



DELIVERING

THE MAXIMUM

THE MARKET

DIVERSIFICATION[®]

RISK PREMIUM

APPROACH

Diversification is our only bet



TOBAM*
CORE INVESTMENTS

TOBAM's investment philosophy is anchored around the belief that enhanced diversification lies at the heart of collecting the full risk premium of an asset class. While many managers focus on "alpha", much less attention is given to "beta" even though it is a major contributor to the performance and risk of a portfolio. The most common way for investors to obtain 'beta' exposure is through a market cap-weighted strategy; however, academic and practitioner research points to the inefficiencies of this methodology. TOBAM believes that these inefficiencies arise from insufficient diversification.

1. WHAT DOES IT MEAN TO BE DIVERSIFIED ?

BEING DIVERSIFIED MEANS:

- ★ Not being biased.
- ★ Avoiding concentrations. (in stock, sector, style, country, etc.).
- ★ Allocating to risk evenly across all the available sources of risk.

2. WHY MAXIMIZE DIVERSIFICATION ?

SECURITY RETURNS ARE DIFFICULT TO PREDICT

> *Focus on beta not alpha*

AVOID THE MARKET CAP-WEIGHTED BIASES

Market cap-weighted methodology by construction:

- ★ Fails to be a neutral risk allocator.
- ★ Is in fact a dynamic risk allocator.
- ★ Everything else being equal, it will increasingly allocate to a risk driver as it becomes more expensive.

> *Let's imagine a smarter beta*

COLLECT THE MARKET RISK PREMIUM

By definition, the risk premium is the return of the undiversifiable portfolio. The Maximum Diversification[®] portfolio is a good candidate to be the undiversifiable portfolio.

> *Maximum Diversification[®] has one aim: to maximize diversification and thus provide the theoretical definition of the market risk premium.*

The shortcomings of investing with the market cap-weighted methodology can be evidenced by the US Equity market: Sector weights from 1962 to 2017.



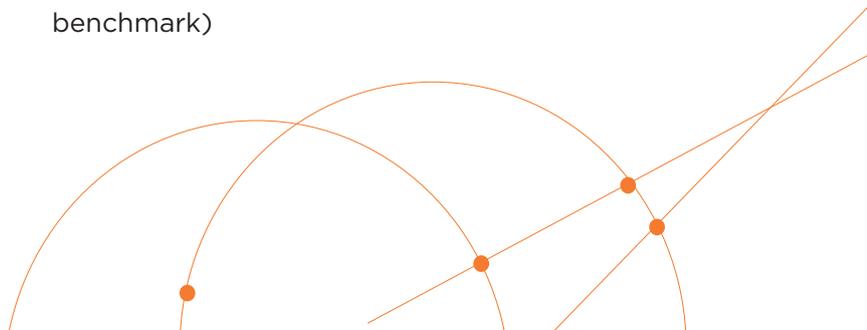
TOBAM calculations. Data from September 1962 to December 2017.

3. WHAT IS THE MAXIMUM DIVERSIFICATION[®] APPROACH ?

The Maximum Diversification[®] approach is a quantitative investment approach based on a unique principle; increasing diversification. From this concept, TOBAM derived the mathematical definition of a portfolio's diversification: the Diversification Ratio[®]. The Maximum Diversification[®] investment process has one objective: to maximize the Diversification Ratio[®] of a portfolio given a set of constraints.

As a result of maximizing diversification, we aim to:

- ★ Reduce risk.
- ★ Enhance returns. (compared to the market cap-weighted benchmark)



ABOUT TOBAM

1. Created in 2005 by Yves Choueifaty, the former CEO of Credit Lyonnais Asset Management and a mathematician by background. Founder of the Maximum Diversification® approach, Yves is widely recognized as one of the pioneers of the Smart Beta movement.
2. Majority-owned by its employees, TOBAM has a unique “one-team” spirit and strong alignment of interests within the company.
3. Two major institutions as minority shareholders:
 
4. Unique quantitative investment process patented in several countries including the US.

RESEARCH DRIVEN

We work with some of the most sophisticated institutional investors in the World and we consider that sharing our expertise and allowing them to benefit from our research capabilities to find solutions to their complex challenges is a crucial factor in building a solid and grounded research team.

* **>35% OF THE STAFF** is made up of investment professionals dedicated to the Maximum Diversification® approach.

* **PROVIDE CUSTOMIZED ANSWERS TO CHALLENGING ISSUES** raised by our clients, in an effort to ensure no stone is unturned.

RESPONSIBLE

Since its beginnings, TOBAM has decided that sustainable development would be explicitly core to its values. Our clients have a long-term approach to investing and our sustainable way addresses these concerns.

TOBAM's sustainable way is based on two pillars:

A SUSTAINABLE RESPONSIBLE INVESTMENT APPROACH

SRI Filter: Our products (Anti-Benchmark® strategies and

Maximum Diversification® indices) incorporate a SRI filter that is inspired by the exclusion list published by the Norges Bank.

CORPORATE ENGAGEMENT AND ACTIONS

- * Proud sponsor of Human Rights organisations via an innovative donation mechanism.
- * 150% of the carbon footprint of the company is compensated for by donating to carbon offsetting projects.
- * Commitment to the Arts.
- * Youth Sponsoring Initiative.

AMNESTY INTERNATIONAL 

HUMAN RIGHTS WATCH

 **PRI** Principles for Responsible Investment

INVESTING

CAPABILITIES & SOLUTIONS

EQUITIES, FIXED INCOME, MULTI-ASSET

1

ANTI-BENCHMARK® STRATEGIES

Anti-Benchmark® strategies are TOBAM's flagship offering based on the Maximum Diversification® approach. The strategies are designed to maximize the degree of diversification available when selecting weights of assets during the portfolio allocation process.

SOLUTIONS

- ★ Funds (open-ended & dedicated)
- ★ Advisory
- ★ Mandates

2

MAXIMUM DIVERSIFICATION® INDICES

The TOBAM Maximum Diversification® Index Series is based on the Maximum Diversification® approach, but constrained to deliver replicable and transparent indices. Unlike the Anti-Benchmark® strategies, the indices are designed to offer lower ex-post tracking error due to a 50% active share constraint.

SOLUTIONS

- ★ Licensing (for Funds or ETFs)
- ★ Advisory
- ★ Mandates

3

CUSTOM INDICES & STRATEGIES

Due to the unique nature of our quantitative investment process, we work together with our clients to design dedicated and bespoke solutions catering to their constraints and preferences (investment universe, tracking error management, integration of client's specific filter/blacklist...).

	INVESTMENT APPROACH	INVESTMENT UNIVERSES
ANTI-BENCHMARK® STRATEGIES	Maximum Diversification®	<ul style="list-style-type: none"> ★ Regional & Country Equities ★ Global Developed & Emerging Markets Equities ★ Fixed-Income ★ Multi-Asset
MAXIMUM DIVERSIFICATION® INDICES	Maximum Diversification® with constraints	<ul style="list-style-type: none"> ★ Regional & Country Equities ★ Global Developed & Emerging Markets Equities
CUSTOM INDICES & STRATEGIES	Maximum Diversification® customized with clients	<ul style="list-style-type: none"> ★ Custom



CORE STRENGTHS

1. PATENTED, UNIQUE & TRANSPARENT

All research efforts at TOBAM are dedicated to our unique investment philosophy. The Maximum Diversification® approach is a **patented investment methodology**, which allows for **full transparency** of our investment process.

2. RECOGNIZED PIONEER IN ALTERNATIVE BETA STRATEGIES

We have a **12-year track record** of providing innovative smart beta solutions to our clients.

3. AGILE INVESTMENT BOUTIQUE WITH PROMINENT SHAREHOLDERS & CLIENTS

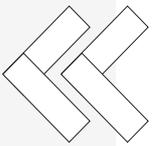
Benefits from the advantages of being a boutique investment firm **focused on meeting the needs of the most demanding clients** in the world.

4. VALUE-ADDED RESEARCH-FOCUS

TOBAM is driven by Research. We partner with our clients to **produce innovative and customized research**.

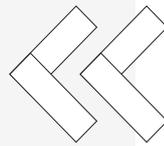
5. STREAMLINED, EFFICIENT AND STRAIGHT-THROUGH PROCESSING

TOBAM remains focused on value-added tasks. We strive to differentiate ourselves via **top-of-the-league automated systems** designed to provide cutting edge investment services, reports, and research.



TOBAM fits with Amundi's strategic vision, which consists of **always seeking and offering the best in class strategies** and solutions to its clients. The Maximum Diversification® approach is **unique and protected by a patent**. This makes TOBAM a **unique player** in the asset management world.

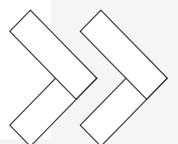
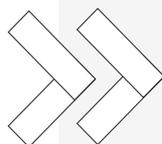
Yves Perrier
CEO of Amundi



TOBAM has a clear vision, and the **strategy is well-articulated, easy to understand and well researched**. It is **very transparent**, especially for a quantitative approach, which means we really know what we are getting. All those things indicated to us that TOBAM's story **would resonate with CalPERS** and other institutional investors.

Kenneth Grossfield & Christopher Pond

Strategic Investment Group
(Shareholders on behalf of CalPERS)



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