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ESMA TRV Risk Analysis

Financial Stability

Risks in UCITS using the absolute Value-at-Risk approach

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Summary

UCITS are subject to tight regulatory constraints, designed to ensure diversified portfolios and control over all market exposure. These rules also limit their use of financial derivatives for both investment and hedging purposes. When using such instruments, funds can manage their risk profile by employing the so-called absolute Value-at-Risk (VaR) approach and thereby assess the maximum potential loss they might incur at any given time.

In this article we present an analysis of (1) the use of the absolute VaR approach, (2) the types of funds that implement this approach, (3) the levels of gross leverage of those funds, (4) risk metrics for potentially leveraged UCITS and Hedge Funds under the AIFMD, (5) potential risk implications associated with such exposures.

We find that UCITS using the absolute VaR approach account for at least 8% of the sector. Within this cohort of funds, some – especially those pursuing hedge-fund like strategies – are highly leveraged on a gross basis (over 400% of NAV). We show that complementary approaches based on econometrics and market risk measures also point to directional positions taken by those funds extensively using derivatives. A comparison of risk metrics between these UCITS and Alternative Investment Funds (AIFs) following hedge fund strategies shows that such UCITS can have higher leverage and higher risks than AIFs across a range of dimensions (complexity, liquidity and interconnectedness).

This group of highly-leveraged UCITS is relatively small in the context of the overall UCITS universe, accounting for a combined NAV of EUR 152bn (or 2% of total UCITS NAV), and it is heterogeneous in terms of strategies, including alt-UCITS, fixed income, and mixed approaches. Despite their small share these funds have a larger volume of assets than Hedge Funds registered under the AIF framework (NAV of EUR 124bn).

Our analysis is a starting point to a more systematic exploration of the risks that extensive use of synthetic leverage can pose. Supervisory insights play an important role, and, in the future, granular fund portfolio data could enable national authorities and ESMA to undertake targeted analysis in this field.

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Introduction

Leverage and financial stability

The use of excessive leverage by investment funds can entail risks to financial stability. Leverage can be used to hedge risks in portfolio positions, increase exposures and boost returns, but it can also amplify stress to the financial system through two main channels: **position liquidation** and **counterparty defaults** (FSB, 2024).

In case of adverse market developments, leveraged entities might face large, unexpected declines in the mark-to-market value of derivatives positions and collateral posted, triggering liquidity demands through collateral or margin calls. Those demands might in turn lead to forced sales by leveraged entities which can increase market volatility and lead to adverse feedback loops. Risks related to the **position liquidation channel** crystallised in September 2022 during the mini-budget crisis in the UK. As sovereign yields surged, funds pursuing liability-driven investment strategies, and relying on leverage from repo and derivatives, faced large mark-to-market and collateral losses which resulted in margin and collateral calls, prompting them to liquidate large amounts of long-dated UK government bonds, further amplifying the initial shock (ESRB, 2023).

Adverse market developments can also result in large losses for leveraged entities and ultimately their collapse. A recent illustration of this **counterparty default channel** occurred in March 2021, with the collapse of Archegos Capital Management. Archegos was a US family office which built large leveraged positions on a few stocks during the course of 2021Q1. Archegos used equity swaps, where the bank counterparty delivers the performance of an underlying stock to its counterparty by buying the stock. Archegos mirrored its highly concentrated positions across a range of counterparties, which were unaware of the actual size of Archegos aggregate positions. When prices moved adversely, Archegos faced large margin calls which it was unable to meet, triggering its default. Bank counterparties had to liquidate the underlying stocks they held, which given the large market footprint of Archegos resulted in liquidation losses above USD 10bn (ESMA, 2022). While GBP LDI funds and Archegos were not UCITS entities, funds pursuing similar strategies using synthetic leverage might be exposed to comparable risks along the same transmission channels (FSB, 2024).

Risks related to leverage can also be amplified by **interconnectedness** within the financial sector, **concentration** and **liquidity imbalances**.

In this article, we examine the potential risks associated with activities that may embed or give rise to synthetic leverage, and their use by investment funds to amplify their global market exposure. This activity-based analysis focuses on UCITS that employ the absolute VaR method to manage market risks.

The article is structured as follows:

- The first section outlines the different approaches to measure global exposures by UCITS with a focus on the absolute VaR approach.
- The second section describes the main features of UCITS using the VaR approach
- The third section provides evidence on the use of leverage by VaR UCITS, particularly for funds implementing alternative strategies.
- The fourth section compares a range of risk metrics for leveraged UCITS and hedge funds and finds that, based on their activities, their risk profile is similar.
- The last section concludes.

I. UCITS global exposure

UCITS operate under stringent regulatory constraints designed to manage their overall risks, including on leverage. The UCITS Directive incorporates mechanisms that constrain the total market exposure of these funds. Specifically, under the commitment approach, used by most UCITS, the global exposure, including positions acquired through derivatives, is limited to 100% of the fund's net asset value (NAV).

Methods to amplify market exposure are most commonly associated with hedge funds or other alternative investment funds (AIFs) (ESMA, 2024a; ECB, 2025). Certain UCITS also adopt strategies that substantially increase their exposure levels. These approaches, often involving synthetic exposure through derivatives, can result in a heightened market risk profile.

The EU's UCITS market has been considered a success story, also against the background of the level of investor protection the UCITS legal framework aims to provide. UCITS are typically

thought as funds targeting retail investors — in contrast to AIFs which cater mainly to professional and institutional investors. UCITS regulatory requirements aim at protecting investors and limiting the risks they might be exposed to. UCITS follow a wide variety of investment strategies ranging from simple to more complex. Investments are limited to assets that meet the criteria laid down in the Eligible Assets Directive.

Within the current framework, some UCITS do pursue more complex investment strategies that require extensive use of derivatives. The 2001 revision of the UCITS Directive permitted the use of financial derivatives for investment purposes, expanding their application beyond the previous restriction to hedging. Since 2010, an implementing Commission Directive [2] allows UCITS to measure global exposure using either the traditional commitment approach or the Value-at-Risk (VaR) approach. The absolute VaR method, in particular, enables funds with low portfolio volatility to increase their exposure through derivatives.

Financial and synthetic leverage

Leverage can be obtained through outright borrowings (**financial leverage**) or through derivatives (**synthetic leverage**).

Financial leverage can be obtained through unsecured borrowings or secured borrowings (such as repo). UCITS are subject to strict requirements regarding unsecured borrowings. Funds are only allowed to borrow up to 10% of the NAV in exceptional circumstances to finance temporary cash flow mismatches and, as such, not for investment purposes.

Restrictions on secured borrowings and on synthetic leverage are covered by the guidelines on the calculation of global exposure (CESR, 2010). Those guidelines provide two main methods to calculate global exposure for UCITS as foreseen in the UCITS implementing Directive: the commitment approach and the Value-at-Risk (VaR) approach.

Calculation of global exposure

The commitment approach

Under the commitment approach, UCITS are required to convert all their derivatives positions into the market value of an equivalent position in the underlying asset. UCITS are also required to include the exposure obtained through repo or securities lending transactions ('efficient portfolio management techniques'). For each netting and hedging arrangement, UCITS calculate the net exposure.

The global exposure under the commitment approach is equal to the sum of (i) the absolute values of derivatives not involved in netting and hedging, (ii) the absolute value of each net commitment after netting and hedging, and (ii) the absolute value of the commitment linked to efficient portfolio management techniques.

For UCITS, using the commitment approach, leverage is limited to 110% of the NAV, including exposures funded by temporary borrowing (up to 10% of the NAV)[3].

The VaR approach

According to CESR guidelines, a UCITS must use the VaR approach if (i) it engages in complex investment strategies, (ii) it has significant exposure to exotic derivatives, or (iii) the commitment approach does not adequately capture the market risk of the portfolio.

UCITS can then opt for the **relative VaR** or the **absolute VaR** approach.

— **Relative VaR:** Strategies suited to the relative VaR approach are those where a leverage-free benchmark is defined for the UCITS, reflecting the investment strategy which the fund is pursuing. In this case, the VaR of the UCITS should not be greater than two times the VaR of the reference portfolio.

— **Absolute VaR:** Under the absolute VaR approach, the one-month VaR at a 99% confidence level cannot be greater than 20% of its NAV. This means that, according to fund's internal models, the UCITS should not lose more than 20% of its NAV over one month in 99% of the cases.

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[2] See the Commission Directive 2010/43/EU implementing Directive 2009/65/EC of the European Parliament and of the Council as regards organisational requirements, conflicts of interest, conduct of business, risk management and content of the agreement between a depositary and a management company.

[3] For UCITS, leverage is equal to $\frac{Global\ exposures+borrowings-NAV}{NAV}$.

The increase in exposures can be possible as part of the absolute VaR approach. Since risk is measured based on portfolio volatility, funds with low-volatility portfolios can significantly increase their exposures via derivatives until the VaR constraint becomes binding. By contrast, UCITS employing a relative VaR approach set their risk limits in relation to a leverage-free benchmark or target risk level. This relative measurement inherently curtails the potential for exposure amplification, preventing the build-up of synthetic exposure possible under the absolute VaR method.

Disclosure requirements for UCITS

All UCITS must disclose in their prospectuses the method used to calculate global exposure (commitment approach, relative VaR or absolute VaR). Funds using the VaR approach must also disclose the expected level of **gross leverage,** which is the sum of absolute values of long and short positions, as it offers insight into the overall risk level of the portfolio, even if the net exposure might be lower. When the levels of leverage attained vary over time, they could also disclose its maximum expected value (CESR, 2010).

UCITS using the VaR approach are also subject to additional disclosure requirements in their annual reports. UCITS using the relative VaR approach must disclose information on the reference portfolio. Finally, UCITS using VaR approaches are required to disclose the lowest, highest and average VaR utilisation during the year.

Comparison with Alternative Investment Funds

Unlike UCITS, AIFs are generally not subject to direct (or indirect) leverage constraints. However, National Competent Authorities (NCAs) can impose such limits at domestic level under Article 25 of AIFMD for financial stability reasons, or under national legislation, typically from an investor protection angle[4]. All managers of AIFs have to report the level of leverage attained to NCAs measured under the gross and commitment methods. An AIF is considered substantially leveraged if its leverage under the commitment method is above 300% of its NAV[5]. There are no VaR constraints in AIFMD for AIFs, including hedge funds.

Absolute VaR and maximum leverage

Based on the absolute VaR method, the applied constraints could, in principle, enable UCITS to increase their market exposure via the use of derivatives, effectively amplifying their risk profile. If a fund has a portfolio with a very low volatility, the VaR will also be very low. Therefore, the fund can then amplify its exposures by using derivatives which replicate the portfolio (such as total return swaps) up to the point where the VaR constraint is reached.

It is possible to relate the VaR of a portfolio to a maximum level of leverage (ESRB, 2024). The lower the VaR of the portfolio, the higher the leverage a fund can use to amplify its exposures to the original portfolio and hence its VaR (Textbox 1). In some cases, the maximum leverage that can be attained under the absolute VaR approach can reach several multiples of the NAV. In addition, when volatility is subdued, VaR measures are low, which might incentivise funds to take on more leverage. When market corrections occur, losses might trigger procyclical deleveraging[6].

Chart 1 illustrates the relationship between portfolio volatility and the maximum exposure a VaR UCITS might achieve[7]. For example, with a portfolio volatility of 5%, the VaR of an unleveraged fund is equal to 3.3% of NAV. Under these conditions, the fund could, in theory, adjust its exposure by a factor up to six times its NAV to reach the 20% VaR NAV threshold[8], reaching

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4 For an overview of leverage limits for AIFs see ESMA (2024).

5 Leverage is reported differently under the commitment approach for AIFs and UCITS. For AIFs, commitment leverage is equal to $\frac{Global\ exposures}{NAV}$, where the numerator is the total exposure resulting from netting and hedging arrangements. For example, an AIF with a NAV of 100 and global exposures of 200 would report a leverage under the commitment approach of 200%. Under the UCITS framework the same fund would report a leverage of 100% of NAV. See ESMA (2019) for further details.

6 Using data on banks and broker-dealers, Adrian and Shin (2010) show that marked-to-market leverage is procyclical, and Adrian and Shin (2014) relate this procyclicality to the use of VaR models.

7 In the chart, the distribution of returns is assumed to follow a lognormal distribution, and the expected return (at monthly horizon) is set to 0% ($\mu = 0$), yielding a value of σ^* equal to 32.5%. Other parametric distributions provide qualitatively similar results, although maximum leverage values would differ.

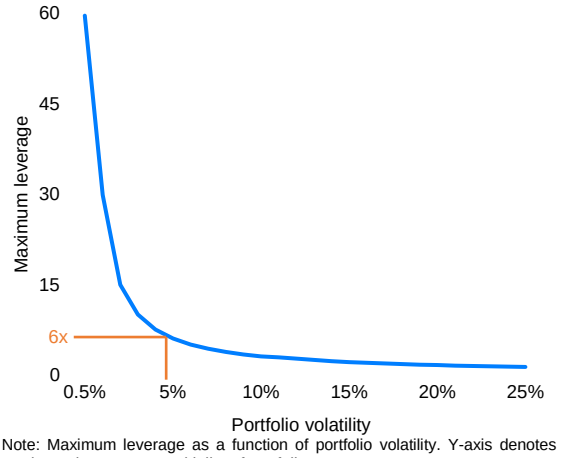
8 The maximum leverage is equal to $Leverage = \frac{VaR_{limit}}{VaR}$. In that case $Leverage = \frac{20\%}{3.3\%} = 6.1$.

leverage levels typically adopted by hedge funds[9]. In this setting, the VaR constraint would provide a leverage limit equal to 100% of NAV only if the portfolio volatility is higher than 16%. Such levels of volatility are comparable to the historical annualised volatility of US or EU equity markets. Given that UCITS are subject to diversification requirements, the VaR of the portfolio is lower than the VaR of its constituents. Diversification reduces the VaR, therefore allowing UCITS to acquire more leverage before the VaR constraint becomes binding.

Chart 1

Leverage and volatility

Maximum leverage could be high under the absolute VaR approach



Note: Maximum leverage as a function of portfolio volatility. Y-axis denotes maximum leverage as multiplier of portfolio NAV.
Source: ESMA.

The analysis has shown that the use of the absolute VaR approach can allow for high levels of leverage. The next section looks at the actual use of leverage by VaR funds, using a range of risk metrics.

Textbox 1

VaR constraints and leverage

Formally, one can assume that the movements in the value S_t of a portfolio over a given time horizon Δt are determined by the expected returns μ and the volatility of the portfolio σ. In that set-up, S_t follows a geometric Brownian motion (for further details see Malz, 2011).

The logarithmic value of the portfolio can be written as:

$$\ln\big(S(t+\Delta t)\big) = \ln S(t) + \left(\mu - \frac{\sigma^2}{2}\right)\Delta t + \sigma\xi_G\sqrt{\Delta t}$$

with ξ_G as a random shock.

The absolute VaR constraint implies that the fund must not lose more than β percent of its NAV over one month at a confidence level α. In other words, the probability that the value of the portfolio over one month (noted S_T) is below $(1-\beta)$ percent of the initial value S_0 should be equal or less than 1- α:

$$P[S(T) < (1-\beta)\times S(0)] \leq 1-\alpha.$$

One can show that the maximum level of annualised portfolio volatility compatible with the VaR constraint (noted σ^*) is :

$$\sigma^* = \frac{-z_\alpha + \sqrt{z_\alpha^2 - 2\ln(1-\beta) + 2\mu}}{\sqrt{T}}$$

with z_α the α^{th} percentile of the distribution of S_t and β the loss limit.

For absolute VaR UCITS, we have $\alpha = 99\%$ (confidence level), β =20% (loss limit) and $\sqrt{T} = \sqrt{\frac{1}{12}}$ (one-month horizon).

The maximum leverage a VaR UCITS can use (noted L^*) for a given portfolio volatility is equal to:

$$L^* = \frac{\sigma^*}{\sigma}$$

II. Overview of the VaR UCITS sector

Mapping absolute VaR UCITS

We construct a sample of UCITS that calculate their global exposure using the absolute VaR approach.

To identify UCITS using the absolute VaR approach, we collect information from various NCAs (IE, DE, ES, FR, LU and SE). We then exclude funds not covered by Morningstar and funds not reporting their NAV, resulting in a final sample of 2,088 funds (Table 1).

[9] Most hedge funds have leverage levels below 2, except for relative value and macro strategies where leverage is above 6 (OFR, 2024).

We enrich our sample with information from regulatory datasets on gross derivatives notional values (from EMIR) and securities financing transactions (from SFTR), as of end 2023.

Part of our methodological approach consists in comparing metrics between VaR UCITS and hedge funds covered by AIFMD, in order to assess whether these funds are similar from an activity-based approach. We retrieve from AIFMD data the list of hedge funds and a series of fund-specific information, such as the NAV at end-2023, gross leverage and fund strategy. After excluding funds not reporting NAV or gross notional derivatives in EMIR, we end up with a sample of 388 AIF hedge funds, amounting to a combined NAV of EUR 60bn[10].

VaR UCITS pursue various investment strategies

Overall, the NAV of UCITS using the absolute VaR approach in our sample amounts to EUR 731bn as of end-2023 (Table 1), around 8% of the entire sector[11]. These funds are mainly domiciled in IE and LU (94% of NAV compared to 68% for all UCITS).

UCITS using the absolute VaR approach follow different investment strategies. Fixed income funds account for 52% of NAV of VaR UCITS (EUR 381bn), followed by mixed funds with 26% of NAV (EUR 192bn), **alternative UCITS** ('alt-UCITS') with 14% of NAV (EUR 103bn) and other residual categories (equity[12], convertibles, commodities and miscellaneous), which account for 8% of NAV combined. Within alt-UCITS, market neutral strategies account for the highest share of NAV (32%), followed by multi-strategy (29%) and global macro (18%), with the residual categories accounting for 21% of the combined NAV for alt-UCITS[13]. Alt-UCITS tend to pursue hedge-fund like strategies using derivatives and are analysed in more details in the next subsection.

Table 1
Absolute VaR UCITS sample
Size of sample at EUR 731bn

Category	No of funds	NAV in EUR bn
Alt-UCITS	450	103
Miscellaneous	85	15
Currency	14	0.8
Global Macro	90	19
Market neutral	125	33
Multi	105	30
Option trading	28	5
Fixed income	728	381
MMFs	13	13
Mixed	459	193
Other	438	41
TOTAL	2,088	731

Note: Number of funds by fund type and NAV, in EUR bn.
Sources: Morningstar Direct, NCAs, ESMA.

A closer look at alt-UCITS

A select number of UCITS pursue hedge-fund like strategies using derivatives, which is allowed under strict constraints on e.g. leverage, diversification, counterparty risks[14]. Those funds are typically labelled by the industry as either '**alternative UCITS**', as they implement complex investment strategies associated with alternative funds[15], or 'liquid alternatives', as they provide a higher degree of liquidity to investors (mostly daily redemptions) than traditional hedge funds (which have longer redemption frequencies and use redemption restrictions[16]). For ease of reference, we label this type of funds as 'alternative UCITS' or 'alt-UCITS' throughout this

[10] The NAV of all AIF HFs was EUR 124bn end-2023 while the NAV of HFs reporting EMIR amounted to EUR 60bn.

[11] This estimate is a lower bound since all UCITS using the absolute VaR approach in IE and LU have a NAV of EUR 997bn end-2023. However, some of those funds are not covered in Morningstar or do not report the NAV and hence are not covered in our analysis.

[12] 115 funds that are classified as "Equity" by Morningstar pursue equity long/short strategies.

[13] Market neutral strategies seek to profit from both increasing and decreasing prices in the financial markets. Global macro strategies attempt to profit from broad market swings caused by political or economic events, whereas multi-strategy funds aim to generate returns by investing in a number of varied strategies that generally exhibit minimal/negative correlation.

[14] The 2010 CESR Guidelines refer directly to such strategies in justifying the need for an alternative approach to the commitment method: "*there are investment strategies that can be pursued by UCITS through the use of financial derivative instruments for which the commitment approach does not adequately capture the related risks […] and/or for which it does not give, with regard to the complexity of the strategy, an adequate and risk sensitive view of the related risks (for instance hedge fund-like strategies)*".

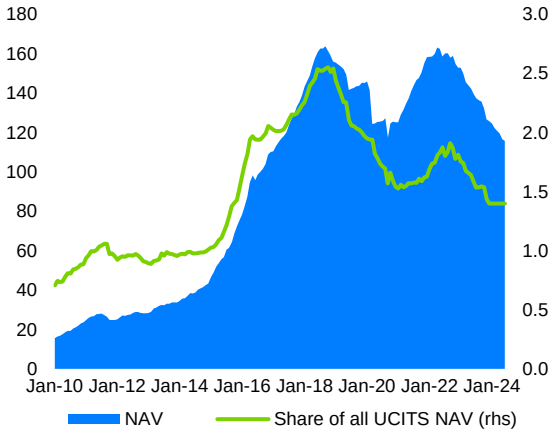
[15] The Commission Recommendation 2004/383/EC distinguishes explicitly between sophisticated and non-sophisticated UCITS.

[16] Such redemption restrictions include lock-up periods during which investors cannot redeem their shares or notice periods.

article[17]. Most alternative UCITS in our sample use the absolute VaR approach (82% of NAV), while only 11% use the commitment approach and 6% use the relative VaR approach[18].

Chart 2 shows the net asset value (NAV) of alt-UCITS from 2010 until 2024. Overall, their NAV has grown significantly from 2010 to 2017, likely driven by investors seeking alternatives to fixed-income funds, amid a negative interest rate environment. However, there were two periods of major decline from 2018 to 2020 and since 2023 (from 2.5% to 1.5% of total UCITS assets). These developments may indicate that alt-UCITS are subject to cyclical fluctuations, potentially influenced by a combination of factors such as shifts in investor sentiment, interest rate cycles, general economic conditions, and changes in monetary policy.

Chart 2
Alt-UCITS NAV
Cyclical fluctuations, decline since 2023

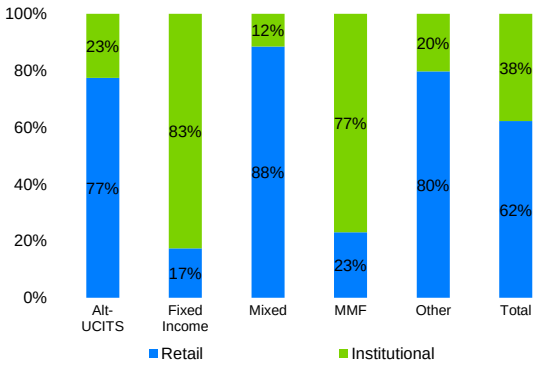


Note: NAV of Alt-UCITS, in EUR bn (lhs), and share of all UCITS NAV (rhs), in %.
Sources: Morningstar Direct, NCAs, ESMA.

Investor composition

While UCITS are typically intended to be readily accessible by retail investors, institutional investors have a significant presence in this segment, accounting for 38% of the overall investor base in terms of NAV (Chart 3).

Chart 3
Investor composition for absolute VaR UCITS
Large presence of institutional investors



Note: Share of retail and institutional investors in VaR UCITS at end of 2023, % of NAV.
Sources: Morningstar, ESMA.

All types of UCITS VaR funds, with the exception of fixed income and MMFs, have a strong retail investor base. Retail investors account for 77% of NAV for alt-UCITS, 88% for mixed funds and 80% for the remaining other VaR funds[19].

Industry concentration

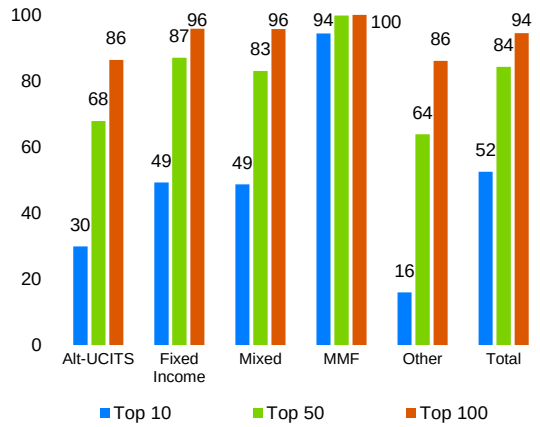
When analysing the fund size by management companies (Chart 4), alt-UCITS exhibit a more dispersed structure compared to other categories. The top-10 management companies control only 30% of alt-UCITS, rising to 68% for the top 50 and 86% for the top 100. This contrasts with fixed income and mixed funds using the absolute VaR method, which show much higher concentration levels, reflecting the dominance of larger firms in these segments.

[17] "Alternative UCITS" and alt-UCITS are used in this article for ease of use only. They are not terms used in EU legislation and do not refer to regulatory classifications.

[18] For the remaining 1% the information on the global exposure method used is unavailable.

[19] ESMA (2013) provides an assessment of the risk/returns characteristics of alt-UCITS in the context of the sale of complex products to retail investors ('retailisation').

Chart 4
Manager concentration
Top 100 managers hold majority of VaR UCITS



Note: VaR UCITS management companies concentration, in % of NAV.
Sources: Morningstar Direct, ESMA.

The relatively fragmented structure of alt-UCITS indicates a competitive and dynamic market, with ample opportunities for smaller and mid-sized management companies to differentiate through innovative strategies and niche investment solutions. This diversity underscores the versatility and specialised nature of the alt-UCITS market, which plays a key role in offering investors access to a wide array of strategies beyond traditional asset classes.

Measuring leverage for VaR UCITS

Leverage metrics for VaR UCITS

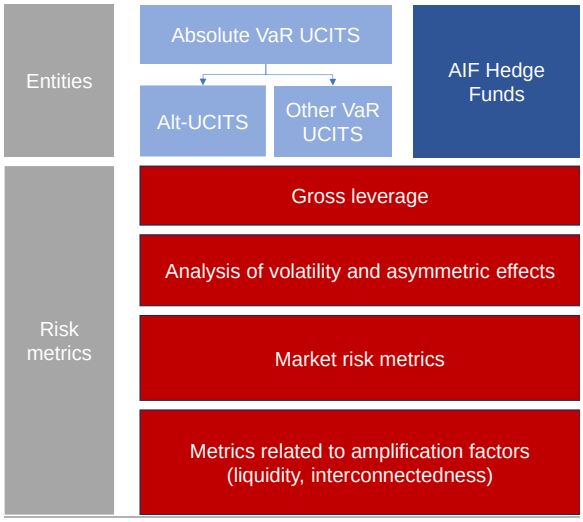
Since funds using the absolute VaR approach do not report leverage under the commitment approach, we use a range of leverage-related metrics instead.

Our analysis focuses on the activities carried out by the funds, specifically their use of derivatives and repurchase agreements (repos). These instruments are key components of strategies that can amplify risks and exposures and our analysis aims to capture the potential risks associated with these activities.

We adopt an holistic approach (Chart 5) to understand leverage-related risks stemming from funds' activities, in line with the risk metrics suggested by the FSB (2024):

- Gross leverage assessment
- Econometric analysis of volatility-driven dynamics
- Evaluation of market risk metrics
- Risk metrics related to amplification factors

Chart 5
Risk-based approach
Measures of leverage-related risks



Gross leverage captures the total nominal exposure of a fund, calculated as the sum of its long positions along with those positions that replicate short exposures through derivatives, divided by the net asset value (NAV). Because UCITS are not permitted to engage in physical short selling, they achieve short exposure by replicating these positions using derivatives. Unlike the commitment approach, gross leverage does not take into account netting and hedging arrangements and hence might overstate net exposures (FSB, 2024). Therefore, we rely on a range of alternative metrics to address this issue.

Our second approach uses **econometric techniques** to quantify how changes in a portfolio's value affect its effective leverage. This phenomenon has been extensively described in literature since the foundational studies by Black (1976) and Christie (1982). When portfolio values decline, the implicit leverage in the portfolio increases as the capital falls (to absorb losses) and hence any fixed obligations (e.g. in our case, margins posted for derivative contracts) represent a greater proportion of the diminished total value. This mechanism creates an asymmetric relationship between portfolio returns and volatility, where negative returns typically generate larger volatility increases than positive returns of equal magnitude. The strength and characteristics of this asymmetric effect can be quantified using econometric techniques to estimate volatility (Textbox 2). These methods allow portfolio managers to measure how

leverage dynamics impact risk profiles across different market conditions, ultimately improving risk management and portfolio construction decisions.

As a third approach, we evaluate metrics related to **market risk** to assess leverage. Actual VaR reported by funds provide information on market risk, and leveraged entities are more likely to report higher VaR than others. In this context, an important metric is the maximum drawdown, which measures the largest peak-to-trough decline of a fund over a given period, and appears correlated with leverage. Funds with higher leverage are more likely to suffer larger declines in their value than other funds during stress periods.

We finally complement our analysis by using a range of metrics related to amplification factors such as liquidity imbalances or interconnectedness.

Textbox 2

Leverage effect at fund level

GJR GARCH Methodology for volatility analysis

The Glosten-Jagannathan-Runkle Generalized Autoregressive Conditional Heteroskedasticity (GJR GARCH) model is an extension of the GARCH framework that explicitly incorporates asymmetry in volatility dynamics (Glosten, Jagannathan and Runkle, 1993). It is particularly effective in capturing the 'leverage effect' where negative shocks to returns increase volatility more than positive shocks of the same size.

The conditional variance in a GJR GARCH model is expressed as:

$$\sigma_t^2 = \omega + \alpha r_{t-1}^2 + \gamma r_{t-1}^2 I(r_{t-1} < 0) + \beta \sigma_{t-1}^2$$

where, $I(r_{t-1} < 0)$ is an indicator function equal to 1 if the lagged return (r_{t-1}) is negative and 0 otherwise. The parameter γ captures the additional impact of negative shocks on volatility, allowing the model to differentiate between the effects of positive and negative returns. This flexibility makes GJR GARCH well-suited for analysing financial markets where bad news tends to drive larger volatility increases than good news.

Usefulness of GJR GARCH analysis

The GJR GARCH model is particularly useful in capturing the dynamic behavior of volatility under systemic stress scenarios. Since volatility tends to be higher during stress periods, by accounting for the asymmetric response to market shocks, it provides a more nuanced understanding of volatility clustering and the risk dynamics of hedge funds. This makes it invaluable for risk management and financial stability analyses, where understanding downside risk is critical.

III. Use of leverage by VaR UCITS

Gross leverage

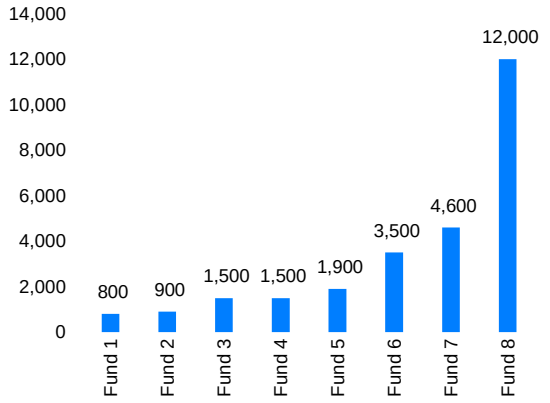
In this section, we review gross leverage metrics for our sample of VaR UCITS. We first provide, as an illustration, evidence of high expected gross leverage disclosed in prospectuses, before looking at actual gross leverage measures.

Example of high expected gross leverage for absolute VaR UCITS

Chart 6 shows the maximum expected levels of leverage for a sample of eight UCITS, all using the absolute VaR approach. The expected levels of leverage were disclosed by the funds in their

prospectuses[20]. For this sample of funds, gross leverage is typically above nine times the NAV and, in one case, as high as 120 times the NAV of the fund, which constitute very high levels of gross leverage in absolute terms.

Chart 6
VaR UCITS gross leverage in prospectuses
Very high expected gross leverage



Note: Expected gross leverage for eight UCITS using the absolute VaR approach, in % of NAV.
Sources: Funds' prospectuses, ESMA..

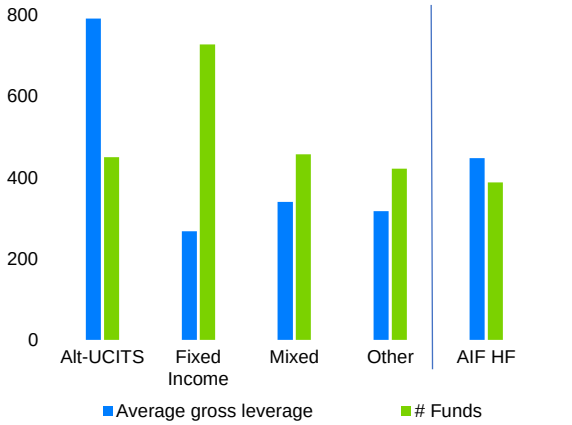
Gross leverage measures for VaR UCITS

While leverage can increase returns on the upside, it can also magnify losses. High levels of leverage increase the risk of market impact, especially if the funds' trading behaviour is procyclical. Gross leverage can come from both securities financing transactions and the use of derivatives. Overall, most of VaR UCITS leverage comes from the use of derivatives, rather than the use of securities financing transactions.

High exposures from derivatives

The use of synthetic leverage is a common feature in VaR UCITS, and it is more prominent in alt-UCITS, which appear to be extremely leveraged on a gross basis, with a weighted average leverage close to 800% of NAV (Chart 7). This level is higher than the gross leverage of AIF hedge funds (448% of NAV), and other VaR UCITS such as mixed funds (340% of NAV), other funds (317% of NAV) and fixed income funds (268% of NAV).

Chart 7
Gross leverage ratio
Alt-UCITS leverage higher than AIF hedge funds

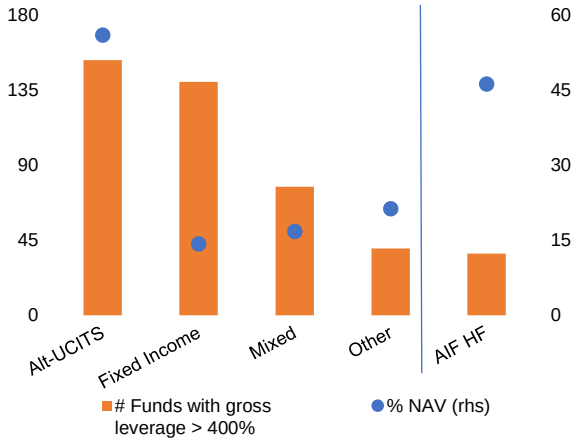


Note: Weighted average gross leverage by fund type, in % of NAV, and number of funds.
Sources: AIFMD, EMIR, Morningstar Direct, SFTR, ESMA.

Looking at the sample of funds with high gross leverage (above 400% of NAV), alt-UCITS have the highest number of funds (153 funds, accounting for 56% of alt-UCITS NAV), followed by fixed income and mixed funds (although the share of highly leveraged funds is around 15% of the NAV for those strategies), whereas AIF hedge funds have 37 funds with leverage above 400% NAV, amounting to 46% of AIF hedge fund NAV (Chart 8). Altogether, these highly leveraged and heterogeneous funds — spanning alternative, mixed, fixed income, and other strategies — represent a total NAV of EUR 152bn.

[20] Those funds were selected based on the levels of leverage disclosed in their prospectuses. Prospectuses from 50 alt-UCITS were retrieved and funds with the highest leverage were chosen for illustrative purposes.

Chart 8
Highly leveraged funds
More than half of alt-UCITS highly leveraged



Note: Number of funds with gross leverage above 400% of NAV, and share of each segment represented by those funds, in % of NAV.
Sources: AIFMD, EMIR, Morningstar Direct, SFTR, ESMA

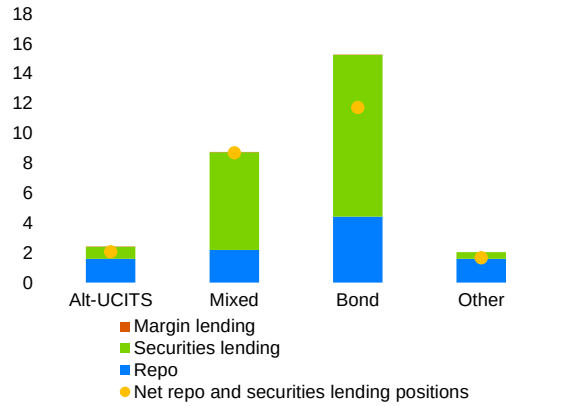
Limited leverage from securities financing transactions

SFTR data provide information on a range of activities that might increase leverage such as margin loans, repurchase agreements or securities lending. Margin lending occurs when a counterparty lends money to a fund for the purchase of securities, which are used as collateral for the loan. Such activity is typically associated with hedge funds borrowing from prime brokers (FSB, 2023). In a repo transaction, one counterparty (the borrower) transfers securities in exchange for cash to another counterparty (the lender), and the borrower commits to repurchase the securities at a future date. Securities lending refers to a transaction where one counterparty borrows securities from the other, with the commitment to return equivalent securities at a future date.

Overall, the use of SFTs by VaR UCITS is limited, with gross exposures of EUR 28bn as of end-2023 (Chart 9), 4% of total NAV. Only a few funds use margin loans, with overall borrowing of EUR 8mn. Repo transactions amount to EUR 10bn, mostly from fixed income and mixed funds. Securities lending amounts to EUR 18bn.

VaR UCITS are mostly net lenders through repo and securities lending transactions, and hence leverage obtained through secured borrowing remains very limited, with less than a dozen funds having secured borrowing above 10% of the NAV. A few funds lend out securities against cash collateral, but the amounts are small (around EUR 214Mn).

Chart 9
Exposures to SFTs
VaR UCITS are net lenders



Note: Gross SFTs positions by fund type, in EUR bn.
Sources: SFTR, ESMA.

Since gross leverage might overstate UCITS exposures, as it does not take into account netting and hedging arrangements, we complement our analysis by looking at two alternative approaches: (i) the estimation of leverage effects using econometrics and (ii) the use of metrics related to market risk.

Volatility analysis and asymmetric effects in alt-UCITS

Under the absolute VaR framework, a portfolio's volatility defines how much synthetic exposure can be generated: lower volatility leads to a lower VaR, which in turn permits funds to increase their exposure via derivatives until the risk constraint is reached (Textbox 1). Monitoring these volatility dynamics through market data enables us to assess how investment funds build their risk profiles relative to broader market benchmarks. Using commercial indices from Eurekahedge, we analyse monthly performance of EU hedge funds (HFs) and alt-UCITS[21].

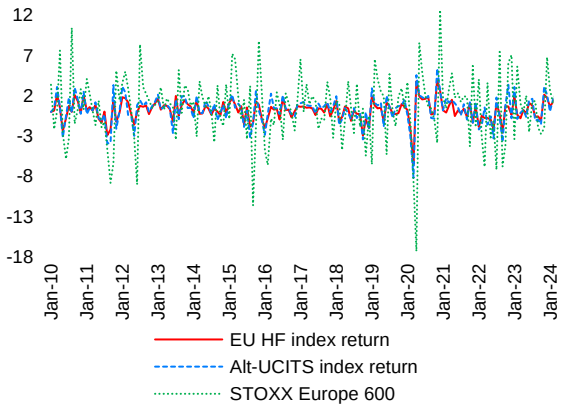
Chart 10 shows that while the overall return trends between alt-UCITS and EU HFs are broadly aligned, alt-UCITS (blue series) exhibit noticeably wider fluctuations than EU HFs (red series). When we add the STOXX Europe 600

[21] Eurekahedge labels alt-UCITS as 'UCITS Hedge Funds'. The Eurekahedge UCITS hedge fund index is an equally weighted index of 490 funds, which are all UCITS III compliant.

(green series) as a broad equity market benchmark, however, its fluctuations are consistently larger than that of both alt-UCITS and HFs, reflecting the broader market sensitivity to diverse risk factors.

This contrast is crucial in the context of VaR-based risk management, where the underlying volatility directly influences the extent to which funds can build synthetic exposures employing activities such as derivatives trading and repurchase agreements. As described earlier, periods of low volatility can allow UCITS to significantly amplify their exposures under the absolute VaR framework.

Chart 10
Alt-UCITS and EU Hedge funds vs. market index
Alt-UCITs and HFs performance broadly aligned

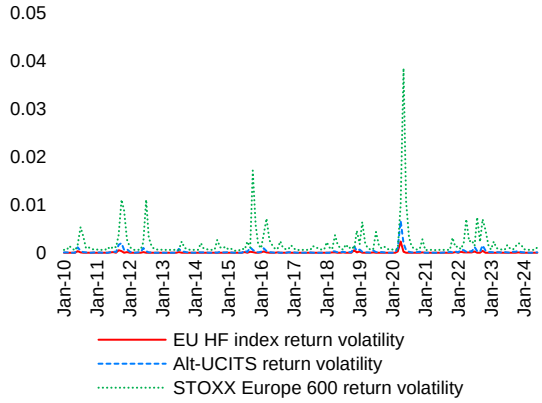


Note: STOXX EUROPE 600, EU EWHF portfolio and alt-UCITS index returns. Alt-UCITS pursue HF-like strategies and are UCITS III compliant. Returns in %.
Sources: EurekaHedge, ESMA.

To explore these features in more detail, we estimate return volatility for each fund type and the equity index benchmark using a GJR GARCH model that accounts for time-varying volatility and clustering effects (i.e., periods of low volatility can be followed by periods of high volatility).

Chart 11 highlights that alt-UCITS consistently demonstrate higher volatility than HFs. This finding is particularly significant because, under the absolute VaR framework, periods of low underlying volatility can allow funds to significantly amplify their synthetic exposures. The consistently higher estimated volatility for the STOXX Europe 600 suggests that, while alt-UCITS may display heightened volatility relative to HFs, their market risk profile remains relatively contained when compared to broad equity indices, possibly reflecting diversification benefits under UCITS requirements.

Chart 11
Alt-UCITS and HF volatility vs. market volatility
Alt-UCITS more volatile than HFs



Note: STOXX Europe 600, EU EWHF portfolio and UCITS HFs index return volatility. Alt-UCITS pursue HF-like strategies and are UCITS III compliant. Volatility estimated with a GJR-Garch (1,1), in %.
Sources: EurekaHedge, ESMA.

Expanding our analysis, we examine the volatility dynamics at fund-level for 280 alt-UCITS, using individual return data from Morningstar.

The results show evidence of a leverage effect for the majority of alt-UCITS. Approximately 70% of the funds display an asymmetric, leverage-like effect, whereby negative shocks lead to heightened volatility, thereby increasing market risk. In contrast, about 30% of the funds show an inverse response to volatility shocks, a pattern often associated with absolute return strategies aimed at market neutrality. These strategies are designed to generate returns independent of market movements, potentially mitigating procyclical effects even during periods of high volatility. However, the extent to which these strategies effectively dampen market cycles depends on their specific implementation and prevailing market conditions.

Overall, we find that the majority of alt-UCITS exhibit a leverage effect, with an amplifying effect of volatility on their returns and hence a risk of procyclical effects, while for a smaller portion of alt-UCITS negative returns are associated with lower volatility, which could mitigate procyclical effects. This indicates some heterogeneity within the alt-UCITS segment.

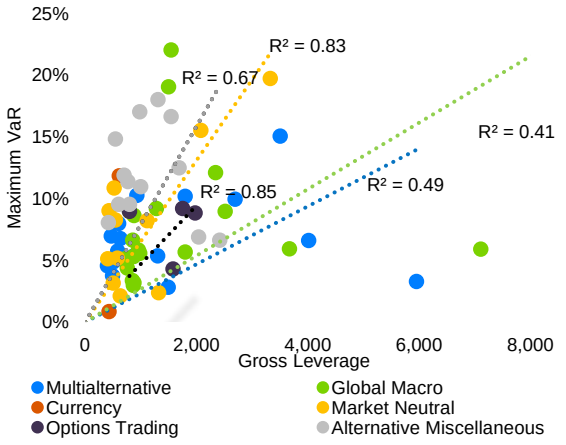
This analysis emphasises that volatility, not simply traditional leverage metrics, is a key driver of risk in VaR UCITS. The inherent sensitivity of synthetic exposure to changes in underlying volatility presents a potential vulnerability: in

periods of low volatility, funds might inadvertently exceed conventional exposure limits, thereby elevating their risk profiles. While parallels with HF dynamics exist, a deeper investigation into these volatility-driven risks is essential for a comprehensive understanding of their implications for financial stability. Therefore, the next section explores metrics related to market risks under our third approach.

Insights from market risk metrics

Since gross leverage is an imperfect measure of risks, notably because it includes interest rate derivatives exposures measured as notional values, rather than adjusted by duration, we correlate our leverage measures to alternative indicators. We focus on a sample of 150 VaR UCITS with the highest gross leverage, which are all alt-UCITS. For each fund we manually collect the average and maximum VaR disclosed in annual reports. Chart 12 shows that, for the most leveraged UCITS, high levels of gross leverage are associated with a high reported VaR, and this result is similar when average or maximum VaR are used. This result points to directional derivative positions used by those funds rather than hedging.

Chart 12
Actual VaR and gross leverage for alt-UCITS
Positive relationship between leverage and VaR

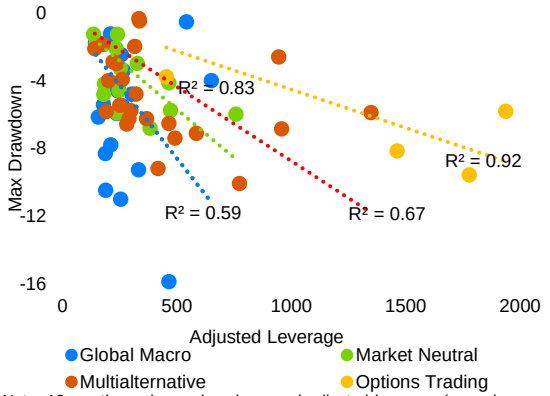


Note: Maximum VaR (as % of NAV) and gross leverage (as % of NAV) of VaR UCITS funds with gross leverage above 400% of NAV.
Sources: Annual reports, EMIR, Morningstar, SFTR, ESMA.

In addition, we also look at the relationship between maximum drawdown and gross leverage. The intuition is that – due to the asymmetric effect of leverage – a decline in asset prices results in higher leverage by reducing the NAV, therefore negative returns are associated with higher volatility than positive returns, funds with higher leverage are more likely to suffer larger declines in their value than other funds during challenging periods. We also use an adjusted measure of leverage: we do not include interest rate and foreign exchange derivatives since they might be used for hedging and might inflate gross leverage measures.

Chart 13 shows a negative relationship between adjusted gross leverage and drawdowns: funds that experienced the largest declines in NAV in 2023 are also those with the highest leverage. However, this relationship does not apply uniformly to all fund strategies. It is strongest for global macro funds, market neutral and multi-strategy funds. For funds pursuing currency strategies and a residual category of funds, there is no clear relationship between leverage and drawdowns.

Chart 13
Maximum drawdowns and leverage for alt-UCITS
Leveraged funds suffer worst drawdowns



Note: 12-month maximum drawdown and adjusted leverage (gross leverage excluding IRDs and FX derivatives) of VaR UCITS funds with gross leverage above 400% of NAV, excluding Alternative Miscellaneous funds, in %. Adjusted leverage was used to exclude funds that may use FX and interest rate derivatives for hedging. Leverage on x-axis; Max drawdown on y-axis.
Sources: EMIR, Morningstar, SFTR and ESMA.

These findings are closely related to the volatility analysis discussed earlier, which revealed evidence of the leverage effect in 70% of alt-UCITS. The leverage effect amplifies volatility following negative market shocks, thereby increasing the likelihood and severity of drawdowns for highly leveraged funds. This mechanism provides a direct link between the two metrics: heightened volatility driven by the leverage effect compounds downside risks, making drawdowns more severe.

By accounting for this dynamic, we can better understand how market conditions interact with fund-specific characteristics to drive both volatility and drawdown outcomes. Moreover, the heterogeneity in responses across fund strategies underscores the importance of

distinguishing between systemic risk contributors and funds with lower market correlation. For instance, absolute return and market-neutral strategies often exhibit unique behaviours during periods of systemic volatility, as they tend to decouple from traditional market shocks. This highlights the need for a nuanced approach to risk assessment that accounts for the diverse characteristics of alt-UCITS and their varying exposure to leverage and market dynamics.

Overall, our multi-pronged approach shows that (i) some VaR UCITS have high gross leverage, (ii) there is evidence of a leverage effect for most alt-UCITS and (iii) VaR UCITS with the highest gross leverage measure exhibit higher market risk.

We complement our analysis by looking at risk metrics related to potential amplification factors, including risks related to complexity, liquidity imbalances and interconnectedness. Given that some VaR UCITS exhibit features commonly associated with hedge funds, we use our sample of AIF HFs as a benchmark when analysing risk metrics.

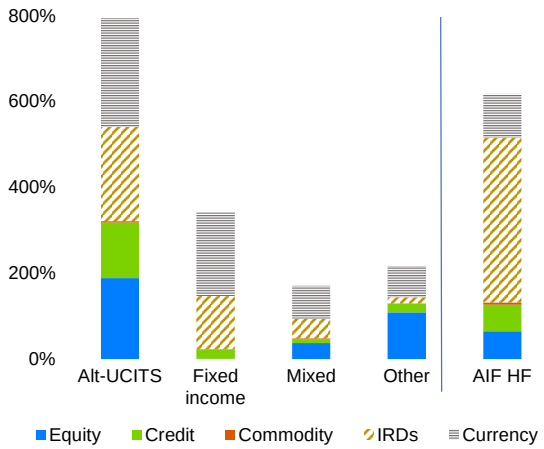
IV. Comparing risk metrics for VaR UCITS and AIF HFs

We focus on the composition and complexity of derivative exposures, liquidity risks related to potential margin calls and risks related to concentration and interconnectedness.

Decomposition of synthetic leverage

Absolute VaR UCITS and hedge funds are exposed to a wide range of derivatives asset classes (Chart 14). Their composition varies based on the investment strategy. Alt-UCITS use mostly interest rate, equity and currency derivatives and their gross exposure is very similar to that of AIF hedge funds (around 800% of the NAV). At product level, for interest rate derivatives, the biggest positions held by alt-UCITS and AIF hedge funds are both in interest rate swaps, however this is less pronounced for alt-UCITS. In equity and credit derivatives most positions are in swaps and options. As expected, fixed income UCITS mostly rely on currency, interest rate and to a lesser extent credit derivatives, whereas mixed UCITS are exposed to interest rate, currency and equity derivatives, while 'other' UCITS mostly to equity derivatives.

Chart 14
Gross derivative notional by asset class
Alt-UCITS, AIF HF with similar gross notional



Note: Gross notional of absolute VaR UCITS and AIF HFs, in percent of NAV.
Sources: AIFMD, EMIR, Morningstar, ESMA.

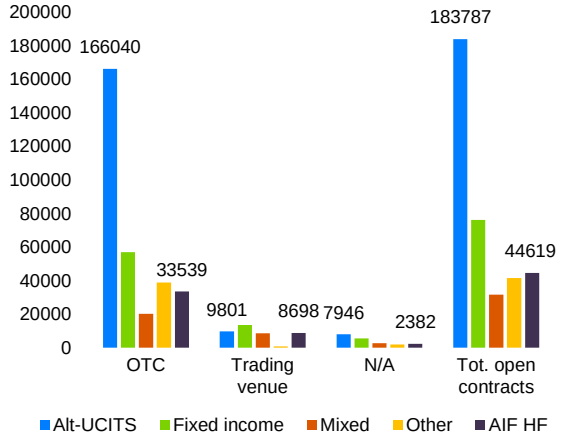
Complexity

Complexity may be reflected in the scale and scope of fund operations. The higher the complexity, the more difficult and costly it may be to unwind investment positions of a fund during periods of market downturns. Following recent work by the US Office of Financial Research (OFR, 2024) we measure complexity at fund-level by using the number of investment positions and the amount of over-the-counter (OTC) derivatives' contracts [22] held by the fund (Chart 15). We find that alt-UCITS have more open positions (total of 183,787) than all other VaR UCITS combined (total of 149,285), and a larger OTC share than AIF hedge funds (90% of open positions vs. 75%) or US hedge funds (around 70% according to the OFR). Furthermore, only 66% of alt-UCITS positions are centrally cleared, against 90% for AIF hedge

[22] Derivatives traded on trading venues are standardised contracts with transparent characteristics and prices, whose usage encourages market participation, increases liquidity, and helps to improve market efficiency. Conversely, OTC derivatives are executed bilaterally with features that can be tailored to the two counterparties and are thus more opaque to the market. For that reason, the split between OTC and trading venues is an important indicator of transparency, standardisation, liquidity and ultimately complexity in derivatives markets.

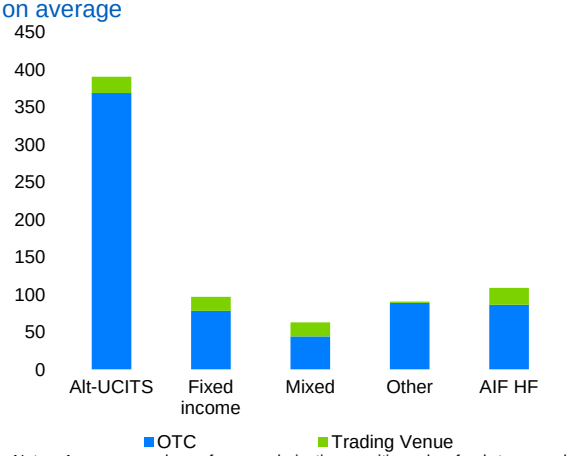
funds, pointing to the use of more complex and bespoke derivatives. Finally, regarding the average number of open derivative positions, alt-UCITS have 408 positions on average, compared with less than 270 for all other VaR UCITS combined and 115 for AIF hedge funds (Chart 16).

Chart 15
Number of open derivative positions
Prevalence of OTC derivatives



Note: Number of open derivative positions, by execution venue and fund type.
Sources: AIFMD, EMIR, Morningstar Direct ESMA.

Chart 16
Average number of open derivative positions
Alt-UCITS have larger number of derivatives positions on average



Note: Average number of open derivative positions by fund type and execution venue.
Sources: AIFMD, EMIR, Morningstar Direct, ESMA.

Overall, the analysis shows that some VaR UCITS, especially alt-UCITS, use a wide array of derivatives to obtain synthetic leverage and that the complexity of their strategies is higher than for hedge funds.

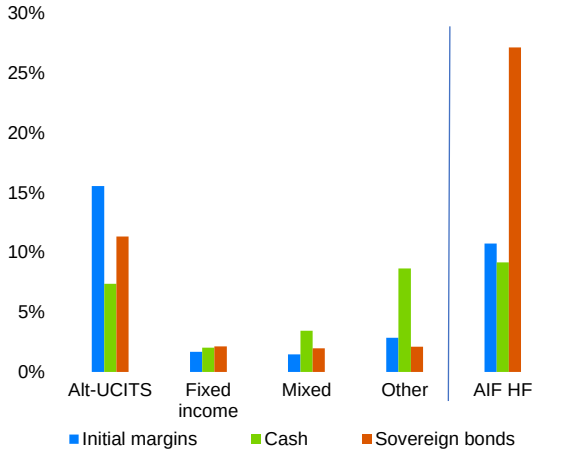
Risk related to liquidity imbalances

We examine a set of metrics that capture **liquidity risks** arising from the use of synthetic leverage, with a particular emphasis on indicators tied to initial margins. Initial margins represent the upfront collateral posted by the fund to open a position in a derivative contract. These margins enable the fund to leverage its positions, gaining large exposure to various asset classes with relatively limited capital. Initial margins reflect the size of the potential future exposure over the life of the contract.

Our focus centres on two ratios: (i) total gross margins posted to NAV and (ii) total margins posted to cash holdings. Broadly, these metrics assess the fund's ability to withstand sudden surges in margin calls. The initial margins-to-NAV ratio reflects the fund's capacity to absorb losses stemming from adverse shifts in its derivative positions, while the initial margins-to-cash ratio captures its ability to meet margin calls using available unencumbered cash.

At the aggregate level, we find that alt-UCITS have higher initial margins, reflecting high derivatives exposures and/or exposures to riskier derivatives, and lower levels of highly liquid assets, measured by cash and sovereign bonds, than AIF hedge funds (Chart 17).

Chart 17
Exposures to IMs and highly liquid assets
Alt-UCITS hold less highly liquid assets than AIF HFs

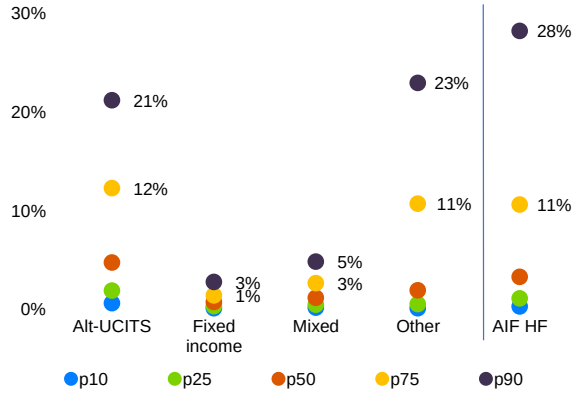


Note: Initial margins, cash and sovereign bonds exposures by fund type, in % of NAV.
Sources: AIFMD, EMIR, Morningstar Direct, ESMA.

Since aggregate measures might hide heterogeneity within funds, we also look at the distribution of risk metrics among funds. Chart 18 indicates that the median ratio of margins to NAV

is higher for alt-UCITS than hedge funds, while both fund types have high outliers, with a ratio above 20% of NAV.

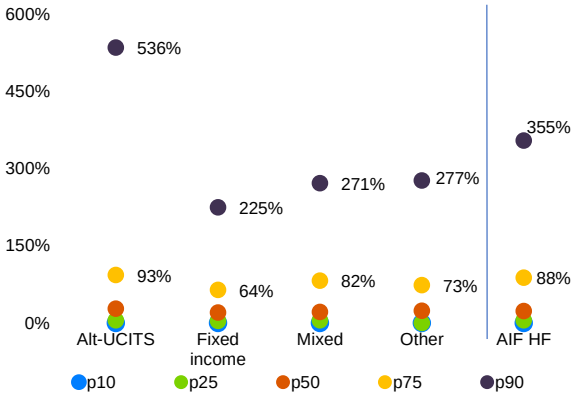
Chart 18
Initial margins to NAV
Median higher for alt. UCITS



Note: Distribution of total gross initial margins posted to NAV ratio, in %. 'HFs' = Hedge fund AIFs. 'Other' category includes commodities, convertibles, equity and miscellaneaous funds.
Sources: AIFMD, EMIR, Morningstar Direct, ESMA.

The ratio of initial margins to cash, used as a proxy for funds' ability to meet future margin calls indicates that one fourth of alt-UCITS have a ratio above 90%, similar to AIF hedge funds, implying potential liquidity risks. In addition, Chart 19 illustrates that 10% of alt-UCITS have margins which are five times higher than their cash holdings (536% of cash), compared to 355% for the top 10% hedge funds. Overall, liquidity risks related to derivatives might be high for alt-UCITS and above similar risk measures for AIF hedge funds.

Chart 19
Initial margins to cash
Similar distribution for alt-UCITS and HFs



Note: Distribution of total gross initial margins posted to cash, in %. 'HFs' = Hedge fund AIFs. 'Other' category includes commodities, convertibles, equity and miscellaneaous funds.
Sources: AIFMD, EMIR, Morningstar Direct, ESMA.

Relatedly, Molestina, Wedow, Weistroffer (2023) focus on bond UCITS using the VaR approach and find that outflows are greater for leveraged funds during stress periods and after bad performance compared to unleveraged funds. This implies that leveraged funds are more exposed to liquidity risks than other funds. In addition, the authors find that managers of leveraged funds react pro-cyclically to losses by selling more assets than other funds. Those two findings imply possible further downward pressures on markets in times of stress.

Interconnectedness and concentration

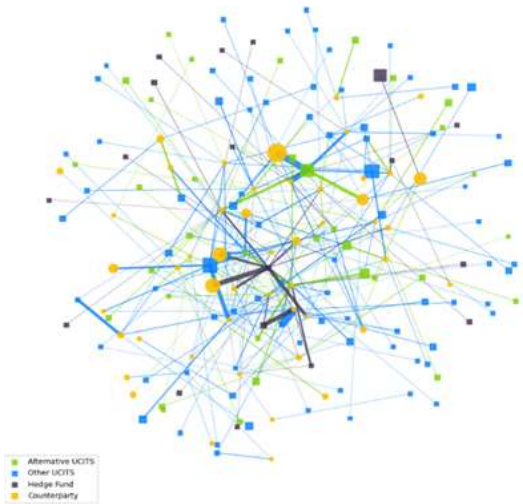
The use of leverage by funds increases **counterparty exposures**, interconnectedness and concentration, which remain important features for assessing financial stability risks in derivative markets. High concentration, where a small number of counterparties dominates market activity, heightens the risk that a failure or disruption involving one of these entities could destabilize the market and other institutions. Similarly, greater interconnectedness increases the likelihood of contagion, allowing disruptions to spread broadly and impact a large number of counterparties.

Chart 20 provides an illustration of the network between counterparties, VaR UCITS and AIF hedge funds. Similarly to other recent studies[23], the analysis shows a highly concentrated network

[23] See ESMA (2023) and FSB (2023).

with few counterparties strongly interconnected and central to the network.

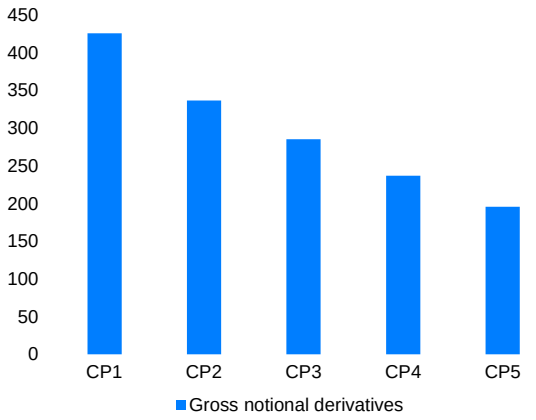
Chart 20
Concentration risk: Network analysis
High concentration, some funds with only few counterparties



Note: Undirected network of total notional amount outstanding as of end-2023. The size of the shapes is proportional to the total notional amount outstanding. The thickness of the line is proportional to the total notional amount outstanding between the fund and the counterparty. Notional amounts are shown if they exceed EUR 0.2bn. Sources: AIFMD, EMIR, Morningstar Direct ESMA.

Many funds rely on multiple counterparties to diversify their source of leverage. However, the network also presents very little peripheral nodes grouping; the outer nodes are more sparsely connected, representing smaller isolated clusters of funds that only depend on one or two counterparties. Alt-UCITS and AIF hedge funds have denser connections and thicker links (representing higher notional values) than other VaR UCITS. Overall, the top five counterparties account for 50% of funds' gross derivatives notional (Chart 21).

Chart 21
Counterparty exposures
Relevant amounts held by top counterparties

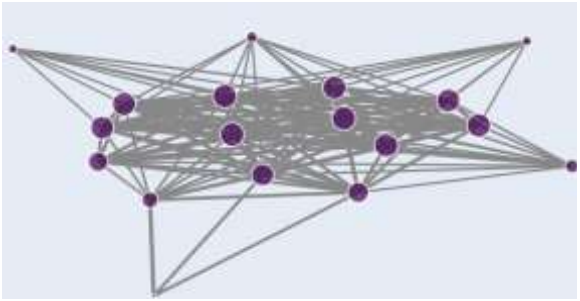


Note: Gross notional derivatives held by the top 5 counterparties, in EUR bn. Sample includes all Absolute VaR UCITS and hedge funds AIFs. Data as of end-2023.
Sources: AIFMD, EMIR, Morningstar Direct, ESMA

The degree of **common exposures** by VaR UCITS is another possible vulnerability: funds might have a large market footprint and shocks to the funds or to the underlying market can spillover to entities exposed to the same assets. To analyse this, we construct a network that quantifies the portfolio similarity among funds' equity swaps exposures. We focus on equity swaps because they account for a large portion of equity derivatives exposures of alt-UCITS (75% of NAV), are all traded OTC, and were the main instruments used by Archegos to build large, concentrated positions in US stocks (ESMA, 2022). We calculate pairwise cosine similarity between the normalized vector of gross notional exposures (Girardi et al., 2021, ESMA, 2021).

This similarity measure captures how closely aligned the portfolios are in terms of their gross notional exposures to different instruments. Chart 22 shows a tight network of VaR funds with similar equity swap exposures. The width of each link is directly related to our portfolio overlap measure and the size of each node is determined by the degree centrality of the fund in the network.

Chart 22
Network of common exposures through equity swaps
Tight network of funds with similar exposures



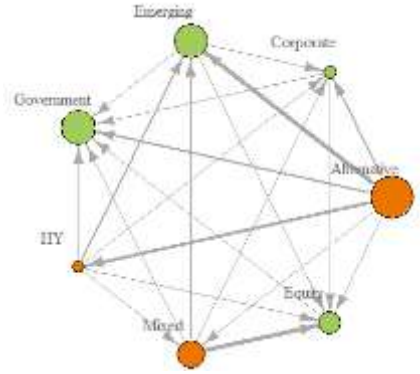
Note: Each node is a fund, and the size of the node is proportional to the eigenvector centrality. Edges are based on cosine similarity measures, only values above 0.5 are shown for readability.
Sources: EMIR, Morningstar Direct, ESMA.

High portfolio similarity implies that any shock to the underlying (or any shock to one of the counterparties) is likely to trigger price pressures on other entities exposed to the same asset. This effect is compounded if the market footprint of funds with high common exposures is substantial. This has been the case for GBP LDI funds which had similar concentrated exposures to long-dated and inflation-linked gilts (see Barria and Pinter (2023)).

In the case of equity swaps held by VaR UCITS, exposures are spread out across a range of underlying assets. Aggregated positions of those funds account for a small fraction of the market capitalisation at issuer level (less than 2%), implying a low market footprint and hence a more moderate price impact in case of liquidation. However, our analysis does not include direct holdings of equities by VaR UCITS due to the lack of harmonised reporting of UCITS portfolio data.

Beyond common exposures, funds might also transmit **spillovers** to other segments of the fund industry. During stress periods, alt-UCITS tend to propagate volatility shocks to other funds. Using the Diebold and Yilmaz (2009, 2012, 2014) connectedness framework, Bouveret, Ferrari and Gentile (2023) show that alt-UCITS are net transmitters of volatility shocks to other types of funds (Chart 23). The net transmission of volatility shocks is highest during stress episodes such as the Brexit referendum in June 2016.

Chart 23
Interconnectedness
Alt-UCITS transmitted shocks in 2016



Note: Network analysis of pairwise net volatility spillovers across funds strategy during the Brexit period. Orange nodes indicate transmitters of volatility shocks while green nodes indicate absorbers of volatility shocks. Volatility spillovers are based on the methodology outlined by Diebold and Yilmaz of (2009, 2012, 2014). See for details Bouveret, Ferrari and Gentile (2023), ESMA.

Conclusion

This article shows that UCITS using the absolute VaR approach account for 8% of the UCITS sector. Our analysis further suggests that

(i) some UCITS using the absolute VaR approach (with a NAV equal to EUR 152bn, which is higher than the size of the EU AIF HF sector) are highly leveraged measured by the standards of alternative funds, and that

(ii) several UCITS implement hedge-fund like strategies which might not be suitable to all types of retail investors.

On (i), while most funds using the VaR approach are bond and mixed funds with limited leverage, we find that a subset of funds pursuing these strategies have high leverage. For the funds with the highest gross leverage measure, we show that complementary approaches also point to high market risk and directional exposures. In addition, most funds which exhibit high gross leverage share similarities with 'traditional' hedge funds across a range of risk metrics and in their complexity.

While the size of these highly leveraged UCITS is relatively small in the context of the broader UCITS universe (with a combined NAV of EUR 152bn), ESMA, together with National Competent Authorities, will continue to closely monitor and further analyse the risks that these funds could pose to financial stability through liquidity risks, counterparty and concentration channels.

Within VaR UCITS, we document that a large fraction of funds with high gross leverage are funds pursuing alternative strategies.

On (ii), in terms of investor protection, UCITS using the absolute VaR approach can be marketed to retail investors and be passported across the EU under the UCITS framework. We have shown that, apart from mixed funds, they indeed have a large retail investor base. However, due to lack of granular data, it is not possible to determine whether these investors are primarily mass affluent individuals or high-net-worth individuals seeking higher yields in exchange for greater risk.

Looking forward, our analysis calls for a more systematic exploration of the risks that absolute VaR UCITS can pose through their extensive use of synthetic leverage. Supervisory insights play an important role, and, in future, granular fund portfolio data could enable national authorities and ESMA to undertake targeted analysis in this field.

Since the use of the VaR approach is also allowed in other jurisdictions, such as in the US for mutual funds under the SEC derivative rules (SEC, 2020) and in the UK, our empirical findings may be of wider interest as well.

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