below 0.1 in all cases. There are two correlation coefficients with an absolute value higher than 0.5. Umbrella scale and promoter scale are strongly positively correlated, while there is a strong negative correlation between affiliated distribution and the independence of the depository.

Highly negatively correlated as well, but below 0.5, are the percentage of independent board members and the dummy variable for affiliated distribution. The percentage of independent board members is strongly positively correlated with the (semi-) independent chair dummy and with the variable for the board tenure. The chair dummy is negatively correlated with the affiliated distribution dummy, which indicates that affiliated distribution goes together with dependent chairs. Both umbrella scale and promoter scale are strongly positively correlated with the size of the board. Fund size and fund age are positively correlated as well. Furthermore, the correlation matrix indicates that larger promoters tend to have affiliated distribution in the group, use affiliated depositories and apply fixed TER fee schedules.

[Table 3]

6. Empirical results

6.1. Costs

6.1.1. Costs at fund level

The results of the cost analysis are displayed in table 4. Model I and II are first estimated for the entire 2000-2008 research period, without the variables for board tenure (*TEN3%*) and promoter scale (*LTNAp*), because these two variables are not available for the whole period. This is

referred to as Model Ia and Model IIa, respectively. These two variables are then added to the equation in what is referred to as Model Ib and Model IIb, limiting the analysis to the 2002-2008 period. Because of the correlation between several of the governance variables, the model is also estimated by adding governance variables one by one. These model specifications do not produce materially different results and are therefore not reported.

[Table 4]

In Model I, several of the governance variables are associated with the level of costs in a statistically significant manner. The primary interest in this study is the relationship between the independence of the board and the level of costs. A higher percentage of independent directors is associated with a lower TER. The result is statistically significant, but the economic significance is modest. Each additional independent board member, rather than a dependent board member, is associated with a TER approximately 1.2 basis points lower. The panels of the table for Management Fee and Other Costs show that it is the Other Costs component of the TER that is responsible for the difference. The cost component that directors have most control over, the Management Fee, is higher for funds with more independent boards. The coefficient for the chair position is positive, but statistically significant only at the level of 10% in model Ib.

The result for the percentage of semi-independent board members is not statistically significant in either model Ia or Ib. For this variable, the coefficients for Management Fee on the one hand, and Other Costs on the other hand, have opposite signs, so that only a small net effect remains at TER level. Funds with an independent depositary have TERs almost 7 basis points higher. For this variable, the result is driven by the Management Fee, not by the Other Costs. This is surprising, because the direct costs of the depositary are part of the Other Costs. A larger board is associated with higher costs. Each additional board member is associated with almost 1.4 basis points of additional TER. Both the Management Fee and the Other Costs contribute to the difference. Funds with more experienced boards have higher TERs, which is driven by Other Costs. In line with the notion that FCPs have inferior governance as compared to SICAVs, FCPs have higher TERs. This is driven the Management Fee, not by Other Costs.

The outcome of Model II, that focuses on the variation of the governance variables within umbrellas, does not confirm some of the main results of Model I. The result for the coefficient

for the percentage of independent board members is positive, and economically and statistically significant, with both the Management Fee and the Other Costs contributing. This finding implies that in cases where funds had an increase in the percentage of independent board members, this did not coincide with a decline of their TERs. Replacing one dependent by an independent board member is associated with an increase in TER by 5.6 basis points. This strong positive relationship makes it unlikely that the negative association between the percentage of independent board members and the level of TER found in the cross-sectional analysis of Model I is a causal relationship. The sign of the coefficient for the chair position also is opposite to what was found in the cross-sectional analysis. The introduction of an independent chairman to the board is associated with a lowering of the TER.

The coefficients for the percentage of semi-independent board members, the position of the depositary, the number of board members and the tenure are not statistically significant, thus not supporting the results with Model I for these variables.

Of the control variables, several of the coefficients are statistically significant, with consistent results in both model specifications. All three measures for scale have statistically significant coefficients. Larger funds are associated with lower TERs, due to lower Other Costs, not due to a lower Management Fee. Bigger umbrellas are also associated with lower TERs. However, promoters with more assets under management are associated with a higher Management Fee, which could be a reflection of these players' ability to command premium pricing for their services. Funds with performance fees have higher TERs, not lower as might be expected. Funds in the Emerging Markets sector have a TER that is approximately 30 basis points higher than funds investing in developed markets. The funds with promoters with an affiliated distribution channel have TERs lower by 16 basis points, due to lower a Management Fee and lower Other Costs. This variable is included in Model I only.

6.1.2. Costs at umbrella level

When interpreting the results of the analysis with the umbrella-average model, displayed in table 5, it should be noted that the cost level of an umbrella is measured with the RCI in standard deviations from the sample mean. In order to better understand the economic significance of the

results and compare them to the individual fund model results, the coefficients are multiplied by the average standard deviation of the TER in basis points.

[Table 5]

The results of Model I at umbrella level are largely consistent with those at fund level. Boards with a higher percentage of independent directors have a lower TER. The economic significance is practically the same as in the individual fund model. Each additional independent board member is associated with approximately 1.3 basis points lower TER. As in the individual fund model, the coefficient of the dummy variable for the chair position is positive. In this case, the coefficient is somewhat higher and significant at the 5% level. The coefficient for the percentage of semi-independent board members is positive, but significant only at the level of 10%. Larger boards and more experienced boards are associated with higher TERs. Umbrellas with the legal form of an FCP and those with an independent depositary have higher TERs.

The results for the control variables are similar to those found for the individual fund model. Larger funds and funds in larger umbrellas have lower costs, whereas funds of larger promoters and funds of promoters without affiliated distribution have higher costs.

The results for Model II at umbrella level deviate more from those at the individual fund level. The reason for this difference is that by having a dependent variable at umbrella level and dummy variables per umbrella, practically all variability is captured in the dummy variables. This results in a high R-squared, but less meaningful results for the explanatory variables. The statistically significant coefficients found do point in the same direction as for Model II at the fund level.

6.1.3. Robustness check: Promoter origin

In section 4.2, it was shown that independent board members are more common for funds of promoters of Anglo-Saxon origin than for continental European promoters. As a robustness check, the regression analysis is repeated for these two sub-samples separately. The results are reported in table 6, for easy reference along with the results for the full sample.

[Table 6]

When comparing the results for the whole sample with those for the two sub-samples according to the promoter origin, a noteworthy difference occurs for the variable for the percentage of independent board members. Whereas with Model I, in the whole sample the coefficient is negative and statistically significant, it is positive in the Anglo-Saxon sub-sample and negative in the continental European sub-sample, but not statistically significant in either of the two. In Model II, it turns out that the positive and significant relationship between this percentage and the TER in the sample as a whole consists of a negative and significant relationship in the continental European sub-sample and a strongly positive and significant relationship in the Anglo-Saxon sub-sample.

By means of a “snail trail”, figure 1 provides clarification of the deviating results for the two sub-samples. This chart plots the average TER of funds investing in developed markets against the average percentage of independent board members in each of the calendar years in the research period, separately for the continental European and the Anglo-Saxon sub-sample. As was shown in table 1, TERs increased in the research period. The upward development is visible in both sub-samples, although the average TER in the continental European sub-sample is lower than in the Anglo-Saxon sub-sample. The chart also reflects the development towards more independence in the sub-sample of Anglo-Saxon promoters and the development is opposite direction in the continental European subsample. This finding implies that among Anglo-Saxon promoters, the increasing TERs coincided with increasing board independence, whereas among continental European promoters, increasing TERs coincided with decreasing independence. In the results for Model II, this development is reflected as a negative coefficient in the continental European sub-sample and a positive coefficient in the Anglo-Saxon sub-sample. These results are not supportive for the existence of any causal relationship between board independence and the level of the TER.

[Figure 1]

Consistent with the results for the whole sample is that larger boards, independent depositaries and funds set up as FCPs are associated with higher TERs, even though the relationship between board size and TER in the sub-sample for Anglo-Saxon promoters is significant only at the level of 10%. The relationship between board tenure and TER is positive in both sub-samples, but

significant only in the Anglo-Saxon sub-sample. The coefficient for the chair position is not statistically significant in either sub-sample. The relationship between the percentage of semi-independent board members and the TER is significantly positive in the Anglo-Saxon sub-sample. For the control variables, the results for the two sub-samples based on promoter origin also support the results for the sample as a whole.

6.2. Performance

6.2.1. Performance at fund level

The two models are first estimated for the entire 2000-2009 research period, without the variables for the board tenure (*TEN3%*), promoter scale (*LTNAp*) and TER per month (*TERM*). The tenure is not available for 2000 and 2001, promoter scale is not available for 2000 and the TER is not available for 2009. When board tenure and promoter scale are added in Models Ib and Iib, the analysis is limited to the 2002-2009 period. In Models Ic and Iic, the TER per month is added as control variable, further reducing the research period to 2002-2008. In addition, the number of observations in the 2002-2008 period is reduced because the TER is not available for all fund-calendar year combinations for which return data is available. The results of the regression analyses are presented in table 7.

[Table 7]

In Models Ia and Ib, a higher percentage of independent directors is associated with a higher sector-adjusted return (*ASAR*). The coefficients are economically significant, but statistically significant only at the level of 10%. When the TER is added to the equation in Model Ic and, as a consequence, 2009 is dropped from the research period, the coefficient for *I%* continues to be positive, but loses its statistical significance. When measuring excess return as Carhart's alpha (*CFFA*), the coefficients are positive, but smaller, and marginally significant only in Model Ib. The results for the percentage of independent board members with Model II, which focuses on the variation of variables within umbrellas and promoters, do not provide consistent evidence that more independence is associated with better performance. Model II picks up on boards where the percentage of independent board members varied through the research period and analyses whether this is associated with different levels of performance. With the excess return

measured as the Average Sector-Adjusted Return, the coefficients are negative, contrary to Model I, but statistically significant only in Model IIa. With Carhart alpha as the dependent variable, there is a positive and statistically significant relationship between excess return and the percentage of independent board members, but only in Model IIc.

The coefficients for the dummy variable for the chair position are not statistically significant in either Model I or II. In Model I, the coefficient for the percentage of semi-independent board members is always negative, but is statistically significant only when excess return is measured as Carhart's alpha. In Model II, the sign of the coefficients for the percentage of semi-independent board members is also negative, but it is statistically significant only in two of the three model specifications with excess returns measured as the Carhart alpha, once at the 10% level and once at the 5% level. In Model II, the relationship between Carhart alpha and the position of the depositary is also negative, indicating that when funds change to an independent depositary, they perform worse. In the cross-sectional analysis of Model I, none of the coefficients for the position of the depositary is statistically significant. The results for the other governance variables are not statistically significant in any of the specifications of Model I, and not in more than one out of six specifications of Model II.

The relationship between fund size and excess returns estimated with the Carhart 4-factor model is not statistically significant in either Model I or II. Fund size is positively related to the sector-adjusted return in a statistically significant manner in Models Ia, Ib and IIa. When the TER is added in Model Ic, the coefficient continues to be positive, but loses its statistical significance. This could well be because without the TER variable in the equation, fund size serves as a proxy for lower Other Costs. In Model II, the scale of the umbrella is negatively related to fund performance, in particular with excess return measured versus the sector average. With Carhart alpha as dependent variable, the result is not statistically significant in Model IIc. The coefficients for promoter scale are not statistically significant.

The most consistent results are those for fund age and the dummy variable for affiliated distribution. According to both models and with both performance measures, older funds perform worse. Funds of promoters with affiliated distribution perform worse than their counterparts of promoters independent from a distribution channel. The return difference, net of

fees, is 1.0 (CFFA) to 1.2 percentage point (ASAR) per annum. This is despite the fact that on average funds of promoters with affiliated distribution charge lower fees.

6.2.2. Performance at umbrella level

Table 8 shows that the results of the analysis at umbrella level are similar to those at fund level. The relationship between excess return and the percentage of independent directors is not statistically significant in the model specifications of Model I. In Model II, there is a positive relationship between Carhart alpha and the percentage of independent directors, but a negative relationship when return is measured versus the sector average. The results for the dummy for the chair position are not statistically significant in any model specification.

The relationship of the affiliated distribution dummy with excess return at fund level is confirmed at umbrella level. Funds of promoters with affiliated distribution perform worse than funds without.

[Table 8]

6.2.3. Robustness check: Three-year performance

In this section, as a robustness check, the relationship is analysed between three-year excess returns of funds and their governance characteristics. Boards might require more time than a one-year period to prove their added value for investors. Furthermore, using monthly returns, a 12-month period is short to estimate the Carhart model. In addition to funds that were active throughout the entire three-year period, the analysis includes funds that either entered the sample during the three-year interval or were terminated before the end of the period, as long as at least 12 months of returns are available. Models Ib, Ic, Iib and Iic include an additional dummy variable, indicating whether a fund dropped from the sample before the end of a three-year period, in order to capture if these non-surviving funds perform worse than their surviving counterparts.

[Table 9]

As is shown in table 9, a higher percentage of independent directors is associated with higher sector-adjusted returns in all specifications of Model I. This finding is in line with the outcome of the analysis of one-year performance data, although the statistical significance is higher. The economic significance of the coefficients is similar to the analysis of one-year performance. When measuring excess return as Carhart's alpha (CFFA), the primary performance measure in this study, the coefficients are close to zero and not statistically significant. This finding is also in line with the outcome of the analysis of one-year data.

The results of Model II do not support the conclusion that more independence leads to better performance. With both performance measures, the coefficients are significantly negative in all variations of Model II. This finding indicates that, when the percentage of independence on their boards increased, performance deteriorated, rather than improved.

The coefficient for the chair dummy variable is not statistically significant in any of the model specifications. Unlike the analysis using one-year performance intervals, the results for the percentage of semi-independent board members are never statistically significant in the cross-sectional analyses of Model I. In Model II, there is a negative relationship between the percentage of semi-independent board members and sector-adjusted excess returns. For the other governance variables, including the board size, the coefficients are not statistically significant. As when analysing one-year performance, the most consistent results are found for the control variables for affiliated distribution and fund age. Funds of promoters with affiliated distribution underperform their counterparts that are independent from a distribution channel. The results are statistically significant for both excess return measures. The level of underperformance is 1.3 to 1.4 percentage point per annum versus the fund sector average and 0.9 to 1.0 percentage point when measured with the Carhart model. Younger funds outperform older funds in a statistically and economically significant manner.

Fund scale is positively related to both measures of excess return in Model I and II. Umbrella scale is related negatively with the sector-adjusted return in both models, but the coefficients are not statistically significant when using Carhart alpha. In two model specifications, the relationship between promoter scale and Carhart alpha is negative. This finding seems to indicate that scale at the fund level is a more important driver of economies of scale than at the umbrella or promoter level. There is more evidence that higher TERs are associated with lower performance on the basis of three-year performance data than on the basis of one-year

performance. In all four model specifications in which the TER is included, the coefficient for the TER is negative, once in a statistically significant manner. It might be the case that one-year performance data is too noisy to pick up the negative impact of costs and that it requires longer-term data for the negative relationship between performance and costs to become statistically significant. Surprisingly, the coefficient for the dummy variable indicating whether a fund was closed before the end of the three-year period is not consistently negative. One would expect that funds underperforming their peers would be the ones to be closed by means of a liquidation or merger into another fund. The results do not support this expectation.

7. Conclusions and implications

This aim of this study has been to investigate whether more independent boards are more effective for investors, whereby costs and investment performance are used as measures for effectiveness. It is the first empirical fund governance study to use a sample of Luxembourg-domiciled UCITS funds. Luxembourg is the second largest fund domicile globally and the primary location for funds offered on a cross-border basis, but it is under-researched by academics. Although it has been a topic of debate and contrary to U.S. funds, Luxembourg UCITS are not obliged to have independent board members. Nevertheless, independent board members are not uncommon for Luxembourg funds and the cross-sectional variation in the level of independence is greater than in samples of U.S. funds. The level of independence of boards of Anglo-Saxon promoters in the sample is higher than for continental European promoters and increased in the research period from 2000 to 2009. Among continental European promoters independent governance is less common and the level of independence decreased in the research period.

The primary measures for board independence used were the percentage of independent board members and the position of the chair. The regression analyses did not provide consistent evidence that independent governance contributes to lower costs. Analysing the sample as a whole, contradictory results were found in the cross-sectional model specification and the specification that focuses on variation within umbrellas. When the sample was split into sub-samples of funds of continental European and Anglo-Saxon promoters, the coefficients for the level of board independence were not statistically significant and had opposite signs in these two

sub-samples, which is inconsistent with boards having a downward effect on costs. The results can be explained by two developments happening simultaneously, but independently: the increase of fund costs, irrespective of the country of origin of the promoter, and the deviating developments with regard to the level of independence in the sub-samples, downwards among continental European promoters and upwards Anglo-Saxon promoters.

These results are not in line those of Tufano and Sevick (1997), who found for U.S. open-end funds that more independence is associated with lower costs. The results are in line with those of later studies, specifically Meschke (2007), Ferris and Yan (2007) and Cremers et al. (2009) that come to inconsistent and insignificant results.

There was no consistent evidence that independence governance contributes positively to investment performance either. The relationship between the Carhart alpha and the percentage of independent board members was not statistically significant at the level of at least 5% in any of the model specifications that focus on cross-sectional variation. In model specifications that focus on variation of performance and governance characteristics within umbrella funds, the relationship between this performance measure and the percentage of independent board members was inconsistent, with positive coefficients for the analysis of one-year performance intervals and negative coefficients for three-year performance intervals. These inconsistent and statistically insignificant results for the relationship between board independence and performance are in line with Ferris and Yan (2007) and Cremers et al. (2009). They are not consistent with the statistically significant negative relationship found by Kong and Tang (2008) for the percentage of independent board members and by Meschke (2007) for both the percentage of independent board members and the position of the chair.

Both for the level of costs and performance, whether or not the promoter has affiliated distribution in the group seems to be a more important driver than the composition of the fund board. Affiliated distribution is associated with statistically significantly lower TERs. However, despite higher costs, funds of promoters that are independent from a distribution channel perform better. Adjusting for risk with the Carhart model, the return difference, net of fees, is approximately one percentage point per annum. These differences are more pronounced than the results of Frye (2001). She found that bank-managed bond funds underperformed funds of non-banks on an unadjusted basis, but that on a risk-adjusted basis the differences were not

statistically significant. It could be that funds of banking and insurance groups are overrepresented in the category of funds that Cremers and Petajisto (2009) refer to as “closet indexers”. The portfolios of these funds deviate little from the index and therefore have a low active share. They find that these closet indexers have no skill and underperform because of the burden of costs, whereas funds with a high active share do display some skill. Not deviating much from the index could be a sensible strategy for fund management companies that are part of banks or insurers. They could have a more risk-averse clientele, but it could also be the result of these groups distributing their products on the basis of marketing, cross-selling and the groups’ general reputation, rather than on the basis of good performance. The negative implications of underperformance could also be greater for these financial groups since it could jeopardise a much broader, profitable client relationship. Comparing the active share of funds of promoters with affiliated distribution and funds without, would be an interesting area for future academic research.

The results of this study provide no evidence that more independent boards are more effective for investors. Therefore, the study provides no support for those who believe having independent board members should become mandatory, either on the basis of formal regulations or on the basis of self-regulation, as the Irish fund association has recently introduced. Market forces could be more effective than fund boards in avoiding conflicts of interest between fund management companies and investors. The introduction of the Key Investor Information Document (KIID), a new requirement under UCITS IV, can be seen in that perspective. This two-page document is to help retail investors make informed investment decisions. The standard definition of the Ongoing Charges, similar to the TER definition used in this study, is an important step forward in achieving comparability and transparency of fund costs. This enhanced disclosure can help market forces in doing their monitoring work.

Appendix A: Sample of promoters and umbrellas

Nr	Promoter	Umbrella name (latest name in research period)	Period included in sample
1	Aberdeen Asset Managers	Aberdeen Global SICAV	1-Jan-2000 - 31-Dec-2009
2	ABN AMRO Asset Management	ABN AMRO Funds SICAV	1-Jan-2000 - 30-Apr-2008
3	Activest	Activest Lux Global Portfolio SICAV	1-Jan-2000 - 31-Dec-2006
4	AllianceBernstein	ACMBernstein FCP	1-Jan-2000 - 31-Dec-2009
5	Allianz Global Investors	Allianz Global Investors Fund SICAV	1-Jan-2000 - 31-Dec-2009
6	American Express (thereafter Threadneedle)	Threadneedle (Lux) SICAV	1-Jan-2000 - 31-Dec-2009
7	Aviva Investors	Aviva Investors SICAV	1-Jan-2000 - 31-Dec-2009
8	Axa Investment Managers	Axa World Funds SICAV	1-Jan-2000 - 31-Dec-2009
9	BlackRock	BlackRock Global Funds SICAV	1-Jan-2000 - 31-Dec-2009
10	BNP Paribas Asset Management	Parvest SICAV	1-Jan-2000 - 31-Dec-2009
11	Capital International	Capital International Fund SICAV	1-Jan-2000 - 31-Dec-2009
12	Crédit Agricole Asset Management	CAAM Funds SICAV	1-Jan-2000 - 31-Dec-2009
13	Credit Suisse	Credit Suisse Equity Fund (Lux) FCP	1-Jan-2000 - 31-Dec-2009
14	Dexia Asset Management	Dexia Equities L SICAV	1-Jan-2000 - 31-Dec-2009
15	DWS	DWS Invest SICAV	3-Jun-2002 - 31-Dec-2009
16	Fidelity Investments	Fidelity Funds SICAV	1-Jan-2000 - 31-Dec-2009
17	Fortis Investments	Fortis L Fund SICAV	1-Jan-2000 - 31-Dec-2009
18	Franklin Templeton Investments	Franklin Templeton Investment Funds SICAV	1-Jan-2000 - 31-Dec-2009
19	Gartmore Investment Management	Gartmore SICAV	26-Sep-2000 - 31-Dec-2009
20	Goldman Sachs	Goldman Sachs Funds SICAV	1-Jan-2000 - 31-Dec-2009
21	Henderson Global Investors	Henderson Horizon Fund SICAV	1-Jan-2000 - 31-Dec-2009
22	HSBC Global Asset Management	HSBC Global Investment Funds SICAV	1-Jan-2000 - 31-Dec-2009
23	ING Investment Management	ING (L) Invest SICAV	1-Jan-2000 - 31-Dec-2009
24	INVESCO	Invesco GT SICAV	1-Jan-2000 - 31-Dec-2009
25	Investec	Investec Global Strategy Fund SICAV	1-Jul-2008 - 31-Dec-2009
26	J.P. Morgan Asset Management (formerly Flemings)	JPMorgan Funds SICAV	1-Jan-2000 - 31-Dec-2009
27	J.P. Morgan Asset Management	J.P. Morgan Investment Fund SICAV	1-Jan-2000 - 31-Dec-2001
28	Julius Baer	Julius Baer Multistock SICAV	1-Jan-2000 - 31-Dec-2009
29	KBC Asset Management	KBC Equity Fund (L) SICAV	1-Jan-2000 - 31-Dec-2009
30	Legg Mason Group (formally Citi)	Legg Mason Global Funds FCP (Luxembourg)	1-Jan-2000 - 31-Dec-2009
31	Lloyds TSB	Lloyds TSB International Portfolio SICAV	1-Jan-2000 - 31-Dec-2009
32	Lombard Odier Darier Hentsch	LODH Invest SICAV	1-Jan-2000 - 31-Dec-2009
33	Martin Currie	Martin Currie Global Funds SICAV	1-Jan-2000 - 31-Dec-2009
34	Massachusetts Financial Services	MFS Meridian Funds SICAV	1-Jan-2000 - 31-Dec-2009
35	Morgan Stanley Investment Management	Morgan Stanley Investment Funds SICAV	1-Jan-2000 - 31-Dec-2009
36	Natixis Asset Management	NATIXIS International Funds (Lux) I SICAV	1-Jan-2000 - 31-Dec-2009
37	Nordea Asset Management	Nordea 1, SICAV	1-Jan-2000 - 31-Dec-2009
38	Pictet Funds	Pictet Funds (Lux) SICAV	1-Jan-2000 - 31-Dec-2009
39	Pioneer Investments	Pioneer Funds FCP	1-Jan-2000 - 31-Dec-2009
40	Robeco Group	Robeco Capital Growth Funds SICAV	1-Jan-2000 - 31-Dec-2009
41	Sarasin & Cie	Sarasin Investmentfonds SICAV	1-Jan-2000 - 31-Dec-2009
42	Schroders	Schroder International Selection Fund SICAV	1-Jan-2000 - 31-Dec-2009
43	SEB Asset Management	SEB Fund 1 FCP	1-Jan-2000 - 31-Dec-2009
44	Société Générale Asset Management	SGAM Fund SICAV	1-Jan-2000 - 31-Dec-2009
45	Sparinvest	Sparinvest SICAV	10-Oct-2001 - 31-Dec-2009
46	T. Rowe Price	T. Rowe Price Funds SICAV	5-Jun-2001 - 31-Dec-2009
47	UBS Global Asset Management	UBS (Lux) Equity Fund FCP	1-Jan-2000 - 31-Dec-2009
48	WestLB Mellon Asset Management	WestLB Mellon Compass Fund SICAV	1-Jan-2000 - 31-Dec-2009

Appendix B: Definitions of governance variables

The following is a list of governance variables used in this study, applying at the level of the umbrella u , together with a short description and definition. The source for the data used is provided between brackets in the third column.

Variable	Description	Definition (source)
$T_{u,t}$	Average total number of board members of umbrella u in calendar year t	Average based on daily observations for the number of board members. (source: Proprietary Fund Governance Database)
$I\%_{u,t}$	Percentage of independent board members of umbrella u in calendar year t	$I\%_{u,t} = I_{u,t} / T_{u,t}$ where: $I_{u,t}$ is the average number of independent board members in calendar year t , based on daily observations. (source: Proprietary Fund Governance Database)
$S\%_{u,t}$	Percentage of semi-independent board members of umbrella u in calendar year t	$S\%_{u,t} = S_{u,t} / T_{u,t}$ where: $S_{u,t}$ is the average number of semi-independent board members in calendar year t , based on daily observations. (source: Proprietary Fund Governance Database)
$CH_{u,t}$	Independency status of the Chair of the board of umbrella u in calendar year t (dummy)	Dummy variable equals 1 when the chair is taken by independent or semi-independent board members for more than half of the year. (source: Proprietary Fund Governance Database)
$DEP_{u,t}$	Independency status of the Depositary of umbrella u in calendar year t (dummy)	Dummy variable equals 1 when the Depositary is independent from the promoter, i.e., not belonging to the promoter group, for more than half of the year. (source: Proprietary Fund Governance Database)
$TEN3\%_{u,t}$	Board tenure for umbrella u in calendar year t	$TEN3\%_{u,t} = TEN3_{u,T} / T_{u,T}$ where: $TEN3_{u,T}$ is the number of board members with at least 3 years experience in the position on the board of umbrella u on the final day of calendar year t . $T_{u,T}$ is total number of board members on the final day of calendar year t . Because board data was collected for the 2000–2009 period, it is not known on which exact date directors in the sample on 1 January 2000 were appointed. This implies that, on the basis of the available data, this measure could be calculated as of 31 December 2002. (source: Proprietary Fund Governance Database)
$LEG_{u,t}$	Legal form of the umbrella (dummy)	Dummy variable equals 1 when in calendar year t the umbrella is an FCP or equals 0 when it is an SICAV. (source: prospectuses and annual reports)

Appendix C: Definitions of control variables

The following is a list of control variables used in this study, applying at the level of the fund i , umbrella u or promoter p , together with a short description and definition. The source for the data used is provided between brackets in the third column.

Variable	Description	Definition (source)
$PF_{i,t}$	Performance Fee (dummy)	Dummy variable equals 1 when for fund i a performance fee is in place during (part of) calendar year t . (source: prospectuses and annual reports)
$FIX_{i,t}$	Fixed TER (dummy)	Dummy variable equals 1 when for fund i a Fixed Service Fee or All-In Fee is in place during (part of) calendar year t . (source: prospectuses and annual reports)
$TERM_{i,t}$	Total Expense Ratio per month	Total Expense Ratio per annum divided by 12. (source: Lipper)
$LTNA_{i,t}$	Fund scale	$LTNA_{i,t}$ is the natural logarithm of the average Total Net Assets of fund i in calendar year t . The average is calculated based on monthly values obtained by taking the average of the Total Net Assets in the fund at the beginning and at the end of the month. All figures are in millions of Euros. The monthly data is available only from the end of 2001. For 2001, fund scale is measured as the natural logarithm of the Total Net Assets at the end of December of that year. For 2000, the measure used is the natural logarithm of the Total Net Assets at the end of the financial year ending that year, as included in the fund's annual report. (source: Lipper FMI from end of 2001; annual reports for 2000)
$LTNA_{u,t}$	Umbrella scale	Natural logarithm of Total Net Assets of umbrella u in calendar year t , taken at the end of the financial year ending in year t . All figures are in millions of Euros. When the figure given in the annual report is in a different currency, it is transferred to Euros with the exchange rate on the same date. (source: annual reports)
$LTNA_{p,t}$	Promoter scale	Natural logarithm of Total Net Assets of the fund promoter p in funds in Europe at the end of calendar year t . All figures are in millions Euros. This data is available from 2001. Note that the measure does not include assets under management of the same groups in regions other than Europe, nor does it include assets under management in other forms of asset management than funds, most notably institutional mandates. (source: Lipper FMI)
$EM_{i,t}$	Emerging Markets sector (dummy)	Dummy variable equals 1 when the fund sector of fund i in calendar year t is Emerging Markets equity and 0 if it is one of the developed markets sectors (Global equity, Japan equity, North America equity, Pan-European equity and Euroland equity). The fund sector definition is based on Lipper. (source: Lipper)
$LAGE_{i,t}$	Fund age	Natural logarithm of the age of fund i in years at the end of calendar year t . Age is calculated by subtracting the fund's inception date from the final date of calendar year t . (source: Lipper FMI)
$AD_{p,t}$	Affiliated distribution (dummy)	Dummy variable equals 1 when the promoter group has an affiliated distribution network in Europe, either banking or insurance. (source: own research)

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Table 1: Comparison of the average fund costs by sector in 2000 and 2008.

The first panel is an analysis of the development of the TER (*TER%*) from 2000 (year 1) to 2008 (year 2) by sector. The second and third panels are an analysis of the development of the two TER components, specifically the Management Fee (*Mgt%*) and the Other Costs (*Other%*). Excluded from the sample for the table are funds that had a performance fee schedule in place in the specific calendar years. Figures for 2009 are not included because at the time of analysis, no figures for the full year 2009 were available yet for the majority of funds.

In the columns to the left, the table displays the mean fund costs (*TER%*, *Mgt%* and *Other%*) and the number of observations (*n*) in both years. In the columns to the right, the differences between the values for these two years (Delta) and the t-values for the differences are provided.

The number of observations for the TER is not the same as for Management Fee and Other Costs. The reason is that for funds with an All-In Fee, the TER cannot be broken down into these two components.

Sector	Mean <i>TER%</i> ₁	n ₁	Mean <i>TER%</i> ₂	n ₂	Delta _{1,2}	t
Global	1.802%	50	1.876%	70	0.073%	1.54
Emerging Markets	2.133%	25	2.079%	31	-0.053%	-0.58
US	1.711%	51	1.861%	92	0.151%	3.20
Japan	1.762%	40	1.866%	47	0.105%	1.59
Pan-Europe	1.680%	50	1.859%	88	0.178%	3.61
Euroland	1.658%	26	1.759%	31	0.100%	1.60
Sector	Mean <i>Mgt%</i> ₁	n ₁	Mean <i>Mgt%</i> ₂	n ₂	Delta _{1,2}	t
Global	1.383%	49	1.526%	67	0.143%	3.65
Emerging Markets	1.566%	25	1.686%	30	0.120%	1.85
US	1.399%	46	1.529%	89	0.130%	3.45
Japan	1.391%	37	1.537%	44	0.146%	2.85
Pan-Europe	1.330%	49	1.507%	84	0.177%	4.50
Euroland	1.324%	25	1.487%	24	0.163%	3.02
Sector	Mean <i>Other%</i> ₁	n ₁	Mean <i>Other%</i> ₂	n ₂	Delta _{1,2}	t
Global	0.425%	49	0.357%	67	-0.067%	-1.91
Emerging Markets	0.567%	25	0.383%	30	-0.184%	-2.97
US	0.349%	48	0.337%	89	-0.013%	-0.41
Japan	0.394%	37	0.351%	44	-0.043%	-0.95
Pan-Europe	0.352%	49	0.356%	84	0.004%	0.11
Euroland	0.350%	25	0.323%	24	-0.027%	-0.75

■ Significant at 5% level. ■ Significant at 10% level

Table 2: Descriptive statistics of funds in the sample by calendar year

For each of the variables, the mean is provided for each calendar year in the 2000-2009 period. For the dummy variables, the mean can be interpreted as the percentage of funds in the sample that complied with the specific characteristic in that year. Except for the dummy variables, also the maximum, minimum and standard deviation are shown.

The sample is that used for the analysis of fund performance. Although the sample of 48 promoters and 593 funds for the performance analysis is the same as that for the cost analysis, there are still differences in the sample in each year of analysis. The reason is that one of the conditions for a fund to be included in the cost analysis is that at least 90 days of cost data is available for a specific calendar year. For the performance analysis, the condition is that performance data is available for the full calendar year.

Variable	Characteristic	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Number of funds	Total	200	240	283	306	318	353	374	415	422	420
ASAR (in %)	Mean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Maximum	2.1	2.9	2.1	1.4	1.0	2.0	0.9	2.3	3.9	2.0
	Minimum	-2.7	-3.6	-2.1	-1.3	-1.0	-1.1	-1.9	-2.1	-4.1	-2.1
	Standard deviation	0.8	0.7	0.6	0.4	0.3	0.3	0.4	0.5	0.8	0.5
CFFA (in %)	Mean	-0.1	-0.4	-0.3	-0.1	-0.2	-0.1	-0.2	-0.1	-0.1	-0.1
	Maximum	2.2	1.1	1.8	1.5	1.1	1.8	1.5	1.1	2.4	1.5
	Minimum	-2.3	-4.0	-3.3	-1.7	-1.5	-1.2	-1.7	-1.6	-2.0	-3.2
	Standard deviation	0.7	0.6	0.6	0.4	0.4	0.3	0.4	0.4	0.6	0.6
T	Mean	6.8	7.1	7.1	6.8	7.1	7.0	7.0	6.9	7.1	6.8
	Maximum	22.5	19.0	18.1	18.5	19.3	18.8	18.7	19.1	20.5	20.1
	Minimum	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Standard deviation	3.2	3.4	3.2	3.2	3.4	3.3	3.3	3.2	3.3	3.2
I%	Mean	15.0%	14.0%	14.7%	14.9%	16.0%	16.2%	16.1%	15.3%	16.0%	18.4%
	Maximum	50.0%	53.9%	59.0%	50.0%	53.1%	57.1%	58.3%	58.3%	73.5%	80.0%
	Minimum	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Standard deviation	16.6%	17.2%	17.2%	17.8%	18.5%	19.5%	20.4%	20.0%	19.2%	21.5%
S%	Mean	8.2%	9.6%	9.8%	9.1%	9.1%	8.8%	7.8%	8.3%	7.7%	7.1%
	Maximum	50.0%	50.0%	50.0%	40.0%	40.0%	38.1%	40.6%	40.0%	39.1%	38.8%
	Minimum	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Standard deviation	12.1%	13.5%	14.2%	12.6%	12.4%	11.7%	11.1%	11.7%	11.0%	11.4%
CH	Mean	22.5%	29.2%	30.7%	36.9%	34.0%	31.7%	28.3%	27.2%	27.5%	29.8%
DEP	Mean	65.0%	58.3%	58.3%	61.1%	58.8%	56.7%	61.2%	62.9%	65.2%	65.2%
TEN3%	Mean			47.2%	48.9%	52.5%	55.4%	54.8%	56.3%	60.9%	61.4%
	Maximum			100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Minimum			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Standard deviation			25.3%	25.5%	24.5%	25.3%	26.3%	23.8%	26.0%	28.7%
LEG	Mean	10.0%	12.5%	14.8%	15.4%	16.7%	16.4%	14.4%	15.7%	15.2%	16.4%
PF	Mean	4.0%	4.6%	4.9%	5.6%	6.9%	5.9%	6.4%	8.2%	8.8%	9.0%
FIX	Mean	8.0%	5.4%	12.4%	12.1%	15.4%	17.8%	20.9%	23.6%	26.5%	27.6%
TNAi	Mean	452.9	377.4	315.0	271.8	389.6	496.8	643.9	627.5	380.9	278.1
	Maximum	6,071.8	7,395.7	8,713.9	8,822.7	14,420.9	18,314.2	22,163.6	16,089.9	10,197.3	7,135.7
	Minimum	5.0	1.3	1.5	0.5	0.9	0.9	1.1	1.4	1.1	0.9
	Standard deviation	773.0	792.3	721.0	633.8	977.4	1,236.4	1,515.7	1,299.8	758.3	531.8
TNAu	Mean	6,339.9	7,401.1	6,942.7	7,317.0	10,296.0	13,968.1	20,711.2	23,178.4	15,728.4	15,214.9
	Maximum	24,973.6	27,473.0	29,151.3	37,004.6	44,637.7	60,848.4	70,225.1	66,481.2	55,768.8	45,477.8
	Minimum	70.8	85.4	18.8	39.6	103.8	315.3	609.5	483.3	131.8	121.2
	Standard deviation	5,955.0	7,168.3	7,294.2	8,057.9	10,690.6	14,203.9	19,947.5	20,584.5	15,769.0	13,742.7
TNAp	Mean		38,064.9	35,299.1	43,313.5	50,689.4	69,497.3	81,422.4	82,607.7	61,029.8	79,021.0

	Maximum		141,507.9	123,191.7	155,374.0	178,200.1	252,365.8	276,596.9	213,174.1	171,025.3	237,216.7
	Minimum		519.4	614.9	954.4	1,224.7	1,963.2	2,426.9	3,471.2	1,923.8	2,691.6
	Standard deviation		28,466.4	25,404.5	34,975.1	38,998.4	52,791.4	56,834.9	54,025.8	47,931.3	60,352.8
<i>EM</i>	Mean	10.0%	10.0%	9.5%	8.8%	8.5%	8.2%	8.0%	8.2%	8.8%	9.0%
<i>AGE</i>	Mean	6.1	6.1	6.4	7.0	7.5	7.8	8.1	8.2	8.6	9.4
	Maximum	38.5	39.5	40.5	41.5	42.5	43.5	37.0	38.0	39.0	40.0
	Minimum	1.0	1.0	1.0	1.0	1.1	1.0	1.0	1.0	1.0	1.1
	Standard deviation	4.9	4.9	5.0	5.1	5.2	5.3	5.2	5.5	5.7	6.0
<i>AD</i>	Mean	58.5%	60.8%	62.9%	59.8%	58.2%	59.2%	53.7%	51.3%	50.0%	49.5%

Table 3: Correlation matrix

Correlation coefficients calculated based on yearly values for the period 2002-2009, with the exception of the correlations with the TER per month (TERM), which are determined in the period 2002–2008 based on the sub-sample of funds for which both return and cost data is available.

	ASAR	CFFA	T	I%	S%	CH	DEP	TEN3%	LEG	PF	FIX	LTNAi	LTNAu	LTNAp	EM	LAGE	AD	TERM
ASAR	1	0.350	0.009	0.077	0.002	0.038	0.061	0.009	-0.054	0.006	0.024	0.031	0.036	-0.014	0.004	-0.072	-0.098	0.020
CFFA	0.350	1	-0.019	0.047	-0.020	0.019	0.045	0.035	-0.023	-0.003	0.054	0.014	0.062	0.002	0.027	-0.026	-0.092	0.018
T	0.009	-0.019	1	0.259	-0.231	0.016	-0.130	0.263	-0.234	-0.046	-0.094	0.148	0.371	0.307	0.017	0.034	0.059	0.077
I%	0.077	0.047	0.259	1	-0.007	0.465	0.204	0.377	-0.107	-0.071	-0.039	0.080	0.256	-0.048	-0.011	0.069	-0.488	0.129
S%	0.002	-0.020	-0.231	-0.007	1	0.216	0.022	-0.027	-0.168	-0.036	0.090	0.031	0.029	-0.086	-0.033	-0.029	-0.148	-0.043
CH	0.038	0.019	0.016	0.465	0.216	1	0.083	0.102	-0.061	-0.053	0.080	0.063	0.163	-0.106	-0.018	0.043	-0.408	0.095
DEP	0.061	0.045	-0.130	0.204	0.022	0.083	1	-0.006	-0.104	-0.089	-0.257	-0.019	0.031	-0.400	0.012	-0.075	-0.514	0.199
TEN3%	0.009	0.035	0.263	0.377	-0.027	0.102	-0.006	1	-0.103	-0.022	-0.009	0.095	0.260	-0.012	-0.020	0.057	-0.270	0.102
LEG	-0.054	-0.023	-0.234	-0.107	-0.168	-0.061	-0.104	-0.103	1	-0.097	0.095	0.057	0.015	0.095	0.010	0.015	0.187	-0.066
PF	0.006	-0.003	-0.046	-0.071	-0.036	-0.053	-0.089	-0.022	-0.097	1	-0.057	-0.056	-0.065	0.069	0.015	-0.114	0.028	0.143
FIX	0.024	0.054	-0.094	-0.039	0.090	0.080	-0.257	-0.009	0.095	-0.057	1	0.071	0.125	0.375	0.016	0.058	0.081	-0.154
LTNAi	0.031	0.014	0.148	0.080	0.031	0.063	-0.019	0.095	0.057	-0.056	0.071	1	0.384	0.204	0.089	0.357	-0.076	-0.206
LTNAu	0.036	0.062	0.371	0.256	0.029	0.163	0.031	0.260	0.015	-0.065	0.125	0.384	1	0.505	0.008	-0.012	-0.233	-0.072
LTNAp	-0.014	0.002	0.307	-0.048	-0.086	-0.106	-0.400	-0.012	0.095	0.069	0.375	0.204	0.505	1	-0.007	0.079	0.334	-0.113
EM	0.004	0.027	0.017	-0.011	-0.033	-0.018	0.012	-0.020	0.010	0.015	0.016	0.089	0.008	-0.007	1	0.063	0.013	0.294
LAGE	-0.072	-0.026	0.034	0.069	-0.029	0.043	-0.075	0.057	0.015	-0.114	0.058	0.357	-0.012	0.079	0.063	1	-0.028	-0.044
AD	-0.098	-0.092	0.059	-0.488	-0.148	-0.408	-0.514	-0.270	0.187	0.028	0.081	-0.076	-0.233	0.334	0.013	-0.028	1	-0.232
TERM	0.020	0.018	0.077	0.129	-0.043	0.095	0.199	0.102	-0.066	0.143	-0.154	-0.206	-0.072	-0.113	0.294	-0.044	-0.232	1

■ Absolute value in excess of 0.500. ■ Absolute value between 0.333 and 0.500.

Table 4: Regression of fund costs on governance and control variables

The table reports the estimates of the coefficients of the Model Ia, Ib, IIa, and IIb with their t-values. Fund costs are in basis points. For Model II, the results for the constant and umbrella dummies are suppressed. The top panel provides the results with the TER as dependent variable, whereas the middle and bottom panel provide the results for the Management Fee and the Other Costs respectively. White's correction for heteroscedasticity is used.

When a coefficient is statistically significant at the level of 10%, it is highlighted in light grey. For values that are significant at the 5% level, a darker shade of grey is used.

The number of observations for the TER is higher than for the Management Fee and Other Costs. The reason is that for funds with an All-In Fee, the TER cannot be broken down into these two components.

TER%	Model Ia (2000-2008)		Model Ib (2002-2008)		Model IIa (2000-2008)		Model IIb (2002-2008)	
	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t
<i>c</i>	223.50	26.34	177.72	10.23				
<i>T</i>	1.65	11.92	1.39	6.04	0.41	0.51	0.24	0.39
<i>I%</i>	-4.65	-2.46	-8.33	-3.68	20.16	1.77	39.21	3.28
<i>S%</i>	0.37	0.09	4.94	1.23	7.90	0.86	17.07	1.53
<i>CH</i>	1.31	0.68	4.52	1.66	-7.91	-4.95	-9.07	-5.85
<i>DEP</i>	4.19	2.74	6.59	2.79	1.55	1.22	1.54	0.90
<i>TEN3%</i>			9.04	2.54			0.76	0.37
<i>LEG</i>	7.46	3.17	6.00	2.37				
<i>PF</i>	13.65	5.20	13.62	9.89	14.13	9.77	14.33	10.41
<i>FIX</i>	-6.27	-2.47	-8.82	-4.95	10.96	4.79	8.50	3.36
<i>LTNAi</i>	-4.02	-10.32	-4.01	-8.16	-3.09	-6.16	-2.87	-5.44
<i>LTNAu</i>	-3.05	-5.40	-4.76	-7.68	-4.23	-2.64	-5.71	-7.82
<i>LTNAp</i>			5.35	2.86			-2.28	-0.86
<i>EM</i>	31.94	17.50	30.61	18.90	31.11	15.46	28.99	15.16
<i>LAGE</i>	0.41	0.55	0.68	1.02	-0.73		-0.37	-0.60
<i>AD</i>	-16.43	-5.43	-16.03	-7.74				
Periods	9		7		9		7	
Funds	554		538		554		538	
Observations	3044		2541		3044		2541	
R ²	0.277		0.280		0.559		0.565	
Adjusted R ²	0.272		0.274		0.550		0.554	

Mgt%	Model Ia (2000-2008)		Model Ib (2002-2008)		Model IIa (2000-2008)		Model IIb (2002-2008)	
	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t
<i>c</i>	168.65	39.79	150.06	16.38				
<i>T</i>	0.64	5.53	0.53	4.04	0.05	0.10	-0.60	-1.39
<i>I%</i>	5.92	2.76	5.94	1.89	-2.06	-0.34	9.13	3.08
<i>S%</i>	-11.68	-2.16	-13.08	-1.91	17.99	3.52	25.13	4.63
<i>CH</i>	3.46	2.30	5.52	2.72	-2.89	-1.86	-3.11	-1.46
<i>DEP</i>	6.97	5.45	6.82	5.15	1.56	2.68	-0.73	-0.54
<i>TEN3%</i>			0.36	0.11			-3.04	-1.67
<i>LEG</i>	14.12	6.72	12.36	4.96				
<i>PF</i>	4.35	1.00	6.62	2.18	10.09	6.83	10.67	7.33
<i>FIX</i>	0.35	0.21	-1.62	-1.58	1.35	0.97	-0.46	-0.33
<i>LTNAi</i>	0.21	0.98	0.09	0.46	0.59	4.19	0.64	4.07
<i>LTNAu</i>	-3.42	-6.65	-5.06	-4.33	-1.30	-1.07	-2.93	-2.65
<i>LTNAp</i>			3.45	2.14			5.71	2.57
<i>EM</i>	16.73	30.42	16.32	35.68	17.50	28.93	16.68	65.23
<i>LAGE</i>	-1.39	-2.32	-1.32	-2.06	-1.73	-5.67	-1.68	-5.42
<i>AD</i>	-3.96	-3.11	-4.64	-5.42				
Periods	9		7		9		7	
Funds	530		514		530		514	
Observations	2907		2425		2907		2425	
R ²	0.213		0.198		0.604		0.598	
Adjusted R ²	0.207		0.191		0.595		0.587	

Table continues on the next page

<i>Other%</i>	Model Ia (2000-2008)		Model Ib (2002-2008)		Model IIa (2000-2008)		Model IIb (2002-2008)	
	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t
<i>c</i>	65.83	6.30	42.34	3.31				
<i>T</i>	1.10	10.20	0.99	7.16	0.41	0.97	0.85	1.41
<i>I%</i>	-11.57	-7.44	-14.42	-8.33	23.22	3.16	30.46	2.42
<i>S%</i>	11.06	1.70	16.50	2.28	-13.84	-1.27	-8.00	-0.79
<i>CH</i>	-2.65	-3.38	-1.77	-1.57	-5.77	-4.65	-6.06	-4.37
<i>DEP</i>	-3.98	-2.66	-1.49	-0.91	-0.03	-0.03	2.27	1.14
<i>TEN3%</i>			8.02	3.66			3.48	1.81
<i>LEG</i>	-2.10	-1.18	-2.52	-1.36				
<i>PF</i>	8.99	4.31	6.91	3.43	3.92	3.36	3.59	3.60
<i>FIX</i>	-2.79	-1.57	-3.81	-2.39	9.88	7.13	9.12	4.07
<i>LTNAi</i>	-4.44	-10.97	-4.27	-8.77	-3.62	-7.89	-3.44	-6.88
<i>LTNAu</i>	-0.73	-0.91	-0.65	-0.90	-2.76	-4.11	-2.92	-3.60
<i>LTNAp</i>			1.43	2.01			-7.68	-4.39
<i>EM</i>	13.45	7.26	12.44	6.05	12.75	6.81	11.26	5.37
<i>LAGE</i>	2.13	4.13	2.31	4.11	0.79	1.95	1.11	2.34
<i>AD</i>	-13.77	-6.02	-12.43	-4.96				
Periods	9		7		9		7	
Funds	530		514		530		514	
Observations	2907		2425		2907		2425	
R ²	0.276		0.300		0.536		0.561	
Adjusted R ²	0.271		0.294		0.526		0.549	

■ Significant at 5% level. ■ Significant at 10% level.

Table 5: Regression of Average RCI by umbrella on governance and control variables

The table reports the estimates of the coefficients of the Model Ib and IIb with their t-values. The RCI is measured in standard deviations from the sample mean. By multiplying the coefficients by the average standard deviation of the TERs, they are converted to basis points. These figures are shown in the column indicated with bp. For Model IIb, the results for the constant and umbrella dummies are suppressed. White's correction for heteroscedasticity is used.

When a coefficient is statistically significant at the level of 10%, it is highlighted in light grey. For values that are significant at the 5% level, a darker shade of grey is used.

<i>RCI</i>	RCI Model I (2002-2008)			RCI Model II (2002-2008)		
	Coefficient	t	bp	Coefficient	t	bp
<i>c</i>	-0.52	-0.98	-13.5			
<i>T</i>	0.06	5.99	1.5	0.01	0.44	0.3
<i>I%</i>	-0.34	-3.65	-8.8	0.85	1.86	22.1
<i>S%</i>	0.46	1.67	12.1	0.98	2.02	25.4
<i>CH</i>	0.30	3.07	7.9	-0.41	-3.38	-10.8
<i>DEP</i>	0.33	2.78	8.7	0.08	0.85	2.0
<i>TEN3%</i>	0.43	3.06	11.1	0.05	0.67	1.2
<i>LEG</i>	0.32	2.92	8.4			
<i>FIX</i>	-0.44	-7.51	-11.6	-0.07	-0.88	-1.8
<i>LATNAi</i>	-0.12	-4.28	-3.1	-0.04	-0.71	-1.2
<i>LTNAu</i>	-0.20	-6.11	-5.2	-0.26	-4.37	-6.8
<i>LTNAp</i>	0.21	3.59	5.6	0.01	0.13	0.3
<i>AD</i>	-0.44	-5.13	-11.5			
Periods	7			7		
Funds	44			44		
Observations	295			295		
R ²	0.215			0.822		
Adjusted R ²	0.164			0.778		

■ Significant at 5% level. ■ Significant at 10% level.

Table 6: Regression of fund costs on governance and control variables. Sample split by promoter origin.

The table reports the estimates of the coefficients of the Model Ib in the top panel and IIb in the bottom panel, with their t-values. Fund costs are in basis points. In the respective columns, the results are shown for the full sample, for the sub-sample of continental European promoters and for the sub-sample of Anglo-Saxon promoters. For Model II, the results for the constant and umbrella dummies are suppressed. White's correction for heteroscedasticity is used.

When a coefficient is statistically significant at the level of 10%, it is highlighted in light grey. For values that are significant at the 5% level, a darker shade of grey is used.

TER%	Model Ib (2002-2008)		Model Ib (2002-2008)		Model Ib (2002-2008)	
	Full sample		Continental European		Anglo-Saxon	
	Coefficient	t	Coefficient	t	Coefficient	t
<i>c</i>	177.72	10.23	180.43	14.03	164.72	7.31
<i>T</i>	1.39	6.04	1.47	5.29	0.66	1.94
<i>I%</i>	-8.33	-3.68	-15.35	-1.38	3.13	0.63
<i>S%</i>	4.94	1.23	1.71	0.25	18.46	2.60
<i>CH</i>	4.52	1.66	1.62	0.27	4.68	1.65
<i>DEP</i>	6.59	2.79	4.48	2.25	16.73	2.78
<i>TEN3%</i>	9.04	2.54	7.93	1.06	11.14	2.42
<i>LEG</i>	6.00	2.37	5.23	1.98	8.55	1.73
<i>PF</i>	13.62	9.89	11.69	2.54	14.74	4.70
<i>FIX</i>	-8.82	-4.95	-10.02	-3.03	-5.05	-1.22
<i>LTNAi</i>	-4.01	-8.16	-4.07	-6.61	-3.56	-7.05
<i>LTNAu</i>	-4.76	-7.68	-3.37	-3.75	-6.38	-4.51
<i>LTNAp</i>	5.35	2.86	4.69	4.76	7.04	2.40
<i>EM</i>	30.61	18.90	36.06	20.35	23.91	11.38
<i>LAGE</i>	0.68	1.02	0.05	0.03	-0.26	-0.39
<i>AD</i>	-16.03	-7.74	-21.43	-3.18	-6.04	-2.34
Periods	7		7		7	
Funds	538		282		256	
Observations	2541		1264		1277	
R ²	0.280		0.225		0.303	
Adjusted R ²	0.274		0.212		0.291	
TER%	Model IIb (2002-2008)		Model IIb (2002-2008)		Model IIb (2002-2008)	
	Full sample		Continental European		Anglo-Saxon	
	Coefficient	t	Coefficient	t	Coefficient	t
<i>T</i>	0.24	0.39	-1.59	-1.28	2.51	1.79
<i>I%</i>	39.21	3.28	-19.15	-2.60	53.09	3.29
<i>S%</i>	17.07	1.53	5.09	0.59	41.51	1.95
<i>CH</i>	-9.07	-5.85	2.26	0.58	-18.57	-4.77
<i>DEP</i>	1.54	0.90	4.04	1.07	4.70	0.87
<i>TEN3%</i>	0.76	0.37	-0.79	-0.29	3.92	1.05
<i>PF</i>	14.33	10.41	14.85	5.63	10.86	6.27
<i>FIX</i>	8.50	3.36	5.43	2.08	9.78	3.79
<i>LTNAi</i>	-2.87	-5.44	-2.32	-2.74	-3.22	-8.29
<i>LTNAu</i>	-5.71	-7.82	-4.39	-3.11	-6.51	-5.48
<i>LTNAp</i>	-2.28	-0.86	-2.98	-0.64	-0.52	-0.26
<i>EM</i>	28.99	15.16	33.60	16.81	24.96	11.31
<i>LAGE</i>	-0.37	-0.60	-0.78	-1.22	-0.21	-0.29
<i>AD</i>						
Periods	7		7		7	
Funds	538		282		256	
Observations	2541		1264		1277	
R ²	0.565		0.539		0.563	
Adjusted R ²	0.554		0.523		0.549	

■ Significant at 5% level. ■ Significant at 10% level.

Table 7: Regression of fund 1-year excess returns on governance and control variables

The top panel shows the results for the Carhart alpha (*CFFA*). The bottom panel provides the results for the Average Sector-Adjusted Return (*ASAR*). Both are in percentage points per month. The three columns to the left provide the results for Model Ia, Ib and Ic, respectively, while the three columns to the right show the results for Model IIa, IIb and IIc, respectively. For all variables, the table shows the value for the coefficient from the regression analysis and the value for the t-statistic. For Model IIb, the results for the constant and umbrella dummies are suppressed. White's correction for heteroscedasticity is used.

Coefficients that are statistically significant at the level of 10% are shaded in light grey, while those statistically significant at the level of 5% are shaded in a darker grey. For Model II, the results for the constant and umbrella dummies are suppressed.

<i>CFFA</i>	Model Ia (2000-2009)		Model Ib (2002-2009)		Model Ic (2002-2008)		Model IIa (2000-2009)		Model IIb (2002-2009)		Model IIc (2002-2008)	
	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t
<i>c</i>	-0.15	-1.51	-0.01	-0.06	-0.09	-0.77						
<i>T</i>	0.00	-1.22	-0.01	-1.43	-0.01	-1.13	0.00	0.13	0.00	0.52	-0.01	-1.04
<i>I%</i>	0.03	0.99	0.06	1.68	0.05	1.51	-0.07	-0.51	0.11	0.77	0.35	2.25
<i>S%</i>	-0.14	-1.96	-0.18	-2.60	-0.23	-2.43	-0.32	-2.10	-0.25	-1.31	-0.33	-1.96
<i>CH</i>	0.01	0.20	-0.03	-1.54	-0.03	-1.41	-0.02	-0.95	-0.02	-0.51	-0.03	-0.52
<i>DEP</i>	0.00	-0.26	-0.01	-0.62	-0.01	-0.64	-0.05	-0.62	-0.19	-3.31	-0.16	-2.40
<i>TEN3%</i>			-0.02	-0.82	-0.02	-0.66			0.04	1.84	0.04	1.02
<i>LEG</i>	-0.03	-0.68	-0.04	-0.78	-0.06	-0.86						
<i>PF</i>	-0.05	-1.47	-0.02	-0.70	-0.02	-0.76	0.01	0.18	0.02	0.39	-0.02	-0.40
<i>FIX</i>	0.04	1.80	0.07	3.41	0.09	3.13	0.04	1.68	0.07	2.13	0.05	1.63
<i>LTNAi</i>	0.01	1.30	0.01	0.74	0.01	0.73	0.01	0.87	0.00	0.24	0.00	0.44
<i>LTNAu</i>	0.01	0.88	0.02	1.03	0.02	0.81	-0.05	-1.93	-0.06	-2.63	-0.04	-1.11
<i>LTNAp</i>			-0.01	-0.84	-0.01	-0.27			-0.03	-1.08	-0.03	-0.85
<i>EM</i>	0.07	1.21	0.05	0.71	0.06	1.00	0.07	1.13	0.05	0.70	0.06	0.91
<i>LAGE</i>	-0.04	-2.34	-0.03	-1.86	-0.04	-1.96	-0.03	-1.59	-0.03	-1.69	-0.03	-1.95
<i>AD</i>	-0.07	-3.40	-0.07	-2.46	-0.08	-3.05						
<i>TERM</i>					0.08	0.18					0.05	0.09
Periods	10		8		7		10		8		7	
Funds	562		554		505		562		554		505	
Observations	3331		2891		2354		3331		2891		2354	
R ²	0.056		0.045		0.057		0.079		0.073		0.089	
Adjusted R ²	0.050		0.038		0.048		0.060		0.051		0.064	
<i>ASAR</i>	Model Ia (2000-2009)		Model Ib (2002-2009)		Model Ic (2002-2008)		Model IIa (2000-2009)		Model IIb (2002-2009)		Model IIc (2002-2008)	
	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t
<i>c</i>	0.11	1.07	0.13	1.96	0.00	0.01						
<i>T</i>	0.00	0.45	0.00	-0.07	0.00	0.33	0.02	1.94	0.02	1.58	0.01	0.79
<i>I%</i>	0.14	1.72	0.16	1.87	0.17	1.32	-0.53	-2.12	-0.24	-1.03	-0.44	-1.48
<i>S%</i>	-0.05	-0.62	-0.09	-1.25	-0.09	-0.96	-0.20	-1.20	-0.05	-0.32	-0.02	-0.08
<i>CH</i>	0.02	0.47	-0.02	-0.63	-0.02	-0.56	-0.04	-0.88	0.00	-0.03	0.02	0.77
<i>DEP</i>	0.02	0.97	0.01	0.44	0.04	1.39	0.04	0.83	-0.03	-0.53	-0.03	-0.39
<i>TEN3%</i>			-0.07	-1.20	-0.05	-0.91			-0.09	-1.25	-0.08	-0.81
<i>LEG</i>	-0.04	-1.05	-0.07	-1.53	-0.07	-1.32						
<i>PF</i>	-0.04	-0.67	0.00	-0.10	-0.04	-1.04	0.03	0.47	0.05	0.71	0.01	0.24
<i>FIX</i>	0.04	1.19	0.05	1.18	0.06	0.98	0.05	0.82	0.08	1.41	0.09	1.32
<i>LTNAi</i>	0.02	2.00	0.02	1.77	0.02	1.28	0.02	1.93	0.02	1.62	0.02	1.04
<i>LTNAu</i>	-0.02	-1.15	-0.01	-0.62	-0.03	-1.59	-0.08	-3.54	-0.07	-2.35	-0.11	-3.54
<i>LTNAp</i>			0.01	0.25	0.03	0.84			-0.04	-1.42	-0.03	-0.70
<i>EM</i>	0.02	2.37	0.01	1.42	0.02	1.47	0.01	1.30	0.01	0.67	0.03	1.42
<i>LAGE</i>	-0.06	-2.89	-0.07	-3.06	-0.07	-3.22	-0.05	-1.86	-0.07	-2.32	-0.07	-2.63
<i>AD</i>	-0.09	-3.05	-0.09	-2.59	-0.10	-4.47						
<i>TERM</i>					-0.05	-0.08					-0.61	-0.84
Periods	10		8		7		10		8		7	
Funds	562		554		505		562		554		505	
Observations	3331		2891		2354		3331		2891		2354	
R ²	0.024		0.025		0.033		0.056		0.050		0.068	
Adjusted R ²	0.017		0.018		0.024		0.036		0.028		0.041	

■ Significant at 5% level. ■ Significant at 10% level.

Table 8: Regression of umbrella 1-year excess return on governance and control variables

Excess return at umbrella level is calculated as the simple average excess returns of all funds included in a particular umbrella in a calendar year. The top panel shows the results for the Carhart alpha (*CFFA*). The bottom panel provides the results for the Average Sector-Adjusted Return (*ASAR*). Both are in percentage points per month. The three columns to the left provide the results for Model Ia, Ib and Ic, respectively, while the three columns to the right show the results for Model IIa, IIb and IIc, respectively. For all variables, the table shows the value for the coefficient from the regression analysis and the value for the t-statistic. For Model IIb, the results for the constant and umbrella dummies are suppressed. White's correction for heteroscedasticity is used.

Coefficients that are statistically significant at the level of 10% are shaded in light grey, while those statistically significant at the level of 5% are shaded in a darker grey. For Model II, the results for the constant and umbrella dummies are suppressed.

	Model Ia (2000-2009)		Model Ib (2002-2009)		Model Ic (2002-2008)		Model IIa (2000-2009)		Model IIb (2002-2009)		Model IIc (2002-2008)	
<i>CFFA</i>	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t
<i>c</i>	-0.13	-0.81	0.13	0.73	0.06	0.24						
<i>T</i>	0.00	0.08	0.00	-0.38	0.00	-0.87	0.00	0.40	0.01	0.50	-0.02	-1.68
<i>I%</i>	-0.01	-0.16	-0.01	-0.21	-0.03	-0.59	0.20	0.74	0.60	2.38	1.02	3.08
<i>S%</i>	-0.14	-1.29	-0.19	-1.58	-0.28	-1.91	-0.16	-0.81	0.11	0.37	0.01	0.02
<i>CH</i>	0.01	0.42	-0.02	-0.96	-0.03	-1.16	-0.06	-1.25	-0.05	-0.91	-0.08	-0.74
<i>DEP</i>	0.00	0.23	-0.02	-1.11	-0.02	-0.95	0.01	0.11	-0.16	-1.97	-0.11	-1.14
<i>TEN3%</i>			-0.03	-0.78	-0.03	-0.78			-0.02	-0.40	-0.02	-0.39
<i>LEG</i>	0.02	0.30	-0.01	-0.13	-0.02	-0.38						
<i>FIX</i>	0.03	0.92	0.08	2.44	0.10	2.32	0.05	1.28	0.09	1.90	0.06	1.63
<i>LATNAi</i>	0.02	1.15	0.00	0.04	0.01	0.40	-0.04	-1.82	-0.03	-0.91	-0.03	-1.09
<i>LTNAu</i>	-0.01	-0.56	0.01	0.50	0.01	0.41	-0.03	-0.70	-0.05	-1.15	-0.05	-0.76
<i>LTNAp</i>			-0.03	-1.75	-0.03	-1.58			-0.03	-0.86	-0.05	-1.38
<i>AD</i>	-0.10	-2.56	-0.11	-2.35	-0.11	-2.26						
<i>TERM</i>					0.69	0.88					-1.05	-0.71
Periods	10		8		7		10		8		7	
Promoters	48		47		46		48		47		46	
Observations	445		360		306		445		360		306	
<i>R</i> ²	0.190		0.182		0.205		0.315		0.325		0.370	
Adjusted <i>R</i> ²	0.154		0.136		0.152		0.200		0.182		0.209	
	Model Ia (2000-2009)		Model Ib (2002-2009)		Model Ic (2002-2008)		Model IIa (2000-2009)		Model IIb (2002-2009)		Model IIc (2002-2008)	
<i>ASAR</i>	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t
<i>C</i>	0.22	1.58	0.38	1.37	0.27	0.71						
<i>T</i>	0.01	1.59	0.01	1.04	0.01	1.16	0.04	3.28	0.03	1.94	0.01	0.59
<i>I%</i>	0.04	0.55	0.01	0.10	0.01	0.05	-0.52	-1.63	-0.16	-0.56	-0.19	-0.38
<i>S%</i>	-0.11	-1.21	-0.15	-1.16	-0.13	-0.91	-0.37	-1.67	-0.23	-0.88	-0.19	-0.48
<i>CH</i>	0.05	1.26	0.00	0.09	-0.02	-0.45	-0.03	-0.59	0.01	0.20	-0.03	-0.70
<i>DEP</i>	0.05	2.18	0.03	0.87	0.05	1.45	0.12	2.00	0.02	0.24	0.03	0.27
<i>TEN3%</i>			-0.06	-0.87	-0.06	-0.70			-0.11	-1.40	-0.11	-0.88
<i>LEG</i>	0.02	0.40	-0.02	-0.46	-0.03	-0.56						
<i>FIX</i>	0.05	1.22	0.07	1.38	0.07	1.14	0.11	1.86	0.13	2.09	0.11	1.75
<i>LATNAi</i>	-0.01	-0.45	-0.02	-1.18	0.00	-0.13	-0.10	-4.63	-0.09	-3.37	-0.07	-1.44
<i>LTNAu</i>	-0.03	-1.22	-0.01	-0.45	-0.03	-1.52	-0.04	-1.32	-0.06	-1.66	-0.10	-2.18
<i>LTNAp</i>			-0.01	-0.60	0.00	-0.12			-0.07	-1.37	-0.06	-0.68
<i>AD</i>	-0.11	-2.89	-0.12	-2.79	-0.12	-3.06						
<i>TERM</i>					0.63	1.01					-1.44	-1.43
Periods	10		8		7		10		8		7	
Promoters	48		47		46		48		47		46	
Observations	445		360		306		445		360		306	
<i>R</i> ²	0.077		0.081		0.107		0.292		0.309		0.401	
Adjusted <i>R</i> ²	0.036		0.029		0.048		0.173		0.162		0.248	

■ Significant at 5% level. ■ Significant at 10% level.

Table 9: Regression of fund 3-year excess returns on governance and control variables

The top panel shows the results for the Carhart alpha (*CFFA*). The bottom panel provides the results for the Average Sector-Adjusted Return (*ASAR*). Both are in percentage points per month. The three columns to the left provide the results for Model Ia, Ib and Ic, respectively, while the three columns to the right show the results for Model IIa, IIb and IIc, respectively. For all variables, the table shows the value for the coefficient from the regression analysis and the value for the t-statistic. For Model IIb, the results for the constant and umbrella dummies are suppressed.

White's correction for heteroscedasticity is used.

The monthly Average Sector-Adjusted Return and the Carhart alphas are calculated for three three-year intervals: 2000–2002, 2003–2005 and 2006–2008. For the scale measures at the fund, umbrella and promoter levels, the averages are taken of the calendar year values of the calendar years in which the fund was active. The variables included in the regression analysis are the natural logarithm of the averages. Because the promoter level scale is not available for the year 2000, the value for the period 2000–2002 is determined taking the average of the years 2001 and 2002.

For the Total Expense Ratio (TER), the average is taken of the calendar year values of the calendar years in which the fund was active. Including the TER in the regression analysis reduces the sample size because TER data was not available for all funds for all calendar years the fund was active. For this reason, the regression analyses are performed both without (Model specifications Ia, Ib, as well as IIa and IIb) and with the TER as control variable (Model specifications Ic and IIc).

Coefficients that are statistically significant at the level of 10% are shaded in light grey, while those statistically significant at the level of 5% are shaded in a darker grey. For Model II, the results for the constant and umbrella dummies are suppressed.

	Model Ia (2000-2008)		Model Ib (2000-2008)		Model Ic (2000-2008)		Model IIa (2000-2008)		Model IIb (2000-2008)		Model IIc (2000-2008)	
<i>CFFA</i>	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t
<i>c</i>	0.12	1.63	0.12	1.60	0.05	0.35						
<i>T</i>	0.00	0.10	0.00	0.08	0.00	0.56	0.00	0.55	0.00	0.54	0.00	0.26
<i>I%</i>	0.00	0.03	0.01	0.19	0.03	0.98	-0.39	-12.72	-0.39	-20.88	-0.44	-11.26
<i>S%</i>	-0.10	-0.96	-0.09	-0.96	-0.02	-0.15	-0.08	-1.53	-0.07	-1.95	-0.10	-1.07
<i>CH</i>	0.04	1.46	0.03	1.40	0.03	1.56	-0.01	-0.36	-0.01	-0.32	0.00	-0.03
<i>DEP</i>	0.01	0.20	0.01	0.17	0.02	0.60	-0.03	-0.43	-0.03	-0.43	-0.04	-0.49
<i>TEN3%</i>	-0.02	-0.56	-0.02	-0.57	-0.02	-0.46	-0.03	-0.60	-0.03	-0.60	-0.04	-0.92
<i>LEG</i>	-0.01	-0.22	-0.02	-0.24	-0.01	-0.20						
<i>PF</i>	-0.07	-1.62	-0.07	-1.61	-0.05	-1.69	-0.04	-0.55	-0.04	-0.56	0.01	0.18
<i>FIX</i>	0.10	2.80	0.10	2.96	0.09	2.86	0.09	4.86	0.09	11.45	0.12	6.10
<i>LTNAi</i>	0.03	2.21	0.03	2.12	0.03	1.97	0.03	2.06	0.03	1.98	0.02	1.84
<i>LTNAu</i>	0.00	-0.54	0.00	-0.39	-0.01	-1.29	-0.01	-0.17	-0.01	-0.17	0.00	0.04
<i>LTNAp</i>	-0.02	-3.31	-0.02	-3.53	-0.01	-1.15	0.01	0.43	0.01	0.42	0.05	1.47
<i>EM</i>	0.01	0.29	0.01	0.27	0.03	1.57	0.01	0.37	0.01	0.37	0.06	2.55
<i>LAGE</i>	-0.07	-3.93	-0.07	-3.91	-0.07	-3.96	-0.06	-2.33	-0.06	-2.36	-0.06	-2.40
<i>AD</i>	-0.08	-2.11	-0.08	-2.00	-0.08	-3.17						
<i>Closed</i>			-0.04	-2.60	-0.02	-1.37			-0.03	-0.55	-0.03	-0.80
<i>TERM</i>					-0.38	-0.58					-1.54	-2.14
Periods	3		3		3		3		3		3	
Funds	484		484		464		484		484		464	
Observations	1009		1009		954		1009		1009		954	
<i>R</i> ²	0.094		0.094		0.087		0.166		0.166		0.168	
Adjusted <i>R</i> ²	0.078		0.078		0.069		0.113		0.113		0.110	
<i>ASAR</i>	Model Ia (2000-2008)		Model Ib (2000-2008)		Model Ic (2000-2008)		Model IIa (2000-2008)		Model IIb (2000-2008)		Model IIc (2000-2008)	
	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t
<i>c</i>	0.28	1.59	0.29	1.63	0.15	0.58						
<i>T</i>	0.00	0.44	0.00	0.43	0.01	0.80	0.03	1.32	0.03	1.36	0.03	1.72
<i>I%</i>	0.16	2.61	0.17	2.83	0.22	3.96	-0.75	-2.18	-0.77	-2.18	-0.65	-1.48
<i>S%</i>	-0.11	-1.08	-0.11	-1.00	0.01	0.15	-0.32	-6.75	-0.35	-5.12	-0.33	-1.97
<i>CH</i>	0.02	0.52	0.01	0.42	0.01	0.32	-0.11	-0.95	-0.11	-0.96	-0.14	-1.62
<i>DEP</i>	0.03	1.03	0.02	0.94	0.04	1.51	0.03	0.43	0.03	0.45	0.02	0.33
<i>TEN3%</i>	0.00	-0.16	0.00	-0.23	-0.03	-2.15	-0.02	-0.36	-0.02	-0.35	-0.07	-1.66
<i>LEG</i>	-0.04	-0.46	-0.04	-0.48	-0.04	-0.48						
<i>PF</i>	-0.06	-0.86	-0.06	-0.87	-0.04	-0.78	-0.02	-0.13	-0.01	-0.11	0.07	0.61
<i>FIX</i>	0.10	1.40	0.10	1.43	0.10	1.36	0.07	3.26	0.05	1.56	0.08	3.95
<i>LTNAi</i>	0.04	2.01	0.04	1.98	0.04	1.94	0.04	1.85	0.04	1.85	0.04	1.69
<i>LTNAu</i>	-0.03	-2.11	-0.03	-1.99	-0.03	-3.37	-0.08	-3.43	-0.08	-3.51	-0.07	-2.75
<i>LTNAp</i>	0.00	-0.16	0.00	-0.19	0.01	0.26	-0.03	-0.84	-0.03	-0.82	0.00	-0.03
<i>EM</i>	0.03	2.14	0.03	2.06	0.04	1.33	0.03	2.14	0.03	2.19	0.08	1.72
<i>LAGE</i>	-0.10	-10.46	-0.10	-10.40	-0.11	-7.70	-0.10	-18.94	-0.10	-20.77	-0.10	-19.82
<i>AD</i>	-0.12	-3.13	-0.11	-3.13	-0.11	-4.82						
<i>Closed</i>			-0.03	-0.59	0.03	0.62			0.09	1.06	0.20	2.70
<i>TERM</i>					-0.09	-0.16					-1.37	-1.50

Periods	3	3	3	3	3	3
Funds	484	484	464	484	484	464
Observations	1009	1009	954	1009	1009	954
R ²	0.078	0.079	0.083	0.174	0.175	0.183
Adjusted R ²	0.063	0.062	0.064	0.122	0.122	0.126

Figure 1: Development of fund costs and board independence in two sub-samples by promoter origin

By means of a “snail trail”, the figure displays the development in the period 2000-2008 of average fund costs (*TER*%) and the average level of independence of fund boards (*I*%) in two sub-samples, specifically that of Anglo-Saxon promoters (grey line) and that of continental European promoters (black line). Excluded for the calculation for this figure are funds with a performance fee schedule and funds investing in Emerging Markets equity.