*For professional investors only*

# Why is passive not the solution?

**Christophe Roehri, Deputy CEO**

SPS Investment Strategies to address Current & Forthcoming Challenges Conference
9 February 2017

TOBAM*
CORE INVESTMENTS

# TOBAM: Who are we?

**The company:**

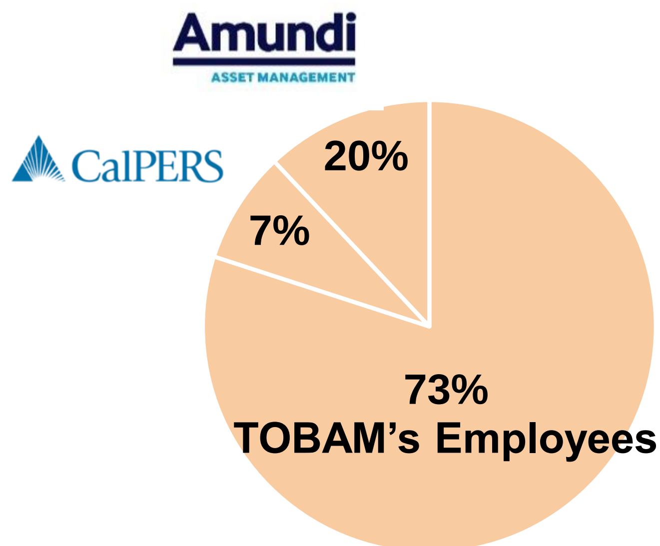
**TOBAM is independent and employee-owned**

- Created in 2005
- USD$8 billion under management
- 48 financial professionals, 17 nationalities

The Maximum Diversification® approach, supported by original research and a mathematical definition of diversification, provides investors with diversified core exposure, both in equity and fixed income markets.

The company manages US$8 billion in equities and fixed income strategies and also offers the TOBAM Maximum Diversification Index series, a set of equity indices based on TOBAM's original approach.

**Shareholder structure:**




*Source: Figures as of December 30, 2016.*

# Agenda

* Why is passive management not the solution?
* The real cost of passive management
* Introduction to a general framework
* The Maximum Diversification® approach

# Why is passive not the solution?

How can you be “Passive” and “Manage”?

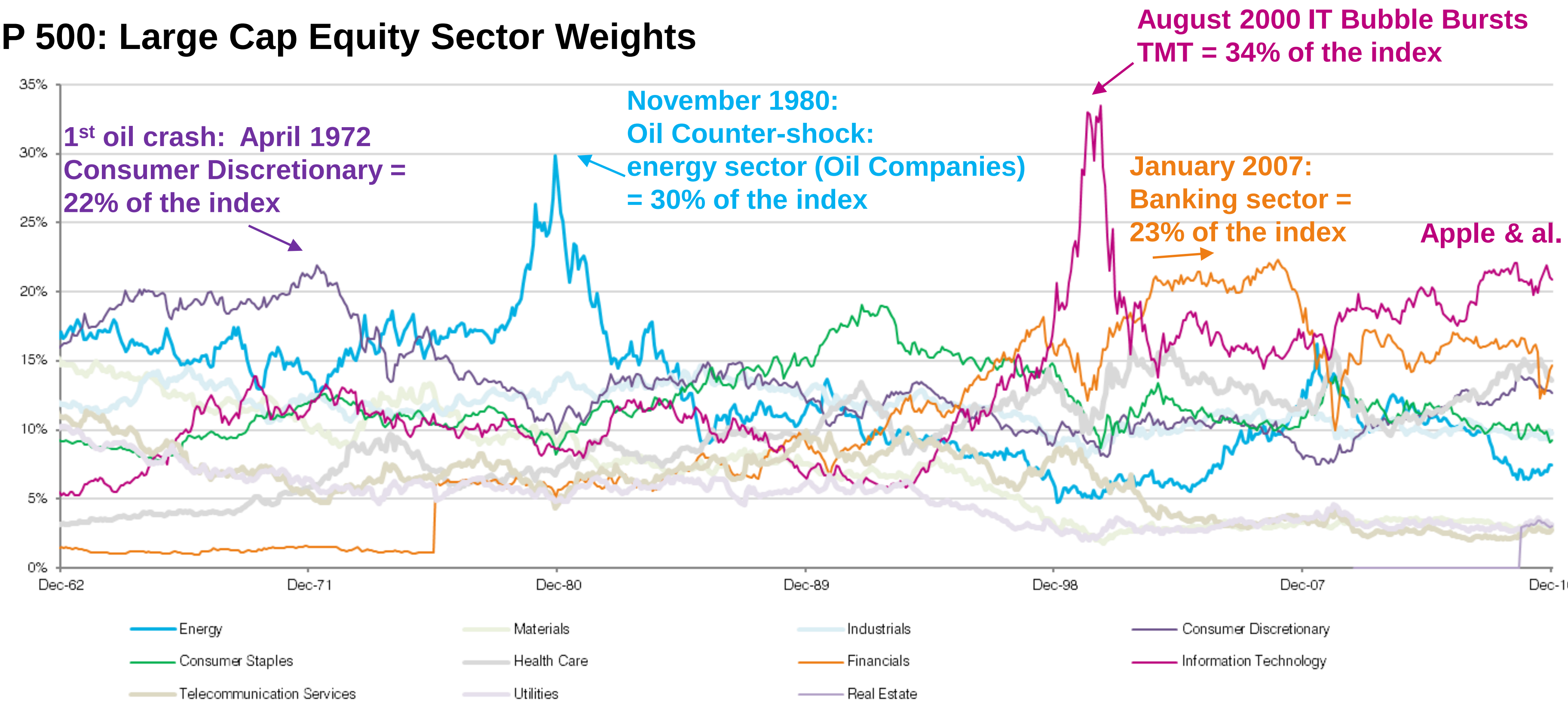
- Being Passive = you do not manage
- Being Passive = Passively implementing an inefficient strategy:

  => Market cap-weighted benchmarks

# Cap-weighted indices take on heavy structural biases…

- As stocks appreciate, the greater their index representation, and conversely so
- The greater the imbalance, the greater the impact of changes in price (volatility)
- Using a biased benchmark as a reference carries heavy (and costly) implicit bets
- These implicit bets evolve dynamically over time

**S&P 500: Large Cap Equity Sector Weights**

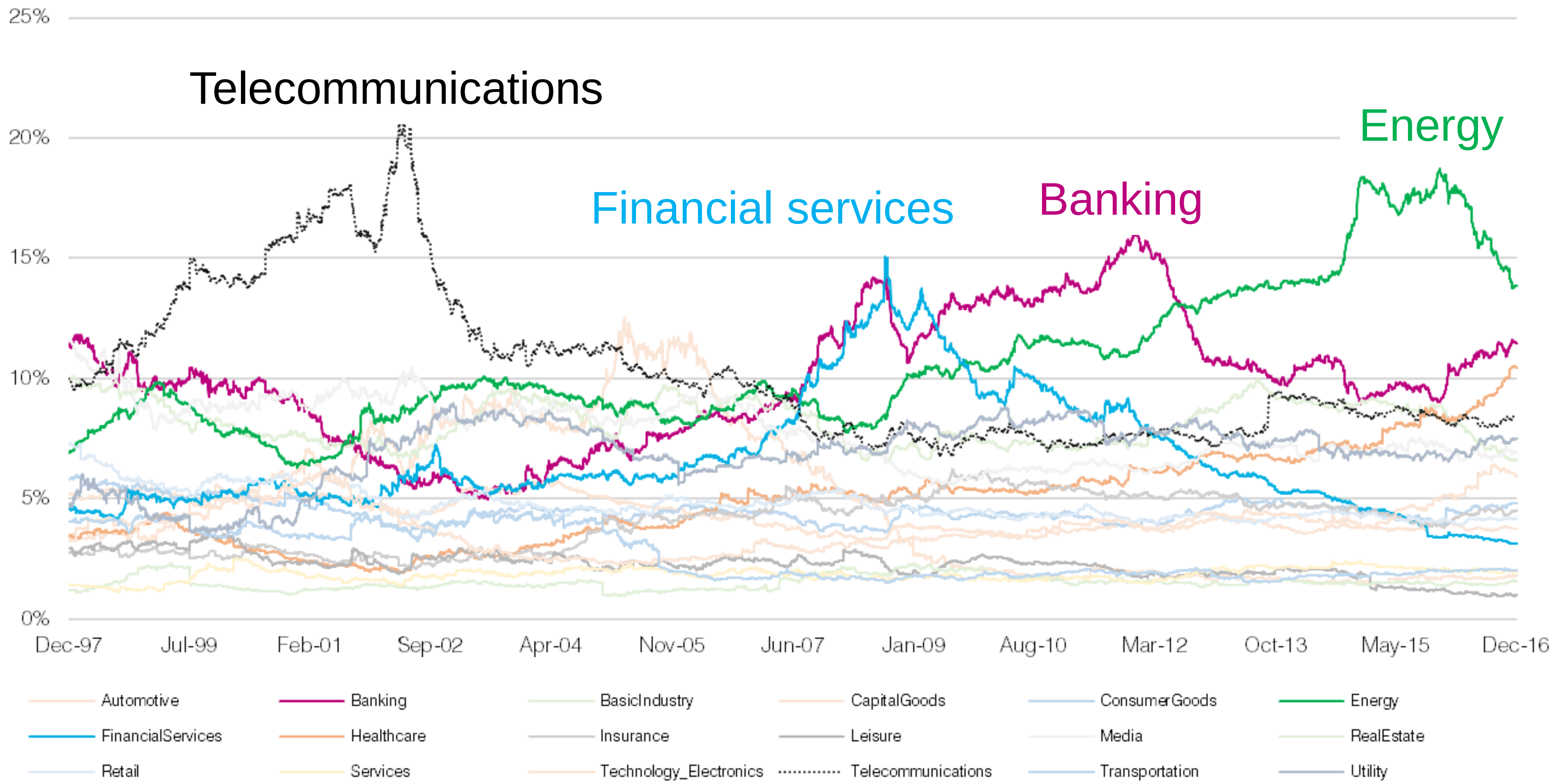



*Source : TOBAM; Bloomberg-CRSP. Figures as of December 30, 2016*

# ... as do issuer-weighted bond indices...

- Issuer-weighted corporate bond indices do not provide a neutral risk allocation

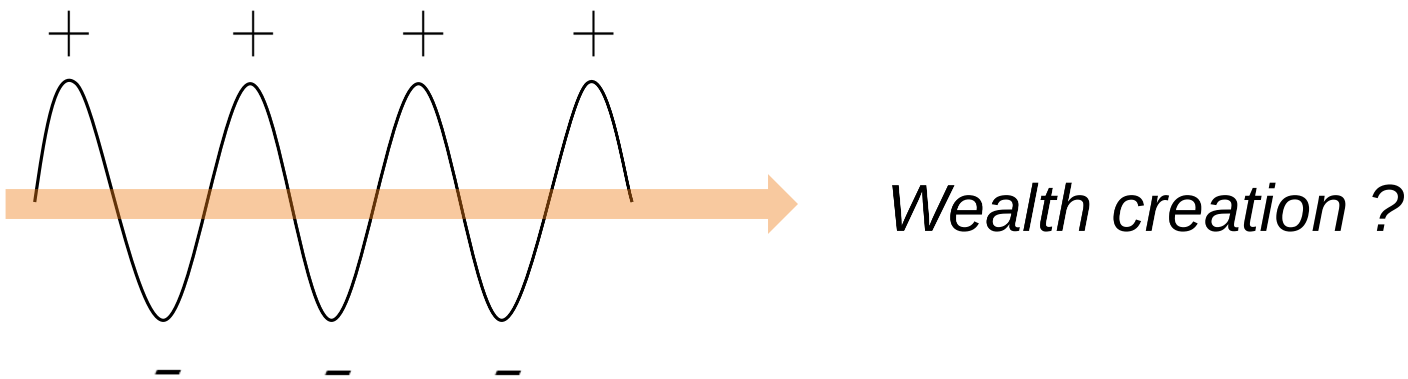
**Risk-weighted Sector concentration in the Merrill Lynch US Corporate index**




*Source : Merrill Lynch, MSCI, Bloomberg, TOBAM. DTS weighted sector weights - 1996-2016*

# …which can destroy value...

- Market benchmarks allocate risk dynamically over time and as such are not truly diversified:



- The market cap-weighted benchmark can also be described as a Dynamic Risk Allocator

# The Big Misunderstandings

- Passive is not neutral
- The CAPM in a way proves it is “undoubtedly unrealistic” to believe that the Benchmark could ever be efficient
- The term “Efficient” is used in 2 different contexts:
  - An efficient portfolio
  - An efficient Market

**The market cap-weighted benchmark is a Dynamic Risk Allocator that is simply the sum of all speculations**

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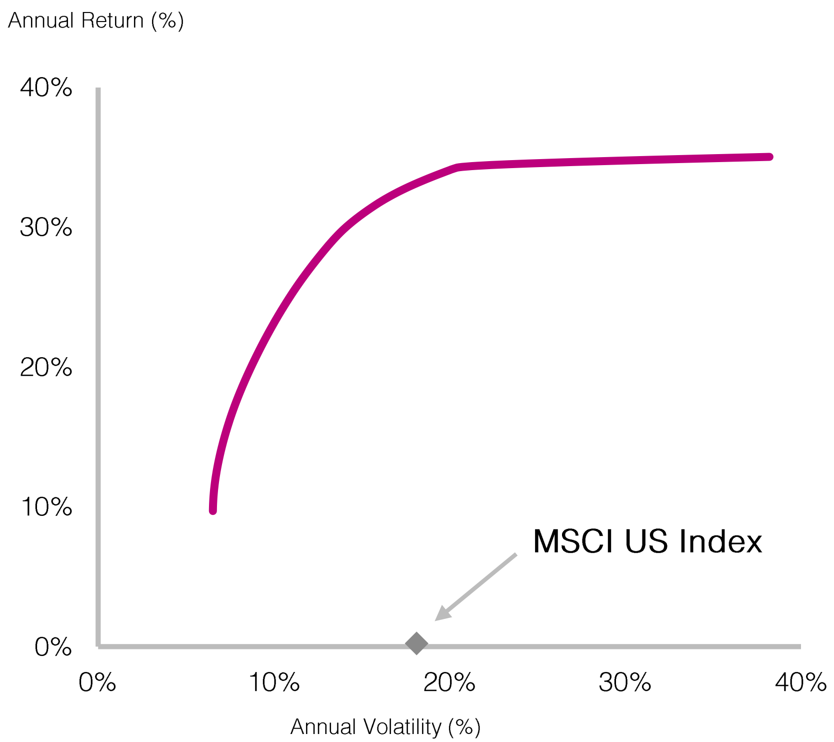
# Across geographies and across time

Empirical evidence across

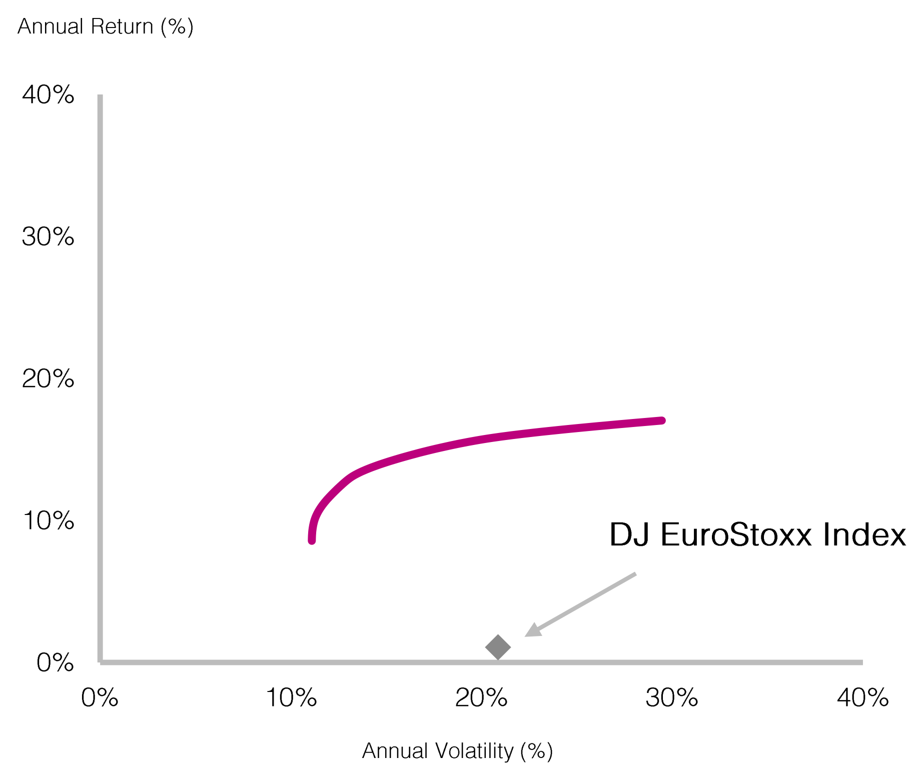
all geographical zones over mid to long-term investment periods:

(data from May 2001 to May 2006)

US Equity Market




Euro Equity Market




*Source : Factset. All returns are stated in local currency. MSCI and DJ EuroStoxx indices are net of dividends.*

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# The real cost of passive management

- From "**wrongly unrewarded fees**":
  - you want an efficient market
  - you want a healthy and growing economy
  - I want to fly New York-Paris not New York-New York
- To "**unrewarded (because unmanaged and undiversified) risk**" : Market cap-weighted benchmarks are hugely biased:
  - a dynamic risk allocator
  - Fail to be "close" to the efficient frontier ex-post

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# Why invest?
## *The search for the risk premium*

**Defining Beta**

- Measure of how much you access the systematic risk premium available in a given market

**Why are long-term investors investing?**

- Not only because they believe portfolio managers are skilled
- But because of a widely held <u>investment belief</u>:

➡ **They should reward the risk over the long-term**

# 2 sources of risk reward in markets

**The Financial Sphere**

Taking advantage of:

- Ability to identify arbitrage opportunities
- Ability to assess mispricings
- Forecasting capabilities
- Speculation

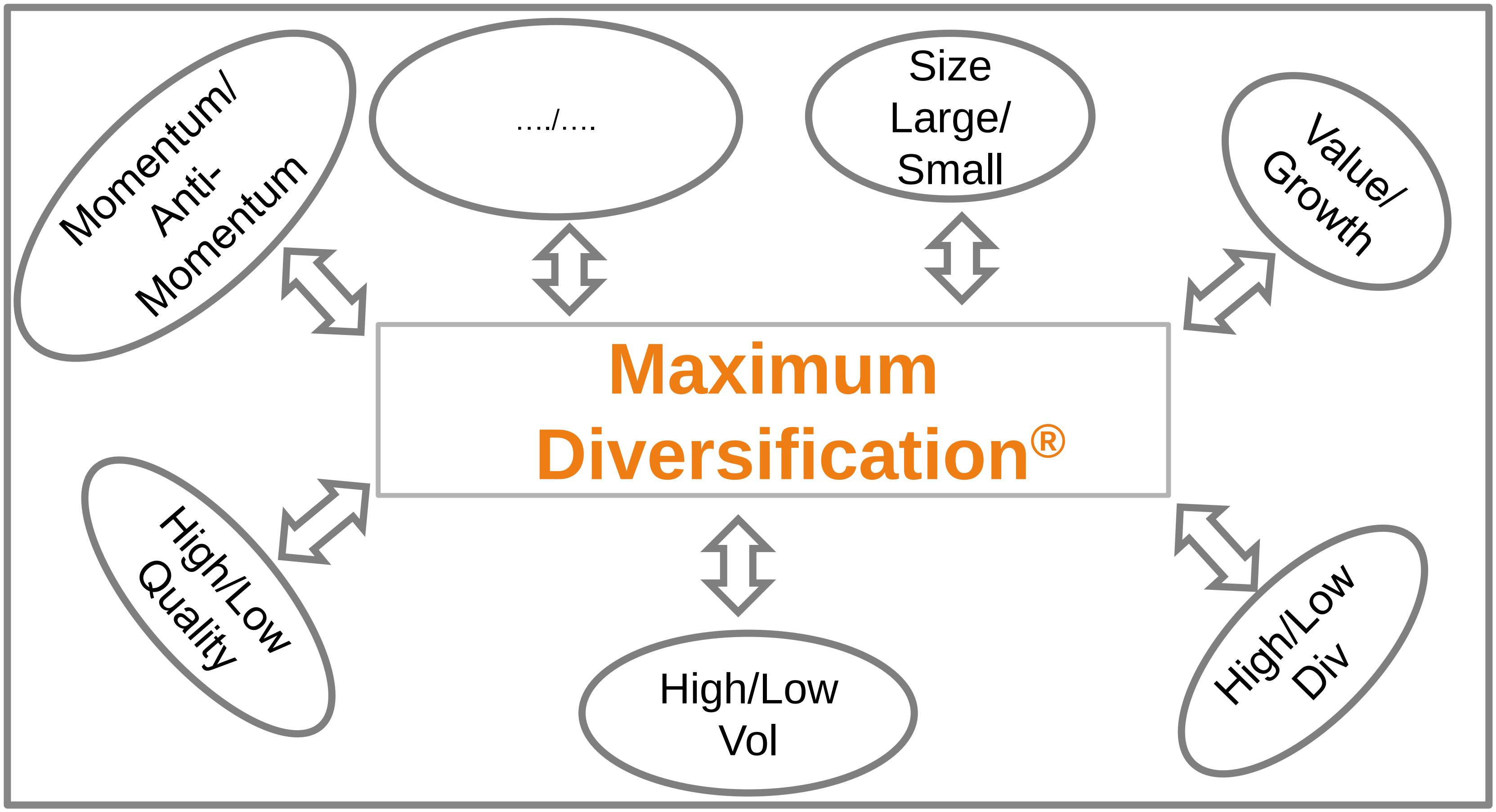
**The Real Economy Sphere**

"The Market Risk Premium"

Delivered by the Most Diversified Portfolio

# Implementation, our views

**example in equities**




**Core / Satellite approach with the MDP as Core investment**

# Agenda

* Why is passive management not the solution?
* The real cost of passive management
* Why invest in equities ? : intro to a general framework
* The Maximum Diversification® approach

# What is the Maximum Diversification® approach?

**Maximum Diversification® : a quantitative investment approach based on a unique principle – building the Most Diversified Portfolio®**

The **Anti-Benchmark® portfolio objective**: outperform the market cap index with less risk, by increasing diversification

- Definition of a mathematical measure of a portfolio's diversification: the *Diversification Ratio* ® (patented),
- Set up of an investment process that increases this *Diversification Ratio* ®*,*
- Long-only, no leverage and fully invested

## What is Diversification?

Diversification is the “magic” by which combining a set of non-fully correlated assets always results in a portfolio whose risk is lower than the weighted average of the single assets’ risks:

Risk of the combination < Combination of the risks

$$\sigma_{(80\%A+20\%B)} < 80\%\sigma_A + 20\%\sigma_B$$

$$\Leftrightarrow \rho_{A,B} \neq 1$$

# Definition of the Diversification Ratio®

TOBAM's unique **Diversification Ratio®** is the tool to measure the diversification of any portfolio P:

$$DR(P) = \frac{\textbf{Combination of Risk}}{\textbf{Risk of the Combination}}$$

$$= \frac{\left(w_1\sigma_1 + w_2\sigma_2 + \ldots + w_n\sigma_n\right)}{\sigma_P}$$

*The weighted average of risk*

*Portfolio risk*

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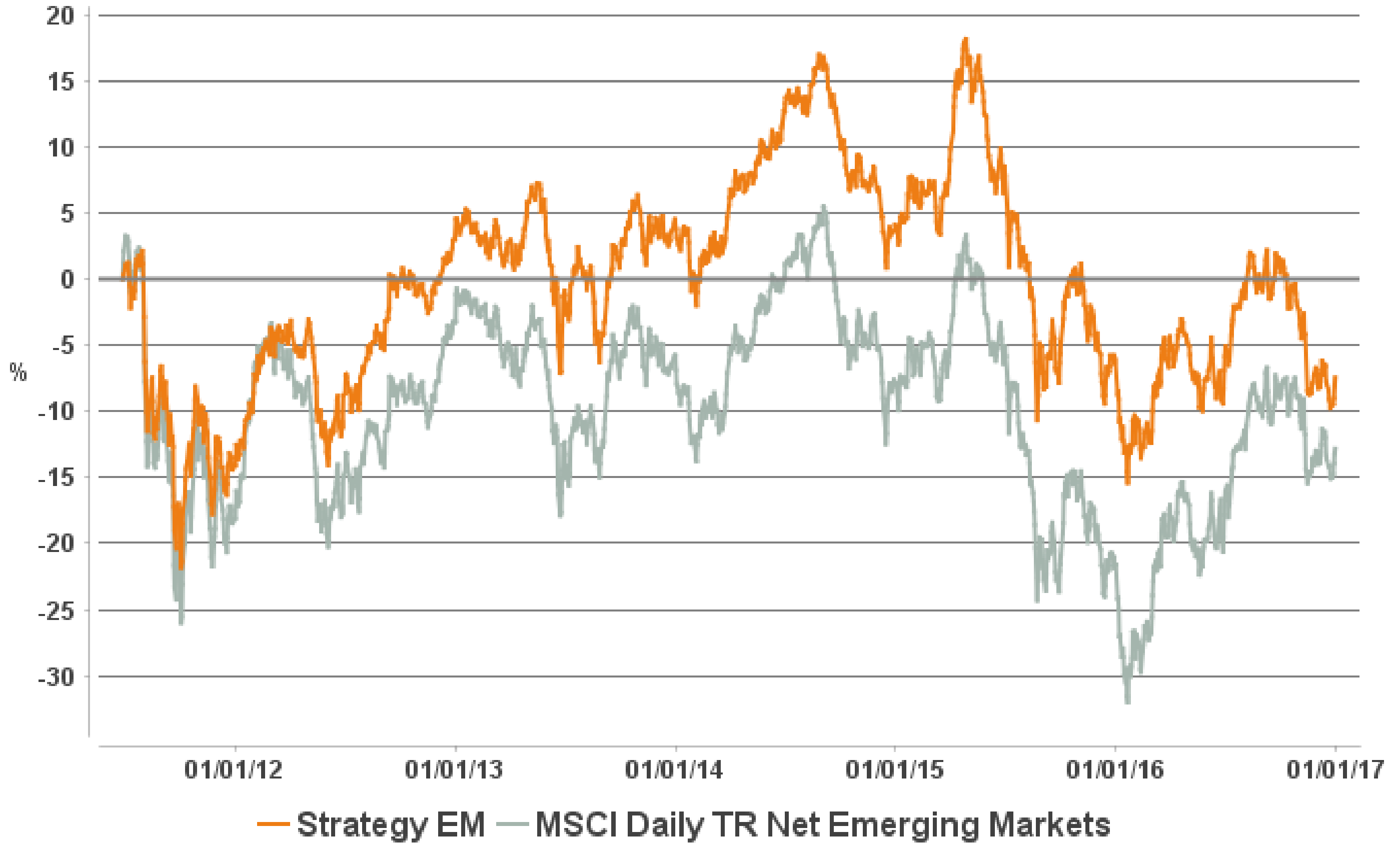
* Appendix
  - Anti-Benchmark Emerging Markets Equity
  - Anti-Benchmark US Credit
  - TOBAM Maximum Diversification USA Index

# Anti-Benchmark® Emerging Markets Equity: performance since inception

**Relative performance of AB EM vs. MSCI EM**
(June 29, 2011– December 30, 2016)




| | | |
|---|---|---|
| **Strategy EM:** | | |
| Return: | -7.41% | |
| Annualized return: | -1.39% | |
| Hist vol: | 13.99% | |
| Sharpe ratio: | -0.12 | |
| Sortino ratio: | -0.18 | |
| **MSCI Daily TR Net Emerging Markets:** | | |
| Return: | -12.80% | |
| Annualized return: | -2.46% | |
| Hist vol: | 16.86% | |
| Sharpe ratio: | -0.16 | |
| Excess return: | 5.39% | |
| Vol reduction: | -17.05% | |
| Excess annual. return: | 1.07% | |
| Tracking error: | 6.15% | |
| Info ratio: | 0.17 | |
| Beta: | 0.78 | $r^2$ 87.84% |
| Correlation: | 93.72% | |
| Jensen's alpha: | 2.23% | |
| Treynor ratio: | -0.02 | |

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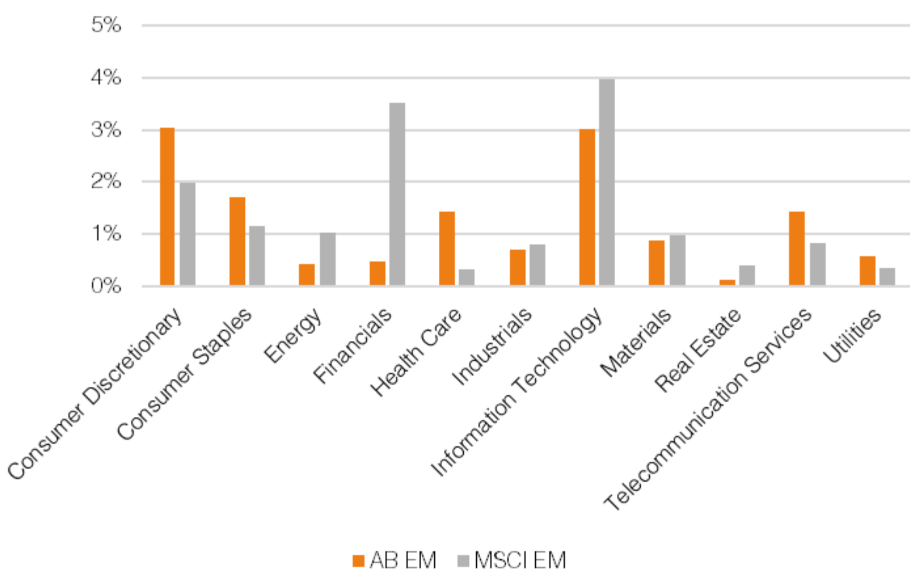
*Source: TOBAM. Returns are Gross of management fees and stated in USD. Past performance is not indicative of future results.*

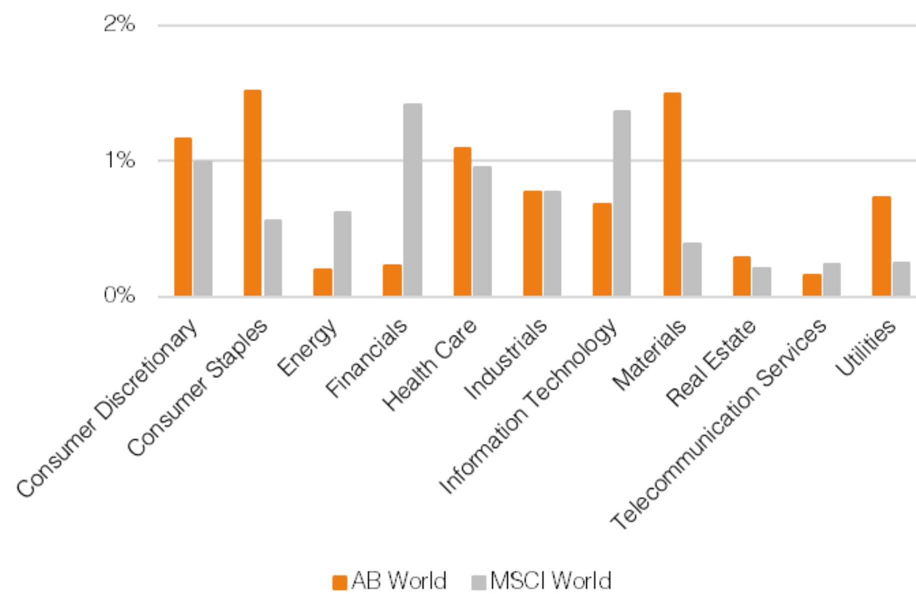
# Anti-Benchmark® Emerging Markets Equity : a diversified exposure

As of December 30, 2016 – Ex-ante

**Volatility contributions by sector**
Anti-Benchmark Emerging Market
Vs. MSCI Emerging Market




**Volatility contributions by sector**
Anti-Benchmark World
Vs. MSCI World




- MSCI EM risk exposure is very much concentrated: half of its volatility comes from Financials and IT alone.

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# Anti-Benchmark® Emerging Markets Equity : a diversifying exposure

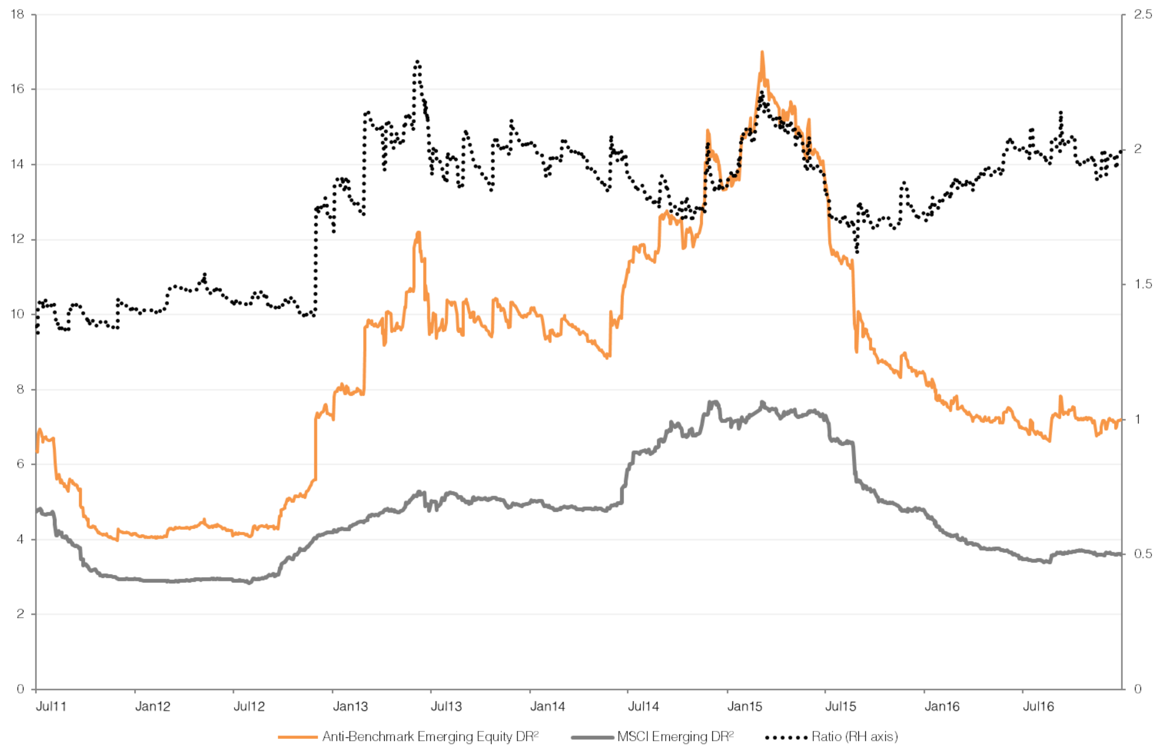
**Global and emerging markets equities correlations:**
Anti-Benchmark® Emerging Markets vs. the MSCI EM and MSCI World
ITD: June 29, 2011 through December 30, 2016 (daily data)

| Investment Universe | MSCI World | MSCI EM | Anti-Benchmark EM |
|---|---|---|---|
| MSCI World | 100% | | |
| MSCI EM | 67% | 100% | |
| Anti-Benchmark EM | 59% | 94% | 100% |

*Source: TOBAM*

# Anti-Benchmark® Emerging Markets Equity : the Diversification Ratio® maximizer

**Diversification Ratio® of Anti-Benchmark EM vs. the MSCI EM**
As of December 30, 2016




- Twice as diversified as MSCI EM
- Better diversifier vs. MSCI World

*Source: TOBAM. Returns are gross of fees and stated in USD and reflect live data for the TOBAM Anti-Benchmark Emerging Markets Equity Fund from Jun 29, 2011 to date. Past performance is not indicative of future results.*

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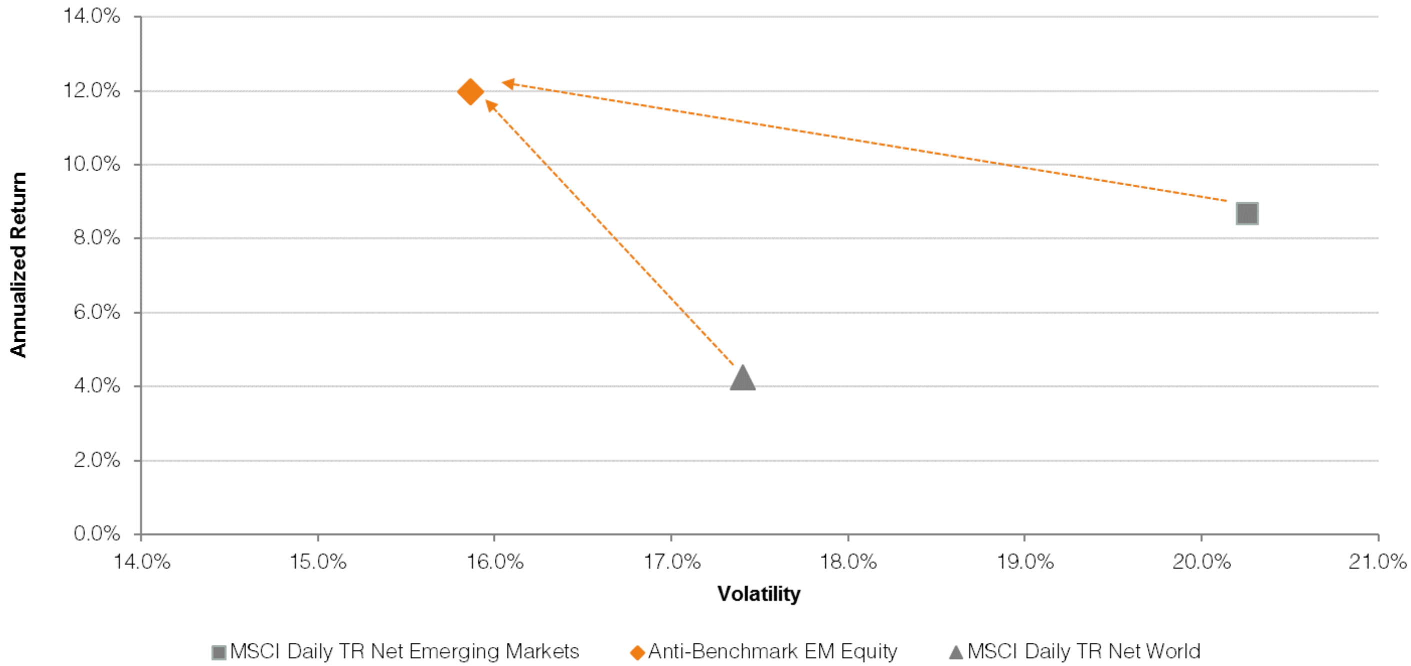
# Anti-Benchmark® Emerging Markets Equity : the best of both worlds - As of December 30, 2016

| USD 29/12/2000 – 30/12/2016 | MSCI Daily TR Net Emerging Markets | Anti-Benchmark EM Equity | MSCI Daily TR Net World |
|---|---|---|---|
| Annualized performance | 8.69% | 11.97% | 4.25% |
| Volatility | 20.26% | 15.86% | 17.40% |
| Sharpe Ratio | 0.34 | 0.65 | 0.14 |




*Source: TOBAM. Returns are gross of fees and stated in USD and reflect back tested data from Dec 29, 2000 to Jun 29,2011, plus live data for the TOBAM Anti Benchmark Emerging Markets Equity Fund from Jun 29, 2011 to date. Back tested results are for information purposes only. They are intended to illustrate how the Strategy would have behaved over the period had it been launched prior to Jun 29, 2011. The simulations are gross of tax and exclude costs of transaction and fee assumptions. Past performance is not indicative of future results.*

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# Anti-Benchmark® US Credit

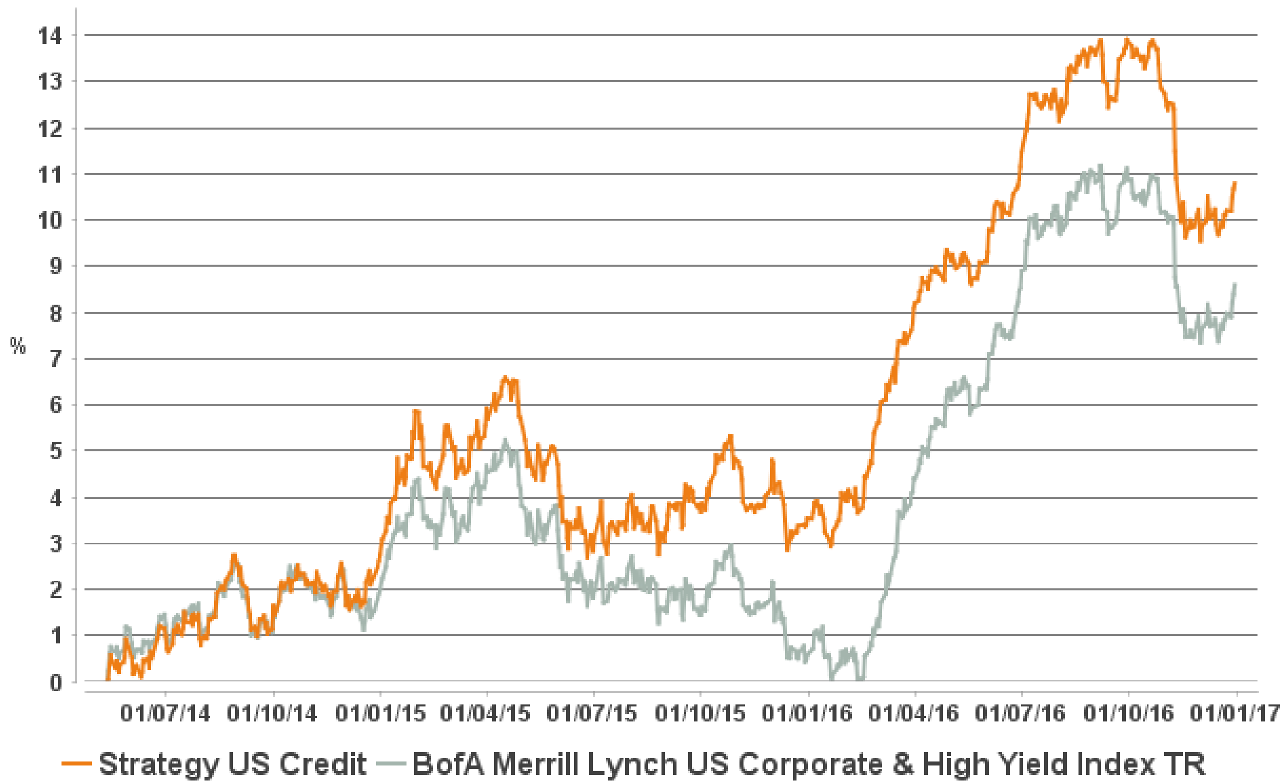
- Investment universe: BoAML US Corporate & High Yield Index
- Long-only, no leverage, fully invested across both US IG and HY markets
- Launch Date: May 12, 2014

- The strategy matches benchmark average duration and spread (+/- 10%)
- Strategy assets in excess of $320 million*
- Available in the following vehicles: UCITS IV pooled funds with daily liquidity, segregated mandate and dedicated fund

*: *Figures as of December 30, 2016.*

# Anti-Benchmark® US Credit: performance since inception

**Relative performance of AB US Credit vs. BofA Merril Lynch US Corporate & High Yield Index**
(May 12, 2014 – December 30, 2016)




| | | |
|---|---|---|
| **Strategy US Credit:** | | |
| Return: | 10.80% | |
| Annualized return: | 3.97% | |
| Hist vol: | 3.64% | |
| Sharpe ratio: | 1.01 | |
| Sortino ratio: | 1.66 | |
| **ML US IG & HY TR:** | | |
| Return: | 8.60% | |
| Annualized return: | 3.18% | |
| Hist vol: | 3.54% | |
| Sharpe ratio: | 0.81 | |
| Excess return: | 2.20% | |
| Vol reduction: | 2.72% | |
| Excess annual. return: | 0.79% | |
| Tracking error: | 1.66% | |
| Info ratio: | 0.48 | |
| Beta: | 0.92 | $r^2$ 79.90% |
| Correlation: | 89.39% | |
| Jensen's alpha: | 2.83% | |
| Treynor ratio: | 0.04 | |

*Source: TOBAM. Returns are Gross of management fees and stated in USD. Past performance is not indicative of future results.*

# Anti-Benchmark® US Credit: Portfolio characteristics

As of December 30, 2016

The Anti-Benchmark US Credit aims to achieve higher Diversification and avoid the risk concentrations inherent in issuer-weighted bond indices.

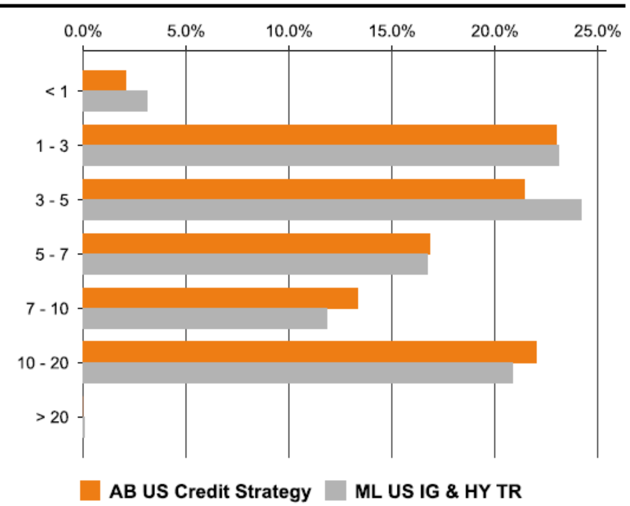
To achieve this in the context of the credit asset class, **the strategy matches the average duration and spread of the benchmark (+/-10%):**

### Statistics

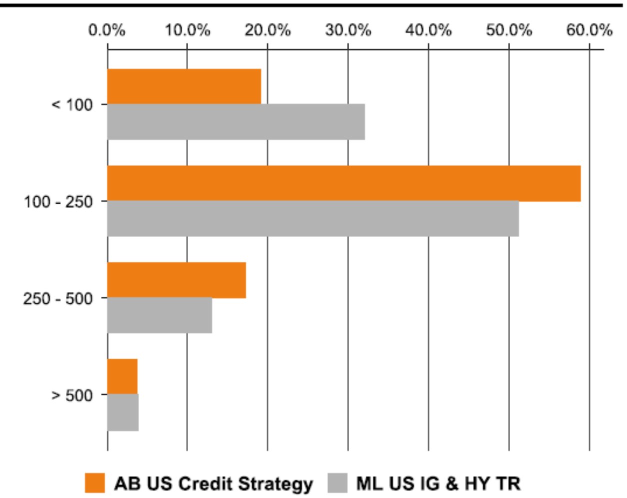
| | AB US Credit | Benchmark |
|---|---|---|
| Squared Diversification Ratio (USD) | 4.53 | 3.57* |
| Modified duration to worst | 6.50 | 6.27 |
| Average rating | BBB3 | BBB1 |
| Average option adjusted spread | 193 | 182 |
| Yield to worst | 4.11% | 3.87% |

** DR computation limited to investable securities*

### Allocation By Duration To Worst




### Allocation By Option Adjusted Spread

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*Source: TOBAM – Figures and charts as of December 30, 2016*

# About TOBAM

TOBAM is an asset management company offering innovative investment capabilities designed to maximize diversification. TOBAM's Maximum Diversification® approach, supported by original, patented research and a mathematical definition of diversification, provides clients with diversified core exposure, in both the equity and fixed income markets. TOBAM currently manages US$8 billion (at December 30, 2016) across its Anti-Benchmark® range. TOBAM's team is composed of 48 professionals.

For more information, visit www.tobam.fr

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