A comparative study of the determinants of Belgian and Luxembourg mutual funds' ongoing charges

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A COMPARATIVE STUDY OF THE DETERMINANTS OF BELGIAN AND LUXEMBOURG MUTUAL FUNDS' ONGOING CHARGES

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TABLE OF CONTENTS

1. INTRODUCTION

1.1. BACKGROUND

In a nutshell, the asset management industry consists of investors entrusting their money to professional portfolio managers. The management of an investor's assets has historically either be performed by a management firm managing separate accounts for individual clients or pooling investors' assets into an investment company, commonly referred to as a fund. A fund is an investment structure coordinating the work of several intermediaries charging differing fees to the fund, and in turn to investors, in return for the services provided.

Investment companies can either be open-ended (often referred to as mutual funds) or closed-ended (referred to as closed-end funds). Each one differs in the way it operates after their initial public offering. A closed-end investment company functions similarly to any other public company: Its stock trades on the regular secondary market and the market price of its shares is determined by supply and demand conditions. In contrast, mutual funds continue to sell and repurchase shares after their initial public offering. They stand ready to sell additional shares of the fund at the Net Asset Value ("NAV") with or without sales charges, or to redeem shares of the fund at the NAV, with or without redemption fees (Reilly and Brown, 2011). These funds offer various share classes in order to provide investors with alternative ways to pay for financial services (Investment Company Institute, 2017).

In Europe, investment funds are commonly referred to as Undertakings for Collective Investment ("UCIs"). UCIs may be defined as structures or organizations investing pooled money collected from a number of investors according to the risk diversification principle (Sougné et al., 2016). UCIs are believed to deliver a number of benefits to investors such as access to financial markets for limited amounts, professional portfolio management, diversification of risks, and economies of scale, to name but a few. However, it is not all positive and there is some downside related to the lack of direct control on asset management decisions and on the investment management strategy from shareholders (or unitholders). Finally, a number of charges are incurred by the UCI and passed on to investors (Sougné et al., 2016). These charges are, for the most part, accrued by the service providers of a fund,

who contribute to the value chain of the mutual fund by either conducting the primary activities or support activities of the fund. Primary activities directly create value for the investors while support activities improve the efficiency of primary activities (Lang and Schäfer, 2013). An illustration of the value chain of a mutual fund can be found in Appendix I. The fees and charges paid by investors remunerate the various service providers of the fund and the ongoing charges figure ("OCF"), being the indicator at the core of this thesis, refers to the recurring charges taken out of a fund's NAV on a yearly basis.

When UCIs invest in transferable securities, are open-ended and comply with the relevant legal framework, they are labelled as UCITS[1]. UCITS funds are opposed to Alternative Investment Funds ("AIFs"), this category being composed of all non-UCITS funds. For the sake of clarity, it should be noted that the analyses conducted as part of this thesis were restricted to UCITS, both for data availability reasons and because UCITS represent the majority of the open-ended funds distributed in Europe. As a matter of fact, the EFAMA[2] (2018) has published a statistical report for the latest year-end indicating that 62.2% of funds were UCITS while the remaining 37.8% were AIFs, as demonstrated in Appendix II. The domination of UCITS is most probably due to the fact that they are sold to investors with minimum formalities and are freely marketable throughout the EU (Sougné et al., 2016).

The two countries under close examination, namely Belgium and Luxembourg, have not been selected solely upon the basis of their geographical proximity but because they share the common feature of having cross-country distributed funds within their industries. It can even be observed from a study performed by Lang and Köhler (2011) that after Luxembourg and Ireland, which are widely recognised offshore countries for mutual funds, Belgium is the third most popular country from which funds are distributed to the largest number of countries on average, as displayed in Appendix III. Overall, the success of the cross-border fund distribution model is related to the development of infrastructure and competence in key cross-border hubs, such as Luxembourg and Ireland, where infrastructures and key competences have developed over time (Deloitte, 2018). This thesis examines, through a comparative analysis of Belgian and Luxembourg UCITS, whether such infrastructures and competences lead investors to pay higher charges or whether it enables them to benefit from cluster efficiencies.

[1] Undertakings for Collective Investments in Transferable Securities.
[2] European Fund and Asset Management Association.

Recent figures from the EFAMA (2018) have appeared to substantiate the above-mentioned success of UCITS. In recent years the net assets of European investment funds have skyrocketed in value and reached record highs of €15,623 billion at the end of 2017, from which €9,714 billion was invested in UCITS and €5,909 billion was invested in AIFs, as represented in Appendix IV. The graph in the appendix indicates that during the period from 2011 to 2017, the net assets of European investment funds steadily increased and pretty much doubled in value. Such a tremendous amount of assets under management suggests that service providers within the financial industry collected colossal fees and charges from investors for the services they provided during the period. These fees have contributed to substantial reductions in the net returns obtained by investors. A recent report from the ESMA[3] (2017a) highlighted the impact of ongoing charges, one-off charges and inflation on the returns associated with mutual funds. The results showed that the impact was far from being negligible. These factors have led to a 38.8% relative reduction in returns obtained by investors in Belgium and to a 37.5% reduction for those investing in Luxembourg funds. The ongoing expenses alone led to a 15.1% reduction of returns in Belgium and a 16.6% reduction in Luxembourg, as illustrated in Appendix V.

1.2. RESEARCH MOTIVATION

In view of the impressive size of the fund industry and the potential reduction in yield resulting from recurring charges and one-off fees being charged to investors, a number of studies have attempted to explain the impact of costs on fund performance. Curiously, although several academics have performed studies on fees, investors have not demonstrated to place much importance on fees at the time of choosing a fund. A recent ESMA report on trends, risks and vulnerabilities (2017) even stated that "despite the impact of fees and charges on the net outcome to investors, these costs do not seem to be reflected in investor choices, given that aggregate net flows to EU fund shares evidently react hardly at all to management fees, and even less so to cost-adjusted net returns". At this stage, it has to be said that this thesis does not make any attempt to be a flow analysis. The extract from the ESMA report does, however, demonstrate that aggregate investments are currently, at best, weakly influenced by cost considerations.

[3] European Securities and Markets Authority.

This fact could be interpreted as meaning that, in the end, investors are either disinterested about the fees they are required to pay or poorly informed about the negative and significant impacts of fees on the compound return they can expect over time. Moreover, investors should be aware that "in contrast with future market trends or the investment adviser's skill, fees are the only fully predictable component of fund returns" (Gil-Bazo and Martínez, 2003). Consequently, investors would be well advised to consider the fees they will have to pay before committing to a fund.

My decision to study ongoing charges was motivated by the recent regulatory framework and its underlying obligation for managers to disclose ongoing charges to investors. The UCITS IV Directive initiated this and disclosure obligations were taken even one step further by the MiFID II[4] and PRIIPs[5] regulations, therefore making this study possible. Consequently, the regulatory framework surrounding fee disclosures was analysed in order to unveil the regulator's intention to foster cost transparency across the European fund industry.

Since the fees paid by end investors are an important component of the net return, "an increase in fees is likely to represent a deadweight loss for investors" (Malkiel, 2013). In the same vein, Gao and Livingston (2008) claimed that "since past performance has little predictive ability, and percentage fees have a high degree of predictive ability of future net returns, most investors are choosing funds based on the wrong criteria". Therefore, any fees paid must be carefully weighed against the services obtained in return. Earlier, Gil-Bazo and Martínez (2003) pointed out "the existence of statistically significant differences in fees between mutual funds that are not explained by fund investment category, average return or risk". Some of these differences were hardly justified by differences in the services provided to investors. These elements support the case for a better understanding of the determinants of these fees.

The origin of mutual fund fees lies in the different services provided to the fund. Such services do indeed add value for the investor and the operation of mutual funds relies on the coordination of different intermediaries to function properly. Since "large intermediation costs create an opportunity for money managers and a problem for investors" (Bogle, 2008), the fee structure of UCITS was analysed for the purpose of this thesis and emphasis placed on the aggregate cost of services. An empirical analysis of the determinants of the ongoing

[4] Markets in Financial Instruments Directive II.
[5] Packaged Retail and Insurance-based Investment Products.

charges figure was also performed. The OCF is a piece of information of which disclosure in the Key Investor Information Document ("KIID") of UCITS is a legal requirement. It serves as a proxy representing the recurring expenses incurred by the fund and the remuneration of any party connected with or providing services to the fund (CESR[6], 2010). This indicator will be considered as an aggregate measure of recurring costs of the services provided to investors, regardless of whether these services are provided directly by the fund or outsourced.

1.3. RESEARCH QUESTION

This thesis aims to answer the following question:

What are the determinants of the ongoing charges of Belgian and Luxembourg UCITS and how do they compare?

The goal is to adopt an explanatory approach of the elements influencing the level of the ongoing charges figure, this being the aggregate measure of the recurring costs of services annually charged to investors. The elements under scrutiny are fund-specific characteristics and will be identified successively prior to the empirical study. A comparison of the way these determinants impact the OCF in each of the two countries considered will ultimately be carried out.

1.4. PERSONAL CONTRIBUTION

As indicated earlier, this thesis aims to provide some insights into the drivers of mutual funds' cost of services by empirically analysing the different factors impacting the ongoing charges figure. As far as I am aware, this is the first of its kind, for the reason that, to the best of my knowledge, previous studies have generally focused on management fees, on the total expense ratio or on the total shareholder cost, which will all be discussed later. Considering the determinants generally explaining these alternative cost measures helped me to assess whether they have an impact on the ongoing cost of the services provided to the fund. Finally, this study departs from most studies on mutual fund fees, since, unlike this one, they have been performed predominantly on data from U.S. mutual funds.

[6] Committee of European Securities Regulators.

1.5. APPROACH

The second part of this thesis contains a review of the literature of different qualitative elements to consider and is divided into six sections. As a starting point, the first section describes existing research on the way fees impact mutual fund returns and how the two concepts are interrelated. In section 2, existing studies on fee dispersion and their causes are looked at. In section 3, the regulatory framework surrounding costs and fees disclosure is detailed. Section 4 describes the UCITS fee structure. Section 5 is dedicated to the ongoing charges figure, its calculation method, and the way it compares with alternative indicators of a fund's charges. The last section, section 6 lists the potential determinants of mutual fund fees described in existing literature as a preparation for the empirical analysis.

The third part of this thesis is dedicated to the explanation of the research methodology applied and to the description of the data set used as a basis for the empirical analysis. The results of the study are analysed in the fourth part. The fifth part links the theme of mutual fund fees to ethical considerations. Finally, the sixth and final section, presents the conclusions.

2. LITERATURE REVIEW

2.1. PERFORMANCE AND MUTUAL FUND FEES

The fee structure of mutual funds is made up of various costs and fees that are charged in different ways. They can either be charged at the time of purchasing shares of a fund (e.g. entry fees) or when withdrawing from a fund (e.g. exit fees), they can be charged incidentally (e.g. performance fees) or on an ongoing basis (e.g. management fees). In any case, such fees, as mentioned in the introductory part, result in a decrease in the net return actually obtained by the investor. In practice, performance is normally reported net of fees and charges.

There have been a large number of studies on performance published and academics have investigated the contributing factors connected to fund performance, in an attempt to find indicators of future success. Interestingly, many studies considering fees and expenses have revealed that the more expensive mutual funds performed no better than the cheaper ones.

As little as fifty years ago, Jensen (1968) claimed that the performance of mutual funds (both after expenses and gross of expenses) was lower than that of simple buy-the-market-and-hold policies for the period ranging from 1945 to 1964. Therefore, Jensen indicated "a pressing need on the part of the fund managers themselves to evaluate much more closely both the costs and the benefits of their research and trading activity in order to provide investors with maximum possible returns for the level of risk undertaken".

Several years later, evidence that mutual funds did not earn returns justifying their information acquisition costs was established (Elton et al., 1993). Malkiel (1995) found similar results for a sample of funds throughout the 1971 to 1991 period, indicating that funds had underperformed benchmark portfolios both after management expenses and gross of expenses. Accordingly, Malkiel suggested that investors would be better off purchasing a cheaper index fund than by trying to select an active manager.

Continuing the discussion, Gruber (1996) questioned the rapid growth of actively managed mutual funds, while their performance had, on average, been inferior to that of index funds. Moreover, he presented evidence that expenses were no higher for top performing funds and that expenses for top performing funds did not increase any more rapidly.

A year later, Carhart (1997) carried out a study on performance persistence and came to the conclusion that common factors in stock returns and persistent differences in mutual funds expenses and transaction costs could possibly account for almost all of the predictability in returns. Nonetheless, Carhart's results indicated that "the best past-performance funds appeared to earn back their expenses and transaction costs even though the majority underperformed by approximately their investment costs".

In Europe, Dahlquist, Engström and Söderlind (2000) conducted a study on the performance and fund attributes of Swedish mutual funds and demonstrated a negative relationship between measured performance and fees: low-fee funds outperformed high-fee funds. Shortly after, Otten and Bams (2002) reported a negative influence of expense ratios on the risk-adjusted performance.

More recently, Gil-Bazo and Ruiz-Verdú (2009) stated that "in a well-functioning mutual fund market, mutual fund fees should be positively correlated with expected before-fee risk-adjusted returns". Counter-intuitively, their results also suggested a "negative relationship between the before-fee performance of funds and the fees they charge to investors". On the same subject, Ferreira, Keswani, Miguel and Ramos (2012) found that "higher-priced management, as measured by the expense ratio, can generate higher gross returns, but these returns are not high enough to cover the fees". These results do not confirm evidence provided by Gil-Bazo and Ruiz-Verdú, although they do corroborate the fact that a negative relationship between the expense ratio and net-of-fees performance exists for non-U.S. funds. It should be noted that this did not prove to be statistically significant for U.S. funds.

In 2013, Malkiel reaffirmed his previous results and found that the higher fees charged by active managers completely overwhelmed the value added to investors. While acknowledging that active managers play an essential role in the efficiency of markets with their role of reflecting information on prices, Malkiel went as far as wondering why so many investors continued to invest in actively managed (and therefore more expensive) mutual funds.

Lastly, Cooper, Halling and Yang (2015) and more recently, Dumitrescu and Gil-Bazo (2018) found results akin to earlier literature. Their results indicated that investors bear significant costs from investing in high expense mutual funds since their expenses were not usually recouped through higher performance.

To summarise, a negative relationship between after-fee performance and expense ratios together with a certain difficulty to recoup investment costs have been widely argued. Although this thesis does not aim to be a study on mutual fund performance nor on the impact of fees on such performance, these outcomes justify the need to inquire about how the fees charged to investors, who "feed at the end of the costly chain of investing" (Bogle, 2008) are substantiated.

From the perspective of an investor, obtaining a return is the principal rationale for investing in a mutual fund. Therefore, the provision of a return should be viewed as the major service provided to an investor and the remuneration of this service should be proportionate to its quality. However, the behavioural component of the decision should not be forgotten. If an investor believes that a fund manager is particularly good, he will be willing to pay higher fees irrespective of the manager's past performance (Iannotta and Navone, 2012). Hence, the trust granted to a manager could also be a key decision criterion. When considering the return as the single service obtained by the investor, an interpretation of the studies mentioned in this section could be that investors tend to be poorly compensated for investing in mutual funds charging high fees. Gil-Bazo and Ruiz-Verdú (2009) put forward the explanation for this outcome that mutual funds strategically set fees as a function of their past or expected performance in the presence of investors with varying degrees of sensitivity to performance. Strategic fee setting from mutual funds leads to the existence of fee dispersion. The evidence and main causes of fee dispersion mentioned in the existing literature are developed in the upcoming section.

2.2. THE EXISTENCE AND CAUSES OF FEE DISPERSION

Conducting a study on the determinants of mutual funds' ongoing charges presupposes the existence of discrepancies in the level of fees charged to investors. Such discrepancies in fees are often referred to as "fee dispersion" in literature on the subject. A number of studies examining the occurrence of fee dispersion and the underlying causes have been carried out over the last two decades. Existing literature has provided four main reasons for fee dispersion, namely the search frictions on the part of investors, the existence of unsophisticated investors (i.e. investors lacking financial literacy), marketing and distribution fees and the potential lack of competition.

2.2.1. EVIDENCE OF FEE DISPERSION

In the prevailing literature, research about the existence of fee dispersion has, for the most part, been carried out on U.S. investment funds and used the expense ratio as the proxy for the level of fees. Such research has been conducted following two distinct approaches. First, authors have considered homogeneous groups of funds as their point of reference for their studies on fee dispersion. Then, these authors have examined the existence of fee dispersion on samples of heterogeneous funds.

During the first wave of literature, various academics studied homogeneous investment funds. Homogeneous funds are commodity-like funds due to the similarity of their gross returns and investment strategies. The similarity ends there as they can charge significantly differing prices. According to Christoffersen and Musto (2002), the existence of differences in net performance achieved by similar money market funds was an indicator of fee dispersion. Similarly, many academics have focused on index funds as a way of examining the rationality of investors when considering virtually similar investment products, since index funds following a particular index all tend to hold the same securities. Elton, Gruber and Busse (2004) examined the dispersion in fees for S&P 500[7] index funds and found that the fees charged and consequently the net returns they offered to investors varied extensively from one fund to another. One reason for this that Elton, Gruber and Busse put forward was that the markets were inefficient, as no informed investor can arbitrage the market (i.e. short-selling is not possible). As a consequence, inferior products continued to exist and even prosper, which is still the case. They also suggested that investor's choices regarding index funds were irrational. For that reason, the law of one price could not hold. Three other studies on the price dispersion of S&P 500 index funds were conducted and all confirmed the existence of price dispersion. Hortaçsu and Syverson (2004) suggested that these results were due to search frictions. Haslem, Baker and Smith (2006) confirmed the existence of fee dispersion and put it down to a lack of competition on the market. Finally, Choi, Laibson and Madrian (2009) suggested that price dispersion occurred because investors were failing to minimize fees when comparing index funds.

In the second surge of literature, academics endeavoured to examine fee dispersion across "heterogeneous funds". Haslem et al. (2008) examined the standard deviation of funds'

[7] Standard & Poor's 500 is an index of the 500 largest U.S. publicly traded companies by market value.

expense ratios and revealed an extensive dispersion of fees for actively managed retail equity funds. Iannotta and Navone (2012) found that, in the context of equity mutual funds, fee dispersion stemmed from the heterogeneity of products, clientele and production functions. In view of this finding, they asserted that around 40% of fee dispersion could be explained by observable sources of heterogeneity such as the age and size of funds.

More recently, Cooper, Halling and Yang (2018) conducted a study on a large cross-section of funds (i.e., all mutual funds investing in US equities) using a long time-series of forty-nine years and found "economically large, robust, persistent and pervasive fee dispersion in the mutual fund industry". They revealed that fee dispersion could be viewed as an indicator of pricing inefficiency, considering that funds with relatively similar characteristics charged different fees. More importantly, they revealed that "fee dispersion has noticeably increased over the last 20 years, even as the industry has experienced enormous growth in capital invested and the number of funds".

Considering that the existence of fee dispersion has now been proven by the prevailing literature, it is interesting to examine why investors, despite the evidence, continue to make irrational decisions regarding the choice of the funds in which they invest. According to the existing literature these causes are fourfold, namely the cost of searching information, the existence of unsophisticated investors, the role played by advertising and distributors in the mutual fund industry and considerations about the competitivity of the market.

2.2.2. THE COST OF INFORMATION

The "cost of information" refers to search frictions, which can be defined as dedicating time or resources to the research of products. In financial markets, an efficient assessment of the quality of funds is either difficult to perform or costly. Such frictions could be one reason for the existence of fee dispersion. As a matter of fact, if investors either lack information about the fees they commit to pay or believe it is not cost-effective to be informed, price dispersion will persist.

The literature has broadly given search or information costs as one of the factors contributing to the presence of fee dispersion on the market. In practice, the "cost" referred to is an opportunity cost, as the prevailing regulatory framework imposes mutual funds to provide, free of charge, information to existing or potential investors, as will be discussed further in a later section.

In their study, Gil-Bazo and Martínez (2003) referred to significant differences in fees and provided the fact that investors found it costly to compare mutual funds as an explanation. By the same token, Elton, Gruber and Busse (2004) suggested substantial information gathering costs as an explanation for fee dispersion. Hortaçsu and Syverson (2004) similarly reported the existence of search frictions and claimed that fee dispersion resulted from these frictions. According to the same authors, the "increase in households' first-time participation in the market caused the shift of assets into higher price funds". Households investing for the first time are considered to be "novice investors" and their lack of information is deemed to be a justification for the persistence of price dispersion.

Iannotta and Navone (2012) wrote that "the cost of acquiring information has a positive impact on price dispersion by reducing the sample of suppliers that consumers analyse in order to make their purchase decision". Similarly, Nanigian (2012) suggested that investors tend to make uninformed decisions since "the improvement in portfolio performance from investing additional time into the fund search process is not large enough to justify their allocation of costly time to such tasks".

2.2.3. UNSOPHISTICATED INVESTORS

As seen in the previous sub-section, an extensive part of existing literature suggests that many investors investing in mutual funds lack or cannot acquire information on the fees they are to be charged without having to endure significant costs to obtain and compare relevant information. Some authors have gone further and stated that even when investors manage to obtain pertinent information, they are not all adequately qualified to interpret it properly and therefore still fail to understand the importance of costs and fees. Such investors are usually known as "unsophisticated investors". Dumitrescu and Gil-Bazo (2018) defined these individuals as being the investors who are not fully able to make optimal financial decisions.

In 2002, Christoffersen and Musto argued in their study on money market funds that "one of the reasons why funds charge different prices is that they face different demand curves". This means that the reason for this lies in the investors themselves. The authors divided investors into performance-sensitive investors and performance-insensitive investors according to the way they managed their money. They described performance-sensitive investors as being the ones migrating from worse to better prospects in terms of performance, leading to the existence of a "higher density of performance-sensitive investors in the better-prospect funds

and performance-insensitive investors in the others". They maintained that since fees simply constitute a reduction in performance, the resulting pricing implication is that the investors remaining in the poorer performing funds ultimately incur higher fees.

According to Barber, Odean and Zheng (2005), investing is a learning process and "investors have become increasingly aware of and averse to mutual fund costs". However, they suggested that investors "have learned more quickly to avoid high front-end loads and commission costs than high operating expense costs". This may be connected to the findings of Cox and Payne (2005), who argued that the information on mutual fund fees made available cannot be seamlessly processed by each and everyone and is therefore unlikely to be understood by all investors. Similarly, Gil-Bazo and Ruiz-Verdú (2008) asserted that not all investors are in a position to make optimal use of all available information when making investment decisions. Furthermore, the same authors argued that lower-return funds were unable to generate a return large enough for sophisticated investors. Managers of these funds would consequently end-up with a pool of unsophisticated investors, from whom they are able to extract rents by raising fees.

Khorana, Servaes and Tufano (2008) claimed that investor sophistication may have actually reduced fees because investors were either more aware of fees and were therefore able to exert pressure on fund managers or they may have needed less assistance to make their investment decisions, thereby reducing management fees. According to Choi et al. (2009), the level of the fees paid decreased with financial literacy. Likewise, Nanigian (2012) found that the highly publicised negative expense-performance relationship (described in section 2.1) disappeared among funds responding to the needs of a sophisticated clientele of investors. For Nanigian, such findings resulted from the intensity of investor monitoring, which could also have explained the relationship between expenses and performance.

To summarise, the above mentioned literature seems to be consistent with the assumption made by Dumitrescu and Gil-Bazo (2018) that although collecting and processing information is costly for all investors, less sophisticated investors tend to be more adversely affected by this friction. Additionally, Cooper et al. (2018) explained fee dispersion by the existence of multiple investor clienteles, each having different levels of sophistication and access to information. For instance, retail investors, unlike institutional investors, and as one would expect, tend to have a limited knowledge of financial products.

2.2.4. THE IMPACT OF ADVERTISING AND DISTRIBUTION ON FEES

Building on the previous sub-section, less sophisticated investors could be said to be far more affected by costs than sophisticated investors because of the impact of advertising and distribution channels. Barber et al. (2005) found that such investors were more likely to invest in funds with larger marketing expenses. Gil-Bazo and Ruiz-Verdú (2009) as well as Bergstresser, Chalmers and Tufano (2009), for their part, provided an interesting distinction to the above-mentioned analysis. Both studies focused on lower-performance funds. In their opinion, when these funds targeted unsophisticated investors, they did so by selling their mutual fund shares through brokers, rather than through direct distribution channels, thereby leading to higher costs. Similarly, in a prior study, Gil-Bazo and Ruiz-Verdú (2008) suggested that advertising costs could reasonably be associated with lower performance rather than higher performance funds. The explanation underlying this assumption was that "unsophisticated investors tended to respond to advertising while sophisticated investors were able to get and process the publicly available information on fund performance" for themselves. Consequently, these authors demonstrated that unsophisticated investors were more likely to suffer even higher costs and obtain lower returns because of the impact of higher marketing costs than their sophisticated counterparts (i.e. due to their distribution channel and higher advertising expenditures).

2.2.5. COMPETITIVITY OF THE MUTUAL FUND MARKETS

Besides considering information, investor sophistication, advertising and distribution costs, numerous studies examining whether the market for mutual funds is competitive enough have materialised. Existing literature about mutual fund fees exhibits the puzzling fact that although there are an increasingly large number of mutual funds competing in the industry, fee dispersion seems to persist.

Hortaçsu and Syverson (2004) thought that dispersion persisted despite competition between many investment firms. They suggested that switching costs were forcing investors to leave their assets invested in a fund, not because of its favourable performance but rather because it would be too costly for the investor to move to another fund. These costs differ from information costs since investors are duly informed about the benefits of moving their money, but the costs associated with actually going through with it make the move less profitable. The authors found that funds with "formal switching costs" (i.e. back-end loads) had larger

market shares. Additionally, they referred to the existence of "informal switching costs", as being the administrative proceedings borne by investors wishing to move their assets.

Haslem et al. (2006) investigated the competitiveness of index funds prices. In the majority of cases, these are considered to be commodity-like due to the fact that they do not differ significantly from one another when they track the same index. These authors found that index funds were not as price-competitive as they had expected. Comparably, various studies have demonstrated that active mutual funds were not price-competitive either. According to Gil-Bazo and Ruiz-Verdú (2009), although a large pool of mutual funds compete, the complexity associated with the evaluation of fund quality leads to a weaker than expected competition and thus to high average fees. Likewise, Choi et al. (2009) claimed that even though the industry has hundreds of competing providers, high-fee funds have not been eliminated from the market.

In 2018, Cooper et al. tempered the previously mentioned findings by distinguishing between large and small funds. They found mixed results indicating that an increase in competition resulted in higher fees for smaller funds and in smaller fees for larger funds. Consequently, they demonstrated that price-competition existed for the largest funds. Other studies arguing for a competitive market included Wahal and Wang (2011), who studied the effects of the entry of new mutual funds into the market. They claimed that incumbents facing tough competition were in the habit of reducing their management fees and experienced lower flows. These features led them to conclude that the market for mutual funds was competitive. Finally, Cremers, Ferreira, Matos and Starks (2016) found that the recent growth of explicitly indexed funds had forced actively managed funds to increase their active share (i.e. deviate more from the benchmark) and to lower their fees. Accordingly, they suggested that competition in the asset management industry was improving.

As illustrated, the effects of competition on fee dispersion remain unclear and two streams of literature seem to contradict each other. In their study of 2009, Gil-Bazo and Ruiz-Verdú concluded that "mutual fund competition and regulation have not been sufficient to ensure that fees reflect the value that funds create for investors". While competition has been discussed in this sub-section, regulation issues have not been addressed yet.

Bearing in mind that this thesis aims at comparing the determinants of the expenses of UCITS domiciled in two countries located in Europe, this would seem an opportune moment to look at the subject of the regulatory framework surrounding financial activities. As a matter of fact,

recent regulations including, inter alia, the UCITS, PRIIPs and MiFID II Directives are strongly connected to the themes of the provision of information to investors, the price-competition of mutual fund markets and the protection of unsophisticated investors.

2.3. IMPACT OF THE REGULATORY FRAMEWORK

As discussed in the previous section, mutual funds may exhibit fee dispersion for a variety of reasons. In the European Union, an extensive legal framework regarding fee disclosure, comparability, transparency and investor protection has developed over the last few years. As a result, incurred fees differ substantially from one fund to another and investors should always be aware of them before making an investment decision. In this section, the impacts of the UCITS IV Directive on fee disclosure and the categorization of fees will be analysed since the empirical analysis of this thesis will focus on UCITS. Moreover, since January 2018, the MiFID II and PRIIPs legal frameworks also play a major role on the transparency and comparability of the information provided to existing or potential investors with a view to increasing investor protection.

2.3.1. UCITS DIRECTIVES

Since the launch of the UCITS I Directive, which established a harmonised legal framework facilitating cross-border distribution and investor protection in 1985, UCITS funds have evolved with the publication of a number of directives. Before proceeding further, it should be remembered that UCITS funds are public funds that may be freely marketed to retail, institutional investors, or both, throughout the European Union. UCITS funds invest in traditional asset classes in contrast to professional funds (i.e. alternative investment funds), which are allowed to invest in a wide range of traditional and alternative asset classes (Sougné et al., 2016). Since UCITS funds may be marketed to retail investors, they need to be regulated more closely, as these investors are likely to lack the necessary knowledge about financial products to protect themselves.

2.3.1.1. The Key Investor Information Document

In the context of this thesis, the UCITS IV Directive (Directive 2009/65/EC), which was transposed into Luxembourg legislation under the Law of 17th December 2010 and into the

Belgian legislation under the Law of 3rd August 2012, has brought a major advance in investor information. By virtue of its articles 78 to 82, the investment company and, for each of the common funds it manages, a management company is now required to draw up a KIID[8].

The KIID is a short document whose purpose is to "enable investors to understand the nature and the risks of the investment product that is being offered to them". Consequently, it aims at "enabling investors to take investment decisions on an informed basis". The KIID constitutes pre-contractual information and must always be offered free of charge in a durable medium or by means of a website to investors before their purchase of units of a UCITS. Moreover, it has to give information consistent with that contained in the prospectus, be presented in a way that retail investors can easily understand and must be kept up to date. Finally, UCITS are required to send the KIID to the competent authorities of their home member state for approval. In Belgium, the competent authority is the FSMA[9] while the CSSF[10] is in charge of approvals in Luxembourg.

Regardless of the way the UCITS IV directive passed into national legislations, the Commission Regulation (EU) No 583/2010 implementing the Directive 2009/65/EC regarding key investor information does not need to be transposed into national legislation and has been binding for all EU member states since 1st July 2011. The form of a Regulation justifies as a way of ensuring that the key investor information and "information about investment opportunities in the UCITS market is consistent and comparable" across all member states. By virtue of its third article, "the Regulation specifies in an exhaustive manner the form and content of the KIID".

The content of the KIID has to be divided into five sections, namely 'Objectives and Investment Policy', 'Risk and Reward Profile', 'Charges', 'Past Performance', and 'Practical Information'. Each of these sections aims at providing important information to assist investors in making informed decisions. However, it is the third section that is most relevant for the research question tackled in this thesis. This section lays out the charges that will be incurred by the investor investing into a fund as well as an explanation for each category. Most importantly, a statement about the importance of charges must be included in this

[8] Key Investor Information Document.
[9] Financial Services and Markets Authority.
[10] Commission de Surveillance du Secteur Financier.

section. As a result, investors are warned that "the charges paid are used to pay the cost of running the UCITS, including the costs of marketing and distributing the UCITS, and that these charges reduce the potential growth of the investment". Due to the causes of fee dispersion mentioned earlier, this statement appears to be of the utmost importance: unsophisticated investors may overlook this and have to be warned about the importance of charges. Finally, the facilitated comparability of UCITS charges is expected to increase price-competition in the industry.

2.3.1.2. Categorization of Charges

Since the entry into force of the Commission Regulation (EU) No 583/2010, UCITS are required to divide their charges into three categories including the one-off charges, the charges taken from the fund each year and the charges taken from the fund under specific conditions. The charges must also be disclosed in a standardised table, as follows:

Figure 1. Presentation of the charges in the KIID

PRESENTATION OF CHARGES	
The charges shall be presented in a table structured in the following way:	
One-off charges taken before or after you invest	
Entry charge	[] %
Exit charge	[] %
This is the maximum that might be taken out of your money [before it is invested] [before the proceeds of your investment are paid out]	
Charges taken from the fund over a year	
Ongoing charge	[] %
Charges taken from the fund under certain specific conditions	
Performance fee	[] % a year of any returns the fund achieves above the benchmark for these fees, the [insert name of benchmark]

Source: Annex II of the Commission Regulation (EU) No 583/2010.

Entry and exit charges must be disclosed as the maximum percentage that could be deducted from the investor's capital before their money is invested or on the amount redeemed from the fund. The ongoing charge figure must represent annual charges and any other payments taken from the assets of the UCITS over the defined period. It is estimated based on the figures for the preceding year, but may vary from one year to the next. Finally the performance fee is an incidental fee that must be clearly listed together with information about when the charge

applies. This standardised template for charges disclosure aims at raising transparency and comparability among different UCITS' cost structures.

At this stage, it should be noted that the origins of the OCF, being at the centre of this thesis, lie in the above-mentioned Regulation. The OCF aggregates different fees, charged by the various service providers of the fund, into a comprehensive piece of information made available to investors for comparison purposes. It should also be noted that a reference computation methodology of the OCF has been developed by the Committee of European Securities Regulators and will be gone into in a later section.

2.3.2. PRIIPs Regulation

The entry into force on 1st January 2018 of the PRIIPs Regulation (Commission Regulation (EU) No 1286/2014) extended the disclosure of costs and charges to all 'Packaged Retail and Insurance-based Investment Products'. PRIIPs are defined by the Regulation as "all products, regardless of their form or construction, that are manufactured by the financial services industry to provide investment opportunities to retail investors, where the amount repayable to the retail investor is subject to fluctuation because of exposure to reference values, or subject to the performance of one or more assets which are not directly purchased by the retail investor". This definition encompasses, inter alia, investment funds, as well as life insurance policies with an investment element and structured products. Because these products package financial instruments together, they allow investors to get different exposures, but they also require information to be disclosed to enable comparisons and transparency for retail investors.

To achieve their goal of informing retail investors, the PRIIPs Regulation requires a KID[11] to be disclosed. The PRIIPs KID is not to be confused with the UCITS KIID, even though they both serve the same purposes of transparency and comparability. They also share common features such as approval by the national competent authorities, the avoidance of jargon and misleading terminology. In the same way as the UCITS KIID, the PRIIPs KID must be provided free of charge and on an ex-ante basis to the potential retail investor. Furthermore it should be kept up to date and disclosed in a standardised format that differs slightly from the one of the UCITS KIID.

[11] Key Information Document.

The Commission Delegated Regulation (EU) 2017/653 indicates the regulatory technical standards to adhere to regarding the presentation and content of the PRIIPs KID. In the section relative to the costs of the investment product, two major differences appear with respect to the UCITS KIID, as indicated by this regulation. First, a new table entitled 'costs over time' has to be presented. PRIIPs manufacturers are further required to disclose a summary cost indicator, being the "reduction in yield" computed for different time periods. This first modification aims at raising awareness of the compound effect of costs on the return obtained by the investor. Second, the table referring to the 'composition of costs' illustrates some differences when compared with the previously presented categorisation of costs applicable to the UCITS KIID. These differences include the disclosure of portfolio transaction costs and carried interests, where appropriate. These tables can be found in Appendix VI.

At this stage, it should be noted that by definition UCITS fall within the scope of PRIIPs regulations. However, because of the recent establishment of the UCITS KIID and in line with articles 32 and 33, a transitional period exempts management companies, investment companies and representatives advising on, or selling, units of UCITS subject to the PRIIPs Regulation until 31 December 2019, therefore allowing them to provide KIIDs to clients during that period. Consequently, although the PRIIPs KID appears to further improve cost disclosure to the benefit of retail investors, it is too early for UCITS investors to benefit from these improvements. For clarity purposes, the reader should be aware that since this thesis focuses on UCITS, the empirical analysis will be based on the OCF as defined in the UCITS IV Directive and its subsequent Commission Regulation (EU) No 583/2010.

2.3.3. MiFID II

As a complement to the PRIIPs regulation described above, MiFID II (Directive 2014/65/EU) entered into force on 3rd January 2018 with a view to enhancing investor protection by redefining the operating conditions of investment firms. MiFID II is an updated version of MiFID (Directive 2004/39/EC), which previously required distributors to disclose costs and associated charges of financial instruments being offered to investors. According to article 24 of MiFID II, any information about costs and charges "shall be aggregated to allow the client to understand the overall cost as well as the cumulative effect on return of the investment, and where the client so requests, an itemised breakdown shall be provided". Furthermore, article

51 of the Commission Delegated Regulation C(2016) 2398 supplementing MiFID II specified the following: "investment firms distributing units in collective investment undertakings or PRIIPs shall additionally inform their clients about any other costs and associated charges related to the product which may not have been included in the UCITS KIID or PRIIPs KID and about the costs and charges relating to their provision of investment services in relation to that financial instrument". Hence, MiFID II requires full disclosure of information about charges for the sake of investor protection.

As a conclusion, the wide range of information that now has to be provided to investors will go a long way to helping them assess the value for money of their investments. The recent regulatory framework is expected to disrupt the old charging practices of funds, as "transparency, direct comparability, and an explicit duty not to provide misleading information to investors intuitively create an incentive to control fund charging structures" (Deloitte and Fundsquare, 2015).

While the recent regulatory tsunami has developed measures to promote comparability and transparency, investment funds have historically developed various ways of charging investors for their services. As a consequence, investors may remain puzzled by the variety of charging structures used in practice. The upcoming section addresses this issue.

2.4. THE UCITS FEE STRUCTURE

As set out previously, fees are extremely important to investors as they reduce the net returns they can expect. Investment firms are also highly dependent on fees, as they allow them to finance their operations and develop their businesses. In order to satisfy the payment preferences of investors, investment firms have developed different ways of charging fees and expenses. It is common practice to set up different share classes.

2.4.1. SHARE CLASSES

According to the ESMA (2017b), assets of different UCITS compartments can be legally segregated and investors investing in a number of different compartments may be offered different investment strategies. A UCITS or its compartments can be divided into different share classes. These share classes differ from fund compartments in that they have an

identical investment strategy but no segregation of assets across all share classes, meaning that investors own a part of the same pool of assets. Although there is no legal segregation of assets between share classes, any costs arising in a given share class can only be passed on to the investors in that particular share class. Consequently, share classes are not sub-funds but rather categories of shares accommodating the specific needs of investors. For instance, share classes may differ in terms of the type of investor (retail or institutional), in terms of the minimum investment amount, in terms of their distribution policy (capitalisation or distribution) and according to their reference currency, which can be hedged or not.

Most importantly within the framework of this thesis, share classes may differ depending on the types and amounts of fees and charges that can be levied (i.e. entry and exit fees, ongoing charges and performance fees). Because of the differences in the fee structures that may arise between share classes, the empirical analysis of this thesis is conducted at the share class level. Each share class will be considered as a cross-sectional unit in the empirical analysis.

2.4.2. COMPONENTS OF THE UCITS FEE STRUCTURE

On the basis of the elements that have to be disclosed in the UCITS KIID previously described, three distinct categories of fees and charges emerge, namely one-off charges, ongoing charges and incidental fees. In this sub-section, the way each of these categories impacts annual returns will be analysed.

While all UCITS levy ongoing charges in order to pay the various intermediaries for the necessary services they provide to the fund over a year, not all of them charge entry and exit fees. This depends on their fee structure. In addition, the fund management company itself rarely receives entry and exit charges since they are generally paid to third-party distributors of the fund (Khorana et al., 2008). Some share classes are referred to as 'load share classes' and charge entry fees, exit fees, or both. In contrast, 'no-load share classes' do not charge any of these fees. Even when a UCITS charges both entry and exit fees and discloses them, their impact on annual performance is uncertain on an ex-ante basis since these fees are one-off charges. The yearly impact on the return attributable to these fees depends on the holding period of the UCITS and investors with shorter investment horizons will suffer larger negative impacts in terms of yearly performance. Similarly, performance fees are inherently uncertain on an ex-ante basis, since the future performance of the fund as well as the performance of the benchmark are difficult to predict. In fact, very few UCITS actually set-up

performance-based charging structures. More precisely, 95% of UCITS charge no performance fees (European Union, 2018). As a result, ongoing charges represent the only category of charges levied on all UCITS where their impact on yearly performance is straightforward, therefore supporting the need to study the determinants of these ongoing charges. The next section describes the computation methodology of the OCF and compares this indicator to alternative indicators of a fund's level of charges.

2.5. THE ONGOING CHARGES FIGURE

2.5.1. COMPUTATION OF THE OCF

As mentioned earlier, the Committee of European Securities Regulator has been required to prepare guidelines on the computation methodology of the ongoing charges figure. These guidelines apply to all UCITS and aim at standardising the calculation of the OCF in order to enable investors to compare UCITS in a convenient manner (CESR, 2010). Generally speaking, the UCITS' management company is held accountable for the computation of the OCF in accordance with set out guidelines and to ensure any information in the KIID is accurate. In the event of a self-managed UCITS, the investment company must still perform the computation itself, as stated in article 2 of the Regulation (EU) No 583/2010 implementing the KIID.

Under CESR guidelines, the OCF is defined as a figure including "all types of cost borne by the UCITS, whether they represent expenses necessarily incurred in its operation, or the remuneration of any party connected with it or providing services to it". More precisely, it has to correspond to "the ratio of the total disclosable costs to the average net assets of the UCITS" being taken from the assets of the UCITS over a period of a year and must be "expressed as a percentage to two decimal places". This has to be calculated for each share class at least once a year, and be based on ex-post cost figures. While the guidelines establish a "presumption that all costs borne by the fund must be taken into account unless they are explicitly excluded", they define indicative but non-exhaustive lists of the elements to include or to exclude.

The elements explicitly included in the calculation are the following:

a) All payments to the following persons, including any person to whom they have delegated any function:
    - The management company of the UCITS
    - Directors of the UCITS if an investment company
    - The depositary
    - The custodian(s)
    - Any investment adviser;

b) All payments to any person providing outsourced services to any of the above, including:
    - Providers of valuation and fund accounting services
    - Shareholder service providers, such as the transfer agent and broker dealers that are record owners of the UCITS' shares and provide sub-accounting services to the beneficial owners of those shares;

c) Registration fees, regulatory fees and similar charges;
d) Audit fees;
e) Payments to legal and professional advisers;
f) Any costs of distribution.

Source: CESR, 2010.

In contrast, an indicative list excludes some elements from the computation, such as entry or exit charges and performance-related fees, which are disclosed separately. Similarly, interests on borrowing and transaction costs must be excluded from the computation of the OCF. The complete list of the elements to exclude may be consulted alongside other aspects of the computation methodology in the CESR guidelines attached in Appendix VII.

Additionally, the guidelines indicate that a UCITS investing "a substantial proportion of its assets in other UCITS or CIUs[12]" must take into account any ongoing charges incurred when investing in the underlying UCITS or CIU for the calculation of its OCF. "The ongoing charges figure (or equivalent) of each underlying CIU is pro-rated according to the proportion of the UCITS' net asset value which that CIU represents at the relevant date". In such a case, the OCF must be designated as a 'synthetic ongoing charges figure'.

[12] Collective Investment Undertakings.

As illustrated in this sub-section, the OCF aims at being a summary indicator of the recurring costs charged by all the different parties involved in the ongoing operations of the UCITS as compensation for the services provided. Within the framework of this thesis, the OCF will be analysed as an aggregate measure of the cost of services incurred by investors. This decision to consider the OCF as an aggregate measure results from the fact that conducting an analysis based on each of the different cost sources would be arduous given the current disclosure requirements. Instead, the empirical analysis will be an analysis of the impacts of a set of fund-specific characteristics.

2.5.2. ALTERNATIVE INDICATORS OF CHARGES

Although a set of fund-specific variables having a potential impact on a fund's expenses will be considered in the empirical analysis, none of the studies reviewed explicitly examined the determinants of the OCF. That may be due to the fact that most studies conducted in the past were carried out on samples of non-European mutual funds or were performed prior to the introduction of the OCF in the regulatory framework. Nevertheless, alternative cost indicators of mutual funds have been subject to academic studies and the effects of their determinants could contribute to the explanation of the magnitude of the OCF for European UCITS. This section is intended to establish a comparison between the major cost indicators encountered in existing literature.

2.5.2.1. Management Fees

Management fees are frequently referred to in studies on fees and are an underlying component of the OCF. They represent fees charged on a yearly basis by funds in return for management services. These fees "always include investment management services, but may also include payments for administration and distribution" (Khorana et al., 2008). It should be noted that distributors are either paid through loads, distribution fees or through retrocessions. In the latter case, fees are paid to the fund manager and then passed along to the distributor. The use of a fee structure involving retrocessions to the distributor may be viewed as a way to align the interests of both parties since "the interest of the distributor is to increase the size of the fund as much as possible, which is in line with the interest of the manager" (Sougné et al., 2016).

Since this thesis aims at exploring the recurring cost of services incurred by investors investing in a UCITS, the OCF appears to be a more comprehensive indicator. Yet, management fees may be deemed to represent a non-negligible part of the OCF. As a matter of fact, Strategic Insight (2011) was commissioned by the EFAMA to conduct a study on mutual fund fees in Europe and reported that fund managers retained about 42% of a UCITS' total expense ratio (henceforth TER), while 41% of the fund's TER was paid to distributors through retrocessions. As will be revealed in the next sub-section, the calculation methodology of the TER resembles that of the OCF, thus supporting the fact that management fees also represent a significant proportion of the OCF.

2.5.2.2. Total Expense Ratio

Before the implementation of the KIID by the UCITS IV Directive, as previously described, UCITS were required to disclose a "simplified prospectus", as provided for in the first UCITS Directive (Directive 85/611/EEC). The Commission Recommendation 2004/384/EC was aimed at specifying the contents of the simplified prospectus and required disclosure of the total expense ratio. As a result of this recommendation, the TER had to constitute an ex-post indicator of the ratio between a fund's total operating costs and its average net assets. Its definition therefore resembles that of the OCF. A comparison of the two computation methodologies indicates that a majority of the cost elements are common to both the OCF and the TER. However, performance fees were to be included in the TER, while this is no longer the case in the computation of the OCF.

The origins of the removal of performance fees from the computation may be found in a CESR's technical information (CESR/09-949, 2009) related to the format and content of the KIID disclosures for UCITS. Prior to this being published, the CESR conducted a phase of consumer testing on the understanding of performance fees and found that "only a quarter of the consumers tested realised that performance fees could be the differentiating factor between the charges of two funds". The CESR subsequently recommended that KIIDs exclude performance fees from the OCF and demanded that, besides their individualisation, performance fees were to be "explained clearly and as simply as possible through a narrative description".

Although the presence or absence of performance fees in any calculation creates some discrepancies between the TER and the OCF, these two indicators of a fund's charges are interrelated. Moreover, as previously seen, very few UCITS actually charge performance fees.

This means that both measures are practically equivalent to each other in the majority of cases. Consequently, the fund-specific determinants of the TER, which have been studied in various sources of literature on the subject, are likely to have an impact on the OCF of UCITS as well.

2.5.2.3. Total Shareholder Cost

While the TER indicated the total operating costs of a mutual fund, some authors decided to take front-end and back-end loads into account, obtaining a measure of the 'total shareholder cost' (also called 'total ownership cost'). Since a fund's loads are one-off charges, their impact on yearly returns achieved by an investor depends on the holding period of their investment. An extended holding period will result in a lower impact of a fund's loadings on yearly returns. It should also be noted that for an investor keeping their investment in a fund over a very long time period, the yearly impact of one-off charges would become negligible. Khorana et al. (2008) suggest computing the total shareholder cost ('TSC') as follows:

$$TSC = TER + \frac{Initial\ load}{5} + \frac{Back-end\ load\ at\ five\ years}{5}$$

Similarly, Gil-Bazo and Ruiz-Verdú (2009) estimated the cost of total ownership using the same formula but instead took an average holding period of seven years. Obtaining an accurate measure of the TSC incurred by investors would imply obtaining data on the exact average holding period of investors within each fund. Such data is unavailable and would be almost impossible to collect.

As a conclusion, although alternative cost indicators do exist, I decided to study the OCF within the framework of this thesis. This choice means taking an aggregate measure of most charges incurred by investors as a reliable indicator. Moreover, the OCF is in line with the current regulatory framework surrounding UCITS' cost disclosures, which is extremely practical, as it promotes data availability, a crucial element for conducting an empirical analysis. Now that the OCF has been defined and explained as well as compared to alternative cost indicators, it makes sense to examine why differences in the disclosed ongoing charges figures exist. The next section lists a wide range of the elements mentioned in existing literature as having an influence on mutual funds' level of charges. The hypotheses about the expected impact of each of these determinants on the ongoing charges of UCITS will also be detailed.

2.6. POTENTIAL DETERMINANTS OF THE OCF

2.6.1. ECONOMIES OF SCALE

The first and most straightforward determinant of the OCF could be the size of the share class or the size of the fund at the origin of the share class. Since the OCF represents the ratio of total disclosable costs to the average net assets of the UCITS, an increase in the TNA[13] accompanied by a less than proportional increase in the recurring costs would result in a lower OCF. Since some of a fund's expenses are fixed, potential large economies of scale may arise (Navone and Nocera, 2016). For the purpose of this thesis, the unit of study chosen is the share class. However, as size effects may either materialize at the share class level or at the fund level (Khorana et al. 2008), the TNA of both the share class and the fund will be considered as potential determinants of the OCF.

According to Gao and Livingston (2008), economies of scale are due to the repartition of the fixed costs over more units, therefore leading to a decrease in the cost per unit of capital invested. Additionally, the same authors stated that economies of scale might also occur since the variable cost components are unlikely to increase at the same rate as the size of the fund. For instance, auditing costs could vary with fund size, but shall not be twice larger for a fund doubling its TNA over a year.

Generally speaking, most administrative expenses are likely to constitute a source of economies of scale. Latzko (2013) divided administrative expenses into two groups. The first was fixed costs that included registration, legal and directors' fees. The second group was for variable costs such as maintenance of shareholder accounts and provision of custodial services. Latzko found that the ratio of variable administrative costs to fund assets falls as assets rise, which is consistent with the findings of Gao and Livingston. While economies in administrative expenses may be expected to occur, management fees are likely to represent the major component of a UCITS' ongoing expenses. Latzko (2013) reported the "existence of breakpoints where management fees are reduced as assets cross certain levels", which demonstrated his belief that some economies of scale could therefore exist for management fees. Intuitively, such breakpoints could be due to the increased negotiation power of fund manufacturers resulting from the larger size of their funds.

[13] Total Net Assets.

Many authors, such as Khorana et al. (2008), Gil-Bazo and Ruiz-Verdú (2009) and Cooper et al. (2018), to name a few, have conducted empirical studies on the impact of size on mutual funds' management fees, TERs or TOCs and they have all demonstrated the existence of economies of scale. Within the framework of these studies, size is measured as the natural logarithm of the TNA, reflecting their expectations of decreasing marginal effects of size. Along the same lines, Gao and Livingston (2008) as well as Latzko (2013) asserted that economies of scale do exist but can sometimes be almost exhausted after a certain size is reached. Nonetheless, all studies agreed that it is reasonable to expect UCITS shareholders (or unitholders) investing in larger funds to benefit from lower ongoing charges.

It should, however, be noted that in some instances, investors might not benefit from size effects, since a service provider could be in a position to retain the realized economies of scale rather than pass them on in the form of lower fees for the fund (Gao and Livingston, 2008). Once economies of scale are passed on to the fund, they are transferred to investors. Keswani, Miguel and Ramos (2016) indicated the counter-intuitive result that fund size was often correlated with increased fees in countries with less competition in the fund industry. According to these authors, such a surprising relationship resulted from the fact that "larger funds have an additional incentive to increase fees taking advantage of their dominant position in the market and of the lack of alternative investment opportunities for investors". Consequently, the existence of a negative relationship between size and fees is conditional on the transfer of economies of scale from the service providers to investors and on the competitiveness of the mutual fund industry.

As regards economies of scale, two different sets of hypotheses will be tested consistently with existing literature and based on the determinants of alternative cost indicators. First, the relationship between the size of share classes and the OCF will be tested:

- H_0 : There is no negative and significant relationship between the size of share classes and their OCF.
- H_1 : There is a negative and significant relationship between the size of share classes and their OCF.

Second, the impact of the aggregate size of all the share classes of a fund (i.e. the fund size) on the OCF will be examined:

- H_0 : There is no negative and significant relationship between the size of a fund and the OCF charged to its underlying share classes.
- H_1 : There is a negative and significant relationship between the size of a fund and the OCF charged to its underlying share classes.

2.6.2. EXPERIENCE EFFECTS

Another potential determinant of a mutual fund's charges pointed out in existing literature is its age, measured by the number of years since its inception. Many authors contend that experience effects play a potential role in explaining the magnitude of the charges incurred by investors. In 1979, Porter documented the existence, in some industries, of entry barriers for new competitors facing higher costs than established ones, the oldest benefiting from the learning curve effect. The benefits of the learning curve are potentially transposed to the financial industry and older funds are expected to have established well-practiced operating cycles for several of their activities, such as the domiciliation of funds (Lang and Köhler, 2011). Intuitively, the established reputation of older funds could also lower their marketing expenses and their allegiance towards a certain service provider or service providers could put them in an excellent position to negotiate lower fees. According to Gil-Bazo and Martínez (2003), and Keswani et al. (2016), older funds should be expected to levy their investors less than newly created ones.

This type of relationship may either result from the fact that "newer funds usually face higher costs and suffer from their lack of experience during the start-up period" (Ferreira et al., 2012), or also because investment firms may face difficulties raising fees charged to investors in an existing fund. Issuing a new fund may provide investment firms with a greater flexibility to raise fees (Houge and Wellman, 2007). On the basis of these studies, funds could be expected to report lower OCFs over time.

In practice, empirical studies exhibit mixed results on the relationship between the age of a mutual fund and its charges. Gil-Bazo and Ruiz-Verdú (2009) found a negative and significant relationship between age and the total ownership cost of funds. Khorana et al. (2008) maintained that "the relationship between age and fees was not stable and depended on the type of fee and the specification employed". Keswani et al. (2016) also found mixed results, as a fund aged, it increased the TSC for funds domiciled outside the United States and decreased the TSC for funds domiciled in the United States. Iannotta and Navone (2012), for

their part, revealed the counterintuitive result that, on average, older funds actually charged higher expense ratios. A possible explanation for this effect could be that "investors that have accumulated capital gains over time face tax payments when redeeming their shares, this implies that management companies of older funds could in principle benefit from their captive clientele by charging higher fees" (Gil-Bazo and Martínez, 2003).

The set of hypotheses tested for this potential determinant are the following:

- H_0 : There is no negative and significant relationship between the age of a share class and its OCF.
- H_1 : There is a negative and significant relationship between the age of a share class and its OCF.

2.6.3. INSTITUTIONAL SHARE CLASSES

According to Dumitrescu and Gil-Bazo (2018), institutional share classes constitute a distinct segment of the market. They either make it explicit in their names and prospectuses that they target institutions (i.e. pension funds, insurance companies, investment companies, etc.) rather than retail investors or implicitly restrict the entry of retail investors by imposing high minimum initial investments. Institutional funds do not only differ by the amount of money pooled into the fund, they are usually considered to be cheaper and held by more sophisticated investors than retail funds (Cooper et al., 2015). The main reasons explaining why institutional funds tend to be cheaper have been published in various empirical studies.

The most frequent explanation resides in the intensity of the monitoring exerted by institutional investors. According to Siggelkow (2004), institutional funds have higher monitoring incentives than retail investors and have a clearer picture of the expenses charged by funds. Such awareness of the level of fees charged enables them to exercise a downward pressure on fees. Institutional investors are expected to monitor funds more closely than retail investors. Since they generally own a larger share of the fund, institutional investors can harvest the reductions in expenses while retail investors do not generally hold a large enough stake in their share class to absorb the costs resulting from an increased level of monitoring (Shleifer and Vishny, 1986). Similarly, Nanigian (2012) considered the minimum initial purchase requirement as a proxy to distinguish between sophisticated funds and 'myope funds'. Hence, following his line of reasoning, institutional funds could be deemed to be more

sophisticated funds than some of the others. The findings of Nanigian suggested that the "managers of sophisticated funds exert more efforts than managers of myope funds do as they are under greater scrutiny by their shareholders". In a similar way, Evans and Fahlenbrach (2012) demonstrated that institutional investors are more sensitive to high fees than retail investors. They argued that institutional assets were monitored more closely and that such monitoring ensured that the expenses charged remained reasonable.

Besides an accrued level of monitoring, the intrinsic features of institutional investors might enable them to pay lower expenses. Institutional investors generally invest much larger amounts of money, therefore allowing them to have more bargaining power (Siggelkow, 2004). Moreover, institutional funds generally deal with only a few institutional investors rather than a large number of retail investors. Such a smaller investor group may enable institutional funds to avoid extensive marketing expenses and costly measures of investor protection (Lang and Köhler, 2011).

At this stage, there is still one key element to address: investors probably exhibit varying levels of sophistication within their own groups (i.e. some institutional investors could be more sophisticated than other institutional investors and some retail investors could be more sophisticated than other retail investors). However, for the purposes of this thesis, retail and institutional investors will be considered as homogeneous groups of investors in terms of sophistication for feasibility purposes. An institutional share class will be identified by a dummy variable and refers to a share class "meeting one of the following qualifications: has the word 'institutional' in its name; has a minimum initial purchase of $100,000 or more; states in its prospectus that it is designed for institutional investors or those purchasing on a fiduciary basis" (Morningstar, 2018). Consistently with the above-mentioned studies, institutional share classes are expected to benefit from lower ongoing charges. Consequently, the following hypotheses will be tested:

- H_0 : Institutional share classes do not significantly exhibit lower OCFs than non-institutional share classes.
- H_1 : Institutional share classes significantly exhibit lower OCFs than non-institutional share classes.

2.6.4. CROSS-BORDER DISTRIBUTION

UCITS are always domiciled in a single country although their share classes may be sold in a number of different countries. Cross-border distribution refers to situations when a fund is sold in at least another country than the one in which it is domiciled. In Europe, cross-border investing forms one of the key pillars of the capital markets union plan developed by the European Commission, which aims at mobilising capital in Europe and create an integrated capital market in the EU by 2019 (European Union, 2018). Yet, cross-border distribution of UCITS funds is not new and has already been facilitated by the UCITS IV Directive.

Under the UCITS IV Directive, UCITS benefit from a 'passport' for their distribution inside the European Union. UCITS may be freely marketed in any European Member State following a simple notification procedure, which involves transmission of a notification file to the competent authorities of their home Member State. This file is subsequently transferred to the national competent authorities of each host Member State in which the UCITS aspires to be made available for sale.

In many instances, UCITS are distributed outside of the European Union, leading cross-border distribution to be considered as a key driver to export European competences globally (Deloitte, 2018). In the context of this thesis, considering cross-border distribution of UCITS as a determinant of the OCF appeared of paramount importance since "UCITS funds are the most regulated types of investment funds in Luxembourg, but, at the same time, they are the investment funds which are the easiest to distribute" (Sougné et al., 2016). Luxembourg is the principal financial centre for the cross-border distribution of UCITS. This is due to its economic and political stability, the quality of the infrastructures in place and its experience in global fund distribution (Sougné et al., 2016).

Although UCITS funds benefit from the simplified notification procedure, "the requirements on which documents have to be presented still differ from country to country, leading the notification procedure to develop into a de facto registration procedure" (Lang and Köhler, 2011). The registration procedure creates registration costs for each country in which the fund is sold. Moreover, the same authors revealed that cross-border distribution is generally one of the largest influences on administrative fees after registration costs. These administrative fees include the fees paid to the custodian, transfer agent, accounting firm, auditor and legal companies, and also for the internal administrative services provided by the fund company

itself. Consequently, it would be reasonable to expect mutual fund fees to be higher for funds sold in numerous countries. Several empirical studies tend to confirm this hypothesis. According to Khorana et al. (2008), funds distributed in more countries exhibited higher fees. Likewise, Lang and Köhler (2011), as well as Keswani et al. (2016) discovered that the number of countries where a fund is available for sale influences its TER. To confirm this, the following hypotheses will be tested:

- H_0 : The number of countries in which a share class is available for sale does not have a significant and positive impact on its OCF.
- H_1 : The number of countries in which a share class is available for sale has a significant and positive impact on its OCF.

2.6.5. FUND TYPES

Conducting a study on the ongoing charges of mutual funds involves taking into account the type of assets that the fund manages since "the costs of research, market analysis and management may heavily depend on the kind of assets the fund invests in" (Gil-Bazo and Martínez, 2003). For instance, equity funds are likely to incur higher costs of research and money market funds presumably incur lower custody fees. In addition to the differences in costs of management, Gil-Bazo and Martínez (2003) claimed that the "heterogeneity in the particular risk profile of funds results in a lack of perfect substitutability and hence in different prices depending on investors' demands". Lang and Köhler (2011), for their part, stated that competition from banks and insurance companies is higher for fixed income and money market funds, thus reducing the possibility of fund companies raising fees on these two types of funds.

For the purposes of this study, share classes will be assigned different dummy variables according to the type of the fund to which they belong (i.e. corresponding to their 'global broad category group'). Only the four major different types are considered for data representativeness reasons. The different fund types under consideration are equity funds, allocation funds, fixed income funds and money market funds. Lang and Köhler (2011) demonstrated that equity funds exhibited the highest total expense ratios; they were followed by allocation, fixed income and money market funds, respectively. Consequently, the following hypotheses about the way fund types influence the OCF will be tested:

- H_0 : Share classes belonging to an allocation fund do not significantly exhibit lower OCFs than share classes belonging to an equity fund.
- H_1 : Share classes belonging to an allocation fund significantly exhibit lower OCFs than share classes belonging to an equity fund.

- H_0 : Share classes belonging to a fixed income fund do not significantly exhibit lower OCFs than share classes belonging to an equity fund.
- H_1 : Share classes belonging to a fixed income fund significantly exhibit lower OCFs than share classes belonging to an equity fund.

- H_0 : Share classes belonging to a money market fund do not significantly exhibit lower OCFs than share classes belonging to an equity fund.
- H_1 : Share classes belonging to a money market fund significantly exhibit lower OCFs than share classes belonging to an equity fund.

2.6.6. LOAD FUNDS

As mentioned earlier, mutual funds are allowed to charge one-off fees, such as front-end or back-end loads. Although these fees are not paid from the funds' assets and should therefore not be included in the computation of the OCF, some authors have argued that they can play a role in the determination of the level of the recurring charges incurred by investors. According to Houge and Wellman (2007), "mutual funds use loads to segment customers with lower financial sophistication" and take advantage of the heterogeneous clientele of investors to charge higher expense ratios. In the same vein, Latzko (2013) suggested that "investors purchasing a load fund through a broker may not be as cost sensitive as no-load investors, allowing load fund operators to charge high management and distribution fees". On the same subject, studies conducted by Iannotta and Navone (2012) as well as Navone and Nocera (2016) checked for such a possible clientele effect and reported a positive relationship between loads and expense ratios. Hence, the following hypotheses will be tested:

- H_0 : Load share classes do not significantly exhibit higher OCFs than no-load share classes.
- H_1 : Load share classes significantly exhibit higher OCFs than no-load share classes.

2.6.7. FUNDS OF FUNDS

In some instances, mutual funds may choose to invest a substantial part of their assets in other funds. The mutual funds following such an investment strategy are termed 'funds of funds'. Such an investment approach may enable funds to achieve enhanced diversification and access different managers. However, "this comes at the cost of a multiplication of the fees paid by the investor", as the investor is charged both the fees of the fund of funds and of the constituent funds (Brown, Goetzmann and Liang, 2003). Unexpectedly, Navone and Nocera (2016) reported that funds of funds exhibited lower expense ratios. Khorana et al. (2008) came to the same conclusion but indicated that this was probably due to the fact that "the underlying fund fees are embedded in the gross return".

Conversely, as previously mentioned, UCITS investing a substantial part of their assets in other UCITS or CIUs are obliged to report a synthetic OCF, taking into account the ongoing charges incurred when investing in these underlying funds. Consequently, since the effects of the underlying charges are taken into account in the reported measure of the OCF, funds of funds will be expected to display higher OCFs. The following hypotheses will be tested:

- H_0 : Share classes of funds of funds do not significantly exhibit higher OCFs than share classes of individual funds.
- H_1 : Share classes of funds of funds significantly exhibit higher OCFs than share classes of individual funds.

2.6.8. DOMICILE OF FUNDS

In some instances, the previously listed determinants have not explained satisfactorily the discrepancies in fees between mutual funds domiciled in different countries. These determinants, although susceptible to explain differences in the pricing of mutual funds, do not take into account the country-specific effects. To take into account such effects, Khorana et al. (2008) included a dummy variable for Luxembourg-domiciled funds in their study and found a significant and positive relationship with the total expense ratio. This finding appeared to be consistent with the positive relationship they established between fees and the size of the industry of the domicile country. Furthermore, Lang and Köhler (2011) showed that the decision to set up a fund in Luxembourg was mostly due to the presence of a qualified workforce and the presence of necessary infrastructures to set-up funds rather than to cost

considerations. Hence, the quality of the infrastructures set up and the expertise of the available workforce could well lead to higher expenses for Luxembourg funds. Following the findings of Khorana et al. (2008) the size of fund industries in Belgium and Luxembourg could be a key differentiator, since the net assets of the Luxembourg fund industry are considerably larger than the assets of the Belgian fund industry, as can be inferred from recent data provided by the EFAMA (2018). Accordingly, this could potentially translate into fluctuations in the fees charged to investors.

As a world-renowned financial centre, Luxembourg could potentially benefit from cluster effects. Clusters are defined as "geographic concentrations of interconnected companies and institutions in a particular field" (Porter, 1998). Such clusters enhance competition among service providers and foster better coordination between companies, which should in turn become more efficient, due to better access to employees and suppliers but also due to the access to specialized information (Porter, 1998). For the purposes of this thesis, Luxembourg will be considered as the European country benefitting from the most highly developed cluster of financial services providers. Consequently, Luxembourg fund companies might take advantage of increased efficiencies and investors could ultimately benefit from lower expenses, as a result of the simultaneous enhanced competition and coordination between financial services providers.

In order to capture the potential country effects and to assess how these effects influence the OCFs of UCITS, a dummy variable will be added to distinguish Belgian funds from Luxembourg funds, being considered as the reference funds. The hypotheses to examine are:

- H_0 : Share classes of funds domiciled in Belgium do not significantly exhibit different OCFs than share classes of funds domiciled in Luxembourg.
- H_1 : Share classes of funds domiciled in Belgium significantly exhibit different OCFs than share classes of funds domiciled in Luxembourg.

3. RESEARCH METHODOLOGY

3.1. PANEL DATA MODEL

In order to examine the role played by the features described in the previous part in the determination of a share class' level of ongoing charges, a panel data model was specified. Panel data models offer several advantages such as the possibility to take the heterogeneity between the subjects of the study (i.e. the share classes) explicitly into account. Moreover, since panel data combine both time-series and cross-sectional observations, panel data present the advantage of offering "a large number of data points, increasing the degrees of freedom and reducing the collinearity among explanatory variables, hence improving the efficiency of econometric estimates" (Hsiao, 2003). For this study, the choice to specify a panel data model was supported by the possibility to study the evolution of the OCF of each share class (i.e. the cross-sectional unit) and of its potential independent variables over time (i.e. on yearly data), although it should be noted that some of the potential determinants are time-invariant.

After the collection of panel data, pooling the data about the observed individuals at different times together would "camouflage the heterogeneity that may exist among the individuals" (Gujarati, 2015). For that reason, the uniqueness of each individual could be incorporated in the single error term of the model, leading the error term to be correlated with some of the regressors included in the model. As a consequence, the estimated regressors could be biased and inconsistent in some instances (Gujarati, 2015).

In order to account for such heterogeneity, two models are widely referred to in practice, namely the fixed effects model and the random effects model. On the one hand, the fixed effects model takes into account such heterogeneity by allowing each of the individuals to have a distinct intercept, thus capturing their own special features. On the other hand, the random effects model assumes that the individuals in the sample are drawn from a larger population and that they have a common value for the intercept. The random effects model assumes there is no correlation between the unobserved heterogeneity amongst individuals and the explanatory variables included in the model (Gujarati, 2015). This assumption suggests the introduction of a sufficient number of control variables in the model to take into account individual and group effects.

In the random effects model, differences in the individual values are reflected in the composite error term, which has two components (Hill, Griffiths and Lim, 2011):

- u_i : The individual-specific error component (constant over time);
- e_{it}: The regression-specific error component, the idiosyncratic term.

The value of the composite error term is set equal to the sum of these two components:

$$v_{it} = u_i + e_{it}$$

Since the error terms of a given cross-sectional unit at two different times can be correlated in some instances (i.e. presence of autocorrelation), the correlation coefficient between the two components must be considered and equals (Hill et al., 2011):

$$\rho = corr(v_{it}, v_{is}) = \frac{\sigma_u^2}{\sigma_u^2 + \sigma_e^2} \; ; t \neq s$$

Gujarati (2015) noted two essential points about this correlation. "First, for any cross-sectional unit ρ remains the same no matter how far apart the two time periods are; and secondly, ρ remains the same for all cross-sectional units". Not taking into account ρ would lead the ordinary least squares (OLS) estimators to be inefficient (i.e. they would not have minimum variance) and consequently lead to misleading inferences because OLS standard errors are underestimated. In order to take into account such a correlation, the method of the generalized least squares (GLS) is used to obtain efficient estimates (Gujarati, 2015).

The random effects model enables time-invariant variables to be included in the model, which is not the case with a fixed effects model. However, it should be noted that "the fixed effects model indeed controls for all-time invariant variables, whereas the random effects model can estimate only those time-invariant variables that are explicitly introduced in the model" (Gujarati, 2015). Since some of the potential determinants of a mutual fund's ongoing charges mentioned in the previous section are time-invariant, and in order to control the particular effects of these variables, it was deemed necessary to specify a random effects panel data model as part of this thesis. The model including all the main variables is the following:

$$OCF_{it} = B_1 + B_2 SIZE\_SC_{it} + B_3 SIZE\_FUND_{it} + B_4 AGE_{it} + B_5 COUNTRIES\_AFS_{it} + B_6 INS_{it} + B_7 ALLOC_{it} + B_8 FI_{it} + B_9 MMF_{it} + B_{10} LOAD_{it} + B_{11} FOF_{it} + B_{12} BEL_{it} + v_{it}$$

Where the variables are defined as:

- OCF_{it} : The ongoing charges figure of the share class *i* reported for year *t*;
- $SIZE\_SC_{it}$: The natural logarithm of the total net assets of the share class *i* at the end of year *t*;
- $SIZE\_FUND_{it}$: The natural logarithm of the aggregated total net assets of the fund containing the share class *i* at the end of year *t*;
- AGE_{it} : The age of the share class *i* from its inception (in years) at the end of year *t*;
- $COUNTRIES\_AFS_{it}$: The number of countries in which the share class *i* is available for sale during the year *t;*
- INS_{it} : A dummy variable taking a value of 1 if the share class has the name 'institutional' in its name; is explicitly aimed at institutional investors in its prospectus or has a minimum initial purchase amount of $100,000; and otherwise a value of 0;
- $ALLOC_{it}$: A dummy variable taking a value of 1 if the share class' type is "allocation" and otherwise a value of 0 (the fund type EQUITY is used as the reference);
- FI_{it} : A dummy variable taking a value of 1 if the share class' type is "fixed income" and otherwise a value of 0 (the fund type EQUITY is used as the reference);
- MMF_{it} : A dummy variable taking a value of 1 if the share class' type is "money market" and otherwise a value of 0 (the fund type EQUITY is used as the reference);
- $LOAD_{it}$: A dummy variable taking a value of 1 if the share class charges either a front-end load, a back-end load, or both, and otherwise a value of 0;
- FOF_{it} : A dummy variable taking the value of 1 if the share class belongs to a fund of funds and otherwise a value of 0;
- BEL_{it} : A dummy variable taking the value of 1 if the share class is domiciled in Belgium and otherwise a value of 0 (Luxembourg being the domicile of reference);
- v_{it} : The composite error term.

3.2. DATA COLLECTION PROCESS

In order to assess the impact of each of the explanatory variables on the level of a share class' ongoing charges (i.e. the dependent variable), data was retrieved from the global databases of Morningstar Direct ©. In order to build a balanced panel data set, data was retrieved for share classes with available data for the same time periods and non-surviving funds were included in the data set in order to avoid the so-called survivorship bias. As a matter of fact, including

only surviving funds would have led the results to be influenced by the supposedly best funds and bias inferences drawn from the data. The retained observations were also required to have data available for each of the variables under consideration. Moreover, due to the particular regulatory framework they are subject to, and in order to achieve data representativeness, only the share classes belonging to UCITS were considered, since no sufficient data on AIFs was available for Belgian mutual funds. Similarly, due to the sparse data available on index funds, the decision was taken to leave them out. Exchange-traded funds were also excluded from the study to ensure that the results were not driven by passively managed funds. Indeed, passively managed funds have proved to follow more aggressive pricing policies than actively managed funds (Deloitte and Fundsquare, 2015).

Following this procedure, yearly data on 1230 share classes of UCITS domiciled in Luxembourg and 105 share classes of UCITS domiciled in Belgium were retrieved for the period ranging from 2014 to 2017, as it was the period maximizing the number of observations. As a result, I used a sample taking the form of a panel data set composed of a total number of 5340 observations of the dependent variable and each of the explanatory variables.

3.3. TESTING OF THE CLRM HYPOTHESES

The random effects model previously discussed is an extension of the classical linear regression model (CLRM), and presupposes the existence of certain assumptions. Its classical assumptions are the following:

Figure 2. Assumptions of the classical linear regression model.

ASSUMPTIONS OF THE MULTIPLE REGRESSION MODEL

MR1. $y_i = \beta_1 + \beta_2 x_{i2} + \cdots + \beta_K x_{iK} + e_i,\ i = 1, \ldots, N$

MR2. $E(y_i) = \beta_1 + \beta_2 x_{i2} + \cdots + \beta_K x_{iK} \Leftrightarrow E(e_i) = 0$

MR3. $\text{var}(y_i) = \text{var}(e_i) = \sigma^2$

MR4. $\text{cov}(y_i, y_j) = \text{cov}(e_i, e_j) = 0 \quad (i \neq j)$

MR5. The values of each x_{ik} are not random and are not exact linear functions of the other explanatory variables

MR6. $y_i \sim N[(\beta_1 + \beta_2 x_{i2} + \cdots + \beta_K x_{iK}), \sigma^2] \Leftrightarrow e_i \sim N(0, \sigma^2)$

Source: Hill et al., 2011.

The first assumption refers to the linearity of the parameters. The second assumption requires the expected, or mean, value of the error terms to be zero. The third assumption refers to the principle of homoscedasticity: the variance of the error terms must remain constant. The fourth assumption requires no autocorrelation between two different error terms. The fifth assumption refers to the absence of multicollinearity. Finally, it should be noted that the sixth assumption of normality in the distribution of the error terms with zero mean and constant variance σ^2 is sometimes assumed (Hill et al. 2011), however, it is not part of the CLRM (Gujarati, 2015). Under the five first assumptions, the least squares estimators are the best linear unbiased estimators (BLUE) of the parameters in virtue of the Gauss-Markov theorem (Hill et al., 2011).

Within the context of this thesis, the tests for heteroscedasticity and autocorrelation will be examined since they carry implications for the regression analysis that will be conducted later on. Additionally, the hypothesis of no multicollinearity will be examined to make sure the estimators can be used for statistical inference. As a matter of fact, when the independent variables are collinear, it is difficult to isolate the impact of each explanatory variable separately on the dependent variable (Gujarati, 2015).

3.3.1. HETEROSCEDASTICITY

The CLRM assumes that the error terms are homoscedastic (i.e. they have equal variance) across observations. In the presence of heteroscedasticity, erroneous conclusions about the statistical significance of the estimated regression coefficients could be drawn since these regressors are no longer efficient (Gujarati, 2015). The Breusch-Pagan test is frequently carried out in order to test for heteroscedasticity. It can be easily performed using the statistical software Stata, which provides the following output:

Figure 3. Breusch-Pagan test for heteroscedasticity.

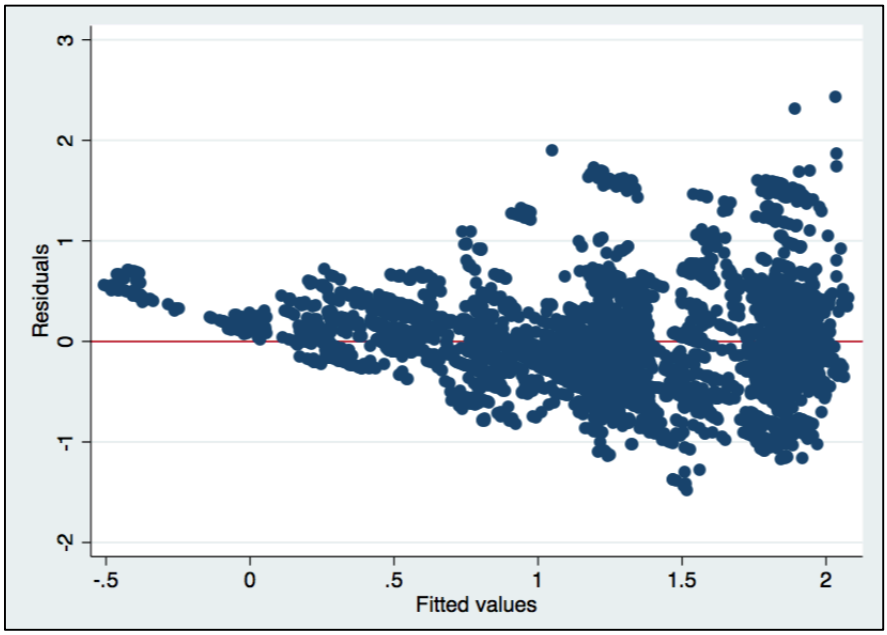
```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of OCF

         chi2(1)      =   117.82
         Prob > chi2  =   0.0000
```

Source: Stata.

Because of the low (null) p-value resulting from this test, the null hypothesis of constant variance can be rejected, thus indicating the presence of heteroscedasticity.

The issue of heteroscedasticity can also be observed graphically. When plotting the residuals against the predicted values of Y, a clear pattern appears and residuals expand conically for higher predicted values of Y. Consequently, the error terms do not have equal variance.

Figure 4. Graph of the residuals vs. the predicted values of Y.



Source: Stata.

In conclusion, the presence of heteroscedasticity has been established. The outcome could be biased conclusions about the statistical significance of the regression coefficients. Fortunately, the statistical software Stata can compute heteroscedasticity-robust standard errors for random effects model, inter alia. The robust procedure "does not alter the value of the coefficients but corrects the standard errors to allow for heteroscedasticity" (Gujarati, 2015). Consequently, robust standard errors will be requested at the time of obtaining the results of the regression analysis.

3.3.2. AUTOCORRELATION

As previously mentioned, panel data may exhibit correlation between the error terms of a given cross-sectional unit at two different times. That leads OLS estimators to be inefficient. In the presence of autocorrelation, the statistical significance of these estimators is not reliable and the hypothesis-testing procedure becomes suspect (Gujarati, 2015).

Stata can compute the Wooldridge test for serial correlation in panel data models. This test examines the correlation in the idiosyncratic error terms between two subsequent periods (Drukker, 2003) and provides the following results:

Figure 5. Results of the Wooldridge test for autocorrelation.

```
Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,     1334) =      11.321
           Prob > F =      0.0008
```

Source: Stata.

The low p-value resulting from this test indicates that the null hypothesis of no first-order correlation can be rejected. Consequently, the sample panel data set is subject to serial correlation, which must be addressed to maintain the efficiency of the estimators. A common way to deal with autocorrelation issues is to apply least squares to a transformed regression model (Gujarati, 2015). In the case of a random effects model, the minimum variance estimators are the GLS estimators, which are based on a transformed model (Hill et al., 2011). The statistical software Stata computes these estimators by default when performing a random effects regression.

3.3.3. MULTICOLLINEARITY

The CLRM assumes there is no exact linear relationship among explanatory variables. Multicollinearity arises when there is at least one perfect linear relationship between two regressors. According to Gujarati (2015), "when regressors are collinear, statistical inference becomes shaky", this is due to the fact that the estimators have large variances, thus leading their confidence intervals to become wider.

A common way of detecting multicollinearity is to analyse the variance inflation factors (VIF) and the tolerance factors (TOL), which are computed as follows (O'Brien, 2007):

$$VIF = \frac{1}{1 - R_k^2} \qquad TOL = 1 - R_k^2$$

Where R_k^2 is the R^2 resulting from the auxiliary regression of the *k*th regressor on all other regressors of the model (Gujarati, 2015).

The VIF measures the effects of R_k^2 on the variance of the estimated regression coefficient for the *k*th independent variable. The tolerance factor is equal to the inverse of the VIF and can be interpreted as "the proportion of variance in the *k*th independent variable that is not related to the other independent variables in the model" (O'Brien, 2007).

Stata provides the following results for the VIF and TOL factors for the panel data set used in this study:

Figure 6. Values of the VIF and TOL factors for multicollinearity testing.

Variable	VIF	1/VIF
FOF	1.40	0.712010
SIZE_SC	1.39	0.718423
SIZE_FUND	1.38	0.725989
AGE	1.38	0.726265
ALLOC	1.34	0.748026
BEL	1.30	0.771142
INS	1.17	0.854794
LOAD	1.11	0.902202
FI	1.10	0.911510
COUNTRIES_~S	1.09	0.916915
MMF	1.09	0.917072
Mean VIF	1.25	

Source: Stata.

A common rule of thumb found in the literature indicates that an independent variable is not highly collinear with the others unless its VIF exceeds 10 (or the TOL is lower than 0.10), which will happen if the R_k^2 exceeds 0.9 (Gujarati, 2015). In the present case, the independent variables are not highly collinear with the others and the R_k^2 is never higher than approximately 0.288.

Alternatively, an analysis of the pairwise correlations between the explanatory variables could indicate with more precision whether two of them are highly correlated or not. The pairwise correlations among independent variables are shown in Appendix VIII. The results indicate the absence of perfect correlation between any pair of explanatory variables. Yet, some of the pairs of variables demonstrate noteworthy correlations. As expected, the variables on the size of the share class and of the fund itself present a pairwise correlation of 0.3733. Moreover, the dummy variable indicating that a share class belongs to a fund domiciled in Belgium displays a set of correlations suggesting that Belgian funds in the sample are smaller, older, available

for sale in fewer countries and more frequently 'funds of funds' than their Luxembourg counterparts. Finally, the correlation of 0.4467 between the allocation dummy and the funds of funds dummy indicates that a large number of allocation funds are funds of funds. Nevertheless, there seems to be no alarming problem of high multicollinearity between the regressors of the model, which can thus all be examined alongside any other regressor.

3.4. APPROPRIATENESS OF THE RANDOM EFFECTS MODEL

As seen previously, the pooled OLS regression appear to carry out inefficiencies due to issues of heteroscedasticity and autocorrelation. These issues can be addressed by the specification of a random effects model with robust standard errors. However, the appropriateness of such a model still remains to be established. The application of a random effects model presupposes the existence of unobserved effects in the model, that is, the presence of heterogeneity between the individuals to account for (Hill et al., 2011). The presence of the previously described correlation ρ is an important feature of the random effects model while if $\sigma_u^2 = 0$, the correlation coefficient ρ is equal to 0 (Hill et al., 2011).

This hypothesis can be tested with the Breusch and Pagan Lagrangian multiplier (BP-LM) test for random effects. Under the null hypothesis, the variance of the individual-specific error component is null. If the null hypothesis holds true, there are no random effects (Hill et al., 2011). In the absence of unobserved effects, pooled OLS regressors are efficient and their associated pooled OLS statistics are asymptotically valid (Wooldridge, 2010).

Figure 7. Breusch-Pagan Lagrangian multiplier test for random effects.

```
Breusch and Pagan Lagrangian multiplier test for random effects

        OCF[SC,t] = Xb + u[SC] + e[SC,t]

        Estimated results:
                         |       Var     sd = sqrt(Var)
                ---------+------------------------------
                     OCF |   .4848993       .6963471
                       e |   .0060587       .0778376
                       u |   .2109472       .4592899

        Test:   Var(u) = 0
                                chibar2(01) =  7515.63
                            Prob > chibar2 =   0.0000
```

Source: Stata.

The null p-value suggests a rejection of the null hypothesis and therefore confirms the presence of high heterogeneity amongst the individuals and the presence of a significant variance in the individual-specific error components. Consequently, a random effects model is required in order to properly account for the heterogeneity amongst the different share classes examined.

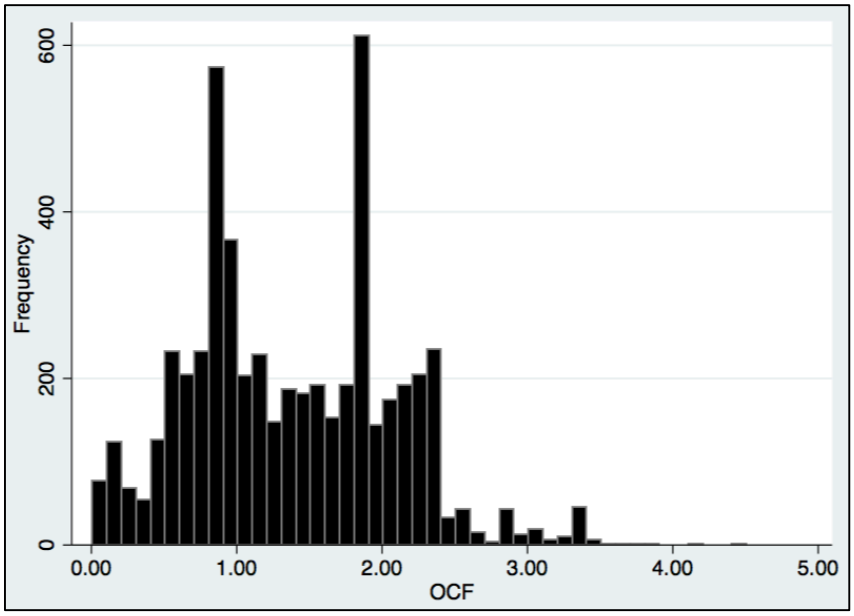
In the following part of this thesis, statistics on the dispersion of the OCF will be displayed alongside comparisons of the differences in the OCF charged in Belgium and Luxembourg. Then, the results of the different random effects regressions conducted will be presented and discussed.

4. RESULTS AND ANALYSES

4.1. ANALYSIS OF THE DISPERSION IN THE ONGOING CHARGES

The analysis of the determinants of the OCF presupposes the existence of dispersion in the ongoing charges levied. The histogram below represents the frequency of share classes with a reported OCF falling within different intervals. It illustrates a relatively wide dispersion:

Figure 8. Histogram of the distribution of the ongoing charges figures in the sample.



Source: Stata.

This graph suggests that investors are facing important discrepancies in the ongoing charges they incur. The minimum OCF charged amounts to 1 basis point while the maximum OCF amounts to 446 basis points. The spread between the 10th and 90th percentiles amounts to 176 basis points and the interquartile spread is equal to 103 basis points. Descriptive statistics on OCF distribution are provided in Appendix IX.

Moreover, the histogram demonstrates peaks and troughs in the OCF charged. This pattern is potentially linked to differences in the fund types and the fact that the data set is not balanced between fund types. Out of the 5340 observations of the OCF, there are 3044 share classes of equity funds, 396 share classes of allocation funds, 1712 share classes of fixed income funds, and 188 share classes of money market funds. The comparative analysis of the median ongoing charges across fund types and countries is outlined in the upcoming section.

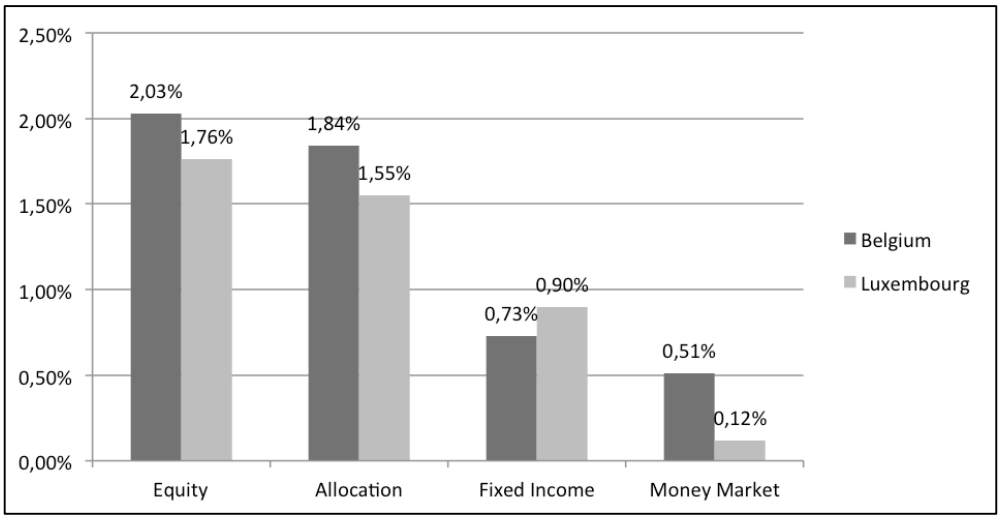
4.2. COMPARISON OF BELGIAN AND LUXEMBOURG OCFS

The previous section sets out dispersion in the OCFs for the two countries considered jointly and showed economically important differences. However, it should be noted that the distribution of the OCF differs between the two countries, as observable on the country-specific histograms provided in Appendix X. Descriptive statistics for these distributions are also provided in Appendix XI. This section aims at unveiling potential differences between the OCFs charged in Belgium and Luxembourg. A comparison will be performed both across the different fund types and over the considered timeframe.

4.2.1. COMPARISON ACROSS FUND TYPES

A summary of the median values of the OCF for each fund type and each country are presented in the following graph:

Figure 9. Bar chart of the median values of the ongoing charges figures by fund type and country.



Source: Personal reconciliation of data obtained from Morningstar Direct.

These values provide an explanation for the presence of the three highest peaks appearing on the histogram representing the distribution of the OCF from the previous section. The intervals corresponding to these peaks seem to coincide with the median values of equity and fixed income funds, which are by far the two most frequent fund types in the dataset.

Additionally, the graph displays substantial differences in the OCF charged for funds pursuing different investment strategies. In the two countries, equity funds and allocation funds charged the highest OCFs while fixed income and money market funds charged the

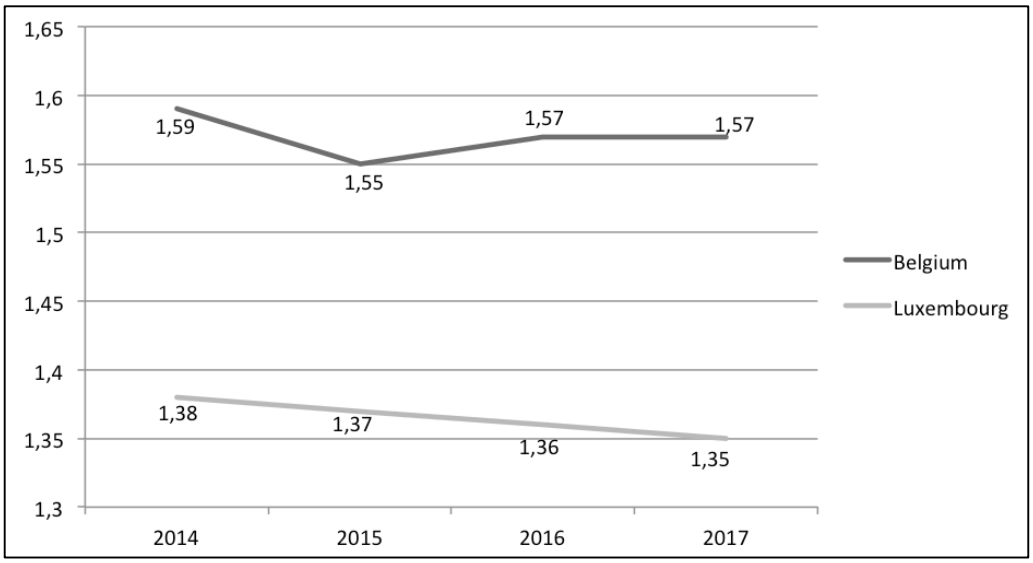
lowest OCFs. These results are not surprising since one can reasonably expect equity and allocation funds come out with higher costs of research and market analysis, increasing the management fees charged to these funds. Since management fees represent a significant part of a fund's OCF, as mentioned previously, higher values of the OCF appear to be rational for these two fund types. Because of such discrepancies, the inclusion of explanatory variables linked to the fund type in the model appears to be essential.

Moreover, the median value of the OCF charged is usually lower for share classes of funds from Luxembourg rather than Belgium, although fixed income funds stand out as an exception. Since Belgian and Luxembourg UCITS require the intervention of similar intermediaries for their functioning, these results seem to suggest the existence of cost advantages for funds domiciled in Luxembourg. However, one should be reminded that these results do not hold constant the values for the other potential determinants identified earlier. These results could therefore bias the reality. The random effects regressions, which will be carried out later on should provide a more accurate assessment of the eventuality of observing differences in the ongoing charges attributable to the country of domicile. These results will be presented in a later section.

4.2.2. EVOLUTION OF THE OCF OVER TIME

The average values of the ongoing charges for each year under consideration and each of the two countries suggest a slightly decreasing evolution of the OCF over time:

Figure 10. Graph of the evolution of the average ongoing charges figure over time, by country.



Source: Personal reconciliation of data obtained from Morningstar Direct.

Because of the nearly flat evolution of the OCF over the time period under scrutiny, the results of the upcoming random effects regression should mainly be influenced by the heterogeneity amongst the individuals rather than by the periodicity of the data. Nonetheless, the absolute values of the average values of the two countries should be analysed prudently, since the samples of share classes for each country are not perfectly balanced across fund types nor across the other features considered. In fact, this analysis was not performed holding any of the remaining explanatory variables constant. Consequently, the structure of the data set could bias the results and the slightly decreasing (almost non-existent) evolution of the OCF over time for each country is the only potential conclusion that could be drawn from these results. Although panel data captures both cross-sectional and time effects in the variations of the OCF, it is reasonable to expect cross-sectional differences to be the major cause of differences in the OCF, as opposed to time effects.

In order to examine the potential impact of each of the identified explanatory variables more consistently, the results of the random effects regressions are discussed in the upcoming section.

4.3. RESULTS AND ANALYSIS OF THE RANDOM EFFECTS REGRESSIONS

With the aim of testing each of the previously formulated hypotheses on the potential explanatory variables of the OCF, I conduct a stepwise inclusion of these variables in six different models. The four first models incrementally add the main explanatory variables, either individually or in groups of variables, to the base model. These four models do not take geographical differences into account, as they are simply based on the pooled observations for the two countries considered. Conversely, the purpose of models (5) and (6) is to account for geographical differences. In the fifth model, the 'BEL' dummy variable is added to test for differences in the OCF charged in Belgium and Luxembourg, while taking the other explanatory variables into account. In the sixth model, interaction variables are added to capture additional differences between the two countries of domicile. The results for each of the six models are obtained by applying random effects regressions to the data described in section 3.2, using, once again, the statistical software Stata. A table presenting a summary of the results can be found in Appendix XII.

Before getting into the substance of the case, there are three key elements that need mentioning. Firstly, all models were based on 5340 observations of each of the independent variables associated to their OCF, since the database used is balanced.

Secondly, the Wald Chi-square test is a large sample test used to test joint hypotheses of two or more coefficients. The test "follows the chi-square statistic with degrees of freedom equal to the number of regressors estimated" (Gujarati, 2015). The null hypothesis of the test is that, jointly, none of the independent variables have any impact on the dependent variable (Gujarati, 2015). The null p-value of the Wald test for each of the six models suggests that the null hypothesis should be rejected, which indicates that the groups of variables included in each of the models were jointly significant.

Thirdly, all the models returned high values for the intraclass correlation ρ, with values higher than 0.97 in all instances. The correlation was caused by the individual-specific component of the error term (u_i), which is common to all time periods. Consequently, the high correlation should be interpreted as the proportion of the variance in the composite error term (v_{it}) explained by differences across individual components (Hill et al., 2011). Differences across share classes explain more than 97% of the variance in the composite error term while time effects only explain a minor proportion of the variance. With these considerations in mind, an interpretation of each model will then be performed one after the other and the coefficients for each regressor and their statistical significance will be discussed.

4.3.1. MODEL (1) – SIZE AND EXPERIENCE EFFECTS

Model (1) aims at testing the impact of size and experience effects on the OCF. The results surprisingly indicate no significant relationship between the size of the share class and the level of the OCF. What is more, the size of the fund at the origin of the share class does not exhibit any significant relationship with the OCF either. This could indicate that economies of scale are not generated by UCITS' service providers or are simply not passed along to final investors. Moreover, it is worth noting that such a relationship could equally be an indicator of the lack of preference of investors for lower ongoing charges funds. In such a case, more money would be invested in less expensive share classes and funds, therefore inflating their size. Unsurprisingly, the choice of a fund is not solely based on cost considerations.

Although economies of scale are not present, model (1) indicates a significantly negative relationship between the age of a share class and the level of its OCF (at the 1% significance level). This relationship suggests the existence of experience effects that should enable older funds to decrease their ongoing charges. The coefficient of the explanatory variable age indicates that for every additional year of experience since the inception of the share class, final investors should have benefited from a reduction in the OCF of approximately 0.7 basis points. Finally, it should be noted that the R^2 of model (1) is only equal to 1.38%, suggesting that alternative explanatory variables should be considered since a large proportion of the variance of the OCF is left unexplained.

4.3.2. MODEL (2) – CROSS-COUNTRY DISTRIBUTION

In model (2), an explanatory variable is added in order to take cross-country distribution into consideration. The results suggest a significantly positive relationship between the number of countries in which the share class is available for sale and its ongoing charges. The significant regression coefficient indicates that for each additional country in which the fund is available for sale, investors could expect to witness an increase of approximately 0.6 basis points in the OCF they incur. Hence, the increased registration and administrative costs stemming from cross-country distribution in effect penalise investors. As in model (1), the very low level of the R^2 implies that additional regressors could go some way to more clearly explaining variations in the OCF.

4.3.3. MODEL (3) – FUND TYPES

Model (3) is intended to examine the effects of fund types on the OCF by the inclusion of the relevant three dummy variables indicating whether the fund is an allocation fund, a fixed income fund or a money market fund, taking equity funds as the reference. The results are significantly negative for all types of funds and an analysis of their regression coefficients indicates that these three fund types are expected to provide reductions of the ongoing charges ranging from 10 basis points to 139 basis points, depending on the fund type considered. Equity funds are the most expensive of the fund types studied, followed respectively by allocation funds, fixed income funds and money market funds. Furthermore, the inclusion of these variables increased the R^2 of the model from an almost null value to more than 25%.

This implies that they made a significant contribution and account for roughly a quarter of the variations in the OCF.

4.3.4. MODEL (4) – ADDITIONAL FEATURES OF THE SHARE CLASS

In order to attempt to bring accuracy to the previously defined models, model (4) adds three dummy variables whose purpose is to capture additional features of the share class, namely whether the share class is reserved for institutional investors or is open to retail investors, whether up-front-end or back-end loads have to be paid and whether the share class belongs to a fund of funds. The results show that institutional investors benefit from a significant reduction in incurred ongoing charges, therefore confirming the intuition that they are able to exert a downward pressure on fees because of their larger size or their likely superior level of monitoring. Conversely, load share classes exhibit higher ongoing charges in addition to the one-off fees they entail. Clientele effects therefore seem to exist, and an investor choosing to invest in a load share class is penalised twice. Additionally, investors in share classes belonging to a fund of funds bear higher ongoing charges. These are explained by the multiplication of the ongoing charges attributable to the constituent funds. It should be emphasized that the addition of these three explanatory variables significantly improves the R^2 of the model from roughly 25% to more than 54%. Consequently, they are essential for explaining the variance of the OCF.

4.3.5. MODEL (5) – TAKING THE COUNTRY OF DOMICILE INTO ACCOUNT

While the first four models were useful to gain an insight into some of the determinants of the level of a share class' ongoing charges, they do not control for differences attributable to the country in which they are domiciled. In model (5), a dummy variable is added to test whether the OCF of the funds in Belgium differed from those in Luxembourg, while holding constant the effects of the previously analysed explanatory variables. The regression coefficient of the dummy variable 'BEL' reveals that, all other things being equal, investors in Belgian UCITS incur significantly higher ongoing charges than investors choosing to invest in Luxembourg UCITS. Consequently, this seems to support the fact that investors placing their money in Luxembourg UCITS ultimately benefit from the cluster of financial services providers and its resulting efficiencies in the form of lower ongoing charges.

4.3.6. MODEL (6) – INTERACTIONS WITH THE COUNTRY OF DOMICILE

In model (5), differences in the ongoing charges for the two countries included in this thesis were demonstrated. Since the database contains a large majority of observations related to Luxembourg share classes (about 92% of the observations), some of the regression coefficients of models (1) to (4) and their interpretations could be influenced by interactions of these variables with the country of domicile. In order to account for this eventuality, various interaction variables are added to model (6). Such variables are obtained by multiplying two main explanatory variables for each observation.

Interaction variables are required when there is a reason to expect the marginal effect of one variable to be dependent on the level of another variable (Hill et al., 2011). In the present case, I expect five main explanatory variables to be influenced by the country of domicile. Economies of scale at either the share class or fund level could depend on it due to differences in the competition between financial services providers in each country. Hence, the interaction terms SIZE_SC*BEL and SIZE_FUND*BEL were added to the model.

Likewise, economies of experience could be said to depend on where a fund is based, since learning curve effects could be more present in one particular national fund industry than in another. The funds domiciled in one of the chosen countries are potentially better able to establish well-practiced operating cycles over time than funds domiciled in the other country. This is why it was decided to reflect the interaction between the age of the share class and its country of domicile in the variable AGE*BEL.

While investment firms of both countries distribute funds abroad, it seemed logical to test whether Luxembourg UCITS have a comparative cost advantage over Belgian UCITS in terms of cross-border distribution. This potential advantage would be attributable to its economic and political stability, the quality of the infrastructures in place and its experience in global fund distribution (Sougné et al., 2016). In order to test this hypothesis, the interaction variable COUNTRIES_AFS*BEL was therefore added to the model.

Moreover, the impact of loads on the mutual fund fee structures could differ from one country to another and the presence or absence of loads and their interactions with ongoing charges might be influenced by competitors decisions whether to charge loads or not. The so-called clientele effects are likely to be country-specific. Consequently, the interaction variable LOAD*BEL was examined in this sixth model.

An analysis of the regression coefficients for each of these five interaction variables indicates that economies of scale at the share class or the fund level are not present in either of the two countries. Experience effects, for their part, are not significant and do not decrease the OCF for Belgian share classes while the coefficient of the main variable AGE remains negative and significant at the 1% level. This indicates that only Luxembourg funds benefit from economies of experience. It was also seen that cross-border distribution leads to higher ongoing charges for Belgian share classes than for their counterpart in Luxembourg. For each additional country in which a Belgian share class is available for sale, investors incur an increase in the OCF 3.5 basis points higher than the increase borne by the investors of a Luxembourg share class.

Finally, the significantly negative regression coefficient for the interaction variable concerned with the interaction between loads and the variable BEL indicates that overall, investors choosing to invest in a Belgian load share class would benefit from a reduction in the ongoing charges they have to bear. This reduction would amount to roughly 5 basis points a year (0.3636 - 0.4160). For comparison purposes, Luxembourg load share classes exhibit increases in the OCF of approximately 36 basis points, all other things being equal. Consequently, Belgian share classes benefit from a comparative advantage in this last aspect.

5. ETHICAL CONSIDERATIONS REGARDING MUTUAL FUND FEES

Financial activities generally involve two categories of people: those entrusting their assets to other people, and those offering their services to these people. Such a relationship between investors and financial services intermediaries undeniably operates on trust and requires certain moral norms to function effectively. Moral norms are sometimes embodied in the laws and regulations in force but ethics are broader than the law. In many instances, "morally contestable issues are not covered by the law" (Crane and Matten, 2010). Understandably, written laws cannot regulate every single activity, for practical reasons. In order to complement existing laws, various ethical standards may be applied to many situations and provide guidance on what is morally right in equivocal situations. The CFA[14] Institute sets out standards of professional conduct aimed at promoting a more ethical financial industry. Whenever possible, the issues raised in this section will be related to these standards. The subject of mutual fund fees, being at the centre of this thesis, can be related to three key ethical issues, namely the drive towards enhanced transparency in the financial industry, the assessment of the reasonableness of fees and the way customers are segmented and charged varying levels of fees.

5.1. THE DRIVE TOWARDS TRANSPARENCY

Customers morally have the right to be kept informed about the level of fees they can expect to be charged in exchange for the various services they are provided. Information on fees and expenses should be considered as material public information that a reasonable investor would want to look into before making an investment decision (CFA Institute, 2014). As mentioned in the section relative to the regulatory framework surrounding fee disclosure, a regulatory tsunami is currently being implemented and, broadly speaking, aims at promoting disclosure of information and investor protection.

In addition to these legal provisions, there are two CFA standards that could be related to this issue of transparency. In the first instance, according to the standard prohibiting misrepresentation: "members and candidates should not make any misrepresentations relating

[14] Chartered Financial Analyst.

to investment analysis, recommendations, actions, or other professional activities" (CFA Institute, 2014). Misrepresenting the magnitude of the fees and charges that will have to be taken on board by investors could lead them to make inefficient investment decisions based on misleading information. Secondly, and in line with the standard of "diligence and reasonable basis", the CFA Institute (2014) recommends to "exercise diligence, independence and thoroughness in analysing investments, making investment recommendations, and taking investment actions". Members and candidates providing an investment service should, inter alia, consider a mutual fund's fee structure and management history. In order for this recommendation to be implementable, complete transparency is paramount.

Although the introduction of the OCF enhanced disclosure procedures for ongoing charges incurred by an investor in an aggregate measure and is complemented by information on one-off and performance fees in investor documentation, complete transparency has not been achieved yet. Blake (2014) referred to the existence of hidden costs that are genuine costs borne by investors, since they result in lower net returns. These hidden costs are either cash costs (e.g. bid-ask spreads, transaction costs in underlying funds, etc.) or non-cash costs (e.g. market exposure, missed trade opportunities, etc.). Even in 2018, hidden, undisclosed costs remain, which means that further work is needed to reach full transparency and reach even higher ethical standards.

5.2. THE REASONABLENESS OF MUTUAL FUND FEES

Although the disclosure of fees and expenses raises the awareness of investors and should be viewed as an indicator of ethical behaviour, it does not prevent investors being overcharged for the services they receive in some instances. While mutual funds' service providers have the right to collect a fair remuneration for the services they provide, shareholders (or unitholders) of the fund have the right to obtain a fair return compensating them for the risks undertaken. In this situation, there is a conflict between the values of the fund's service providers and its shareholders, since an increase in the income achieved by service providers is, all other things being equal, detrimental to the return obtained by investors and vice versa. In such a situation, the directors of a fund can rationalise the situation by applying the reasoning of Friedman (1970). According to this reasoning, the directors of the fund are the agents acting for the individuals who own the fund (i.e. the shareholders or the unitholders)

and their social responsibility is to maximise the net returns achieved by these investors. The most straightforward way to achieve this is to partner up with the service providers enabling the fund to achieve the highest net return. In order to do this, they can either keep the charges incurred by investors to a minimum so as to avoid reducing gross returns too heavily or accept the higher expenses if the expected surplus in gross return outweighs the expected increase in expenses. In the latter case, paying higher expenses would be considered the best decision.

The exact level at which fees could be deemed as reasonable appears too complicated to ascertain for several reasons. Firstly, "for determining the reasonableness of fund fees, the actual cost of operating the fund is the relevant variable" (Latzko, 2013). Since there are discrepancies in the operating costs from one fund to another, a single level of reasonable charges cannot be determined. Secondly, the question of reasonableness is inherently investor-specific. It depends on the perception of the quality of the services obtained in exchange for the fees disbursed, which is purely subjective. Not all investors have the same perception of what is reasonable. Thirdly, the reasonableness of fees depends on the returns achieved by each fund, since investors are less likely to be reluctant to pay higher fees for a fund ultimately providing them with a higher net return. It would seem, therefore, that the best possible way to keep fund fees to reasonable levels is to keep promoting transparency. This should help investors make better investment decisions and enhance price-competition in the market, as better informed investors are more likely to exert a downward pressure on the fees they deem to be unreasonable.

5.3. SEGMENTATION OF CUSTOMERS AND FAIR DEALING

According to Houge and Wellman (2007), investment companies segment investors according to their level of investment sophistication. This enables them to market high expense funds to less-knowledgeable customers. Houge and Wellman suggested that loads are a proxy for investor sophistication, since "less knowledgeable (or less confident) investors are more likely to seek assistance from a broker or financial advisor, who receives a commission for selling load funds to investors". Alternatively, institutional share classes are also usually targeted at more sophisticated investors and constitute a distinct segment of the market, as previously explained. The fact of taking advantage of less knowledgeable clients does not

seem to be highly ethical. The question could be asked as to whether this behaviour meets the ethical standard of fair dealing, which is a duty to clients (CFA Institute, 2014). According to the CFA Institute (2014): "members and candidates may differentiate their services to clients" but they must "disclose to all clients whether the organization offers different levels of service to clients for the same fee or different fees". The key guideline that has to be adhered to behave ethically is, once again, linked to the disclosure of information to existing and prospective clients. In addition, the provision of differentiated services is not unethical per se.

The results of the empirical study conducted as part of this thesis contradict to a certain extent the assertion of Houge and Wellman on load funds mentioned above, since the results were not consistent across both countries. While load funds domiciled in Luxembourg appeared to exhibit significantly higher OCFs, the same conclusion could not be drawn from the results obtained for the sample of funds domiciled in Belgium, where load funds demonstrated lower ongoing charges.

Finally, although funds of both countries significantly charge lower OCFs to institutional investors than to retail investors, the assertion that funds do so in order to take advantage of unsophisticated investors is difficult to ascertain, since this relationship could be attributable to alternative causes. For instance, institutional investors generally invest much larger amounts of assets, therefore increasing their bargaining power (Siggelkow, 2004). Institutional funds are generally less subject to large marketing expenses and costly measures of investor protection (Lang and Köhler, 2011). Consequently, the relative reduction in the OCF charged to institutional investors could possibly be attributed to economic reasons rather than jumping to conclusions that this points to evidence of unethical practices.

6. CONCLUSION

6.1. PRACTICAL IMPLICATIONS OF THE STUDY

Following the widely discussed negative relationship between a fund's level of expenses and its gross returns and the various studies referring to the existence of fee dispersion, it was interesting to carry out a study on the level of charges incurred by investors. The recent evolution of the regulatory framework surrounding the disclosure of UCITS expenses in Europe has led to the creation of the ongoing charges figure, being an indicator of a UCITS' cost of financial services. Since UCITS are required to provide a reasonably accurate estimation of the OCF of the fund from one year to the next on their KIID, the purpose of this thesis was to attempt to explain the differences in the OCF charged rather than to construct a predictive model of the level of the OCF. In order to establish international comparisons between the determinants of a fund's ongoing charges, the empirical study was based on both Belgian and Luxembourg funds, as Luxembourg is acknowledged to be the reference hub for investment funds in Europe.

The outcomes of the study indicated significant relationships between various features of UCITS and their ongoing charges. The assets in which the fund invests appeared to greatly influence the level of the ongoing charges incurred by investors, and equity funds demanded higher ongoing charges than respectively allocation, fixed income and money market funds. Funds of funds, for their part, were seen to be subject to higher ongoing charges while institutional investors benefitted from lower ongoing charges. An analysis of the impact on a fund of the country of domicile indicated that, whilst all other determinants were equal, investors choosing to invest in Luxembourg funds paid lower ongoing charges than investors choosing to invest in Belgian funds.

By the introduction of interaction variables, three key comparative differences between the two countries under scrutiny were identified. Firstly, Luxembourg funds benefit from experience effects while Belgian funds do not enjoy such advantages. Secondly, the number of countries in which the share class is available for sale raises the ongoing charges of Luxembourg funds to a lesser extent than it does for Belgian funds, therefore confirming the assumption that the Luxembourg fund industry is more efficient than the Belgian fund industry with respect to cross-border distribution. Thirdly, load funds domiciled in

Luxembourg go hand in hand with a higher level of ongoing charges. Inversely, the impact of loads on the ongoing charges is slightly negative for funds domiciled in Belgium. Investors seeking to invest in Belgian funds should be able to examine the trade-off between incurring higher one-off fees or higher ongoing charges. Yet, as this relationship was shown to be only slightly negative, the avoidance of loads should remain the most cost-effective solution in many instances.

To summarise, when examining the main results as a whole, Luxembourg UCITS benefit from a comparative cost-advantage on ongoing charges when compared with Belgian UCITS. Such an advantage can be partly explained by the economies of experience they achieve and the relatively lower increase in charges resulting from cross-border distribution. However, this advantage should be somewhat less prevalent for an investor choosing to invest through a sales intermediary and being charged a load in exchange for the services received.

6.2. LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

Although the empirical study conducted as part of this thesis proved useful to identify some of the determinants of a fund's ongoing charges and to take into account geographical differences between Belgium and Luxembourg, it only explained about 54% of the variance in the ongoing charges reported. This suggests that some characteristics affecting fund fees were probably omitted and could be identified in further research. Likewise, the study could be extended to additional European fund industries so as to examine the determinants of the ongoing charges in these countries and the way they compare with the results obtained for Belgium and Luxembourg.

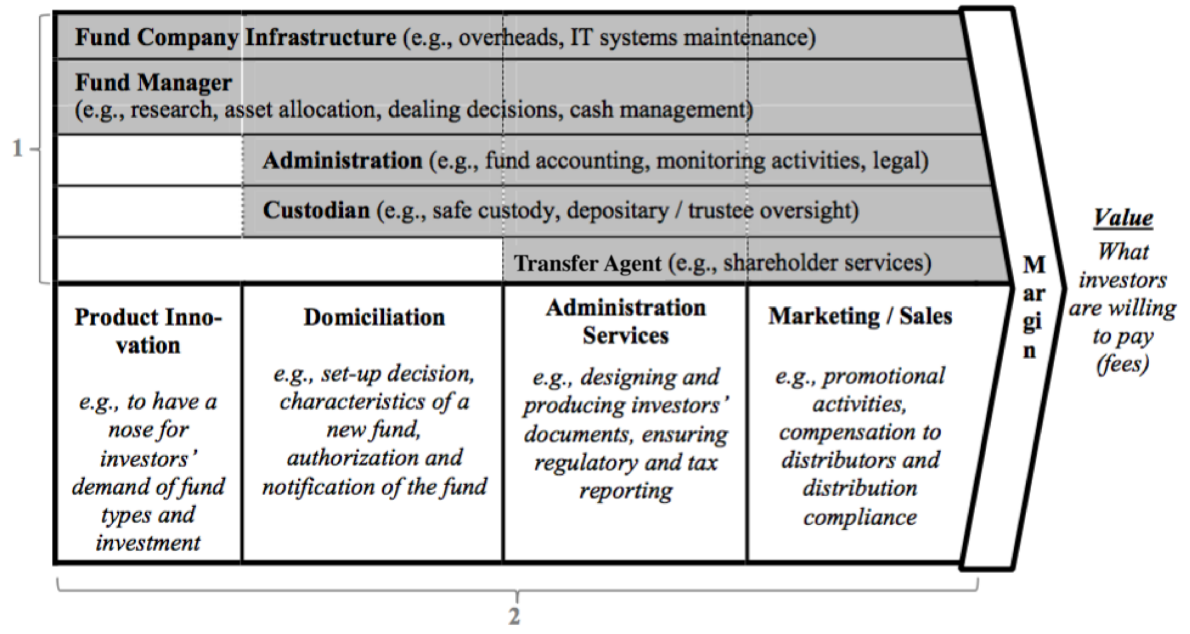
Moreover, as the OCF is a fairly new measure, the study is based on data covering a relatively short time span (i.e. four years of data) and a large proportion of the variance of the OCF explained was due to cross-sectional differences rather than time effects. A repetition of the study on larger time-series data in the future could possibly lead to alternative and more detailed interpretations. It could also be interesting to extend to an analysis of the impact of the implementation of the recent regulatory framework on the level of the ongoing charges as soon as sufficient data become available.

While this thesis concentrated on the ongoing charges incurred when investing in a UCITS, it did not set out to analyse the risk-adjusted returns associated with the funds from which the charges originate. While diverse studies cited in this thesis referred to the existence of a negative fee-performance relationship, there was no intended suggestion that more expensive mutual funds are unable to deliver superior cost-adjusted performance. Hence, it should be acknowledged that in some instances, it would be worth paying higher charges in order to access funds with higher returns. Therefore, a cost-benefit analysis should always be performed at the individual fund level.

On a final note, it should be remembered that the fees and charges incurred by investors stem from the services they receive when they decide to have their money managed. Although the cost-effectiveness of an investment should always be considered, it solely constitutes one of the various decision criteria regarded by investors at the time of entrusting their money to a financial intermediary. The investment funds industry is inherently based on trust and on the degree of investor satisfaction towards the services obtained from the people managing their assets. These considerations were not studied in the context of this thesis and could be at the origin of further studies. At the end of the day, mutual fund investors, as customers in any other industry, may accept being charged higher fees to access the services of professionals they believe to be in a better position to represent their interests.

APPENDICES

APPENDIX I: ILLUSTRATION OF THE VALUE CHAIN OF A MUTUAL FUND



Source: Lang & Schäfer, 2013.

APPENDIX II: NET ASSETS OF THE EUROPEAN INVESTMENT FUND INDUSTRY

Members	End Q4 2017		End Q3 2017		End Q4 2016	
	EUR mn	Share	EUR mn	% chg [1]	EUR mn	% chg [2]
Austria	182,882	1.2%	179,514	1.9%	173,798	5.2%
Belgium	156,232	1.0%	138,880	12.5%	126,876	23.1%
Bulgaria	654	0.0%	631	3.6%	531	23.1%
Croatia	2,966	0.0%	2,947	0.6%	2,824	5.0%
Cyprus	2,748	0.0%	2,354	16.7%	2,177	26.2%
Czechia	11,674	0.1%	10,922	6.9%	9,211	26.7%
Denmark	300,824	1.9%	293,321	2.6%	275,968	9.0%
Finland	116,254	0.7%	113,642	2.3%	106,395	9.3%
France	1,929,115	12.3%	1,931,969	-0.1%	1,798,644	7.3%
Germany	2,038,192	13.0%	2,015,694	1.1%	1,888,296	7.9%
Greece	7,834	0.1%	7,626	2.7%	7,112	10.2%
Hungary	19,768	0.1%	19,480	1.5%	18,732	5.5%
Ireland	2,396,089	15.3%	2,297,884	4.3%	2,084,748	14.9%
Italy	320,767	2.1%	315,665	1.6%	303,158	5.8%
Liechtenstein	46,396	0.3%	45,243	2.5%	44,103	5.2%
Luxembourg	4,159,614	26.6%	4,037,140	3.0%	3,701,076	12.4%
Malta	10,490	0.1%	10,057	4.3%	9,810	6.9%
Netherlands	843,488	5.4%	840,852	0.3%	801,412	5.3%
Norway	115,682	0.7%	118,527	-2.4%	108,026	7.1%
Poland	66,786	0.4%	63,595	5.0%	58,709	13.8%
Portugal	23,085	0.1%	22,797	1.3%	21,634	6.7%
Romania	9,164	0.1%	9,179	-0.2%	9,001	1.8%
Slovakia	6,578	0.0%	6,347	3.6%	5,887	11.7%
Slovenia	2,657	0.0%	2,615	1.6%	2,502	6.2%
Spain	295,265	1.9%	288,629	2.3%	268,513	10.0%
Sweden	335,421	2.1%	332,567	0.9%	303,874	10.4%
Switzerland	550,799	3.5%	541,832	1.7%	537,771	2.4%
Turkey	25,649	0.2%	26,908	-4.7%	27,267	-5.9%
United Kingdom	1,646,058	10.5%	1,589,642	3.5%	1,492,127	10.3%
All Funds	15,623,131	100.0%	15,266,459	2.3%	14,190,183	10.1%
UCITS	9,714,462	62.2%	9,435,853	3.0%	8,674,218	12.0%
AIFs	5,908,669	37.8%	5,830,607	1.3%	5,515,965	7.1%

(1) End Q4 2017 compared to end Q3 2017; (2) End Q4 2017 compared to end Q4 2016.

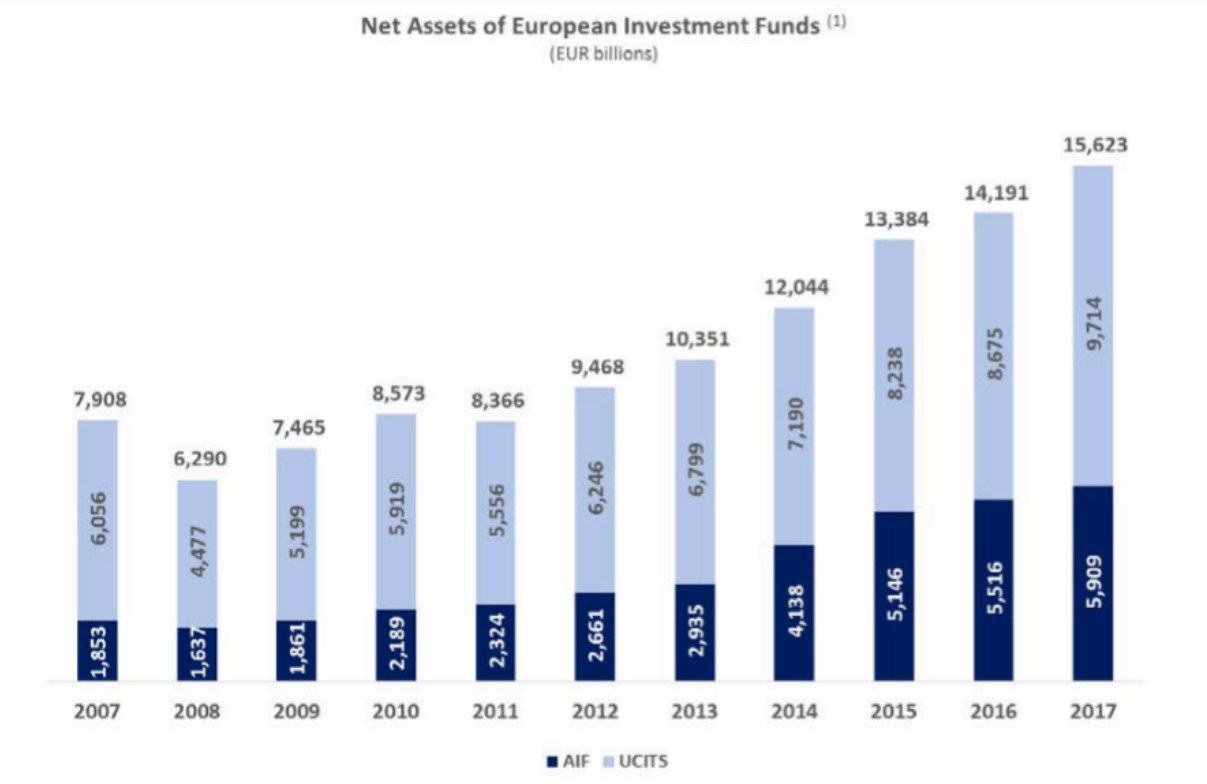
Source: EFAMA, 2018.

APPENDIX III: TABLE OF THE NUMBER OF COUNTRIES IN WHICH FUNDS ARE SOLD, BY COUNTRY

	Obs.	Mean	Median	Std. Dev.	Max.	Min.
Austria	542	1.68	1.00	0.94	8.00	1.00
Belgium	318	2.80	2.00	2.75	11.00	1.00
Switzerland	193	1.09	1.00	0.32	3.00	1.00
Germany	529	1.30	1.00	0.67	6.00	1.00
Spain	1,580	1.00	1.00	0.06	2.00	1.00
Finland	32	2.59	2.00	0.91	5.00	2.00
France	1,454	1.25	1.00	0.97	10.00	1.00
United Kingdom	690	1.81	1.00	2.23	15.00	1.00
Ireland	325	8.70	8.00	4.82	21.00	1.00
India	376	1.00	1.00	0.00	1.00	1.00
Italy	12	1.00	1.00	0.00	1.00	1.00
Luxembourg	2,934	11.97	12.00	8.16	39.00	1.00
Mexico	59	1.00	1.00	0.00	1.00	1.00
Malaysia	65	1.00	1.00	0.00	1.00	1.00
Netherlands	107	1.07	1.00	0.25	2.00	1.00
Norway	19	1.26	1.00	0.56	3.00	1.00
Portugal	45	1.00	1.00	0.00	1.00	1.00
Sweden	12	1.08	1.00	0.29	2.00	1.00
Singapore	127	1.32	1.00	0.68	5.00	1.00
Thailand	141	1.00	1.00	0.00	1.00	1.00
Taiwan	191	1.00	1.00	0.00	1.00	1.00
United States	1,984	1.05	1.00	0.23	3.00	1.00
Total	11,735	4.15	1.00	6.33	39.00	1.00

Source: Lang & Köhler, 2011.

APPENDIX IV: EVOLUTION OF THE NET ASSETS OF EUROPEAN INVESTMENT FUNDS



Source: EFAMA, 2018.

APPENDIX V: RELATIVE REDUCTIONS IN FUND RETURNS DUE TO EXPENSES, LOADS AND INFLATION

Reduction in fund returns – TER and load charges

Average rate of, and relative reductions in Return on Investment

	Absolute returns					Relative return reductions			
	Gross	Net of expenses	Net of expenses and sales charges	Net of expenses, sales and redemption fees	Net of expenses, sales, redemption fees and inflation	Net of expenses	Net of expenses and sales charges	Net of expenses, sales redemption fees	Net of expenses, sales, redemption fees and inflation
	1	2	3	4	5	6	7	8	9
	r^G	r^{nE}	r^{net}_{FL}	r^{net}_{FL+BL}	r^{net}_{FL+BL}	$(r^G-r^{nE})/r^G$	$(r^G-r^{net}_{FL})/r^G$	$(r^G-r^{net}_{FL+BL})/r^G$	$(r^G-r^{net}_{FL+BL})/r^G$
Geographical heterogeneity									
EU	8.84	7.65	7.13	7.11	6.32	13.4%	19.3%	19.8%	28.7%
AT	6.50	5.24	4.66	4.66	3.16	19.4%	28.4%	28.4%	51.4%
BE	10.25	8.70	7.93	7.07	6.27	15.1%	22.6%	31.0%	38.8%
DE	9.15	7.82	7.37	7.37	6.54	14.6%	19.4%	19.5%	28.6%
DK	9.06	7.85	7.71	7.83	7.42	13.4%	14.9%	15.2%	19.6%
ES	6.21	4.99	4.77	4.63	4.37	19.5%	23.1%	26.7%	30.8%
FI	8.58	7.45	7.33	7.35	6.18	13.2%	14.6%	16.0%	29.3%
FR	5.83	4.92	4.56	4.54	3.96	15.6%	21.7%	22.0%	31.9%
IE	7.83	7.05	6.54	6.44	6.15	10.0%	16.5%	17.0%	20.8%
IT	6.54	5.06	4.85	4.80	4.22	22.6%	25.9%	27.7%	36.4%
LU	7.62	6.35	5.61	5.56	4.77	16.6%	26.3%	27.2%	37.5%
NL	11.68	10.67	10.64	10.61	9.52	8.6%	8.9%	9.2%	18.5%
SE	11.65	10.54	10.52	10.52	10.07	9.6%	9.7%	9.7%	13.6%
UK	13.84	12.37	11.82	11.80	10.39	10.6%	14.6%	14.7%	24.9%
Asset classes/Investor type									
Equity Ret	15.54	13.82	13.18	13.15	12.21	11.1%	15.2%	15.4%	21.5%
Equity Inst	14.62	13.67	13.18	13.07	12.43	6.5%	9.8%	10.6%	15.0%
Bond Ret	5.96	4.83	4.12	4.07	3.33	18.8%	30.8%	31.9%	44.3%
Bond Inst	6.12	5.52	5.17	5.08	4.25	9.8%	15.6%	16.6%	30.2%
Mixed Ret	9.39	7.68	7.15	7.13	6.24	18.2%	23.9%	24.5%	33.9%
Mixed Inst	9.26	8.13	7.58	7.50	6.74	12.2%	18.2%	19.1%	27.3%
MMF Ret	1.42	1.15	0.94	0.92	0.34	19.0%	33.6%	34.8%	75.7%
MMF Inst	2.89	2.73	2.69	2.68	2.15	5.4%	7.0%	7.3%	25.6%
ETF	11.69	11.31	10.76	10.36	9.84	3.2%	7.9%	11.3%	15.8%
Management type									
Active	8.67	7.46	6.92	6.90	2.18	14.0%	20.2%	20.7%	29.7%
Passive	13.12	12.65	12.49	12.44	5.74	3.6%	4.8%	5.2%	12.0%
Active Equity	15.49	13.76	13.09	13.04	3.27	11.2%	15.5%	15.9%	21.7%
Passive Equity	14.82	14.32	14.20	14.16	6.31	3.4%	4.2%	4.4%	10.6%

Source: ESMA, 2017a.

APPENDIX VI: PRESENTATION OF COSTS UNDER THE PRIIPS REGULATION

Table 1: Costs over time

Investment [EUR 10 000] **Scenarios**	**If you cash in after [1] year**	**If you cash in after [recommend holding period/2]**	**If you cash in [at the end of the recommended holding period]**
Total costs	[...] %	[...] %	**[...] %**
Impact on return (RIY) per year	[...] %	[...] %	**[...] %**

Table 2: Composition of costs

This table shows the impact on return per year			
One-off costs	**Entry costs**	[...] %	The impact of the costs you pay when entering your investment. [This is the most you will pay, and you could pay less]. *[AND/OR where the costs are embedded in the price, for instance in the case of PRIPs other than investment funds]* The impact of the costs already included in the price. [This is the most you will pay, and you could pay less]. [*Where distribution costs are included in entry costs*]This includes the costs of distribution of your product.
	Exit costs	[...] %	The impact of the costs of exiting your investment when it matures.
Ongoing costs	**Portfolio transaction costs**	[...] %	The impact of the costs of us buying and selling underlying investments for the product.
	Other ongoing costs	[...] %	The impact of the costs that we take each year for managing your investments and the costs presented in Section II.
Incidental costs	**Performance fees**	[...] %	The impact of the performance fee. We take these from your investment if the product outperforms its benchmark [y by x%].
	Carried interests	[...] %	The impact of carried interests. We take these when the investment has [performed better than x%]. [A payment of y% of the final return will take place subsequently to the exit of the investment.]

Source: Commission Delegated Regulation (EU) 2017/653.

APPENDIX VII: METHODOLOGY FOR THE CALCULATION OF THE ONGOING CHARGES FIGURE

The following calculation methodology should be used by UCITS management companies for the purposes of calculating the ongoing charges figure referred to in Article 10(2)(b) of the KII implementing Regulation.

1. The management company of the UCITS shall:

(a) be responsible for the calculation of the ongoing charges figure and for its accurate statement in the KID;

(b) establish procedures that are consistent with this methodology and are adequately documented;

(c) keep records of each calculation for a period of 5 years after the last date on which that version of the KID was available to be issued.

Definition of ongoing charges to be disclosed

2. In the context of the KID, 'ongoing charges' are payments deducted from the assets of a UCITS where such deductions are required or permitted by national law and regulation, the fund rules or instrument of incorporation of the UCITS, or its prospectus. The figure to be disclosed in the KID shall be based on the total of all such payments made over a specific period, excluding the exceptions identified in (5) below.

3. The ongoing charges figure shall include all types of cost borne by the UCITS, whether they represent expenses necessarily incurred in its operation, or the remuneration of any party connected with it or providing services to it. These costs may be expressed or calculated in a variety of ways (e.g. a flat fee, a proportion of assets, a charge per transaction, etc).

4. The following list is indicative but not exhaustive of the types of ongoing charge that, if they are deducted from the assets of a UCITS, shall be taken into account in the amount to be disclosed:

(a) all payments to the following persons, including any person to whom they have delegated any function:

- the management company of the UCITS
- directors of the UCITS if an investment company
- the depositary
- the custodian(s)
- any investment adviser;

(b) all payments to any person providing outsourced services to any of the above, including:

- providers of valuation and fund accounting services
- shareholder service providers, such as the transfer agent and broker dealers that are record owners of the UCITS' shares and provide sub-accounting services to the beneficial owners of those shares;

(c) registration fees, regulatory fees and similar charges;

(d) audit fees;

(e) payments to legal and professional advisers;

(f) any costs of distribution.

5. The following charges and payments shall not form part of the amount to be disclosed as ongoing charges in the KID:

(a) entry / exit charges or commissions, or any other amount paid directly by the investor or deducted from a payment received from or due to the investor;

(b) a performance-related fee payable to the management company or any investment adviser;

(c) interest on borrowing;

(d) payments to third parties to meet costs necessarily incurred in connection with the acquisition or disposal of any asset for the UCITS' portfolio, whether those costs are explicit (e.g. brokerage charges, taxes and linked charges) or implicit (e.g. costs of dealing in fixed-interest securities, market impact costs);

(e) payments incurred for the holding of financial derivative instruments (e.g. margin calls);

(f) the value of goods or services received by the management company or any connected person in exchange for placing of dealing orders (soft commissions or any similar arrangement).

6. The exclusion in 5(d) for transaction-related costs shall not extend to:

(a) transaction-based payments made to any of the persons listed in 4(a) or (b), in respect of which the recipient is not accountable to the UCITS; all such amounts shall be taken into account in the published figure;

(b) the costs of acquiring or disposing of units in other UCITS or collective investment undertakings (CIUs), which shall be taken into account in accordance with 8(f) below.

7. Under a fee-sharing agreement, the management company or another party may be meeting, in whole or in part, operating costs that should normally be included in the ongoing charges figure.

   (a) Any remuneration of the management company (or another person) that derives from such fee-sharing agreements shall be taken into account and added to the total ongoing charges figure. Possible examples include the remuneration of a management company through a fee-sharing agreement with a broker on transaction costs, or with a custodian on stock-lending income.

   (b) There is generally no need to take into account fee-sharing agreements on expenses that are already accounted for in the ongoing charges disclosure (for example, the remuneration of a management company through a fee-sharing agreement with a fund which is captured under paragraph 4(a) above). However, in the specific case of a UCITS investing in other CIUs, any fee-sharing agreement between the management company of the UCITS and the CIU or its operator or management company shall be taken into account if it is not already captured under paragraph 8 below.

8. Where a UCITS invests a substantial proportion of its assets in other UCITS or CIUs, and so makes the disclosures required by the second paragraph of Article 50(3) of the UCITS Directive, its ongoing charges figure shall take account of the ongoing charges incurred in the underlying CIUs. The following shall be included in the calculation:

(a) if the underlying CIU is a UCITS (or a non-harmonised CIU which elects to comply with the KID disclosure requirements) its most recently available ongoing charges figure shall be used; this may be the figure published by the CIU or its operator or management company, or a figure calculated by a reliable third-party source if more up-to-date than the published figure;

(b) if the underlying CIU is operated by the UCITS management company or any linked company (i.e. within the definition in the first paragraph of Article 50(3) of the Directive), but does not fall within (a), the UCITS management company shall make a best estimate of its ongoing charges according to this methodology;

(c) if the underlying CIU does not fall within (a) or (b) and does not publish an ongoing charges figure, the UCITS management company shall either use any published information that represents a reasonable substitute for that figure (e.g. a total expense ratio published by a

reliable source) or else shall make a best estimate of its maximum level based on scrutiny of the CIU's current prospectus and most recently published report and accounts;

(d) where CIUs falling within (c) represent less than 15% of the UCITS' assets, it shall be sufficient to use the published annual management charge for each of those CIUs instead of estimating their ongoing charges;

(e) in all cases, the ongoing charges figure may be reduced to the extent that there is any arrangement in place (and that is not already reflected in the fund's profit and loss account) for the investing UCITS to receive a rebate or retrocession of charges from the underlying CIU;

(f) in cases where subscription and / or redemption fees are payable by the UCITS in relation to the acquisition or disposal of units in an underlying CIU, the monetary value of those fees shall be aggregated for the period under review and taken into account in the calculation of the ongoing charges figure.

9. In the case of a UCITS which is an umbrella, each constituent compartment or sub-fund shall be treated separately for the purpose of this section, but any charges attributable to the UCITS as a whole shall be apportioned among all of the sub-funds on a basis that is fair to all investors.

Methodology for calculation (except for new funds)

10. The ongoing charges figure shall be the ratio of the total discloseable costs to the average net assets of the UCITS, calculated according to this section. The figure shall be expressed as a percentage to two decimal places.

11. As provided for in section 3 of the KII implementing Regulation, the ongoing charges figure shall be calculated at least once a year, on a ex-post basis. Where it is considered unsuitable to use the ex-post figure because of a material change (e.g. an increase in management fees), an estimate may be used instead until reliable ex-post figures reflecting the impact of the material change become available.

12. A separate calculation shall be performed for each share class, but if the units of two or more classes rank pari passu, a single calculation may be performed for them (see also Article 26 of the KII implementing Regulation on the use of a representative class).

13. The ex-post figure shall be based on recent cost calculations which the management company has determined on reasonable grounds to be appropriate for that purpose. The figure may be based on the costs set out in the UCITS' statement of operations published in its latest annual or half-yearly report, if this is sufficiently recent; if it is not, a comparable calculation based on the costs charged during a more recent 12-month period shall be used instead. The costs are assessed on an 'all taxes included' basis, which means that the gross value of expenses shall be used.

14. The average net assets shall relate to the same period as the costs, and be calculated using figures based on the UCITS' net assets at each calculation of the NAV (e.g. daily NAVs where this is the normal frequency of calculation approved by the UCITS competent authority).

15. Where the ongoing charges attributable to an underlying CIU are to be taken into account:

(a) the ongoing charges figure (or equivalent) of each underlying CIU is pro-rated according to the proportion of the UCITS' net asset value which that CIU represents at the relevant date (being the date at which the UCITS figures are taken);

(b) all the pro-rated figures are added to the ongoing charges figure of the investing UCITS itself, thus presenting a single total (a 'synthetic' ongoing charges figure).

16. Information about the ongoing charges figures that were applicable during previous years / periods should be published at the location (e.g. the management company's website) which is specified in the KID as the general source of further information for investors who require it.

Methodology for calculation for new funds

17. The same methodology shall apply as for an ex-post calculation, subject to the following differences:

(a) paragraphs 13 and 14 above do not apply and estimates shall be used instead in accordance with Article 13 of the KII implementing Regulation;

(b) if, in the management company's opinion, expressing a figure to two decimal places would be likely to suggest a spurious degree of accuracy to investors, it shall be sufficient to express that figure to one decimal place;

(c) it shall be assumed, unless there is a statement in the prospectus to the contrary, that no rebates or fee waivers will be received to the benefit of the fund

18. The management company shall ensure that the accuracy of the estimated figure is kept under review. The management company shall determine when it is appropriate to begin using ex-post figures rather than an estimate; but in any case it shall, no later than 12 months after the date on which units were first offered for sale in any Member State, review the accuracy of the estimate by calculating a figure on an ex-post basis.

Source: CESR Guidelines 10/674, 2010.

APPENDIX VIII: PAIRWISE CORRELATIONS BETWEEN THE INDEPENDENT VARIABLES

	SIZE_SC	SIZE_F~D	AGE	COUNTR~S	ALLOC	FI	MMF	INS	LOAD	FOF	BEL
SIZE_SC	1.0000										
SIZE_FUND	0.3733	1.0000									
AGE	0.2233	-0.1972	1.0000								
COUNTRIES_~S	0.0540	-0.0092	-0.0273	1.0000							
ALLOC	0.0315	0.0468	0.0075	-0.0416	1.0000						
FI	-0.0014	0.0702	-0.1552	-0.0350	-0.1944	1.0000					
MMF	0.0570	0.0616	0.1349	-0.0261	-0.0541	-0.1312	1.0000				
INS	0.1935	0.0804	-0.1447	0.0232	-0.0414	0.0177	0.0962	1.0000			
LOAD	0.0444	0.0242	0.1071	-0.0296	0.0343	-0.0510	-0.1439	-0.2448	1.0000		
FOF	-0.0004	-0.1250	0.2081	-0.0932	0.4467	-0.0759	-0.0274	-0.0866	0.0070	1.0000	
BEL	-0.0611	-0.2643	0.2862	-0.2565	0.0660	-0.0457	0.0499	-0.1196	-0.0040	0.2743	1.0000

Source: Stata, on data retrieved from Morningstar Direct, 2018.

APPENDIX IX: DESCRIPTIVE STATISTICS ON OCF DISTRIBUTION, FOR BOTH COUNTRIES

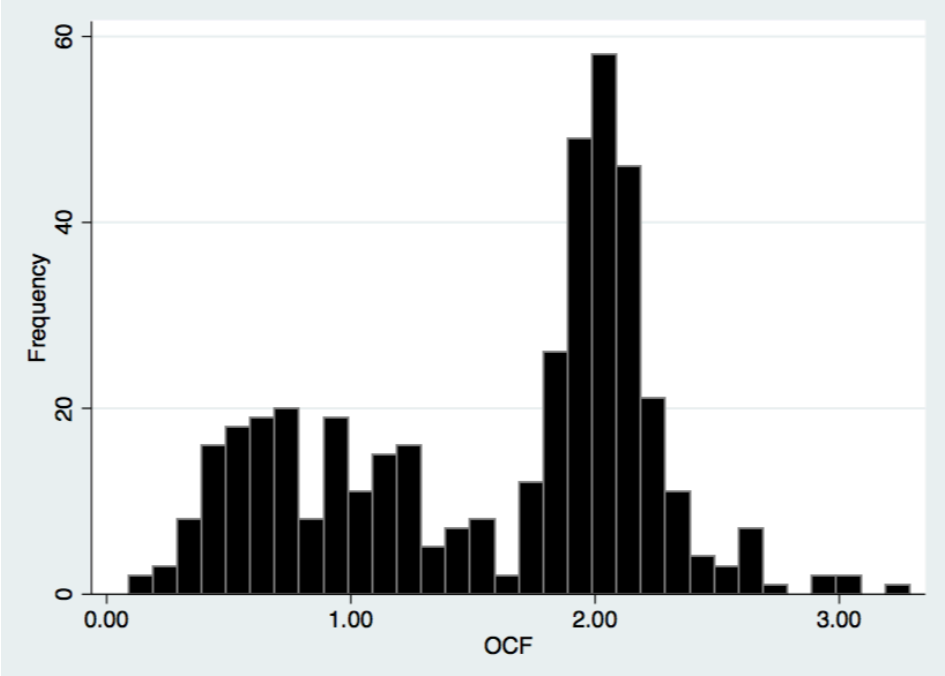
OCF

	Percentiles	Smallest		
1%	.08	.01		
5%	.31	.02		
10%	.53	.02	Obs	5340
25%	.83	.02	Sum of Wgt.	5340
50%	1.32		Mean	1.382639
		Largest	Std. Dev.	.6963471
75%	1.86	3.78		
90%	2.29	3.9	Variance	.4848993
95%	2.4	4.2	Skewness	.3269418
99%	3.31	4.46	Kurtosis	2.680111

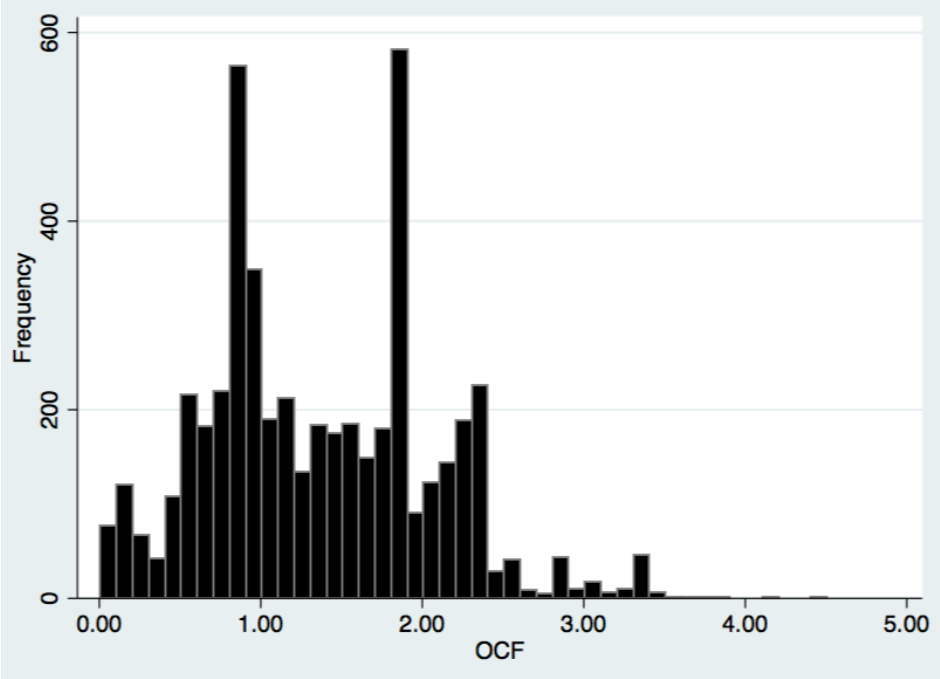
Source: Stata, on data retrieved from Morningstar Direct, 2018.

APPENDIX X: HISTOGRAMS OF THE DISTRIBUTION OF THE OCF, BY COUNTRY

Histogram 1: Distribution of the OCF in Belgium



Histogram 2: Distribution of the OCF in Luxembourg



Source: Stata, on data retrieved from Morningstar Direct, 2018.

APPENDIX XI: DESCRIPTIVE STATISTICS ON THE DISTRIBUTION OF THE OCF, BY COUNTRY

Table 1: Belgium

OCF

	Percentiles	Smallest		
1%	.22	.14		
5%	.43	.14		
10%	.555	.2	Obs	420
25%	.92	.2	Sum of Wgt.	420
50%	1.86		Mean	1.571643
		Largest	Std. Dev.	.6759789
75%	2.09	2.96		
90%	2.21	3.04	Variance	.4569474
95%	2.365	3.05	Skewness	-.3884684
99%	2.93	3.27	Kurtosis	1.978357

Table 2: Luxembourg

OCF

	Percentiles	Smallest		
1%	.07	.01		
5%	.28	.02		
10%	.53	.02	Obs	4920
25%	.83	.02	Sum of Wgt.	4920
50%	1.29		Mean	1.366504
		Largest	Std. Dev.	.6957502
75%	1.85	3.78		
90%	2.3	3.9	Variance	.4840683
95%	2.4	4.2	Skewness	.388431
99%	3.34	4.46	Kurtosis	2.79883

Source: Stata, on data retrieved from Morningstar Direct, 2018.

APPENDIX XII: RESULTS OF THE RANDOM EFFECTS REGRESSIONS

Panel	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable	OCF	OCF	OCF	OCF	OCF	OCF
Independent variables						
SIZE_SC	- 0.0018 (0.0015)	- 0.0019 (0.0015)	- 0.0021 (0.0015)	- 0.0013 (0.0015)	- 0.0014 (0.0015)	- 0.0010 (0.0016)
SIZE_FUND	- 0.0022 (0.0025)	- 0.0022 (0.0025)	- 0.0019 (0.0025)	- 0.0023 (0.0025)	- 0.0019 (0.0025)	- 0.0031 (0.0024)
AGE	- 0.0069*** (0.0011)	- 0.0068*** (0.0011)	- 0.0063*** (0.0011)	- 0.0071*** (0.0011)	- 0.0072*** (0.0011)	- 0.0074*** (0.0012)
COUNTRIES_AFS		0.0062** (0.0031)	0.0031 (0.0027)	0.0059*** (0.0019)	0.0070*** (0.0021)	0.0065*** (0.0021)
ALLOC			- 0.1049* (0.0599)	- 0.2295*** (0.0478)	- 0.2222*** (0.0483)	- 0.2305*** (0.0473)
FI			- 0.6295*** (0.0352)	- 0.5954*** (0.0289)	- 0.5933*** (0.0291)	- 0.5972*** (0.0291)
MMF			- 1.3932*** (0.0392)	- 1.1152*** (0.0509)	- 1.1221*** (0.0512)	- 1.1050*** (0.0524)
INS				- 0.7349*** (0.0245)	- 0.7285*** (0.0249)	- 0.7346*** (0.0250)
LOAD				0.3245*** (0.0407)	0.3270*** (0.0404)	0.3626*** (0.0412)
FOF				0.3434*** (0.1015)	0.2905*** (0.1006)	0.2909*** (0.0859)
BEL					0.1054** (0.0426)	0.0352 (0.3135)
SIZE_SC*BEL						-0.0009 (0.0029)
SIZE_FUND*BEL						0.0126 (0.0154)
AGE*BEL						0.0031 (0.0042)
COUNTRIES_AFS*BEL						0.0354* (0.0187)
LOAD*BEL						-0.4160*** (0.1125)
Model Summary						
Wald Chi-square	43.85	48.06	1411.29	2357.72	2393.80	2399.87
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R^2(%)	1.38	0.24	25.44	54.07	54.17	54.68
Value of ϱ (%)	98.66	98.65	98.16	97.21	97.21	97.18
# Observations	5340	5340	5340	5340	5340	5340

- The table displays the coefficients of the panel regressions and their robust standard errors in parentheses.
- *, ** and *** indicate significance respectively at the 10% level, 5% level and 1% level.

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EXECUTIVE SUMMARY

In an era of increased transparency and accountability towards investors, a dense legal framework has recently been developed around the activities of European mutual funds. One of its key purposes is to enhance investor information. It includes, inter alia, measures aimed at improving the disclosure of information regarding fees and charges incurred by investors. The ongoing charges figure is one of the pieces of information that have to be disclosed and it serves as a proxy of the cost of the services provided to a fund. These charges remunerate the various intermediaries involved in the activities of a fund and are paid out of the net asset value of the fund, therefore reducing the returns actually paid out to investors and highlighting the need to consider them carefully.

This thesis aims at analysing the individual features of UCITS determining the level of ongoing charges incurred by investors. The analysis is based on both Belgian and Luxembourg UCITS in order to examine whether the country of domicile of the fund leads these features to have a distinct impact on the ongoing charges figure.

The main results of the random effects regressions conducted as part of this thesis indicate that some of the analysed features, such as the type of fund, the particularity of being a fund of funds or an institutional fund significantly explain the level of the OCF. The country of domicile is also found to influence the level of the ongoing charges and Luxembourg UCITS appear to benefit from a comparative cost-advantage on ongoing charges when compared with Belgian UCITS. Such a difference is partly attributable to the economies of experience achieved exclusively by Luxembourg funds. It is also explained by the relatively lower increase in ongoing charges resulting from cross-border distribution. Yet, the results obtained suggest that this advantage is less prevalent for an investor choosing to invest through a sales intermediary and being charged a load.

Keywords: Ongoing charges figure - recurring charges - determinants - mutual funds - UCITS - Belgium - Luxembourg.