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## The long and short of leverage and VAR Providing context to hedge fund risk limits

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**How risky are hedge funds compared to long only funds?**

**Why do most fixed income hedge funds have a Value at Risk (VAR) risk limit?**

**What (the actual heck) does VAR even mean?**

These are some of the questions asked by solution providers and advisors once they start delving into some of the intricacies of investing into hedge funds.

It is undeniable that hedge funds have moved on from unpopular obscurity to an asset class that is growing in popularity and accessibility. One only needs to look at the range of CISC-regulated retail hedge funds (RHF) that are now available on most LISP platforms.

The use of hedge funds in both institutional and retail portfolio solutions has become par for the course. This has resulted in a renewed drive to know more about the mechanics, benefits and risks related to such investments.

This article provides a practical guide to help contextualise the risk (of capital loss) when investing in hedge funds – within the framework of current South African regulation.

Many hedge funds focus on extracting relative value (price differences) between assets, rather than attempting to capitalise on general market movements. These relative price differences are often quite small and less volatile than the price movement of the assets themselves.

Long and short positions are required to capitalise on relative value opportunities. Leverage is used to amplify these relative value returns in order to generate a risk-return profile that is aligned to investor objectives.

A significant portion of hedge fund regulation revolves around providing prudent limits for the type and quantum of hedge fund risks – especially hedge funds that are made available to the general public.

### **A quick recap of SA hedge fund regulation:**

- The FSCA provides comprehensive regulatory oversight of the SA hedge funds industry.
  - The FAIS Act defines a hedge fund as:
    - A portfolio that uses any investment strategy that may (theoretically) result in losses that are greater than the NAV of the portfolio.
    - These strategies include, but are not limited to, the use of leverage or net short positions.
  - Hedge fund investment managers are also regulated under FAIS and require the onerous FSP2A license to provide discretionary hedge fund management services.
  - Regulation 28 of the Pension Fund Act allows retirement funds to invest up to 10% in hedge funds (2.5% per single fund or 5% per fund of hedge fund).
  - There also seems to be some good news on the way regarding similar inclusion limits being made available to traditional Cisca unit trusts that are Regulation 28 compliant... just watch this space.
  - Hedge fund products are regulated under Cisca, which can be approved as either qualified investor hedge funds or retail hedge funds (RHF).
  - RHF are made available to the public in much the same way as traditional unit trusts.
  - Cisca Board Notice 52 (BN52) provides the regulatory framework for the risk management process of hedge funds that includes exposure limits and other restrictions.
  - BN52 obliges a RHF to choose between a total market exposure limit that is either:
    - A leverage limit, that limits gross market exposure (sum of long and short exposure) to 200% of fund NAV (max market exposure < 2 x NAV),
- OR
- A value at risk (VAR) limit, that limits the potential loss over any given month to less than 20%, based on a 99% confidence interval (1M 99% VAR < 20% potential loss).

This last bit is quite a mouthful – but what does it actually mean? How do we get a feel for how risky these limits really are? How do these risk limits stack up against long-only investments and traditional risk measurements like volatility (annualised standard deviation) of returns?

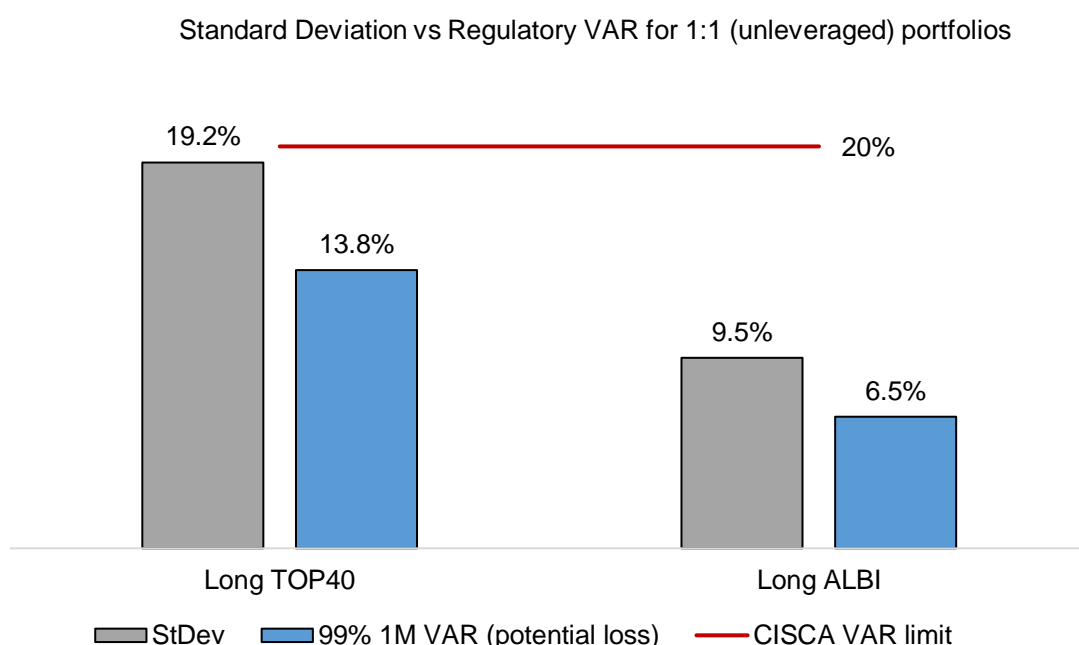
We set out below some informative graphs that may help you to contextualise hedge fund regulatory risk limits as we relate them to typical long-only investments.

The Matrix Fund Managers risk team ran the numbers, based on daily return data from the past 2 000 trading days ending in February 2023, so roughly eight years of data.

Leverage is expressed as Total Market Exposure : Portfolio NAV so 1:1 means that gross portfolio market exposure equals portfolio NAV and there is no leverage.

## Let's start off with the type of risk profiles that we are all familiar with:

### Graph 1: TOP40 vs ALBI



Source: Matrix, RiskCafé, Bloomberg

#### Notes on Graph 1:

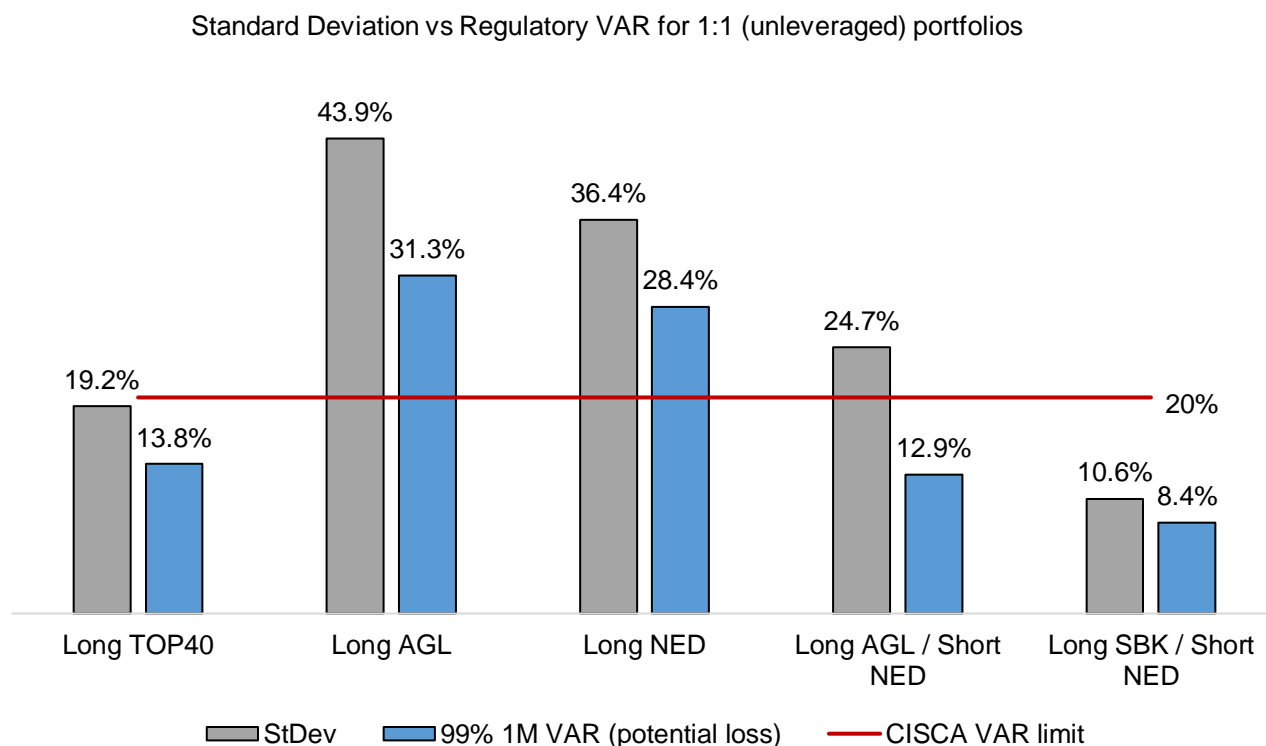
- Here we show the standard deviation (StDev) and VAR of a FTSE/JSE Top40 Index (TOP40) equity portfolio against a FTSE/JSE All Bond Index (ALBI) portfolio.
- The volatility (StDev) numbers should look familiar:
  - Equity volatility is usually around 15% and 17% per annum when measured with monthly data (our numbers are in line but slightly higher because we use daily data; 19.2% per annum StDev in this case).
  - The volatility of the ALBI is roughly half that of the TOP40 at 9.5%.

- Now for VAR:
  - One can expect, with a 99% degree of confidence, to lose no more than:
    - 13.8% of your TOP40 investment, or
    - 6.5% of your ALBI investment over any one-month period.
  - Expressed another way, you have a 1% chance of losing more than 13.8% over any given month when investing in the TOP40.
  - The VAR measured risk for the ALBI is also roughly half that of the TOP40.
- There seems to be some sort of tacit relationship between volatility and VAR.
- If the TOP40 and ALBI portfolios were RHF's, their risk levels would have been within the regulatory VAR limit, with the TOP40 utilising around 70-75% of the allowable limit.
- **We can see that the regulatory hedge fund VAR limit equates to total exposure risk that is (only) slightly higher than the risk of investing in the TOP40.**

## Now, let's consider some specific equity long-only and long/short examples:

In Graph 2, where we compare volatility and VAR of specific shares as well as long/short equity pairs. Once again, we do not introduce leverage here and the long/short positions assume that we hold 50% of NAV long + 50% of NAV short exposure.

**Graph 2: Equity examples**



Source: Matrix, RiskCafé, Bloomberg

### Notes on Graph 2:

- Here we randomly chose a few equity examples for illustrative purposes.
- **If you were holding 100% of either Anglo American (AGL) or Nedbank (NED) in your RHF portfolio, you will breach the CISCA VAR risk limit (as well as a few other limits including maximum single stock holdings) – too risky for a hedge fund!**
- The long / short pairs have a lower standard deviation and VAR than outright long positions.
- Correlated pairs, like Long Standard Bank (SBK) / Short NED, have a lower standard deviation and VAR than uncorrelated pairs like Long AGL / Short NED. This makes sense because we will expect the relative price difference between stocks with similar return drivers to be more stable than for stocks with different return drivers.
- Finally, the tacit relationship between volatility and VAR remains in place – higher volatility means higher VAR.

## Moving onto fixed income

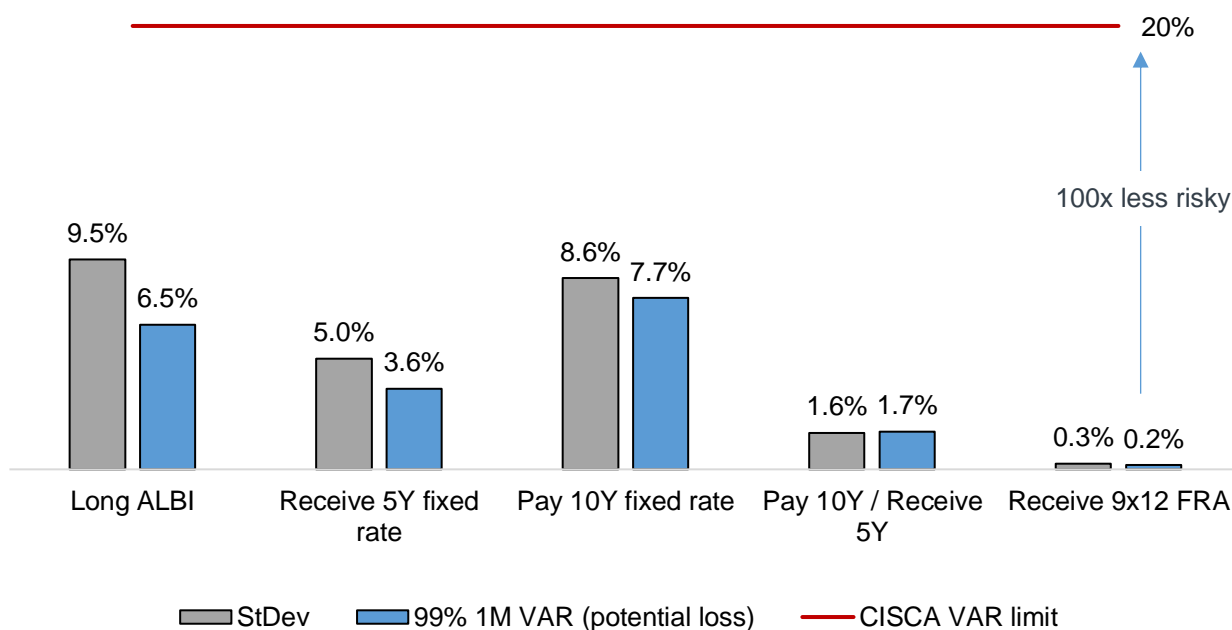
This is where things can start looking a bit weird as we introduce new terminology that is not widely used. In our next graph we compare ALBI risk to other instruments that fixed income hedge fund managers often invest in – interest rate swaps and forward rate agreements (swaps and FRAs).

These are liquid derivatives, extensively utilised by local and global banks and insurance companies to manage interest rate risk. The terminology here is new to many, but in our examples below we can practically think of these exposures as follows:

- **Receive fixed five-year (5Y) swap** – the risk equivalent of being long (buying) a 5Y bond.
- **Pay fixed 10-year (10Y) swap** – will be like being short (issuing) a 10Y bond.
- **Receive 9x12 FRA** – is the equivalent of agreeing to make a three-month fixed deposit in nine months' time at an agreed (forward) deposit rate.

### Graph 3: Fixed interest examples

Standard Deviation vs Regulatory VAR for 1:1 (unleveraged) portfolios



Source: Matrix, RiskCafé, Bloomberg

#### Notes on Graph 3:

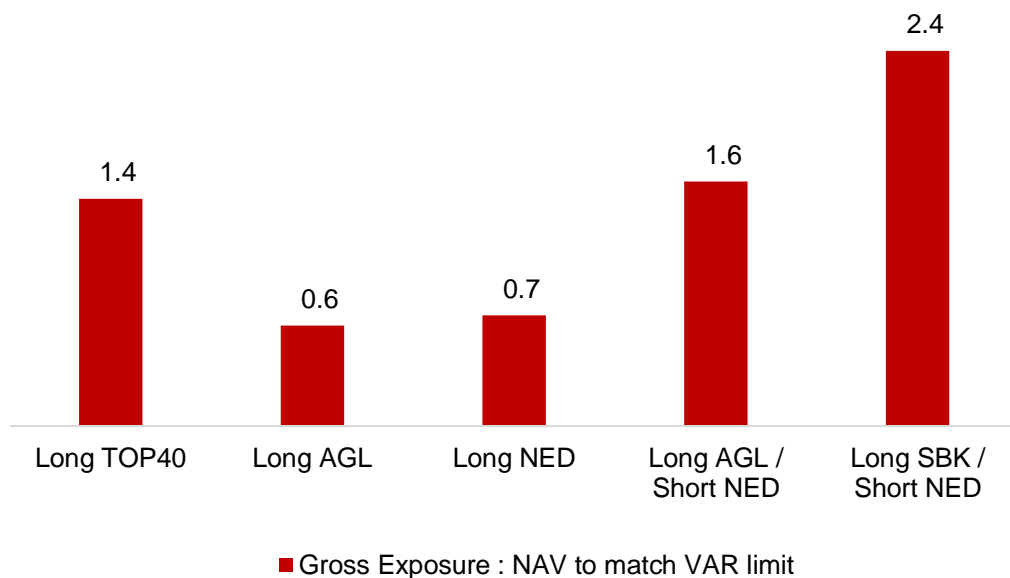
- 10Y rates exposure is riskier than 5Y rates exposure. That makes sense, just think of duration risk.
- The relative value risk between 10Y and 5Y rates is very low!

- That also makes sense, because the relative price movement of instruments along the yield curve are usually low and stable.
- The risk on a forward starting fixed deposit (9x12FRA) is even lower at 0.2%.
- In fact, you can have around 100 similar FRA positions in your portfolio (100:1 leverage) and still be within the CISCA VAR limit.

### Some final remarks about leverage

Up until now, we have not considered any example portfolios that are leveraged. In the two graphs below, we show you how much leverage will be required for each example portfolio to match the regulatory VAR limit:

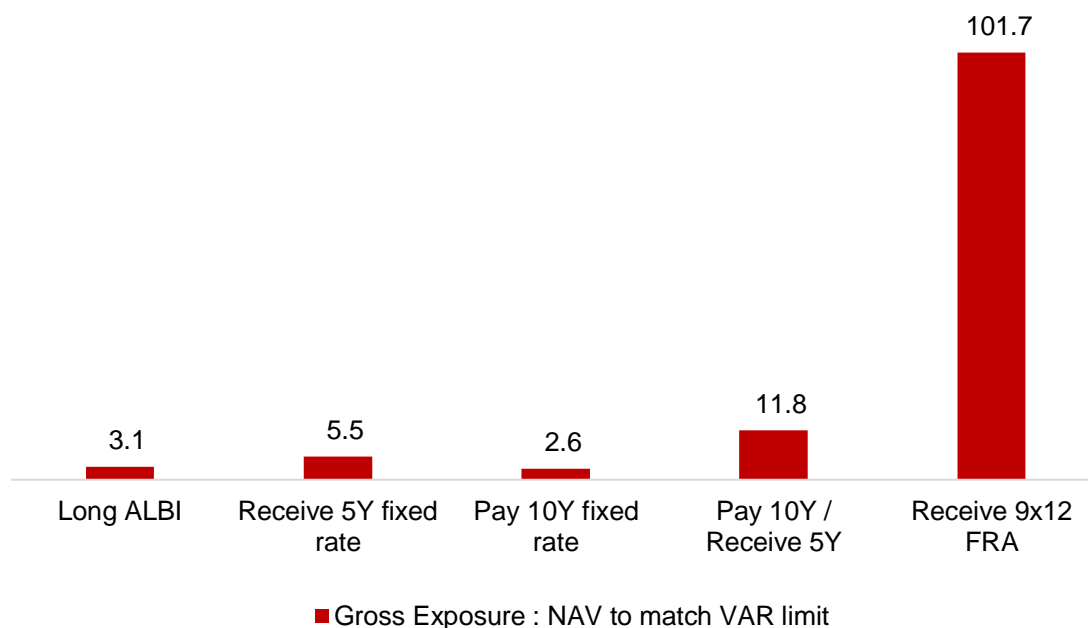
**Graph 4: Equity portfolios**



Source: Matrix, RiskCafé, Bloomberg

- Our long/short equity positions require between 1.6 and 2.4 times NAV of gross exposure to equate to the VAR limit.
- This is quite a neat outcome (if you are a geek like me) because, in equity hedge funds, the regulated leverage limit and the VAR limit more or less restrict a fund to the same amount of total risk.

## Graph 5: Fixed income portfolios



Source: Matrix, RiskCafé, Bloomberg

- Our fixed income examples require anything between three and 100 times NAV gross exposure to get to the regulatory VAR limit!
- Unlike equity hedge funds, when we consider fixed income hedge funds, it becomes clear that the regulated leverage limit and the VAR limit do not (even remotely) equate to the same amount of total risk.

### Final remarks:

1. **Leverage (or gross exposure) does not adequately express the total risk of fixed income hedge funds.**
2. **The majority of fixed income hedge funds therefore manage their total risk budget in line with regulatory VAR limits.**
3. **It is also worth highlighting that the BN52 VAR limit is exactly the same risk limit that is permitted under European UCITS regulations.**



Glacier Research would like to thank Jean-Pierre Matthews for his contribution to this week's *Funds on Friday*



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Jean-Pierre joined Matrix in 2019 as head of Product, responsible for the development and distribution of the Matrix product range. He is also a key individual, representative and member of the Investment Committee at Matrix. JP started his career in financial markets in 1996 as a fixed income analyst and trader. JP has been a long-standing proponent of the hedge fund industry in South Africa and was involved in the establishment of various alternative asset management and securities trading businesses over the years. Before joining Matrix, JP was a portfolio manager and head of business at a large institutional alternative asset manager. He has a degree in actuarial science and is a CFP® and CFA® charter holder.