TOBAM*
Core investments

Diversification Update at 31/01/2011*

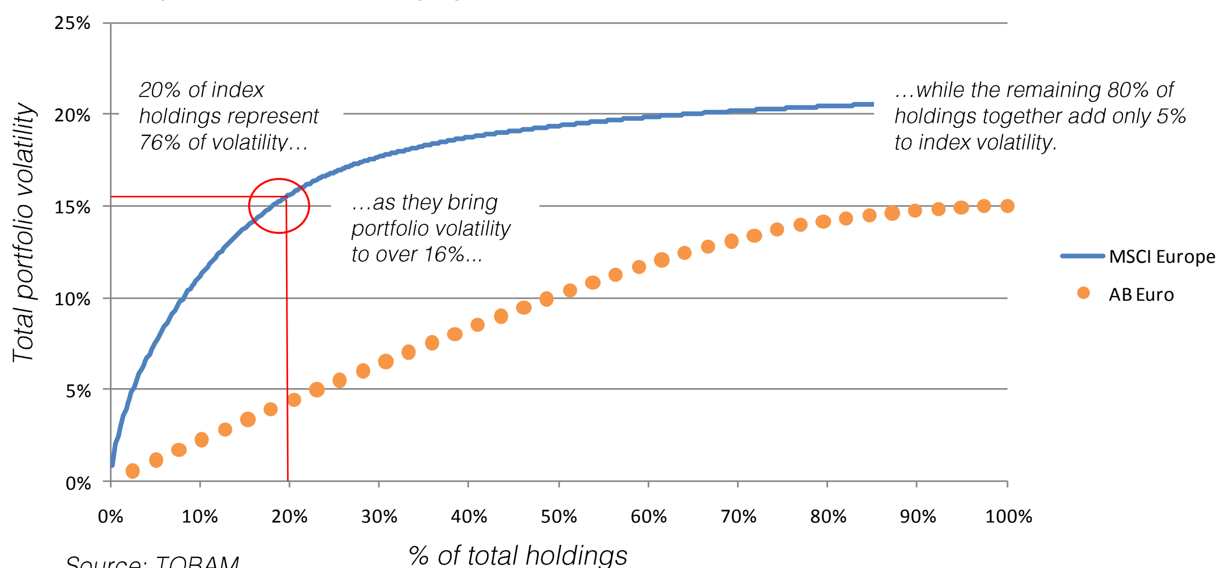
TOBAM's Diversification Ratio (DR)[1] measures how much a portfolio is diversified. The DR2 (square of the diversification ratio) corresponds to the number of independent degrees of freedom (equally-weighted) in a particular portfolio – or the number of independent variables at work. As the chart shows, the "broad market" indices leave diversification on the table. In addition to a snapshot of each market's DR2, the chart shows the DR2 of a well-diversified portfolio, and the fraction of available diversification used by each index.

	DR2 - Index diversification	*DR2 - Maximum diversification*	*% diversification used by index*
DJ EuroStoxx	1.77	2.89	61%
MSCI US	2.04	3.76	54%
MSCI UK	2.28	3.42	67%
MSCI Japan	2.22	3.03	73%
MSCI World	3.69	5.81	63%
MSCI Australia	2.16	4.88	44%

Monthly Focus: the indices and the 80/20 rule

Contrary to popular belief, portfolio risk concentration is not proportional to the number of stocks held. In fact, "buying the market" via a cap-weighted index can actually result in a concentrated portfolio, because many stocks within the same sector may be driven by the same risk factor(s). This means that a minority of stocks can be responsible for the majority of portfolio risk. Said differently, the indices follow the 80/20 rule, where 80% of the effect is linked to 20% of the cause. Below, we compare the incremental risk contributions of all 462 stocks in the MSCI Europe index vs. the Most Diversified Portfolio constructed from the same universe but containing only 42 stocks. In keeping with the 80/20 rule, 20% of the stocks in the index account for 76% of volatility, while the Most Diversified Portfolio spreads risk much more evenly:

MSCI Europe Index vs. Euro Equity Most Diversified Portfolio



Source: TOBAM.

In this way, the Most Diversified Portfolio addresses stock-specific risk *not* by holding as many assets as possible, but rather by selecting the most diverse combination of risks *driving* each stock's performance. As such, the Most Diversified Portfolio is more correlated to any of the stocks it does *not* hold than it is to any of the stocks it does.

TOBAM's Diversification Ratio® measures a portfolio's or index's diversification. It is supported by original research and is based on a mathematical definition of diversification. TOBAM's "Anti-Benchmark" Most Diversified Portfolio® maximizes this Diversification Ratio®. Maximizing diversification within a universe of securities provides a result closer to the true market risk premium from that universe. "Maximum Diversification®" and "MaxDiv®" are registered trademarks of TOBAM.

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About TOBAM

TOBAM is a full-service asset management firm established in Paris, France, registered and authorised by the Autorité des Marchés Financiers (AMF), the French Financial Markets Authority. 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 Anti-Benchmark ® methodology has been applied successfully to other asset classes. TOBAM also publishes the Maximum Diversification® Index series (or MaxDiv® Index) based on the Anti-Benchmark equity portfolio construction methodology. The company manages around 1 billion Euros in assets through its Anti-Benchmark range for institutional clients based in Europe. Its team consists of about fifteen financial professionals.

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