

# Will alternative Ucits ever be loved enough to replace hedge funds?<sup>☆</sup>

30th September 2010

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## Abstract

This article analyses a new data base on Ucits “hedge funds”, or alternative Ucits funds. These are EU regulated investment vehicles allowing for a relatively large degree of latitude for fund managers which makes them attractive for hedge fund-like strategies. The asset under management of alternative Ucits funds has seen large capital inflows, in contrast to the hedge fund industry as a whole, and was in Q1 2010 managing €83 bn (\$121 bn). We examine the performance of these alternative Ucits and compare them to the performance of hedge funds. We do not find any conclusive evidence that the less regulated hedge funds outperform alternative Ucits funds on a risk adjusted basis, even though we find some cross-sectional evidence. We also find a significant difference in level of risk between hedge funds and alternative Ucits funds with the latter bearing less risk. This is anticipated due to the limits on risk and leverage under the Ucits regulation.

*Key words:* Ucits, hedge funds, portfolio analysis, fund regulation,

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<sup>☆</sup>We are grateful for valuable comments from Didier Prime. All errors are our responsibility.

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## 1. Introduction

The European Union's (EU) directive on Undertakings for Collective Investment in Transferable Securities (Ucits) is a regulatory framework which permits hedge fund-like investment strategies. The Ucits framework has grown to become popular as an investment vehicle for hedge fund strategies. For sake of clarity we distinguish hedge fund-like strategies launched under the Ucits framework by referring them as alternative Ucits funds. We find in this article that the aggregate asset under management (AUM) of this segment have grown 500% during the last 4 years to reach €83 bn in 2010. This can be compared with the overall hedge fund industry which according to Hedge Fund Research (HFR) grew only 2% over the same period to €1240 bn.

The Ucits brand has become somewhat a seal-of-approval for alternative investments and there is anecdotal evidence that institutional investors focus exclusively on alternative Ucits funds in favor of hedge funds. Furthermore, there are reports that the Ucits brand enjoys much attention outside of Europe from regulators and investors alike.

Launching hedge funds under the Ucits framework is, however, not without dispute. While no precise definition of hedge funds exists, one central concept of this investment vehicle is that they should have large flexibility and few restrictions on when and which investment instruments they use to achieve high positive returns.

Despite the large attention alternative Ucits funds have received in the investment community no research has to our knowledge been conducted on the performance of alternative Ucits funds. This article gives a tentative answer by in particular analyzing the difference in performance between alternative Ucits funds and hedge funds. We focus on three areas for which the Ucits framework may affect the returns. Firstly, restriction on the level of risk and leverage alternative Ucits funds are allowed to take is likely to result in different risk and return levels as compared to hedge funds. Secondly, limitations on eligible investment instruments for Ucits should result in different risk exposures as compared to hedge funds. Thirdly, higher regulation should provide an investment opportunity set which is less prone to contain funds with extreme returns, to this end we analyses and compare the distribution of return and risk measures of alternative Ucits funds and hedge funds.

Our research is closest to the article by Agarwal, Boyson, and Naik (2009) which examine a dataset of US hedge mutual funds. These are mutual funds which employ hedge fund like strategies but, as in the case with alternative Ucits funds, are under higher regulatory scrutiny. They find hedge mutual funds to underperform lightly regulated hedge funds and they attribute this to less regulation and more flexibility in fee structures which creates better incentive structures for hedge fund managers. There are, however, significant difference with their database and the one we use. Alternative Ucits funds in our database have no restrictions on incentive structures. Furthermore, our database is significantly larger in terms of number of funds and AUM.

Our research is similar to that of Koski and Pontiff (1999), Deli and Varma (2002) and Almazan *et al* (2004) which investigate the differences in performance of mutual funds which use and do not use derivatives. Koski and Pontiff find that performance and risk levels are similar between funds with and without derivatives. Furthermore they find that the added flexibility through the use of derivatives enhance the management of risk exposure. Deli and Varma in particular confirm the added efficiency gained by the use of derivatives. Almazan *et al.* which find that restricting manager investment latitude minimize the agency costs by preventing the manager from strategically altering the fund's risk and increasing the value of future compensation.

Finally, our research also belongs to the large literature on hedge fund performance evaluation. E.g. Liang (1999), Agarwal and Naik (2000), Fung and Hsieh (2001, 2004), Fung *et al.* (2008), Brown, Goetzmann and Liang (2004), Hasanhodzic and Lo (2007), Wallerstein, Tuchschnid, and Sassan (2010), and Gibson-Brandon and Wang (2010).

The primary contributions of this research are as follows. First we provide with empirical data on the alternative Ucits fund universe. As mentioned above the growth has been large in absolute terms and huge on relative terms with traditional hedge funds.

Secondly, we document the differences in the return and risk of alternative Ucits funds and of hedge funds. We find absolute returns to be higher for a composite alternative Ucits index as compared to composite hedge fund indices. Risk-adjusted performance, or alpha, is slightly lower for the Ucits index at 2.6% annually to be compared with 2.9% for the composite hedge fund index. However, the alpha of alternative Ucits index is significant unlike the alpha for the hedge fund index. We do, however, find cross-sectional evidence that hedge funds outperform alternative Ucits both in absolute and

risk-adjusted terms. Risk levels of alternative Ucits funds are at a 3 to 4 order of magnitude lower than for hedge funds. We furthermore find alternative Ucits funds to have lower exposures to more risky assets and more illiquid assets than hedge funds.

Finally, we analyze the distribution of various measures on cross-sectional samples of alternative Ucits funds and hedge funds. We use this as a proxy for the characteristics of the investment opportunity set of alternative Ucits funds as compared to the investment opportunity set of hedge funds. Our results support the assertion that there are significant differences in the investment opportunity set where the sample of alternative Ucits funds exhibit significantly lower dispersion in return and risk characteristics than the sample of hedge funds.

This article has the following structure. Section 2 gives an overview of the Ucits regulation. Section 3 presents the data and some empirical data on the industry. Section 4 presents the performance evaluation of alternative Ucits funds. Section 5 concludes.

## **2. Hedge funds under the Ucits structure**

Ucits was a directive implemented by the European Union (EU) in 1985 aimed to facilitate cross-border marketing of investment funds and maintaining a high level of investor protection. The tenants of the directive are to regulate the organization and oversight of Ucits funds and impose constraint concerning diversification, liquidity, and use of leverage.

The limited definition of permitted assets in the first Ucits directive in 1985 hampered the interest from asset managers to adopt the fund structure. This led to the drafting of a new directive in the early 1990s which was in fact never adopted since it was considered too ambitious in scope. However, in the decade following 2000 the EU Commission has adopted and applied several significant directives which somewhat vaguely is referred to as Ucits III.<sup>1</sup> In particular, the Ucits III structure permits more sophisticated investment strategies like hedge funds to be launched under its structure. In July 2010 the EU Commission adopted a new Ucits directive, often referred to as Ucits IV, with significant regulatory changes which will apply from July 2011.<sup>2</sup>

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<sup>1</sup>See Council Directive 85/611/EEC.

<sup>2</sup>See Council Directive 2009/65/EC

Since our analysis concerns hedge funds-like strategies launched under the Ucits III structure we will not detail the new Ucits IV directive.

The Ucits framework is more precisely an EU directive and as under the EU constitution this implies that each EU member state is obliged to put a directive into national law before a certain deadline. However, each country has some latitude in how to implement each directive. In the case of the Ucits directive this has led to some significant regulatory differences between member states.

It is close at hand to imagine that fund managers go and seek out the most lax implementation of the Ucits directive. However, a report on Ucits by PricewaterhouseCoopers (PwC) in 2008 on behalf of the European Commission would not confirm this. The PwC report found in interviews with Ucits fund managers that the managers did not take such an approach in selecting Ucits domicile. Instead it was issues as operational presence in fund domicile and the reputation of that domicile. Our own discussions with hedge fund managers to some extent confirm this view. However, the operational presence is not of main concern. It is rather the experience of the regulatory body of a domicile in supporting alternative fund launches which is of prime concern. As shall be apparent in the following section, Luxembourg and to some extent Ireland with increasing pace has for these reasons become the main domicile of alternative Ucits funds.

This section will give a brief overview of Ucits directive and some of its implementations since a complete outline of all EU member state's implementations of the Ucits directive is not in the scope of this article.<sup>3</sup>

### *2.1. Eligible investment instruments*

The Ucits directive is on many accounts vague on the investment instruments which should be eligible for Ucits. In order to clear the ambiguity in the directive the EU commission granted The Committee of European Securities Regulators (CESR) the mandate to issue guidelines (CESR/07-044b) on which investment instruments should be allowed under the Ucits directive.

In general, shares in companies, bonds (government and corporate), and most forms of derivatives on bonds and shares are eligible instruments for Ucits funds. In addition the investment instrument must be easily traded in liquid markets.

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<sup>3</sup>The interested reader is referred to PricewaterhouseCoopers' 2008 report on Ucits.

Most jurisdictions do not allow investments in physical commodities or certificates which represent them. The main exception is the German regulation which does allow holdings in commodities certificates. Hedge fund, private equity and real estate holdings are not allowed. However, the Luxembourg regulation allows Ucits to invest in closed-ended real estate investment trust (REIT) funds and closed-ended hedge funds.

Many jurisdictions, however, allow investment in indices representative of such non-eligible assets as physical commodities or hedge funds.

In general, Ucits funds are allowed to synthetically achieve short positions through derivatives. France and Ireland are the exceptions where limited amounts of short selling are allowed. There are, however, additional rules which require the short position to be adequately covered, either by the underlying asset or by an asset which is highly correlated to the underlying.

An exemption in the Ucits directive allows Ucits to hold up to 10%, often called the “trash ratio”, in non-eligible asset. This in practice allows investments in assets like hedge funds and private equity.

## *2.2. Risk management*

The most significant requirement for a Ucits fund on organizational aspects is that the fund management company must have the operational structure to have a separate risk management team, which is “independent of the units in charge of making portfolio management decisions”.<sup>4</sup> Ucits funds are required to produce risk reports on a daily basis. The Ucits fund is required to employ a risk-management process which enables it to monitor and measure at any time the risk of the positions and their contribution to the overall risk profile of the portfolio. Ucits regulations give particular emphasis to the following areas of risk: the use of leverage, liquidity, concentration risk, and counterparty risk.

The 2004 Council recommendation on the use of financial derivative instruments in Ucits introduces the categorization of sophisticated and non-sophisticated Ucits funds. The distinction of these two is far from clear cut, however, most importantly sophisticated are required to employ a more exhaustive risk management process. To date only four member states—Luxembourg, Ireland, France, and Germany—have so far implemented the use of sophisticated and non-sophisticated Ucits funds.

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<sup>4</sup>See CESR’s Circular CSSF 07/308.

Many implementations of the Ucits directive center its risk management regulations for Ucits funds on the value at risk (VaR) measure. VaR is an estimate of the maximum loss a portfolio will exhibit over a certain time period and at a certain confidence level. Most countries distinguish two cases of acceptable VaR levels for Ucits: relative VaR and absolute VaR. Relative VaR is chosen if there exist a suitable reference index. Then the VaR of the Ucits may not exceed twice the level of VaR of the reference index. The absolute VaR approach is chosen if a reference index does not exist. Then the VaR of the Ucits may not exceed a specific absolute percentage of the net asset value (NAV). Most jurisdictions have ruled that the 99%, monthly VaR may not exceed 20% of NAV. The VaR measure is well-understood to be bad at estimating losses during extreme financial events like the credit crises of 2008. Sophisticated Ucits which are using the absolute VaR approach are also required to conduct, at least monthly, stress tests to gauge the risk of unusual market movements, or tail-risk.

### *2.2.1. Leverage*

Ucits funds are in general only allowed to achieve leverage through the use of derivatives. Leverage through borrowing is prohibited for Ucits funds. In practice there are two approaches to define acceptable leverage levels for Ucits: commitment approach or VaR and stress test.

The commitment approach is applied to all non-sophisticated Ucits and defines a limit of 200% leverage of NAV.<sup>5</sup> However, it is also possible that the VaR requirements may limit the leverage to less than 200%.

Sophisticated Ucits does not have an explicit rule which limits leverage. Instead, leverage is limited by the relative or absolute VaR requirements. That is the 99%, monthly VaR may not exceed twice the level of a reference portfolio or the monthly, 99% VaR may not exceed 20% of NAV. If the absolute VaR approach is used, the stress test may also impose limits on leverage.

Using VaR as a risk-metrics is not without controversy. Firstly, as mentioned before it poorly captures extreme event risk. Secondly, the metric lack an unambiguous estimation process since it relies heavily on the distribution model which is assumed to represent fund returns. Thirdly, the dependencies

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<sup>5</sup>The exposure of derivatives is calculated as  $\text{nbr. contracts} \times \text{nbr. of shares} \times \text{option's delta}$ .

between securities returns in the portfolio heavily influence VaR values and the choice to model this highly influence the dependencies estimation.<sup>6</sup>

Jorion (2000) gives an extensive outline of how among others the use of VaR severely distorted the risk profile of Long-Term Capital Management (LTCM), a large hedge fund which went under in 1998. Indeed, Jorion use the figures which LTCM provided to investors and find their estimates of the monthly, 99% VaR to have been about 9% of NAV. Far from the 20% required by Ucits funds and yet it did not prevent LTCM to blow up despite strict internal risk control.

### *2.2.2. Concentration and counterparty risk*

The Ucits directive stipulate an array of rules concerned with concentration and counterparty risk.<sup>7</sup> These rules are in general the same in regulatory implementations across member states. The more significant investment limit rules are that exposure to any security or money market instruments by the same issuer may not exceed 10% of NAV, and in combination with derivatives it may not exceed 20% of NAV. Special rules applies to securities or money market instruments which are issued or guaranteed by a member state of the EU where the maximum exposure is 35% of NAV.

Fund of funds are possible to structure under Ucits regulations. In a Ucits fund of funds, the individual holding of other funds is capped at 20% of NAV. Furthermore, in aggregate they are allowed to hold no more than 30% of NAV in non-Ucits funds.

Over-the-counter (OTC) derivatives are to large degree eligible investments for Ucits funds. However, there are some regulations to limit the counterparty risk towards the issuer of the derivative. Ucits fund are regulated to limit any individual OTC derivative transaction to not exceed 10% of NAV if the counterparty is a credit institution. The total exposure on all transactions towards one issuer is limited to 20%. There are, however, exceptions to these regulations where Ucits are allowed to net their positions on OTC derivatives.

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<sup>6</sup>See McNeil, Frey, and Embrechts (2005) for an extensive overview of using VaR as risk measure.

<sup>7</sup>See directive 85/611/EEC article 22-26.



### *2.2.3. Liquidity*

Ucits funds are required to consider “liquidity risk [...] when investing in any financial instrument”.<sup>8</sup> In practice this means that they are advised to consider such liquidity related factors as bid-ask spread and quality of secondary market. They are specifically required to be able to allow 20% of NAV to be redeemed at any point. The fund is required to value their investments at least twice a month. Illiquid instrument are allowed to be held (up to 10% of NAV) as long as the fund is able to meet foreseeable redemption requests.

The liquidity offered to clients is at least twice a month. There are regulations concerning derivatives which demand daily liquidity which cause many alternative Ucits funds to keep this level of liquidity to clients. However, some funds impose a 5-days notice period thus clients effectively have something closer to weekly liquidity. Despite the notice period, these liquidity frequency is far higher than the monthly or quarterly liquidity offered by hedge funds in general.

Ucits are allowed to impose gates provisions under unusual market conditions which caught some investors with surprise during the financial crises of 2008. The gates provision is, however, capped at 10% of net asset value and can only extend over the offered liquidity period times ten.

### *2.2.4. Transparency*

Ucits funds are required to provide NAV to authorities at least twice a week and publish them at least twice a month to investors. The fund is also required to provide various publications in order facilitate adequate information as basis for investment decision. In particular they must provide a simplified prospectus which gives a short definition of the Ucits’ objectives, a brief assessment of the fund’s risk profile, and historical performance.

## **3. Overview of the data**

### *3.1. Data*

The data has been collected from NARA Capital’s UCITS Alternative Index (UAI) database on alternative Ucits funds. The database contains 522 funds and spans over the period January 2006 to end of May 2010. Return

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<sup>8</sup>See Circular CSSF 08/339.

time series are net-of-fees and time series on AUM is denominated in euro. Fund data have only been collected from the current Ucits vehicle, i.e. no prior offshore performance is included. Data has been collected since June 2009. Between June 2009 and May 2010 only 3 funds in the database has ceased operations. However, in our analysis we have excluded these three funds. Our analysis is focused on funds denominated in EUR for the natural reason that these funds constitute the major share of funds in the database.

The UAI database providers employ multiple rules when including a new fund in the database. In brief, the fund has to comply with the most recent Ucits regulation. The fund should furthermore be able to “take short positions, target absolute returns and charge performance fees”.<sup>9</sup>

### *3.2. Data biases*

Hedge fund databases suffer in general from three biases, mostly arising from the opaque and unregulated nature of the industry. As shall be detailed below, our database is to a somewhat less extent affected by these biases.

Selection bias is due to the selection process of data vendors where they are the ones who seek out and decide, with the consent of hedge fund managers, which funds to include in the database. Thus, there is no guarantee that the data vendor covers the whole universe of hedge funds. In the case of the UAI database; as long as Ucits funds concur with UAI’s selection criteria they will be included in the database. Importantly, selection bias is not induced by a hedge fund manager’s interest to be included or not.

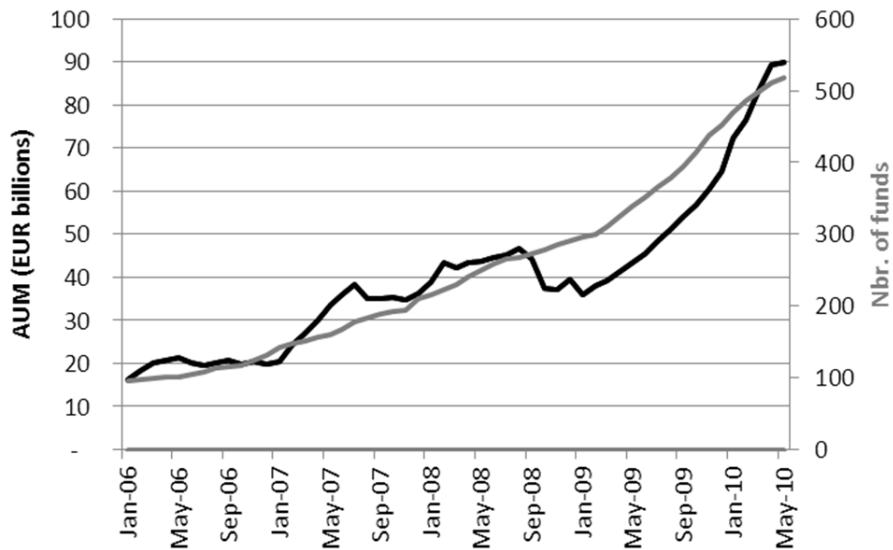
Survivorship bias arises since data vendors often only keep operating funds in their databases. Hence, the funds which has ceased operations or decided not to report fund returns is not available. Since funds which have ceased operations often have worse performance this gives an upward bias on aggregate performance. For regulatory reasons Ucits funds are not allowed to cease reporting returns hence this is not an issue in our data base. However, as mentioned above our database does not have information of defunct funds prior to June 2009. It is safe to assume that there were alternative Ucits funds which went under during the credit crises. However, the attrition rate where data exist (June 2009 to May 2010) in our data base is only 0.6%. This can be compared with an annual attrition rate of 4% in the hedge fund

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<sup>9</sup>See UCITS Alternative Index Methodology (2010) for more precise information on selection criteria.

industry in during 2001-2007 and as high as 13% and 9% during 2008 and 2009 respectively, see IFSL’s “Hedge Funds 2010” (2010).

Instant-history bias is due to hedge fund managers’ strong incentive to put up hedge funds on a trial period and if returns are not stellar they never report the returns to the data vendor. Instant-history bias does not exist in the UAI database since Ucits fund managers do not have this flexibility.



**Figure 1** – The growth in AUM (left axis) and number of alternative Ucits funds (right axis), excluding fund of funds.

### 3.3. General statistics and asset under management

The growth of alternative Ucits funds, both in numbers and by AUM, has been rapid over recent years. At the beginning of 2006 the aggregate AUM of alternative Ucits funds, excluding fund of funds, was €16.2 bn (\$20 bn) which grew more than five-fold to the first quarter of 2010 when AUM was €83 bn (\$121 bn) according to Ucits Alternative Industry report Q1 2010. To be compared with that of the whole hedge fund industry which over the same period only grew around 2% (in euro terms) from €1210 bn (\$1464 bn) to €1240 bn (\$1668 bn) according to HFR Industry Report Q1 2010.<sup>10</sup>

<sup>10</sup>The HFR and UAI database are not distinctly different data bases, hence part of the growth in HFR database is indeed attributed to inflows in alternative Ucits funds.

Figure 1 presents the evolution of the aggregate AUM of alternative Ucits funds (excluding fund of funds) as well as the evolution of the number of funds. The figure in particular illustrates the rapid growth of the industry over recent years.

	# of funds	Share of tot. # funds (%)	AUM (bn. EUR)	Share of tot. AUM (%)
CTA	26	5.4	3.07	3.5
Macro	110	22.9	20.93	23.8
Long/short equity	119	24.7	17.80	20.3
Equity market neutral	37	7.7	5.71	6.5
Event driven	11	2.3	0.78	0.9
Fixed income	67	13.9	24.95	28.4
Emerging markets	34	7.1	3.71	4.2
Commodities	14	2.9	1.20	1.4
FX	36	7.5	3.36	3.8
Multi-strategy	27	5.6	6.38	7.3
Fund of funds	41	—	2.03	—

**Table 1** – *Descriptive statistics on strategy level on the number of alternative Ucits funds and size of AUM at the end of May 2010.*

UAI database have divided funds according to strategy. Table 1 lists these categories and presents some statistics on alternative Ucits funds by strategy level as of end of May 2010. The first and second column shows the number of alternative Ucits funds according to strategy and their share out of total number of funds. The third and fourth column shows the aggregate AUM within the strategy and the percentage share of total AUM (excluding fund of funds). The table shows that macro, long/short equity, and fixed income are the predominant strategies for alternative Ucits funds and constitute as much as 72% in terms of AUM, however, only 61% in number of funds.

Table 2 presents the domicile of alternative Ucits funds as of end of June 2010. There is a significant bias to domicile the fund in Luxembourg with almost 50% of funds choosing this jurisdiction. 36% of funds is registered in Ireland and France. This pattern is symptomatic to the fact that in particular Luxembourg and Ireland have put much effort to facilitate a friendly framework towards alternative Ucits funds.

An estimated 40-60% are labelled as sophisticated Ucits in the database which is an indication that not all hedge fund strategies requires this format of the Ucits regulation.

## 4. Performance analysis

This section evaluates the performance of alternative Ucits from two perspectives. First the raw returns of alternative Ucits funds are presented, then follows a cross-sectional analysis of dispersions between alternative Ucits funds and hedge funds.

### 4.1. Raw Returns

This section analyses funds denominated in EUR. With 428 alternative Ucits funds in our dataset, concentrating on those covering the full sample period January 2008 to May 2010 we are left with a sample of 191 funds. The cross-sectional homogeneous sample period facilitate a coherent comparison of funds since the recent years have experiences significant changes in risk levels and risk premiums.

Table 3 presents cross-sectional average performance of alternative Ucits funds. The first column, presenting the cross-sectional average annualized mean return, is for most categories at an unimpressive level between  $-1.4\%$  and  $2.1\%$ . However, given the low, and in some cases, negative returns of broad benchmarks during the sample period this is not a too surprising result. The result does, however, question the claim by alternative Ucits funds, like hedge funds, to be absolute, positive return providers. There are, however, two outliers; emerging market and commodities funds. There is only one commodities fund in the data set which is no basis for general evaluation, even though the performance of  $-10.64\%$  and a high level of annualized volatility of  $30.75\%$  is dismal. Emerging market funds on the other hand exhibit the best performance with an aggregate mean return of  $5.61\%$ .

Country	Share of total market
Luxembourg	49 %
Ireland	18 %
France	18 %
UK	5 %
Germany	4 %
Spain	3 %
Italy	>1 %
Guernsey	>1 %
Liechtenstein	>1 %

**Table 2** – *Share of market of alternative Ucits funds by domicile.*

	<i>Annual</i>			<i>Monthly</i>					# funds
	Mean	S.D.	Sharpe	Min	Max	Median	Kurt.	Skew.	
Long/short eqt.	0.77 (4.54)	10.45 (6.63)	0.25 (0.85)	-7.4 (5.1)	6.5 (4.8)	0.2 (0.4)	4.1 (1.8)	-0.3 (0.7)	40
Eqt. market neutral	-0.04 (3.89)	4.40 (2.43)	0.39 (1.16)	-3.3 (2.2)	2.4 (1.3)	0.1 (0.3)	4.3 (2.3)	-0.5 (0.9)	14
Macro	1.87 (6.17)	9.13 (8.57)	0.78 (1.25)	-6.0 (5.6)	6.1 (7.0)	0.3 (0.9)	4.4 (2.1)	-0.1 (1.0)	51
Event driven	-0.71 (5.44)	5.30 (3.14)	0.21 (0.94)	-5.1 (3.5)	2.6 (0.9)	0.3 (0.2)	7.1 (3.1)	-1.3 (0.8)	6
Emerging markets	5.61 (4.61)	14.35 (13.85)	0.89 (0.78)	-11.7 (13.3)	8.2 (6.6)	0.6 (0.6)	5.4 (1.7)	0.0 (1.3)	5
Fixed income	1.84 (4.21)	6.12 (5.44)	0.76 (0.96)	-5.3 (6.6)	3.2 (2.3)	0.3 (0.3)	5.4 (3.7)	-0.7 (1.2)	31
Multi-strategy	-1.42 (9.84)	8.80 (14.82)	0.35 (0.91)	-6.3 (9.7)	4.4 (6.3)	0.1 (0.6)	4.3 (1.7)	-0.6 (0.7)	12
FX	1.17 (2.77)	4.44 (3.96)	0.50 (0.81)	-3.3 (3.5)	2.7 (2.4)	0.3 (0.4)	4.4 (1.5)	-0.5 (0.8)	15
Commodities	-10.64 -	30.75	-0.35	-28.2	13.0	0.1	4.5	-1.0	1
CTA	2.11 (9.05)	8.58 (5.37)	0.60 (1.03)	-5.4 (4.1)	5.9 (3.7)	0.1 (0.7)	3.6 (1.3)	0.2 (0.6)	9
Fund of funds	-4.34 (5.84)	5.75 (4.69)	-0.41 (0.72)	-6.3 (6.3)	2.1 (1.2)	-0.0 (0.2)	6.7 (3.7)	-1.3 (1.1)	7
All funds (except FoF)	1.17 (5.68)	8.25 (7.96)	0.55 (1.03)	-6.0 (6.2)	5.0 (5.2)	0.2 (0.6)	4.5 (2.4)	-0.4 (1.0)	184

**Table 3** – *Cross-sectional mean of descriptive statistics of 216 alternative Ucits funds according to strategy over the sample period January 2008 to May 2010. All funds cover the full sample period. Cross-sectional standard deviation is presented in brackets.*

	<i>Annual</i>			<i>Monthly</i>				
	Mean	S.D.	Sharpe	Min	Max	Median	Kurt.	Skew.
UCITS Alt. Long/Short Eqt.	-2.60	7.03	-0.37	-5.4	3.2	-0.1	3.3	-0.7
UCITS Alt. Eqt. Market Ntr.	-2.41	2.67	-0.90	-3.0	1.0	-0.2	6.9	-1.4
UCITS Alt. Macro	-1.34	5.02	-0.27	-4.2	2.3	0.3	3.7	-0.9
UCITS Alt. Event-Driven	-2.71	4.85	-0.56	-5.0	2.0	-0.0	6.9	-1.8
UCITS Alt. Emrg. Markets	2.07	13.96	0.15	-10.8	8.4	0.1	3.7	-0.3
UCITS Alt. Fixed Income	0.34	4.83	0.07	-4.9	1.9	0.3	7.0	-1.7
UCITS Alt. Multi-Strategy	-1.02	3.36	-0.30	-2.6	2.0	-0.2	3.9	-0.4
UCITS Alt. FX	-1.38	2.00	-0.69	-1.6	1.1	-0.1	3.3	-0.2
UCITS Alt. Commodities	-1.61	17.04	-0.09	-12.5	12.6	0.4	4.1	-0.2
UCITS Alt. CTA	1.80	4.12	0.44	-2.2	2.3	0.2	2.4	0.0
UCITS Alt. Fund of Funds	-6.78	4.86	-1.39	-5.5	1.2	-0.3	6.4	-1.5
UCITS Alt. global	-1.57	5.05	-0.31	-4.3	2.1	0.2	4.0	-0.9

	<i>Annual</i>			<i>Monthly</i>				
	Mean	S.D.	Sharpe	Min	Max	Median	Kurt.	Skew.
FTSE Eurotop 100	-16.70	21.79	-0.77	-12.2	12.0	-1.5	2.4	0.1
S&P 500	-10.98	22.69	-0.48	-17.2	9.4	0.7	2.6	-0.5
MSCI World	-14.08	24.64	-0.57	-19.2	10.9	-0.6	2.8	-0.5
MCSI EM	-7.50	35.56	-0.21	-27.7	16.6	0.0	3.1	-0.4
S&P GS cmdty	-20.81	33.92	-0.61	-28.4	19.6	0.2	3.6	-0.4
HFRI Fund w. Composite	-1.65	9.47	-0.17	-7.1	5.1	0.2	3.5	-0.7
HFRI FoF	-6.58	8.21	-0.80	-6.9	3.3	0.1	3.9	-1.1
HFRX Equal w. Strt. (EUR)	-7.18	9.61	-0.75	-11.6	2.1	0.2	10.1	-2.5
HFRX Global (EUR)	-7.95	10.27	-0.77	-11.4	2.9	0.0	7.5	-2.0

**Table 4** – Descriptive statistics of excess return time series of UCITS Alternative indices and some general hedge fund and equity indices over the period January 2008 to May 2010.

The second column in table 3 presents the volatility or annualized standard deviation of the funds and it varies considerable between groups. Excluding the commodities fund, the average annualized volatility ranges from 4.40% for equity market neutral funds to 14.35% for emerging market funds.

The standard deviations (in brackets) of performance measures vary across fund categories and thus indicate varying degrees of dispersion in performance of funds. For example multi-strategy funds have an average mean of  $-1.42\%$  with a standard deviation of 9.84. Assuming normality, as much as 75% of funds, or 3 funds out of every 4, performs within the interval  $-8.1\%$  and  $5.3\%$ . On the other hand, with the same reasoning, 3 FX funds out of every 4 performs within the interval  $-0.7\%$  and  $3.1\%$ . Kurtosis and skewness across fund groups is somewhat higher but still relatively close to the standard normal distribution, indicating little tail risk exposure. The exception is event driven and fund of funds. However, this is based on a relatively small sample of 6 and 7 funds respectively.

UAI calculates and publish an equal-weighted index family, the UCITS Alternative indices, based on their data base. All indices began reporting in January 2008, except the UCITS Alternative Global Index which began in January 2006. All indices are backfilled from January 2010. Each fund category is represented by an index and additionally the UCITS Alternative Global Index is a composite index of all of funds.

The top panel of table 4 presents performance statistics of UCITS Alternative indices over the period January 2008 to May 2010. The bottom panel of table 4 presents performance statistics of equity, commodity, and hedge fund indices. All major hedge fund indices and many major equity indices are denominated in USD. Hence to facilitate a coherent comparison all calculations in table 4 are based on return time-series in excess of the 1-month LIBOR rate denominated in the same currency as that of the index (i.e. EUR or USD). Thanks to the covered interest rate parity, computing excess fund returns in their own currency allows for performance comparison as it is equivalent to consider any investments where currency risk exposure is systematically hedged.<sup>11</sup>

Neither the top nor the bottom panel of table 4 presents any high positive excess performance figures. All UCITS Alternative indices outperform

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<sup>11</sup>A complete systematic hedge of the currency risk is only possible if the full proceeds of the investment is known in advance.



commodity and equity indices both in terms of higher returns and markedly lower risk. All UCITS Alternative indices (excluding the Fund of Funds index) have excess annualized returns in the range of  $-2.71\%$  to  $1.80\%$  compared to equity and commodity indices with a range of  $-6.81\%$  to  $-20.11\%$

The non-investable HFRI and investable HFRX hedge fund indices are more appropriate benchmarks for the UCITS Alternative indices. Using the HFRI composite index as a proxy for the whole hedge fund industry, as many as eight UCITS Alternative indices outperform this index in terms of returns. Only the Long/Short, Market Neutral, Event-Driven, and Fund of Funds indices have worse performance. The annualized standard deviation of UCITS Alternative indices is within the interval of  $2.0\%$  to  $17.1\%$  as compared to the HFIR composite with  $9.5\%$ . The level of risk is in fact lower for ten of twelve UCITS Alternative indices than the HFRI composite index.<sup>12</sup>

The HFRI fund of funds index and the HFRX indices have annualized returns in the interval of  $-7.95\%$  to  $-6.58\%$  which is markedly worse than the UCITS Alternative indices. The only exception is for the UCITS Alternative Fund of Funds Index where returns and risk are at par with these indices.

The top and middle panel of table 5 presents correlations, measured by Kendall's tau, of the UCITS Alternative indices and some HFR hedge fund indices towards equity and commodity indices. The Long/Short, Macro, Event-Driven, Emerging Markets, Fixed Income, Fund of Funds, and Global index have a relatively high correlation of more than  $50\%$ . This is indeed an undesirable result from an asset allocation perspective. The UCITS indices are, however, in good company with the HFRI and HFRX indices which exhibit similar figures. Similarities with HFRI and HFRX indices are corroborated by high correlation figures between HFRI indices and the Ucits alternative indices. The UCITS Alternative indices of Equity Market Neutral, Multi-Strategy, FX, Commodities, and CTA exhibit in general low correlation with equity, commodity and hedge fund indices.

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<sup>12</sup>Negative Sharpe ratios are ambiguous to compare coherently and we thus refrain from any comparisons of these.

	FTSE	S&P500	World	EM	Cmnty	VIX	HFRI		HFRX	
							Comp	FoF	Eq. w.	Global
UCITS Alt. Long/Short	74	68	79	75	33	-48	78	68	62	66
UCITS Alt. Eqt. Neutral	15	12	20	23	25	-18	24	34	37	36
UCITS Alt. Macro	76	73	75	67	28	-45	76	69	63	67
UCITS Alt. Event-Driven	52	51	58	62	27	-43	59	49	41	45
UCITS Alt. Emerging Markets	63	63	72	83	31	-48	72	59	51	56
UCITS Alt. Fixed Income	58	56	56	53	22	-30	62	61	65	61
UCITS Alt. Multi-Strategy	14	10	10	11	27	12	22	30	35	29
UCITS Alt. FX	26	24	22	26	17	-26	30	34	35	30
UCITS Alt. Commodities	23	27	38	39	55	-28	38	40	34	41
UCITS Alt. CTA	-4	0	6	-1	3	-1	1	5	6	7
UCITS Alt. Fund of Funds	52	49	54	57	42	-25	71	77	77	80
UCITS Alt. Global	71	66	76	78	33	-47	82	75	68	70
HFRI Fund w. Composite	69	69	74	78	40	-40	-	80	72	78
HFRI FoF Composite	58	49	55	62	41	-32	80	-	82	84
HFRX Equal w. Strat. (EUR)	52	45	49	56	39	-23	72	82	-	84
HFRX Global Hedge Fund (EUR)	54	51	55	62	43	-33	78	84	84	-

**Table 5** – Correlation, measured as Kendall’s tau, of excess return time series of UCITS Alternative indices and some general hedge fund and equity indices over the period January 2008 to May 2010.

#### 4.2. Risk factor exposures

Previous results suggest that alternative Ucits funds have different risk structures as compared to hedge funds. We analyse the return and risk structure further through regression analysis of the UCITS Alternative Global Index. We have chosen this index since it began reporting already in January 2006 and thus span a longer timer period than the other indices. Our regression model follows Fung and Hsieh (2004) and accounts for seven risk factors which have shown to explain considerable variations in hedge fund return dynamics. Alpha, or the risk adjusted performance, is calculated as the estimate of  $\alpha$  in the following regression:

$$r_t = \alpha + \beta_1 SP500_t + \beta_2 SML_t + \beta_3 Bond_t + \beta_4 Credit_t \\ + \beta_5 BdOpt_t + \beta_6 FXOpt_t + \beta_7 ComOpt_t + \epsilon_t$$

where  $r_t$  is the annualized excess return,  $SP500_t$  is the annualized excess return of S&P 500,  $SML_t$  is the annualized difference between the return of the Russell 2000 and S&P 500,  $Bond_t$  is the month-end to month-end change (with inverted sign) in the excess return of the 10 year treasury constant maturity yield,  $Credit_t$  is the month-end to month-end change (with inverted sign) of the difference between the Moody's Baa and the 10 year treasury constant maturity yield,  $BdOpt_t$  is excess return of a portfolio of bond lookback straddles,  $FXOpt_t$  is excess return of a portfolio of currency lookback straddles,  $ComOpt_t$  is excess return of a portfolio of commodity lookback straddles. Excess return implies returns above the 1-month libor USD rate. Data on equity factors and libor is provided by Reuters 3000, on bond factor by Board of Governors of the US Federal Reserve System and on lookback straddles from David Hsieh's data Library.<sup>13</sup>

The initial time-series of the alternative Ucits funds and indices are denominated in EUR. To coherently use the seven factor model which is denominated in USD we consider, as before, an investor who is fully hedged towards currency risk. That is, calculating EUR return time-series in excess of the 1-month EUR libor rate. We also consider an investor who is unhedged towards currency risk, thus converting the EUR return time-series to USD using the USD/EUR exchange rate.

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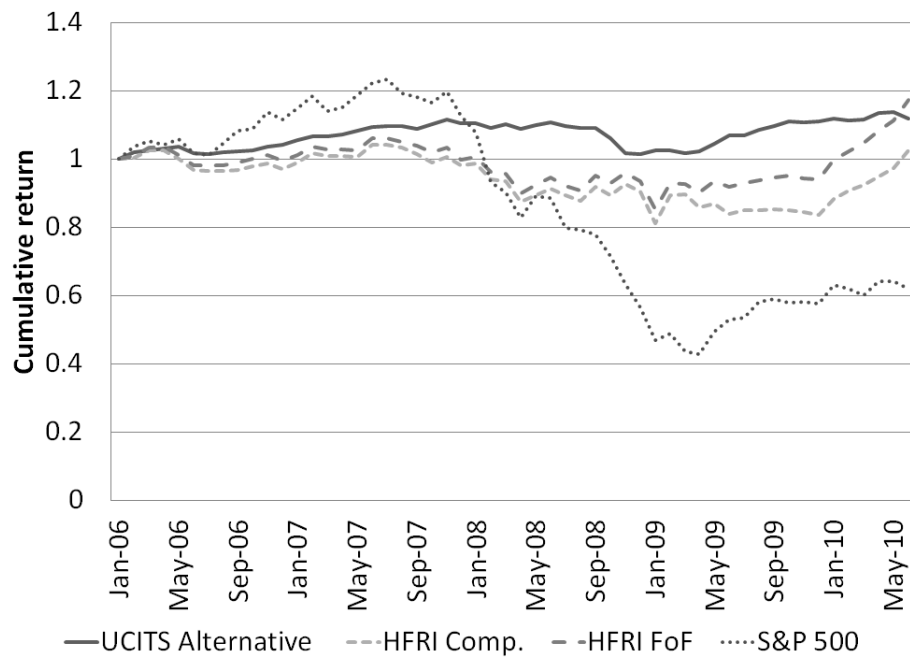
<sup>13</sup>The database can be found at <http://faculty.fuqua.duke.edu/~dah7/DataLibrary/TF-FAC.xls> and Fung and Hsieh (2001) provides more information on their construction.

	<i>Annual</i>			<i>Monthly</i>				
	Mean	S.D.	Sharpe	Min	Max	Median	Kurt.	Skew.
UCITS Global (hedged)	-0.17	4.19	-0.04	-4.3	2.1	0.2	5.2	-1.1
UCITS Global (unhedged)	1.33	14.13	0.09	-13.5	11.1	0.3	5.4	-0.6
FTSE Eurotop 100	-7.41	17.17	-0.43	-12.2	12.0	0.3	3.4	-0.3
S&P 500	-4.53	17.58	-0.26	-17.2	9.4	0.8	4.2	-0.9
MSCI world	-4.58	19.16	-0.24	-19.2	10.9	0.6	4.5	-0.9
MCSI EM	7.25	29.13	0.25	-27.7	16.6	0.7	4.3	-0.7
S&P GS cmdty	-10.14	28.48	-0.36	-28.4	19.6	0.4	4.3	-0.6
HFRI Fund w. Composite	1.96	7.89	0.25	-7.2	5.1	0.6	4.7	-1.0
HFRI FoF	-1.19	7.18	-0.17	-7.0	3.2	0.5	5.1	-1.3
HFRX Eq. w. Strat. (EUR)	-3.87	7.50	-0.52	-11.4	2.1	0.1	15.1	-3.0

**Table 6** – *Descriptive statistics of excess return time-series of Ucits alternative global index and some general hedge fund and equity indices over the period January 2006 to May 2010*

This section is concerned with sample period January 2006 to December 2009. The sample period is extended in an effort to attain as precise statistical inference as possible. Table 6 presents some performance measures on Ucits alternative global index. The new performance measures differ somewhat from previous in table 4 with the HFRI composite having slightly higher excess returns (1.96%) than the currency hedged UCITS Alternative Global Index (-0.17%). The unhedged UCITS Alternative Global Index has slightly higher returns and also significantly higher volatility as expected as it includes the currency volatility. The UCITS Alternative Global Index outperform equity, commodity, HFRI fund of funds, and HFRX index both on in terms of return and risk. The low levels of risk in the hedged UCITS Alternative Global Index with a standard deviation of 4% as compared to HFR indices with 10% to 11% can be seen again in this table. Figure 2 presents the cumulative return over the sample period of the Ucits alternative, HFRI composite, HFRI fund of funds and the S&P 500 index.

Table 7 presents the results from estimating the Fung and Hsieh seven factor regression model over the period January 2006 to December 2009. The model have an adjusted  $R^2$  of between 63% and 78% (excluding the unhedged Ucits alternative global index). This is a relatively high explanatory power for hedge fund return series. However, the  $R^2$  level also call for some caution in making statistical inference from the model. The top panel in table 7 presents results on the Ucits alternative global, HFRI composite, HFRI fund of funds, and HFRX investable equal weighted strategy index. Except for the unhedged UCITS Alternative Global Index, none of the indices have



**Figure 2** – The cumulative return of the Ucits alternative Global, HFRI Composite, HFRI Fund of Funds, and S&P 500. index.

	alpha	SP500	SML	Bond	Credit	BdOpt	FXOpt	ComOpt	R <sup>2</sup>	adj. R <sup>2</sup>
UCITS Alt. Global (hedged) (t-stat)	0.009 (0.675)	0.134*** (5.643)	-0.013 (-0.341)	0.013 (0.279)	0.167*** (3.906)	0.016 (0.159)	-0.056 (-0.783)	0.056 (0.649)	0.775	0.736
UCITS Alt. Global (unhedged)	0.118** (2.028)	0.412*** (3.948)	0.002 (0.010)	0.626** (3.127)	0.471** (2.510)	0.572 (1.296)	0.154 (0.486)	0.061 (0.160)	0.597	0.526
HFRI composite	0.033 (1.275)	0.261*** (5.609)	-0.064 (-0.888)	-0.078 (-0.871)	0.288*** (3.437)	-0.072 (-0.367)	-0.006 (-0.045)	0.101 (0.599)	0.754	0.711
HFRI fund of funds	-0.011 (-0.390)	0.172*** (3.326)	-0.125 (-1.547)	-0.083 (-0.840)	0.293*** (3.144)	-0.217 (-0.992)	-0.058 (-0.367)	0.120 (0.639)	0.632	0.567
HFRX equal w.	-0.034 (-1.360)	0.139*** (3.115)	-0.116 (-1.671)	0.008 (0.097)	0.394*** (4.898)	-0.197 (-1.040)	-0.160 (-1.177)	0.077 (0.477)	0.738	0.692
UCITS Alt. Global - HFRI Composite	-0.024 (-1.483)	-0.127* (-4.348)	0.052 (1.138)	0.091 (1.614)	-0.121** (-2.301)	0.088 (0.714)	-0.050 (-0.565)	-0.045 (-0.427)	0.635	0.571
UCITS Alt. Global - HFRI FoF	0.020 (1.046)	-0.038 (-1.092)	0.112** (2.077)	0.096 (1.446)	-0.125* (-2.014)	0.233 (1.591)	0.001 (0.011)	-0.064 (-0.509)	0.409	0.305

**Table 7** – *Estimates of Fung and Hsieh (2004) seven factor regression model on the UCITS alternative global index and some HFR indices. The sample period is January 2006 to December 2009 and t-statistics of each factor estimation is given in brackets. \*\*\* indicate that the standard hypothesis can not be rejected at the 99% level, \*\* on the 95% level and \* on the 90% level.*

significant annualized alphas after controlling for the seven risk factors. However, the results for the unhedged UCITS Alternative Global Index are necessarily impacted by missing the USD/EUR currency risk factor. In undocumented results the alpha of the unhedged index disappear as an additional USD/EUR exchange rate factor is added to the regression.

It is plausible to assume that the Ucits regulatory framework will allow for different risk exposures than lightly regulated hedge funds. Differences in risk exposure originate partly from the regulatory framework constraining alternative Ucits funds. Furthermore differences arise since the alternative Ucits universe partially covers all hedge fund strategies. To better compare the differences in performance and risk factor exposures the bottom panel of table 7 present regression results on the return of the hedged UCITS Alternative Global Index in excess of the HFRI hedge fund composite index and the HFRI fund of funds. More precisely to also account for interest rate differentials the dependent variable,  $r_t$ , is more precisely

$$r_t = (r_t^{\text{Ucits}} - r_t^{\text{EUR}}) - (r_t^{\text{HFRI}} - r_t^{\text{USD}}).$$

where  $r_t^{\text{Ucits}}$  and  $r_t^{\text{HFRI}}$  is the Ucits and HFRI index return respectively and  $r_t^{\text{EUR}}$  and  $r_t^{\text{USD}}$  are the 1-month EUR and USD libor respectively.

The first two rows in the bottom panel of table 7 shows that UCITS Alternative Global Index is highly significantly less exposed towards S&P 500 as compared to the HFRI composite index. Other significant differences in exposure are with regards to the bond and credit factors. If the latter factor captures exposures to some illiquid credit instruments than it is likely to explain the relatively larger exposure of the HFRI composite index.

The result is similar for the UCITS Alternative Global Index returns in excess of the HFRI fund of funds index returns. The one exception, however, is with regards to the small cap factor where the difference is highly significant. The difference is as before likely to be explained by regulatory constraints that can deter alternative Ucits funds to invest in small cap stocks which tend to be illiquid.

#### *4.3. Cross-sectional differences*

We devote this section to compare the cross-sectional performance of alternative Ucits funds and hedge funds from the Tass and Barclays' database on hedge funds. We study the mean performance and dispersion of three

groups of alternative Ucits funds, namely: long/short equity, macro, and fixed income. These represent the largest groups of alternative Ucits funds and hence form an adequate sample size for our analysis. We compare the results from these funds with hedge funds from the Tass and Barclays data base using similar strategy.<sup>14</sup> The sample period covers December 2006 to July 2009 and only funds which cover the whole sample period are included in the analysis in order to facilitate coherent comparison. Only share classes denominated in EUR and net-of-fees are considered. This sample of hedge funds only considers live funds as of end of the sample period. This does induce an upward bias of returns. Due to the higher attrition rate of hedge funds than alternative Ucits funds, the bias is likely to be more pronounced in the hedge fund sample. Thus, results in this section needs to be seen in the light of this bias.

The size of the data samples of alternative Ucits funds and hedge funds is presented in table 8.

	Ucits	Hedge funds
Long/Short Equity	26	165
Global Macro	33	19
Fixed Income	23	25

**Table 8** – *Number of alternative Ucits funds and hedge funds across strategies in the sample.*

#### 4.3.1. *Distributional properties*

Table 9 presents the average of the annualized mean, annualized standard deviation, skewness, and kurtosis on alternative Ucits funds and hedge funds for the three strategies. The table also present  $p$ -values of two hypothesis tests if the sample of return and risk measures comes from the same underlying distributions. These tests are the parametric Kolmogorov-Smirnov test and the non-parametric Wilcoxon test.

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<sup>14</sup>More precisely the hedge funds in the Tass database labeled as: long/short equity hedge, global macro, and fixed income arbitrage; and the hedge funds in the Barclays database labeled as: equity long/short (L/S), L/S growth oriented, L/S opportunistic, L/S value oriented, fixed income (FI) ABS/sec. loans, FI arbitrage, FI convertible bonds, FI diversified, FI high yield, FI mortgage backed, and macro.



	Long/short equity				Global macro				Fixed income			
	Mean	Test of Diff.		<i>N</i>	Mean	Test of diff.		<i>N</i>	Mean	Test of diff		<i>N</i>
		Kol.	Wil.			Kol.	Wil.			Kol.	Wil.	
		<i>p</i> -value				<i>p</i> -value				<i>p</i> -value		
<b>Mean return</b>												
Ucits	1.11	0.22	0.55	26	1.50	0.03	0.15	33	2.47	0.02	0.14	23
Hedge funds	0.98			165	3.87			19	-11.97			25
<b>Standard deviation</b>												
Ucits	8.89	0.00	0.01	26	7.78	0.01	0.01	33	6.31	0.02	0.00	23
Hedge funds	12.28			165	12.69			19	18.79			25
<b>Kurtosis</b>												
Ucits	4.28	0.99	0.95	26	4.49	0.22	0.59	33	5.96	0.25	0.09	23
Hedge funds	4.52			165	3.84			19	8.03			25
<b>Skewness</b>												
Ucits	-0.44	0.50	0.51	26	-0.06	0.95	0.94	33	-0.81	0.50	0.59	23
Hedge funds	-0.29			165	-0.06			19	-1.10			25

**Table 9** – Averages of annualized excess returns, annualized standard deviation, kurtosis, and skewness. Results are reported for alternative Ucits funds and hedge funds. Tests of differences represent tests of the null hypothesis that mean variable estimates are equal for alternative Ucits funds and hedge funds. *N* denotes the number of observations.

The first two rows in table 9 present cross-sectional averages of annualized mean. The results vary somewhat across different strategies. The hypothesis for equal distributions cannot be rejected in the case of long/short equity funds. The difference is indeed small in economic terms as well between alternative Ucits funds (1.11%) and hedge funds (0.98%). The results are somewhat different for the global macro and fixed income funds. In the global macro case the result is somewhat unclear where the Kolmogorov's two-sided test reject the hypothesis of equal distribution at the 95% confidence level while the Wilcoxon test does not reject the same hypothesis at the 90% level of confidence. It is the group of global macro hedge funds which has a higher average mean return of 3.87% compared to Ucits funds with 1.50%.

For the fixed income funds the hypothesis of equal distribution is rejected at the 95% level for Kolmogorov's two-sided test. The difference in economic terms is substantial in this group with hedge funds having an average annualized mean of  $-11.97\%$  while Ucits have positive returns of on average of  $2.47\%$ . However, a closer investigation of the data reveals four outliers in the dataset of fixed income hedge fund with annualized returns of less than  $-43\%$ . Removing these from the data sample raises the annualized return to  $-0.14\%$ .

A likely explanation to the large difference in average performance is the liquidity requirements and set of eligible assets alternative Ucits funds are bound to. The sample period entailed particularly large negative returns on illiquid fixed income instruments as mortgage backed securities and other structured products. These were likely to be held by hedge funds but prohibited for alternative Ucits funds.

The results in table 9 on comparison of cross-sectional average on standard deviation confirms previous results that alternative Ucits funds have lower standard deviation, or risk, on average than hedge funds. However, no statistical differences are found between alternative Ucits funds and hedge funds in levels of kurtosis and skewness.

	Long/short equity					Global macro					Fixed income				
	Mean	Std.	10%	90%	<i>F</i> -test ( <i>p</i> -val.)	Mean	Std.	10%	90%	<i>F</i> -test ( <i>p</i> -val.)	Mean	Std.	10%	90%	<i>F</i> -test ( <i>p</i> -val.)
<b>Mean return</b>															
Ucits	1.11	4.68	-4.76	6.22	0.00	1.50	6.09	-7.15	8.40	0.11	2.47	6.61	-13.60	6.19	0.00
Hedge funds	0.98	9.65	-10.86	11.41		3.87	8.43	-10.35	10.10		-11.97	34.51	-43.65	11.13	
<b>Standard deviation</b>															
Ucits	8.89	4.89	4.58	16.90	0.04	7.78	7.52	0.68	16.11	0.49	6.31	5.50	1.25	17.44	0.00
Hedge funds	12.28	6.98	5.11	21.94		12.69	8.61	4.39	22.11		18.79	18.69	2.57	48.34	
<b>Kurtosis</b>															
Ucits	4.28	1.67	2.81	5.95	0.02	4.49	2.29	2.58	7.35	0.03	5.96	4.62	2.10	11.18	0.69
Hedge funds	4.52	2.49	2.62	7.54		3.84	1.42	2.56	4.91		8.03	5.03	2.69	15.84	
<b>Skewness</b>															
Ucits	-0.44	0.61	-1.23	0.32	0.01	-0.06	0.92	-1.63	0.86	0.66	-0.81	1.36	-3.09	0.99	0.32
Hedge funds	-0.29	0.97	-1.27	0.82		-0.06	0.83	-1.22	0.91		-1.10	1.69	-3.36	1.11	

**Table 10** – Mean, standard deviation and 10th and 90th percentiles of averages of annualized excess returns, annualized standard deviation, kurtosis, and skewness. Results are reported for alternative Ucits funds and hedge funds. The *F*-Test (*p*-value) column is the *p*-value for an *F*-test of equality of standard deviation between the samples.

#### 4.3.2. Dispersion of performance measures

The comparison of the cross-sectional mean, however, can distort the image of performance since the mean is in fact very seldom attained by investors. The dispersion of mean and risk factors is equally important to analyze because it illustrates what range on performance investors could expect to receive from simply choosing a fund randomly. Thus it also gives indications on how much effort is necessary to devote in the selection process in order to feel somewhat comfortable of investing in the funds strategy family.

Table 10 presents the cross-sectional average mean, as in table 9, of annualized mean returns, standard deviation, kurtosis, and skewness. The table furthermore presents measures of dispersions in the form of the cross-sectional standard deviation of these means and the 10th and 90th percentiles. The  $F$ -Test ( $p$ -value) column is the  $p$ -value for a  $F$ -test of equality of standard deviation between the samples.

The left panel in table 10 presents the dispersion of the group of long/short equity hedge funds and alternative Ucits funds. For all measures, the hypothesis that they have equal dispersion is rejected on at least the 95% confidence level. In all cases it is the group of hedge funds which exhibit higher level of dispersion.

The results for global macro funds, presented in the mid panel of table 10, indicate that levels of dispersion is of similar magnitude with the group of hedge funds and alternative Ucits funds. It is only on the measure of kurtosis which the hypothesis of equal standard deviations in the group of alternative Ucits funds and hedge funds is rejected.

The right panel in table 10 presents the dispersion of the group of fixed income hedge funds and alternative Ucits funds. The dispersion in the two groups for measures of annualized mean returns and standard deviation is large and differs by a factor of 4 to 5, where the alternative Ucits funds exhibit lower levels of dispersions. This result is also highly significant where the hypothesis of equal dispersion is rejected at the 99.9% level. However, the hypothesis that dispersion of kurtosis and skewness is equal for the two groups cannot be rejected.

These results concur with previous results in that hedge funds are a more heterogeneous group in terms of performance than alternative Ucits funds.

## 5. Conclusion

This article offers, to our knowledge, a first comprehensive overview of the differences and similarities of alternative Ucits funds and hedge funds. Our results give a mixed picture of the benefits and shortfalls of using either fund group. The lower attrition rate of alternative Ucits funds is indicative of how Ucits investors are less exposed to fund failure risk. However, given the short sample period this result is based on it still remains to be seen if this level will be sustained.

In terms of excess returns we tend to find mixed results. Over the period 2008 to 2010 the Ucits alternative indices have outperformed the non-investable HFRI composite and HFRI fund of funds indices. Extending the sample period to begin in 2006, the Ucitis Alternative Global Index has lower returns than the HFRI composite index while it has higher returns than the HFRI fund of funds and the HFRX composite indices. Alternative Ucits funds have in general lower risk, or volatility, than hedge funds. These levels are likely to remain for the future since estimations of risk is usually persistent over time. This is not the case for mean returns. In addition to the mostly bearish market sentiments of the sample period it remains to be seen of how the return differentials between alternative Ucits funds and hedge funds will evolve.

The Ucits regulation provides strict rules of holding illiquid assets as well as providing clients with a high frequency of liquidity. The latter certainly explains differences in exposures between the two categories of investment vehicles, with hedge funds for instance being more exposed to credit and small cap factors. While it may be beneficial for clients to frequently being able to invest or redeem money in a fund it also prohibits exposure to the risk and rewards of holding illiquid investments. There is consequently a need to find an appropriate regulatory framework for illiquid investment vehicles as well.

Our results show that hedge funds are a more heterogeneous group in terms of performance than alternative Ucits funds. This has important implication on investors fund selection process, where the Ucits regulatory framework seems to limit the dispersion of performance.

Hence, will alternative Ucits funds replace hedge funds or must they be added to the pallet of existing products? Our results indicate that for the time being both alternative Ucits funds and hedge funds will remain because they have distinctly different characteristics which bring value to different

investment objectives. Alternative Ucits as a group offers better liquidity terms, show lower attrition rate, and exhibit lower dispersion of return. Yet, none of these characteristics can guarantee high performance. Furthermore, our results need to be considered in the light of the short sample period with very particular economic conditions. However, the alternative Ucits segment is still in its infancy but if it fails to deliver investors will end up paying high fees for mediocre performance ... and it then remains to be seen if arguments regarding better liquidity terms or better regulatory protection than Hedge Funds will then ease their pain.

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