For professional investors only

Passive Management: the perfect oxymoron?

LGPS Conference
March 18th, 2015

Presentation by Yves Choueifaty,
President & CIO of TOBAM

TOBAM
CORE INVESTMENTS

TOBAM: Who are we?

The company:

TOBAM is independent and employee-owned

- Created in 2005
- CalPERS became a minority shareholder in April 2011,
- Amundi became a minority shareholder and a distribution partner in May 2012

TOBAM manages over $8.8 billion (as of February 28th, 2015) primarily for large, well-known pension funds. Its team includes 35 financial professionals, complemented by Third Party Marketers.

TOBAM provides the “Most Diversified Portfolio” via full diversification and neutral risk allocation

TOBAM’s flagship Anti-Benchmark® strategies, supported by original research and a mathematical definition of diversification, provide clients with diversified core equity exposure, both globally and in domestic markets.

The founder:

Yves Choueifaty, President & CIO (24 years investment experience), previously:

- CEO of Credit Lyonnais Asset Management (AuM €70bio),
- Graduated in 1992 from ENSAE in Statistics, Actuarial studies, Finance, and Artificial Intelligence

TOBAM: Pioneering "Smart Beta"

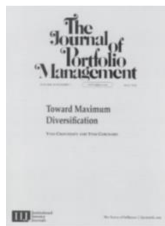
2005 – 2006 – 2007 – 2008 – 2009 – 2010 – 2011 – 2012 – 2013 – 2014 – 2015

June 2005
Yves Choueifaty launches TOBAM as an independent venture. TOBAM is a registered trademark

$ 0.4 bn

June 2006
First patent filed on the Maximum Diversification® approach and Anti-Benchmark® strategy

October 2008
Academic paper supporting the Anti-Benchmark® methodology published in the Journal of Portfolio Management



$ 1 bn

February 2010
TOBAM signs the UN Principles for Responsible Investment and the UN Global Compact

Signatory of:

PRI Principles for Responsible Investment

THE GLOBAL COMPACT
WE SUPPORT

April 2011
CalPERS becomes a minority shareholder

June 2011
US and Australian Patents granted

$ 2 bn

May 2012
Amundi becomes a minority shareholder & a distribution partner

$ 4 bn

Spring 2013
"Properties of the Most Diversified Portfolio" published in the Journal of Investment Strategies

$ 6 bn

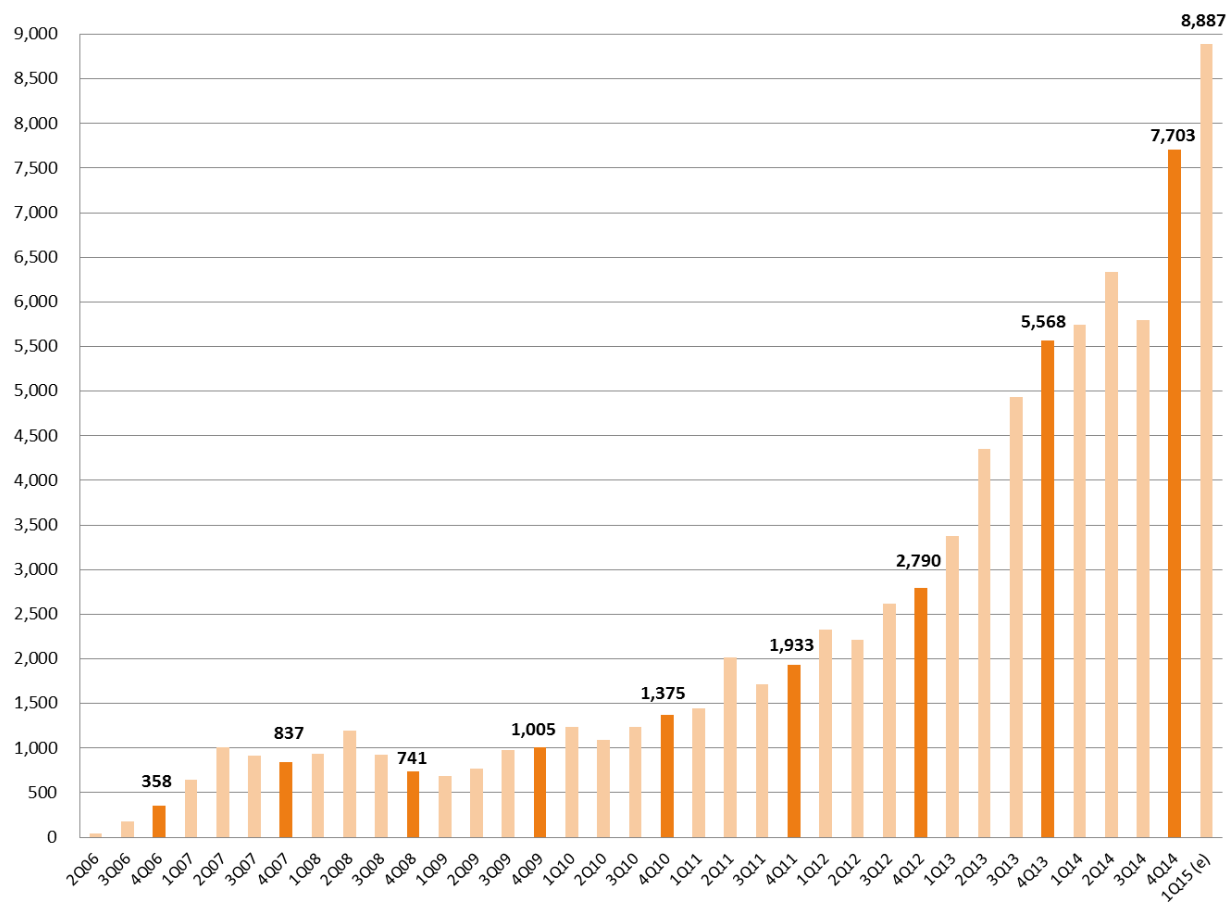
May 2014
Pioneer in alternative fixed income : TOBAM launches its first Fixed Income strategy: Anti-Benchmark US Credit

$ 9 bn

TOBAM* CORE INVESTMENTS

AUM & Strategies

TOBAM Anti-Benchmark Strategy - Quarterly AUM (US$ 000, 000)



- TOBAM only manages Anti-Benchmark® strategies
- The Anti-Benchmark® strategy has been live since June 2006

Available strategies

Regional Equities

- Anti-Benchmark Canada Equity
- Anti-Benchmark Euro Equity
- Anti-Benchmark Europe Equity
- Anti-Benchmark France Equity
- Anti-Benchmark Japan Equity
- Anti-Benchmark Pacific Equity
- Anti-Benchmark Pac ex-Japan Equity
- Anti-Benchmark UK Equity
- Anti-Benchmark US Equity
- Anti-Benchmark US Next Equity
- Anti-Benchmark North America Equity

Global Developed & EM Equities

- Anti-Benchmark Global Equity
- Anti-Benchmark World Equity
- Anti-Benchmark Emerging Markets Equity
- Anti-Benchmark All Countries World Equity

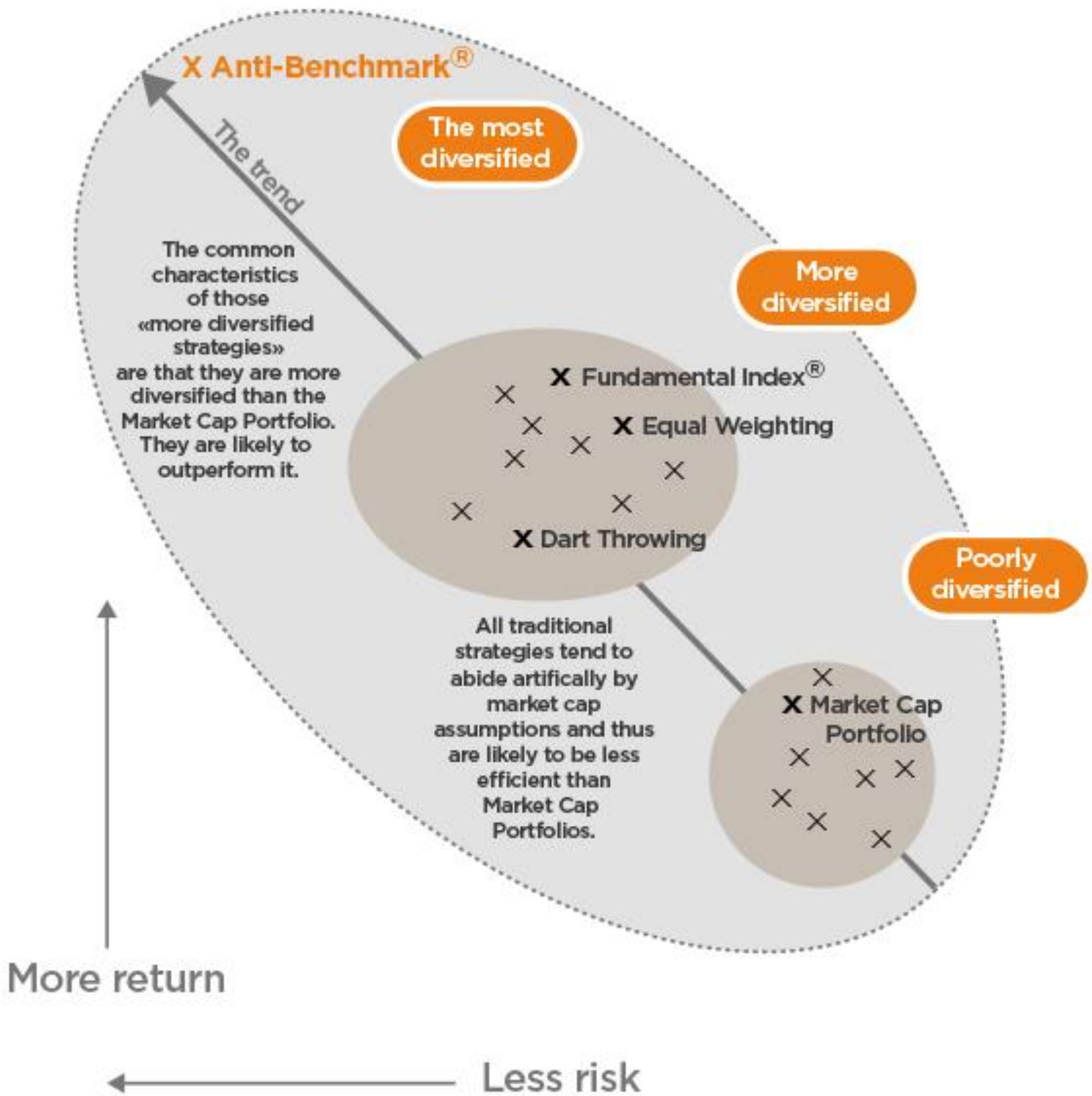
Fixed Income

- Anti-Benchmark US Credit

Source: TOBAM

TOBAM* CORE INVESTMENTS

From Market Cap-weighted benchmarks to “Smart Beta”



TOBAM*
CORE INVESTMENTS

Agenda

* Why is passive management not the solution?
* The real cost of passive management
* Why invest in equities?+Intro to a general Framework
* The Anti-Benchmark® approach

Why is passive not the solution?

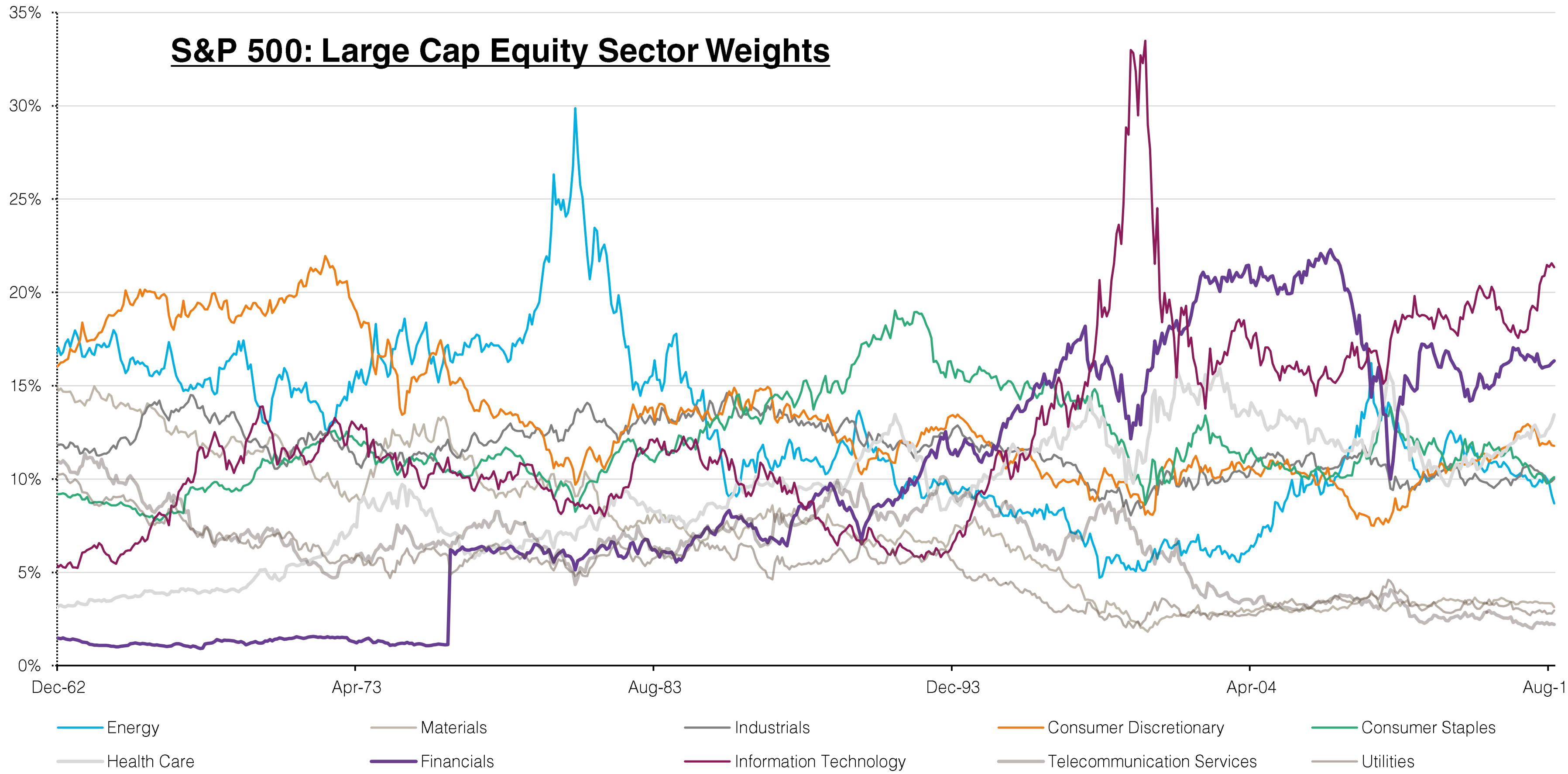
How can you be “Passive” and “Manage”?

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

  => Market cap-weighted benchmarks

Why is passive not the solution?
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

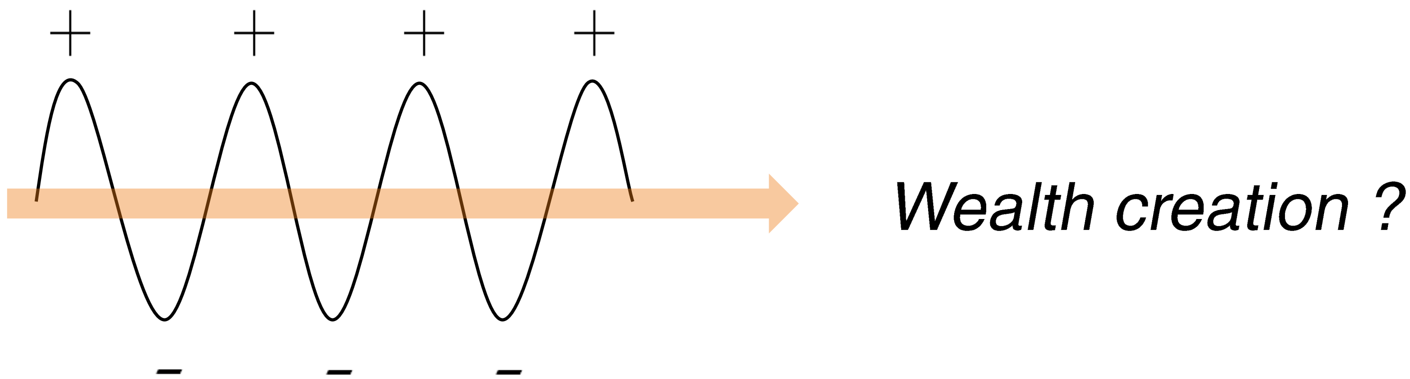


Source : TOBAM; CRSP 1962-2013

TOBAM* CORE INVESTMENTS

…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

TOBAM
CORE INVESTMENTS

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

<u>Conclusion :</u> The market cap-weighted benchmark is a Dynamic Risk Allocator that is simply the some of all speculations.

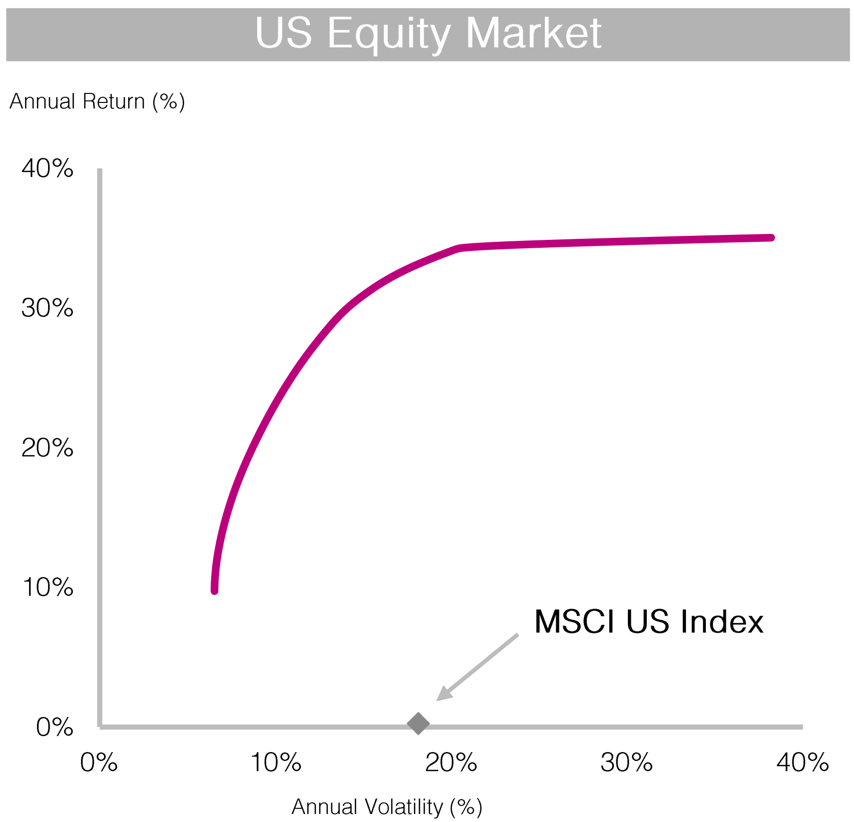
It is an output of our industry, for our industry to use as an output, would be as clever as for a dog to follow its tail it is harmful for the investors and for the economy.

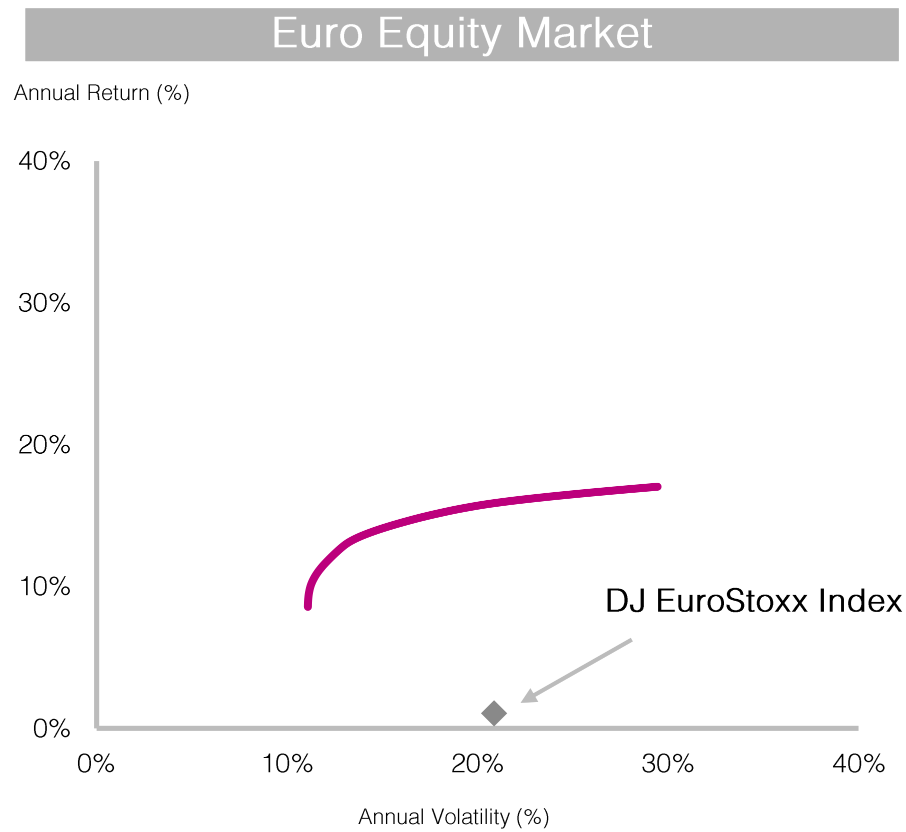
Agenda

* Why is Passive management not the solution?
* The real cost of passive management
* Why invest in equities?+Intro to a general framework
* The Anti-Benchmark® approach

Across Geographies and across time

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





Source : Factset. All returns are stated in local currency. MSCI and DJ EuroStoxx indices are net of dividends. May 2001- May 2006

TOBAM*
CORE INVESTMENTS

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 London-New York not London-London
  - Matt. XXV 14-30
- ….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

Agenda

* Why is Passive management not the solution?
* The real cost of Passive management
* Why invest in equities? + Intro to a general framework
* The Anti-Benchmark® approach

Why invest in equities?

The search for the Beta

Defining Beta

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

Why are long-term investors investing in equities?

- … not only because they believe portfolio managers are skilled
- … but because of a widely held investment belief:

→ Equities should reward the risk over the long-term

2 sources of risk reward in equity markets

Real Economy Sphere

"The Equity Risk Premium"
(ERP)

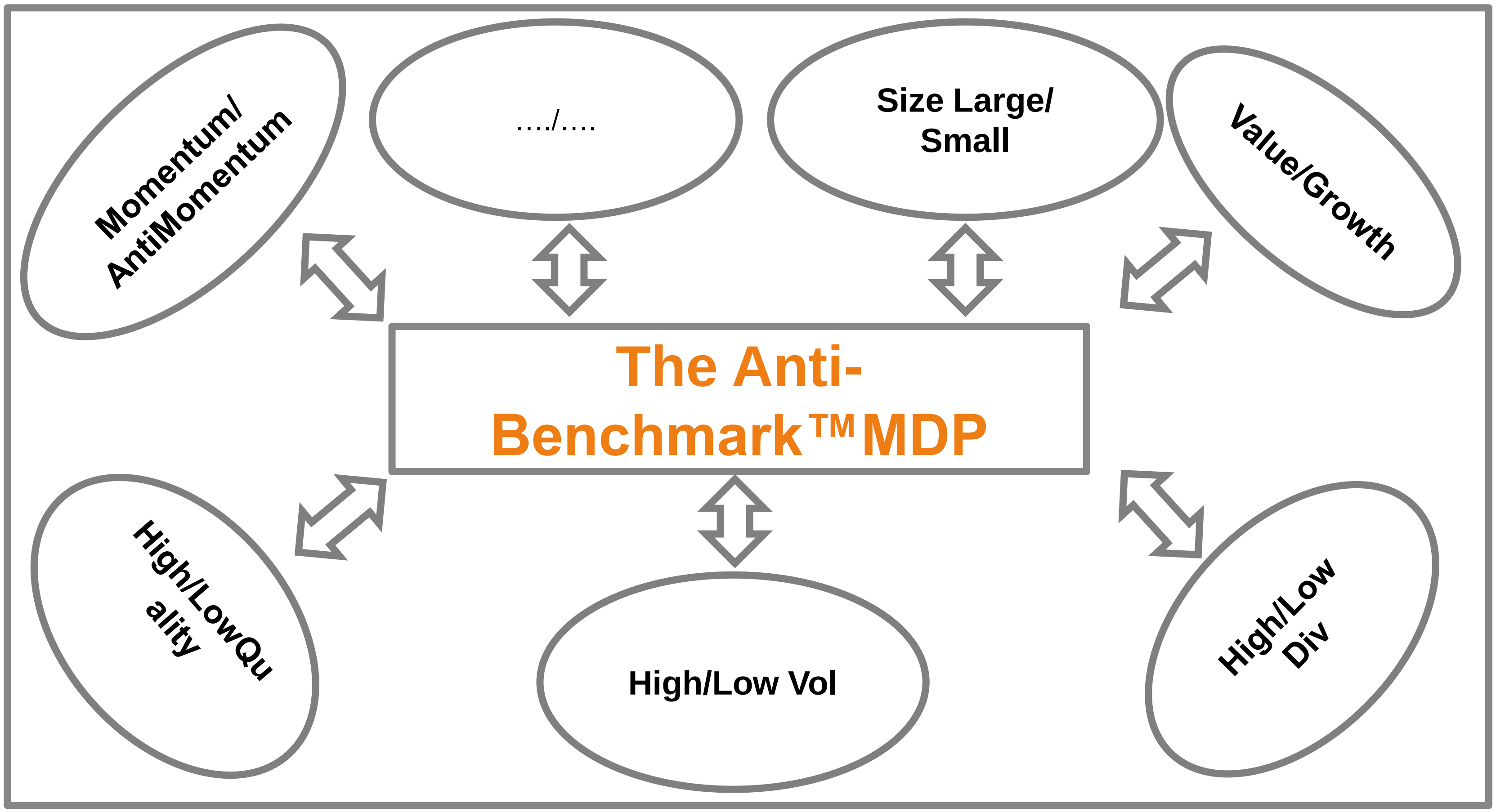
Delivered by the Most Diversified Portfolio

Financial Sphere

Taking advantage of:

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

Implementation, our views (2)



→ Rational Answer: Core / Satellite approach with the MDP as Core investment

In the next 12 slides, we provide an empirical illustration of the above points

Agenda

* Why is Passive management not the solution?
* The real cost of Passive management
* Why invest in equities?
* The Anti-Benchmark® approach

What is Anti-Benchmark®?

Anti-Benchmark® : a quantitative investment approach based on a unique principle – seeking maximum diversification

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

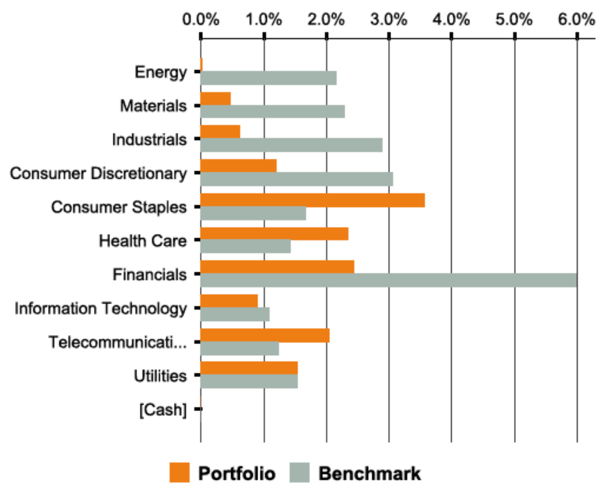
- Definition of a mathematical measure of a portfolio's diversification: the *Diversification Ratio®* (patented),
- Set up of an investment process that maximizes this *Diversification Ratio®*,
- Long-only, no leverage and fully invested

What does it mean to be diversified?

“Being diversified” is the contrary of *“being biased”*:

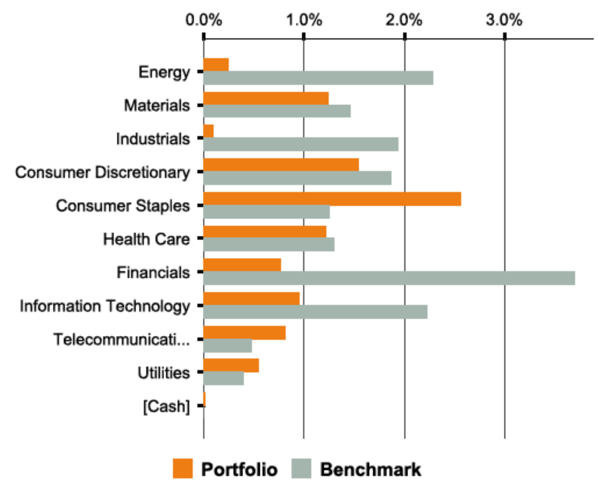
Anti-Benchmark Euro

Sources of Volatility (3M)



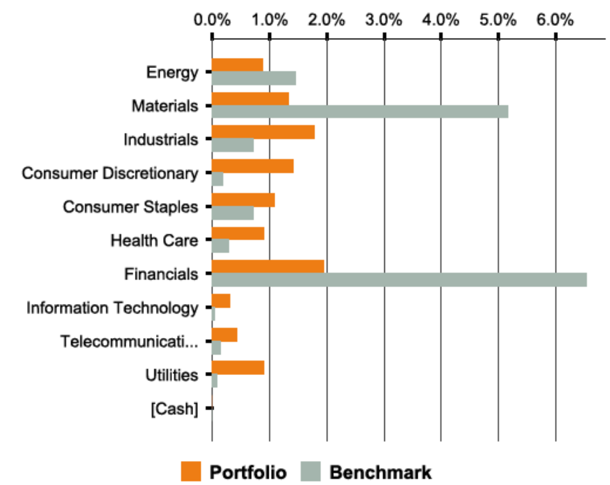
Anti-Benchmark Emerging Markets

Source of Volatility (3M)



Anti-Benchmark Australia

Sources of Volatility (3M)



Anti-Benchmark World

Source of Portfolio Volatility (Ex Ante)

In %	Asia	Europe ex UK	North Amer.	United Kingdom	Total
Consumer Discretionary	0.07	0.00	1.48	0.24	1.79
Consumer Staples	0.04	0.38	2.07	0.49	2.98
Energy	0.00	0.00	0.39	0.00	0.39
Financials	0.07	0.33	0.64	0.00	1.04
Health Care	0.02	0.00	1.45	0.00	1.47
Industrials	0.02	0.00	0.20	0.00	0.22
Information Technology	0.06	0.15	0.79	0.00	0.99
Materials	0.00	0.03	1.25	0.09	1.37
Telecommunication	0.09	0.51	0.24	0.20	1.04
Utilities	0.18	0.00	0.46	0.18	0.82
[Cash]	0.00	-0.00	-0.05	-0.00	-0.05
Total	0.54	1.40	8.92	1.19	12.05

Source of Benchmark Volatility (Ex ante)

In %	Asia	Europe ex UK	North Amer.	United Kingdom	Total
Consumer Discretionary	0.17	0.64	1.44	0.14	2.38
Consumer Staples	0.07	0.40	0.78	0.28	1.53
Energy	0.06	0.37	1.98	0.44	2.85
Financials	0.63	1.17	2.56	0.54	4.90
Health Care	0.05	0.50	1.14	0.14	1.83
Industrials	0.21	0.77	1.43	0.15	2.56
Information Technology	0.08	0.20	2.33	0.02	2.63
Materials	0.23	0.47	0.72	0.40	1.82
Telecommunication	0.03	0.20	0.29	0.12	0.65
Utilities	0.02	0.22	0.27	0.05	0.56
[Cash]	0.00	0.00	0.00	0.00	0.00
Total	1.55	4.96	12.92	2.28	21.70

Being diversified means allocating your risk evenly across all the available sources of risk.

Source : TOBAM – fund reportings as of 31/07/2012.
Past performance is not indicative of future results.

The Anti-Benchmark® defines and maximizes diversification

- The Anti-Benchmark® aims to deliver broad equity market exposure that provides superior performance with lower risk
- Anti-Benchmark® attempts to capture the full equity market risk premium
- We believe the higher returns result from better capturing the risk premium

TOBAM* CORE INVESTMENTS

Anti-Benchmark®: the neutral risk allocator

The Anti-Benchmark®:

- neutrally allocates risk to the effective independent sources of risk,
- is the undiversifiable portfolio,
- provides a theoretical definition of the equity risk premium

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

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

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

TOBAM* CORE INVESTMENTS

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 stock volatilities

Portfolio Volatility

The Diversification Ratio® has NO bias toward high or low volatility stocks.

TOBAM CORE INVESTMENTS

The Active / Passive Debate

Shifting the Debate on Active Versus Passive Investing

Tue Apr 29, 2014 9:00am EDT

* Reuters is not responsible for the content in this press release.

Shifting the Debate on Acti
Passive Investing

**Question Is Not Whether Active Equity Managers Can
Certain Ones Can; Rather, It Is Whether Investors Ca
the Challenges That Go With Investing in Differentiat**

Active Management: The active-versus-active debate

INVESTMENT & PENSIONS EUROPE

NOVEMBER 2014 (MAGAZINE) | BY ERIC COLSON

Print Email Share Comment

Tweet 0

Like 0

Tracking error has often been used as shorthand for 'activeness' in portfolio management. Eric Colson explains the weakness of that approach, and how active share is a much stronger predictor of active performance

EQUITY

Rooting out true value: the case for - and against staying active

Conclusion

- Market-cap weighted indices are <u>not</u> diversified
- Market-cap weighted indices are <u>not</u> efficient from a risk/reward perspective
- Market-cap weighted indices are dangerous for investors and for the economy when used as an input

Cost-effective alternatives exist that can:

- Minimize exposure to 'unrewarded risk'
- Better capture the ERP via the undiversifiable portfolio

After accounting for fees, strategies that optimize risk/reward can offer superior 'value' compared to inefficient and undiversified strategies

Appendix

1st independent claim: The DR measures the number of effective sources of risk in a portfolio

DR^2 (P) = number of independent effective sources of risk (P)

$$DR(P) = \frac{\Sigma.P}{\sqrt{{}^tPVP}} = \frac{(w_1\sigma_1 + w_2\sigma_2 + \ldots + w_n\sigma_n)}{\sigma_P}$$

DR (1-stock portfolio) = 1

DR (2-stock portfolio; 50/50%, risk weighted; ρ= 0) = $\sqrt{2}$

DR (3-stock portfolio; 3 x 1/3, risk weighted; $\rho_{i\neq j}$*= 0) =* $\sqrt{3}$

… DR (n-stock portfolio; n x 1/n, risk weighted; $\rho_{i\neq j}$*= 0) =* $\sqrt{n}$

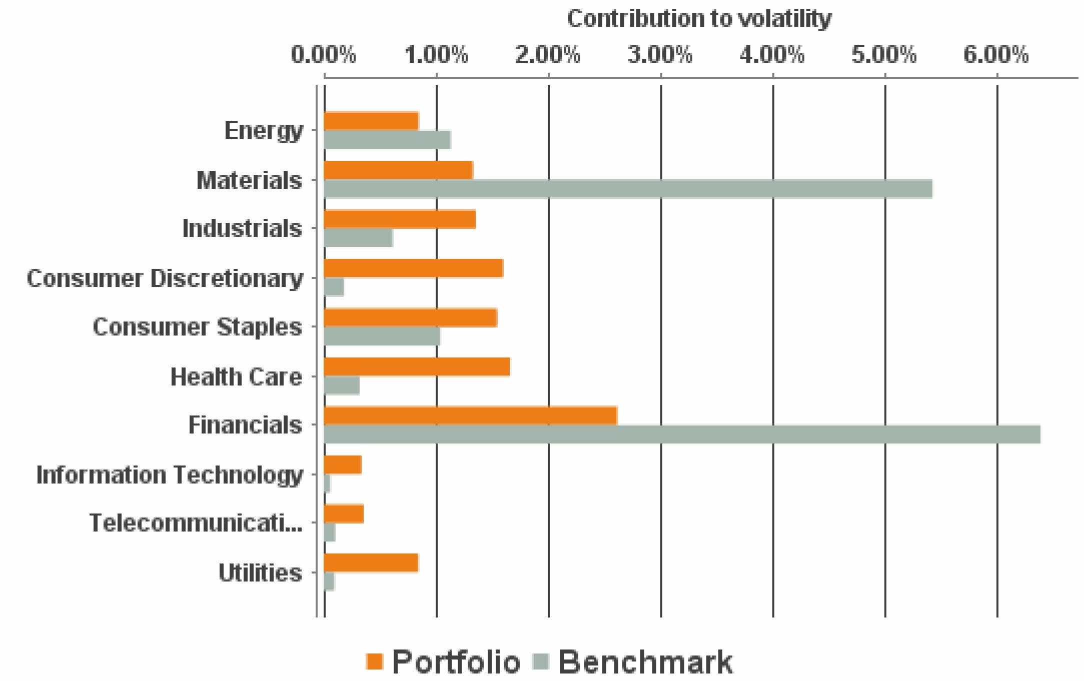
Under a specific formalism:
If « n » orthogonal risk factors $(F_i)_{i=1\ldots n}$ *exist, then:*

DR (Equal-Weighted $(F_i)_{i=1\ldots n}$*) =* $\sqrt{n}$

Diversification Ratio® - Interpretation

	Anti-Benchmark Australia Equity	MSCI Daily TR Net Australia Local
Diversification Ratio	1.89	1.43

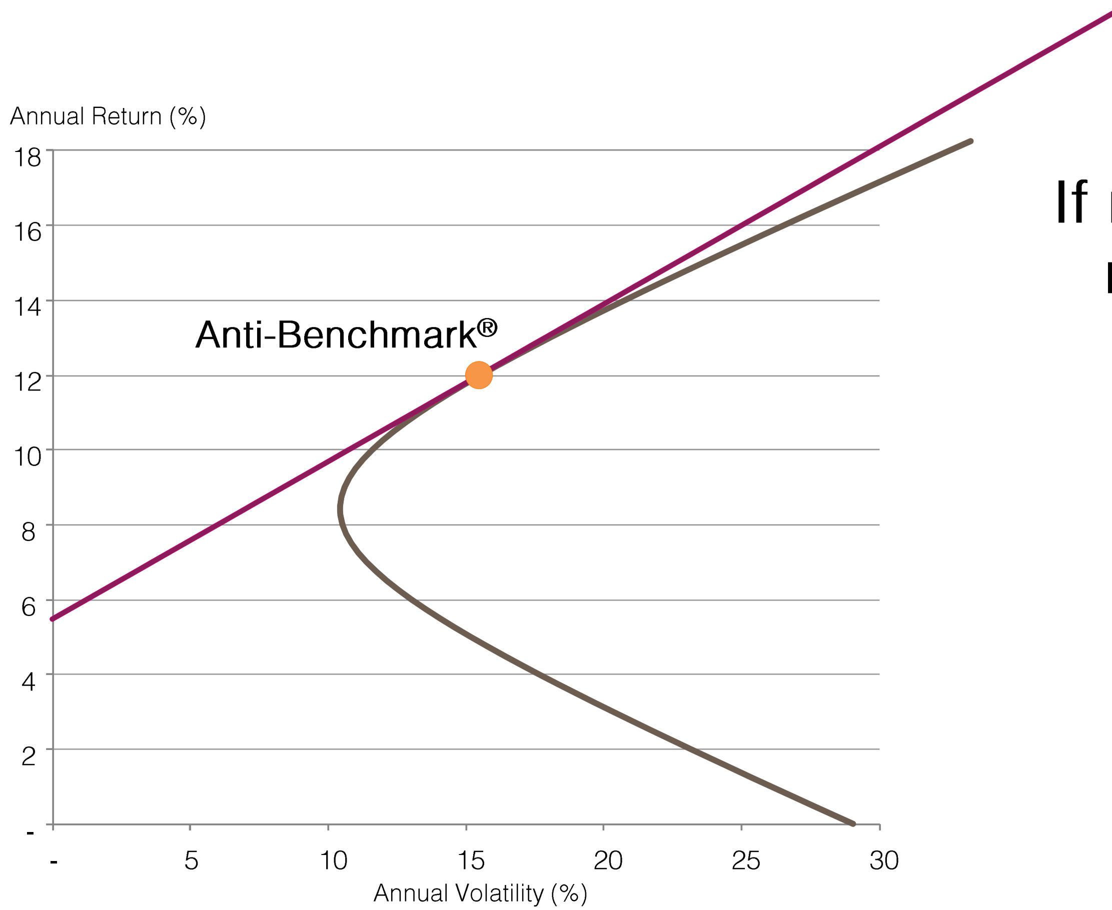
* Sources of Volatility (Ex ante)



Source: TOBAM, Factsheet as of 31st August 2011

TOBAM* CORE INVESTMENTS

2nd independent claim:
The Sharpe Portfolio under the weakest assumption



If risk is homogeneously rewarded across the universe, then :

Max DR(P)

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

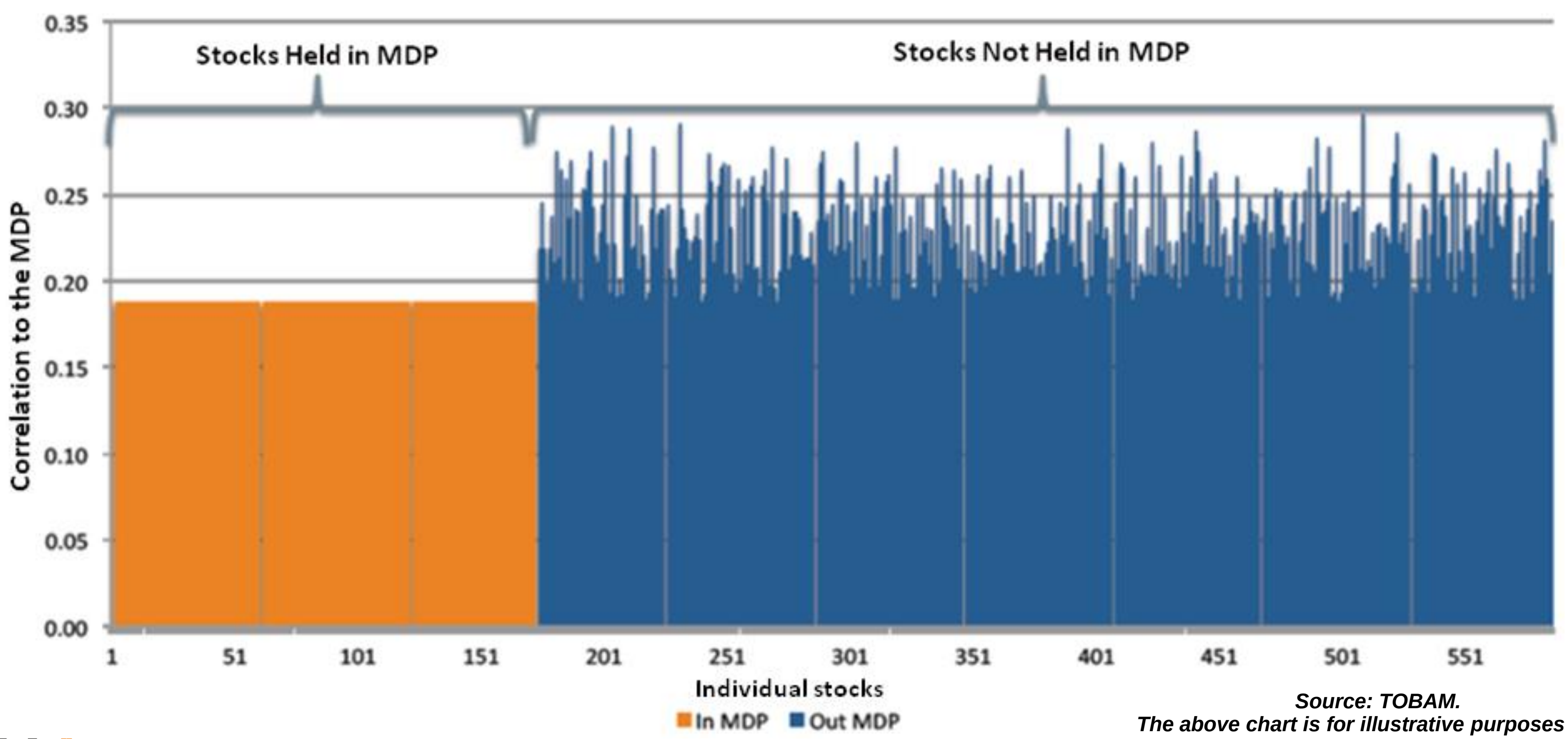
$$\Leftrightarrow \text{Max} \frac{ER(P)}{\sigma_P}$$

⇔ Max Sharpe Ratio

3rd independent claim:
The portfolio that is the most immune to its own mistakes

"The TOBAM team…constructs a "maximum diversification" portfolio that has an equal and lowest-possible correlation with its constituent holdings, and for which all excluded assets would boost the correlations, if included."
"Beyond Cap Weight" by Rob Arnott, Research Affiliates Inc., Journal of Indexes , Jan 2010

The graph below illustrates the correlation of stocks, within and outside of the portfolio, to the Anti-Benchmark® portfolio (or MDP – Most Diversified Portfolio):



Source: TOBAM.
The above chart is for illustrative purposes only.

TOBAM
CORE INVESTMENTS

Conclusion: a lesson of life

If you cannot forecast, you should only diversify

Tyrannosaurus Rex

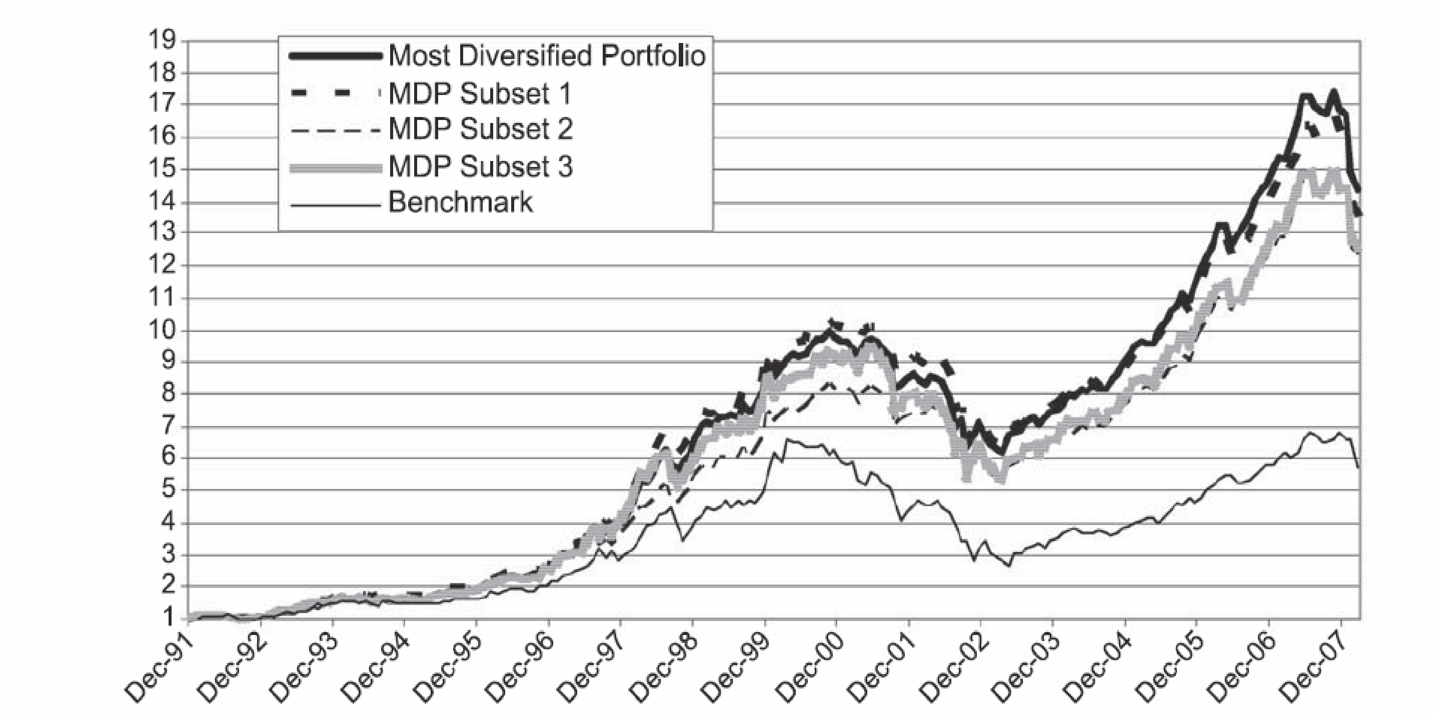
Crusafontia
(prehistoric mammal)

TOBAM* CORE INVESTMENTS

Diversification Ratio® - Stability characteristic

EXHIBIT 6

Empirical Performance of Eurozone Most-Diversified Portfolios, Full Universe and Three Subsets, 1992–2008



Source: Choueifaty, Y. et al « Toward Maximum Diversification . » Fall 2008: Journal of Portfolio Management

The above graph illustrates that the Most Diversified Portfolios® of random subsets of a universe tend to have similar behaviour versus the market cap benchmark.

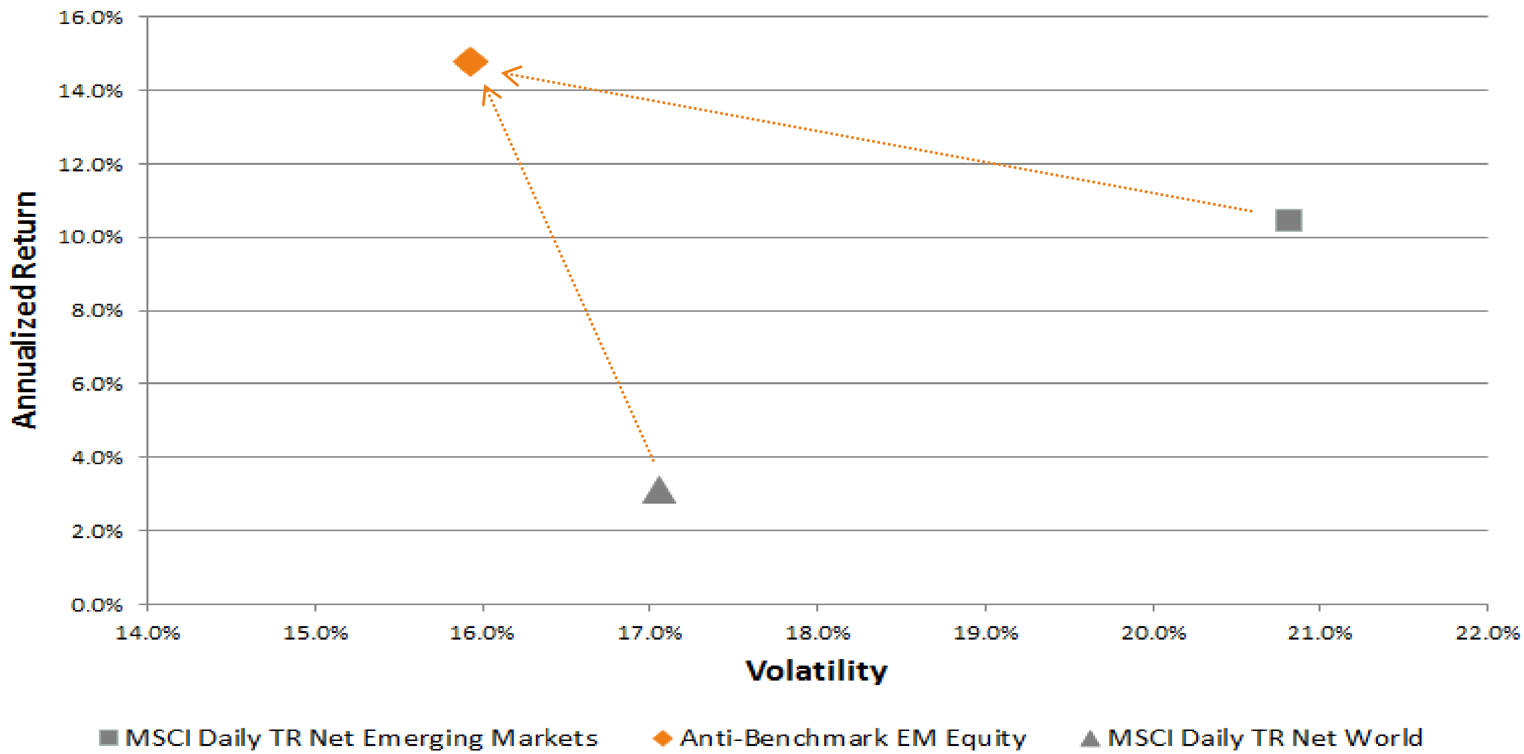
Applying a 100% bottom-up selection methodology, the resulting portfolio will build the most balanced allocation across sources of risk

TOBAM* CORE INVESTMENTS

Anti-Benchmark® EM: long-term behaviour

as of December 31, 2014

USD 29/12/2000 – 31/12/2014	MSCI Daily TR Net Emerging Markets	Anti-Benchmark EM Equity	MSCI Daily TR Net World
Annualized performance	10.43%	14.76%	3.12%
Volatility	20.82%	15.94%	17.06%
Sharpe Ratio	0.41	0.81	0.05



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.

TOBAM CORE INVESTMENTS

Anti-Benchmark® EM: long-term behaviour

as of December 31, 2014

Monthly Returns (%)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD AB	YTD Index
2014	-3.89	2.65	2.37	1.50	1.99	3.18	0.09	3.12	-4.84	-1.20	-1.75	-3.14	-0.38	-2.19
2013	0.50	-0.68	-0.06	2.96	-2.35	-4.47	1.75	-5.07	5.78	4.96	-1.15	-0.10	1.47	-2.60
2012	5.57	6.14	-0.40	0.21	-8.71	3.95	2.19	2.04	4.99	-0.60	0.48	3.27	19.85	18.22
2011	-3.12	0.17	5.02	5.42	0.63	-2.95	0.91	-7.86	-11.47	10.37	-4.98	-0.54	-9.92	-18.42
2010	-3.73	-0.50	6.87	2.74	-6.99	3.33	5.07	1.16	10.60	2.20	-2.38	4.62	24.03	18.88
2009	-6.14	-4.53	9.89	11.31	16.88	-0.22	10.27	-1.17	7.38	-0.15	2.86	4.51	60.55	78.51
2008	-10.96	5.23	-3.47	4.99	-0.59	-6.88	-1.67	-6.18	-12.88	-22.37	-8.46	7.94	-45.80	-53.33
2007	1.57	0.09	2.65	6.13	6.34	2.90	4.71	-1.68	9.53	8.67	-4.77	3.32	46.11	39.39
2006	8.48	1.43	1.00	5.05	-8.40	-0.27	2.71	3.38	2.46	3.57	5.80	2.73	30.62	32.17
2005	2.12	5.73	-3.94	0.86	2.23	4.25	5.75	2.64	7.13	-6.50	5.52	5.86	35.40	34.00
2004	0.66	4.35	3.25	-5.90	-2.82	0.44	1.38	1.01	6.83	3.87	9.43	3.57	28.29	25.55
2003	1.25	-0.83	-0.38	4.91	8.66	6.33	3.29	7.87	3.30	8.04	1.21	10.70	68.92	55.82
2002	6.04	3.58	3.56	0.26	-0.52	-3.20	-4.35	0.13	-6.38	1.63	3.97	4.24	8.47	-6.17
2001	9.33	-1.63	-6.63	-0.26	0.34	-1.17	-3.29	0.11	-11.73	2.14	5.99	4.66	-3.83	-2.61

Reflects actual returns of the TOBAM MDP AB EM (AB) launched on Jun 24, 2011.*

Summary Statistics

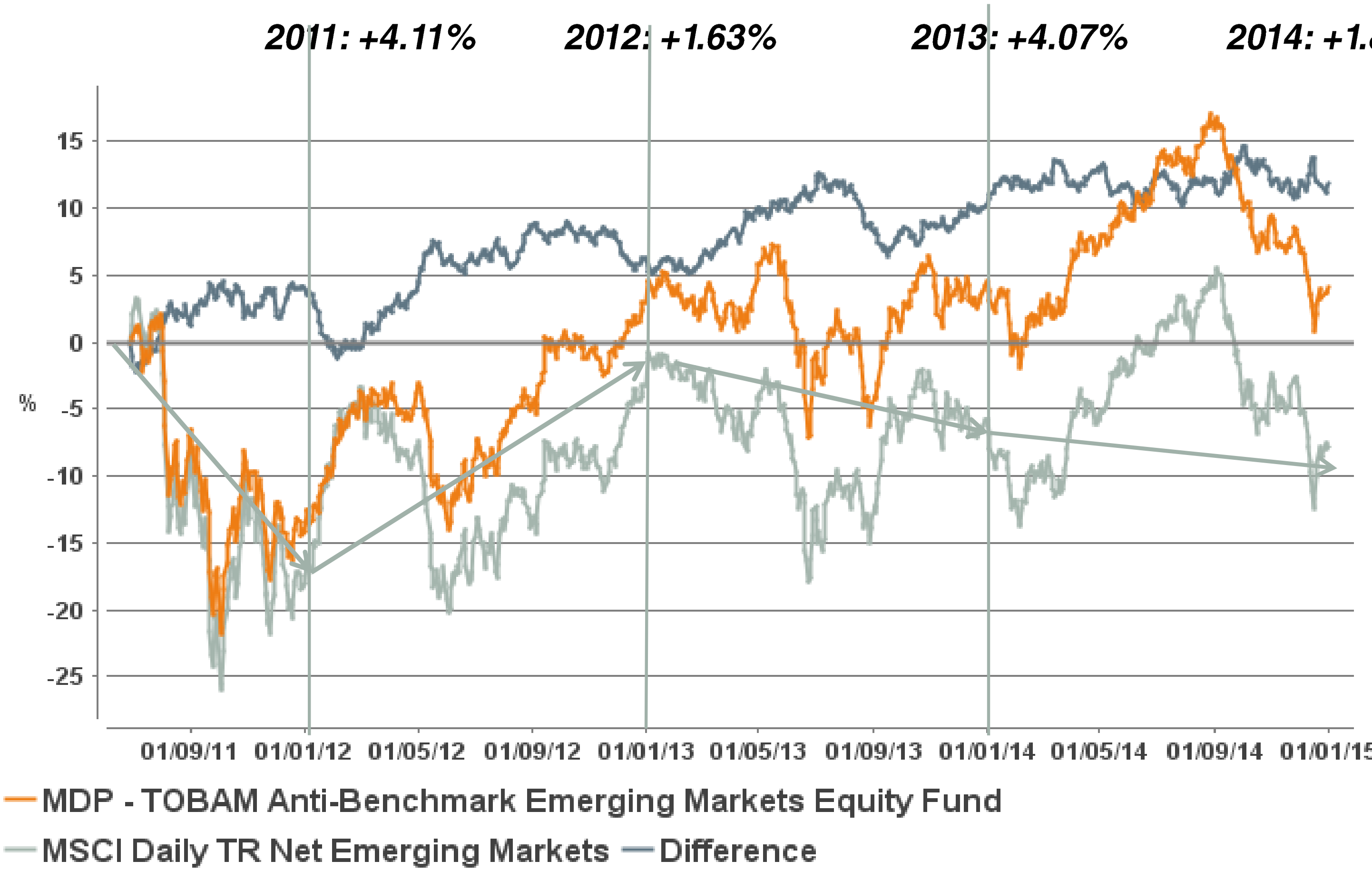
	MDP AB EM	MSCI Daily TR Net Emerging Markets
Total Fund AUM (USD) millions	1,305.29	
Return (Dec '00 - Dec '14)	587.95 %	301.52 %
Annualized return	14.76 %	10.43 %
Volatility	15.94 %	20.82 %
Sharpe ratio	0.81	0.41
Tracking error	8.72 %	
Downside deviation	10.28 %	13.27 %
Sortino ratio	1.25	0.64
Correlation to index	0.92	
Beta to index	0.71	

Returns stated in USD

Source: TOBAM Anti-Benchmark EM Equity factsheet as of 30/09/2014. 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.

Anti-Benchmark® EM: performance since inception

Relative performance of AB EM vs. MSCI EM
(June 29, 2011– December 31, 2014)



Volatility reduction of 18%

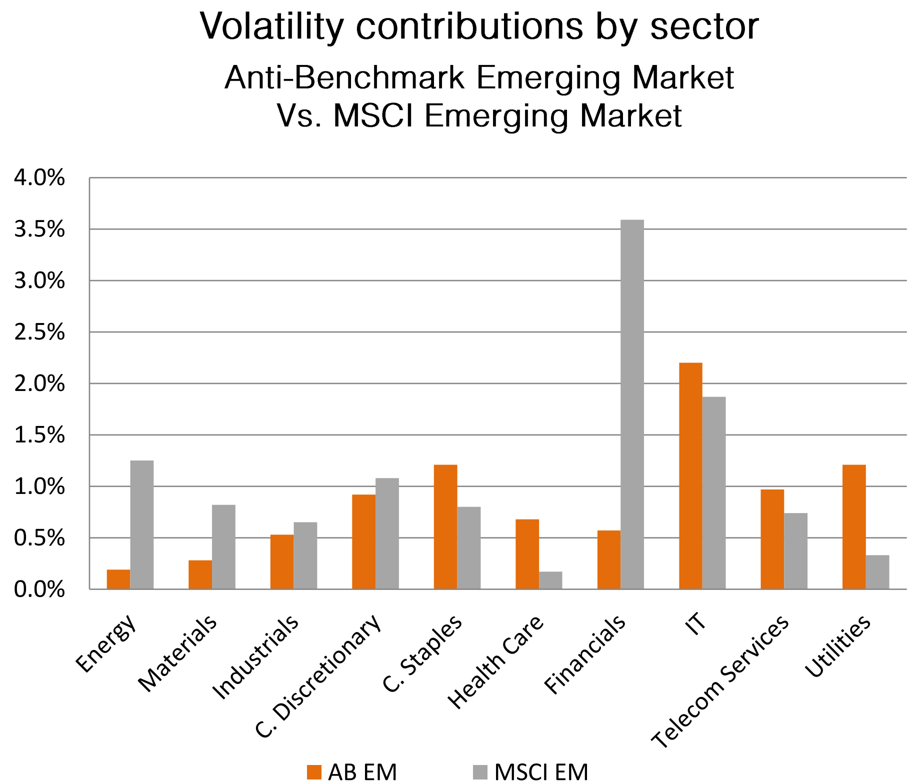
MDP AB EM:		
Return:	4.13%	(31/12/14)
Annualized return:	1.16%	
Hist vol:	13.60%	
Sharpe ratio:	0.07	
Sortino ratio:	0.11	
MSCI Daily TR Net Emerging Markets:		
Return:	-7.83%	(31/12/14)
Annualized return:	-2.30%	
Hist vol:	16.62%	
Sharpe ratio:	-0.15	
Excess return:	11.96%	
Excess annual. return:	3.46%	
Tracking error:	5.98%	
Info ratio:	0.58	
Beta:	0.77	r^2 88.58%
Correlation:	94.01%	
Jensen's alpha:	9.99%	
Treynor ratio:	0.01	

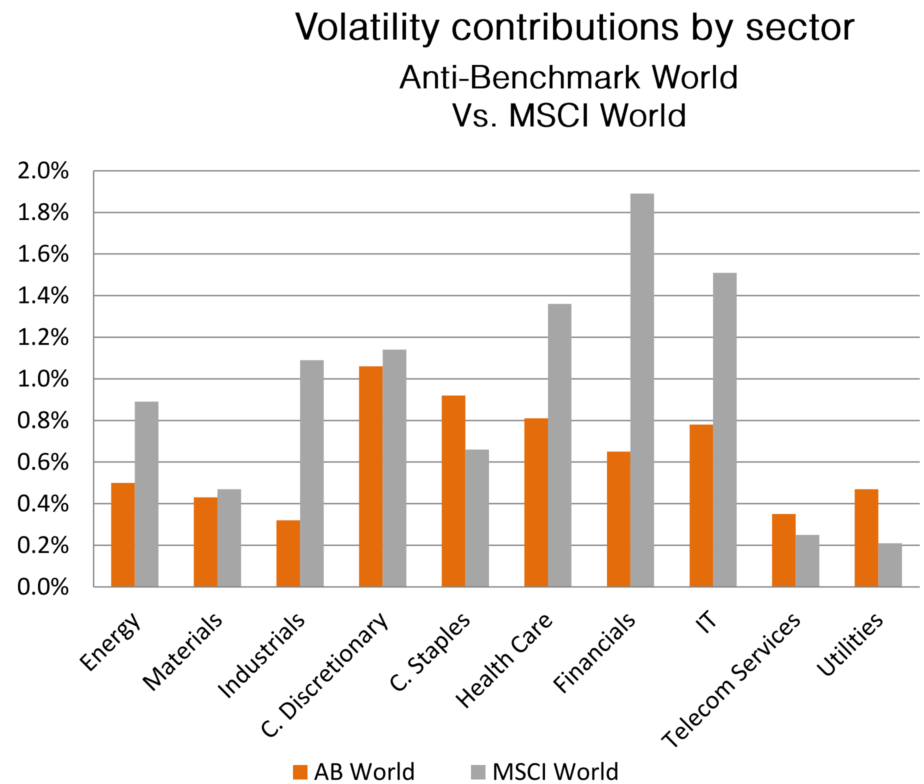
Source: TOBAM. Returns are Gross of management fees and stated in USD. Past performance is not indicative of future results.

TOBAM
CORE INVESTMENTS

Anti-Benchmark® EM Equity: a diversified exposure

as of December 31, 2014 – Ex-ante





- MSCI EM risk exposure is very much concentrated: almost half of its volatility comes from Financials and Energy/Materials alone
- MSCI EM risk exposure is quite similar to that of the MSCI World

TOBAM
CORE INVESTMENTS

TOBAM – Contacts

Paris Office
Christophe Roehri
+33 1 53 23 41 60
christophe.roehri@tobam.fr

New York Office

Stephane Detobel
+1 (646) 829-1621
stephane.detobel@tobamusa.com

Francis Verpoucke
+1 (646) 829-1622
francis.verpoucke@tobamusa.com

Client Service
Joe Kiwan
+33 1 53 23 41 66
clientservice@tobam.fr

TOBAM CORE INVESTMENTS

Disclaimer

This material is solely for the attention of institutional, professional, qualified or sophisticated investors and distributors. It is not to be distributed to the general public, private customers or retail investors in any jurisdiction whatsoever. This document is intended only for the person to whom it has been delivered.

Funds and/or SICAV specific information may have been provided for information solely to illustrate TOBAM's expertise in the strategy. Funds or the SICAV that might be mentioned in this document may not be eligible for sale in some states or countries and they may not be suitable for all types of investors. In particular, TOBAM funds are not registered for sale in the US, and this document is not an offer for sale of funds to US persons (as such term is used in Regulation S promulgated under the 1933 Act). This material is provided for information purposes only and does not constitute a recommendation, solicitation, offer, advice or invitation to purchase or sell any fund, SICAV or sub-fund or to enter in any transaction and should in no case be interpreted as such, nor shall it or the fact of its distribution form the basis of, or be relied on in connection with, any contract for the same.

The information provided in this presentation relates to strategies managed by TOBAM, a French investment adviser registered with the U.S. Securities and Exchange Commission (SEC) under the U.S. Investment Advisers Act of 1940 and the Autorité des Marchés Financiers (AMF) and having its head office located at 49-53 avenue des Champs Elysées, 75008 Paris, France. TOBAM's Form ADV is available free of charge upon request.

Investment involves risk. All investors should seek the advice of their legal and/or tax counsel or their financial advisor prior to any investment decision in order to determine its suitability. The value and income produced by a strategy may be adversely affected by exchange rates, interest rates, or other factors so that an investor may get back less than he or she invested.

Past performance and simulations based on thereon are not indicative of future results nor are they reliable indicators of future performance. Any performance objective is solely intended to express an objective or target for a return on your investment and represents a forward-looking statement. It does not represent and should not be construed as a guarantee, promise or assurance of a specific return on your investment. Actual returns may differ materially from the performance objective, and there are no guarantees that you will achieve such returns. Back tests do not represent the results of an actual portfolio, and TOBAM does not guarantee the accuracy of supporting data. The constraints and fees applicable to an actual portfolio would affect results achieved.

This material, including back tests, is based on sources that TOBAM considers to be reliable as of the date shown, but TOBAM does not warrant the completeness or accuracy of any data, information, opinions or results. TOBAM has continued and will continue its research efforts amending the investment process from time to time accordingly. TOBAM reserves the right of revision or change without notice, of the universe, data, models, strategy and opinions. TOBAM accepts no liability whatsoever, whether direct or indirect, that may arise from the use of information contained in this material. TOBAM can in no way be held responsible for any decision or investment made on the basis of information contained in this material. The allocations and weightings, as well as the views, strategies, universes, data, models and opinions of the investment team, are as of the date shown and are subject to change.

This document and the information herein is disclosed to you on a confidential basis and shall not be reproduced, modified, translated or distributed without the express written permission of TOBAM or TOBAM NORTH AMERICA and to the extent that it is passed on, care must be taken to ensure that any reproduction is in a form which accurately reflects the information presented here. This information could be presented by TOBAM NORTH AMERICA, a wholly-owned subsidiary of the TOBAM group of companies that is authorized to present the investment strategies of TOBAM, subject to TOBAM's supervision, but is not authorized to provide investment advice.

Copyrights: All text, graphics, interfaces, logos and artwork, including but not limited to the design, structure, selection, coordination, expression, "look and feel" and arrangement contained in this presentation, are owned by TOBAM and are protected by copyright and various other intellectual property rights and unfair competition laws. Trademarks: "TOBAM," "MaxDiv," "Maximum Diversification," "Diversification Ratio," "Most Diversified Portfolio," "Most Diversified Portfolios," "MDP" and "Anti-Benchmark" are registered trademarks. The absence of a product or service name from this list does not constitute a waiver of TOBAM trademark or other intellectual property rights concerning that name. Patents: The Anti-Benchmark, MaxDiv and Maximum Diversification strategies, methods and systems for selecting and managing a portfolio of securities, processes and products are patented or patent pending. Knowledge, processes and strategies: The Anti-Benchmark, MaxDiv and Maximum Diversification strategies, methods and systems for selecting and managing a portfolio of securities, processes and products are protected under unfair competition, passing-off and misappropriation laws. Terms of use: TOBAM owns all rights to, title to and interest in TOBAM products and services, marketing and promotional materials, trademarks and Patents, including without limitation all associated Intellectual Property Rights. Any use of the intellectual property, knowledge, processes and strategies of TOBAM for any purpose and under any form (known and/or unknown) in direct or indirect relation with financial products including but not limited to certificates, indices, notes, bonds, OTC options, warrants, mutual funds, ETFs and insurance policies (i) is strictly prohibited without TOBAM's prior written consent and (ii) requires a license.