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Rodex Black Swan Liquid-Ator

Tail Risk Insurance, Absolute Return and daily liquidity

Rodex Risk Advisers LLC
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Executive Summary

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- The Black Swan Liquid-Ator is a directional long/short strategy investing in US equity and US Treasury markets
- The Black Swan Liquid-Ator seeks large returns if equity and/or bond markets move strongly up or down
- Otherwise, it targets positive, absolute returns
- It comprises only two assets: Futures on the S&P500 index and futures on US Treasuries
- The Black Swan Liquid-Ator seeks volatility:
  - The **more** volatile markets are, the more **directional** the strategy becomes
  - The **less** volatile markets are, the more **diversified** the strategy becomes
- Rebalancing and trading only 1x per month

Black Swans and Tail Risk Insurance

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- The term “Black Swan” describes an unlikely or “tail risk” event that, if it realises, causes severe losses
- After the heavy financial market losses of the credit crisis in 2008/09, tail risk insurance is in high demand
- One of the next tail risk events could be high or very high inflation or deflation, strongly rising interest rates or falling equity markets
- Tail risk insurance is often implemented with not very liquid out-of-the-money options
- If the tail risk event does not materialise, the option premium is lost
- Providers of tail risk insurance products offer hedge fund like investment vehicles with the typical disadvantages of hedge fund investments, for example, illiquidity, lock-up periods and opaqueness of the strategy

Value Proposition (1)

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– Rodex Risk Advisers' Black Swan Liquid-Ator, in contrast, offers the following features:

1. **Insurance against longer-term tail risks**:
   a) "Risk Off" environment, for example, a sell off in equity markets
   b) "Risk On" market phases, for example, a strong equity price rally
   c) Rising interest rates
   d) Inflation AND deflation
2. **Positive, absolute returns** in "normal" market environments. There is no loss of an option premium during periods of no tail risk event
3. Implemented with **highly liquid** instruments [futures], **daily liquidity**
4. Full **transparency** provided

Value Proposition (2)

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- The Black Swan Liquid-Ator offers leveraged insurance for tail risk events: A small allocation in the Black Swan Liquid-Ator can help to protect a larger part of a client’s portfolio
- Classification as:
  - thematic investment for retail clients and satellite investment within the Strategic Asset Allocation for institutional mandates
  - Core investment for Absolute Return mandates
- White labelling distribution possible
- Implementation currency is USD, others possible [for example, EUR, CHF]
- Leveraged share class can be implemented
- Live track record:
  - Jun 2011 – Nov 2012: Managed Account
  - Dec 2012 – Dec 2014 the Black Swan Liquid-Ator was available as a structured product in collaboration with Zurich Kantonalbank
  - From Jan 2015: Managed Account

How to Create Tail Risk Insurance

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- Focus on mid- to longer-term tail risk events [e.g., 2008, horizon 3 – 12 months]
- **NOT**: Short-term sell-offs [Tsunami Japan 3/2011]
- We look for payouts as extreme as possible
- Technical trading rules [incl. long/short trend-following] tend to do better in more volatile times

→ Increase exposure when there is high volatility AND become more concentrated

→ Reduce exposure when there is low volatility AND become more diversified

- Simple implementation with as few assets as possible [two assets only: SPX and US Treasuries]
- Exchange-traded, liquid instruments
- Rebalancing only 1x per month
- No loss of an option premium

Tail Risk Insurance

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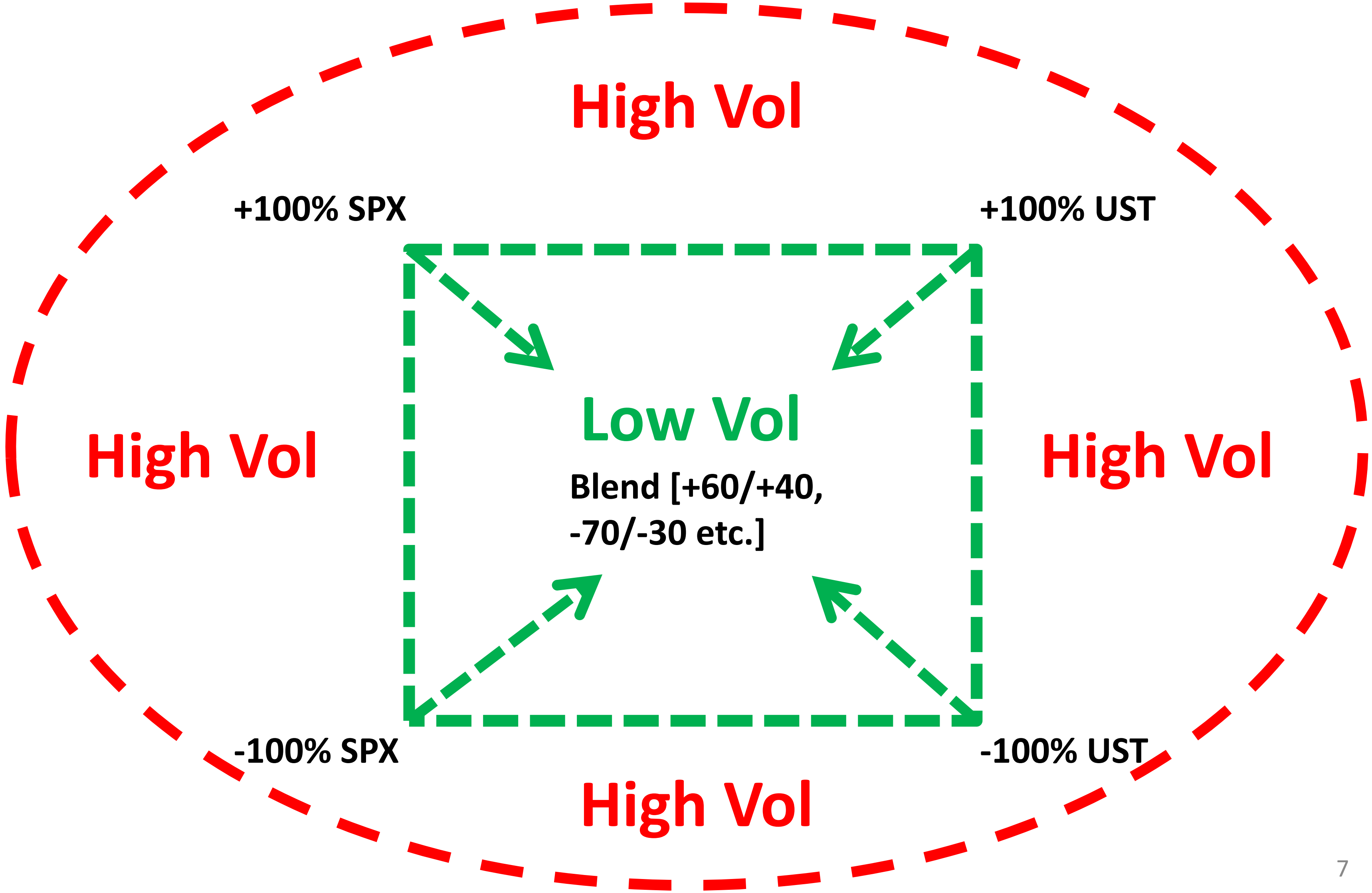

Return Profile (1)

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- Black Swan Liquid-Ator is an Absolute Return Product with underlying theme tail risk insurance
- Based on a quantitative risk management algorithm
- Generates solid returns in trending markets
- Since its seed investment in June 2011, the Black Swan Liquid-Ator has generated a cumulative performance of +42% or +5% annualised

- The Black Swan Liquid-Ator can also be implemented with a levered share class [e.g., levering the strategy 2x]
- The risk management approach targets:
  - Tail risk insurance: A high positive pay-out in the case of a tail risk event including inflation / deflation
  - In a normal market environment, the Black Swan Liquid-Ator aims to generate positive absolute returns

Return Profile (2)

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- Backtested returns during recent crises
  - in 2008 [credit crisis]: +52% vs. SPX -38%; leveraged share class +100%
  - During the bursting of the dot-com bubble [over the three years from 2000-2002]: +70% vs. SPX -40%; leveraged share class +130%

- The Black Swan Liquid-Ator in portfolio context:
  - Adding the Black Swan Liquid-Ator reduces volatility of a typical 60/40 equity/bond portfolio, enhances average returns and increases skew by reducing tail risk
  - Drawdowns are significantly reduced during stress periods [for example, 2000-2002; 2008] and returns improved during normal periods

Returns

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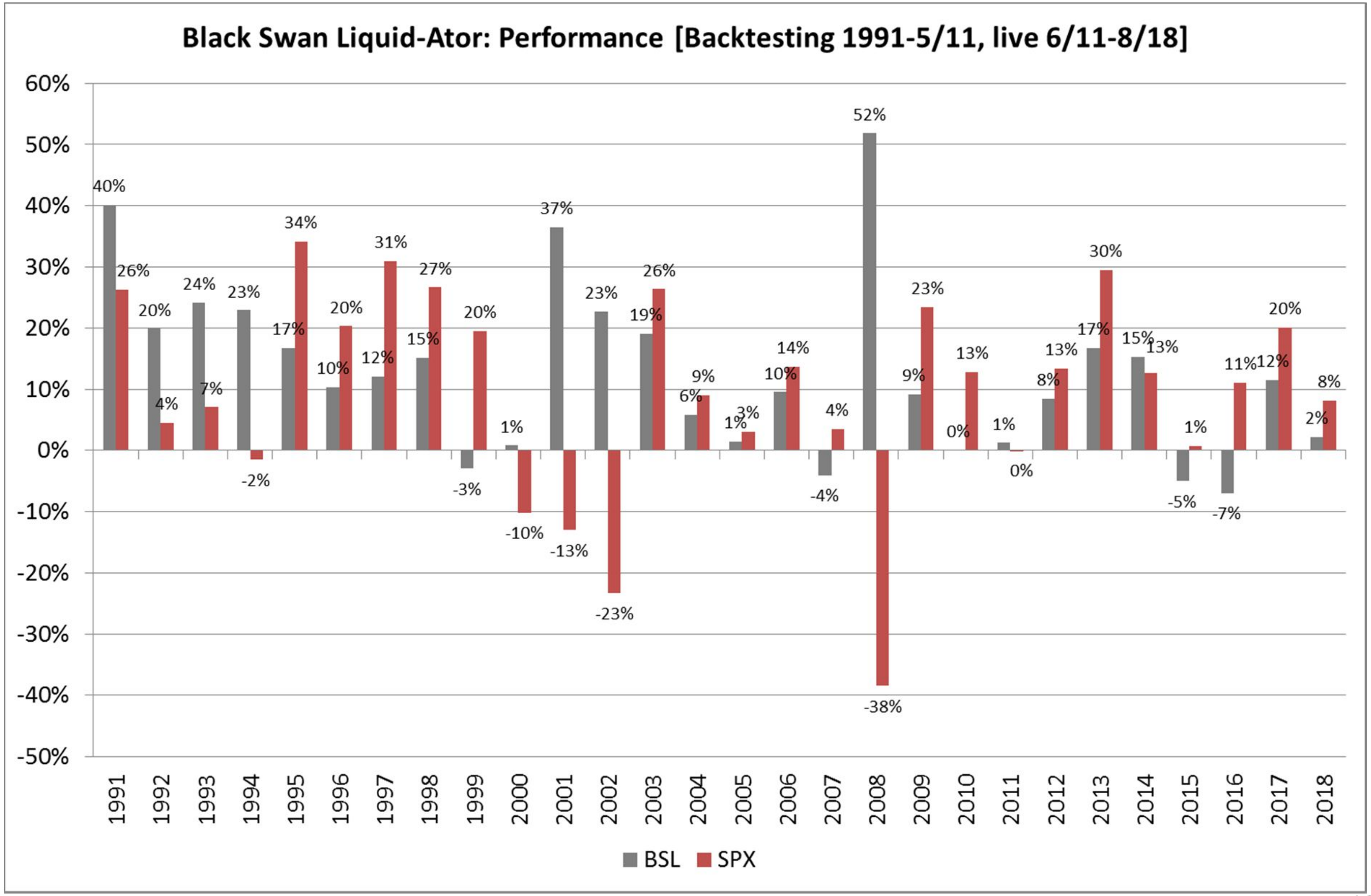

Performance figures start in 7/1991, are in USD and include 0.05% transaction costs, but no management fee

The Risk Management Algorithm: Rationale

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- We have tailor-made quantitative risk models for the application to tail risk insurance, inflation / deflation protection as well as an Absolute Return product
- Conditional on the market environment [“risk on” or “risk off”] our Risk Management approach weighs bonds and equities differently:
  - In a “risk on” environment, equities are overweighted and bonds are underweighted
  - Short positions can be taken depending on the strength of a negative trend. In a high inflation scenario, for example, equities lose and rates increase strongly => Short positions are taken
  - In a “risk off” environment, bonds are overweighted and equities underweighted or sold short
  - In a deflationary environment, equities are underweighted / sold short and bonds overweighted
- This mechanism also works in a normal market environment with shorter, less pronounced trends:
  - When equity prices rise, equities are gradually overweighted and bonds underweighted
  - When bond prices rise, bonds are overweighted and equities underweighted
- The Risk Management Algorithm works very well in trending markets, less well in oscillating markets with no clear trend

The Risk Management Algorithm: Implementation

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– Proprietary models were developed in extensive research, based on a series of academic papers
– The Black Swan Liquid-Ator incorporates Risk Parity as one element: Bonds are levered via duration and/or nominal exposure to achieve similar return volatility as equities
– Essentially, the Black Swan Liquid-Ator model comprises two layers:

1. Regime switching model [=> volatility seeking]:
    - The higher the VIX, the more directional the strategy
    - The more pronounced the changes in VIX, the more directional the strategy
    - In a «calm» market environment the model goes for a mix allocation [e.g., +50% SPX and +50% Treasuries]
2. Trend-following model:
    - Non-parametric, outlier-resistant trend-following model decides for which asset class [SPX, US Treasuries; long or short] the strongest trend can be anticipated

– Simple implementation:
- Only two assets involved: S&P500 index futures and US Treasury futures
- Rebalancing and trading takes place only once per month in the futures markets, minimising operational & transaction costs

Investment Process

Proprietary Risk Management Algorithm

- Signals from our proprietary **risk management algorithm** to change exposure to equities / government bonds

Cost effective Execution

- Execution process to ensure **efficient** and **cost effective** execution at Stock Exchange
- Full transparency

Portfolio/Risk Management

- **P/L control, execution of stop loss policy**
- **Recalibrating** portfolio characteristics
- **Ensures optimal allocation** on a monthly basis

Summary

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– The Black Swan Liquid-Ator targets **tail risks / black swan events**
– The Black Swan Liquid-Ator generates a **unique pay-out profile**:
1) Provide **tail risk insurance** against “Risk Off” and “Risk On” scenarios and also against **inflation** and **deflation**
2) Deliver **positive absolute returns** in a “normal” environment.
– Active portfolio management: Rule based approach shifting from equities [long/short] to government bonds [long/short]
– **Option-like, convex return profile**
– Quantitative, **rule-based** allocation:
  - «Risk On» or inflation: Shift into long equities; if rates rise more strongly than equities => short bonds and/or short equities
  - «Risk Off» or deflation: Shift into long US Treasuries and/or short equities
  - Strongly rising interest rates: short bonds
– High return potential
– **Daily liquidity**
– Implementation with exchange traded **futures**
– Full **transparency**, no black box

Contact Details

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Short Biography

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Claus Huber´s short bio:

From 6/2010: Founder and Managing Director of Rodex Risk Advisers LLC, Altendorf, Switzerland [at the Upper Lake Zurich]

2008 – 2010: Head of Alternative Investment Risk Management, Swiss Re, Zurich

2004 – 2007: Head of Quantitative Analytics and Chief Risk Officer, Credaris Portfolio Management [Credit Hedge Fund], London

2000 – 2004: Credit Strategist and Hedge Fund Analyst, Deutsche Bank, Frankfurt/Main

1996 – 1999: Research Associate, University of Bremen

1994 – 1996: Bond Trader, Bankgesellschaft Berlin

Appendix 1: Monthly Returns from 2012

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- 1/1991 to 5/2011: Backtest
- 6/2011 to 11/2012: Managed Account
- 12/2012 – 12/2014: ZKB Index / Structured Product
- From 1/2015: Managed Account

	BSLA						
	2012	2013	2014	2015	2016	2017	2018
January	4.6%	2.0%	-3.2%	3.6%	-10.8%	-0.8%	0.2%
February	4.3%	1.4%	4.5%	-0.4%	-2.2%	4.3%	1.1%
March	3.1%	1.9%	0.3%	1.1%	3.4%	1.8%	-3.3%
April	-0.7%	1.4%	0.5%	0.3%	-0.5%	2.1%	0.6%
May	-0.1%	0.8%	3.7%	1.0%	-0.4%	1.5%	-1.8%
June	-3.4%	-2.9%	2.1%	-2.2%	-3.4%	-0.7%	1.5%
July	3.9%	5.3%	-0.8%	-2.5%	-0.3%	1.7%	1.0%
August	-1.3%	-3.5%	3.1%	-3.8%	0.0%	1.5%	3.0%
September	-2.5%	3.1%	-0.8%	3.7%	0.4%	-1.2%	
October	-0.5%	3.2%	1.5%	-8.5%	-1.8%	0.5%	
November	1.3%	1.0%	3.3%	0.2%	9.0%	0.1%	
December	-0.1%	2.0%	0.3%	3.2%	0.5%	0.2%	
YTD	8.5%	16.7%	15.3%	-5.0%	-7.0%	11.5%	2.2%

All performance numbers shown are in USD and include 0.05% transaction costs, but no management fee.
Monthly performance figures based on backtesting are available upon request from 1991.