

Diversification Dashboard – 29.11.2013, RETF

TOBAM's Diversification Ratio (DR) ¹ measures to what extent a portfolio is diversified. The DR ² (square of the diversification ratio) measures the number of effective degrees of freedom to which a portfolio is exposed. As the table shows, the "broad market" indices leave diversification on the table. In addition to a snapshot of each market's DR ² , the table shows the DR ² of a well-diversified portfolio, and the fraction of available diversification used by the index.		<i>DR² - Index diversification</i>	<i>DR² - Maximum diversification</i>	<i>% diversification used by index</i>
		MSCI EMU	2.82	8.75
	MSCI US	3.41	9.30	36.6%
	MSCI UK	2.92	5.56	52.5%
	MSCI Japan	2.08	5.42	38.3%
	MSCI World	5.18	19.04	27.2%
	MSCI Australia	2.70	5.04	53.5%
	MSCI Pacific ex-Japan	2.71	6.62	40.9%
	MSCI Canada	4.76	9.65	49.3%
	MSCI Emerging	4.98	10.32	48.2%
	MSCI All Countries	5.69	20.32	28.0%

Diversifying benefits of the Anti-Benchmark compared to the risk factor driven strategies

The purpose of this note is to analyze the benefits of the Anti-Benchmark in the context of risk factor decomposition. The study concludes that the **Anti-Benchmark is an appreciated diversifier relatively to Risk Factor Driven strategies.**

We analyze the relative risk/return characteristics of the AB and of a variety of MSCI Indices over a five years period, split into three regions: US, Developed Market, and Emerging Market.

In addition to the regional benchmark, the factors considered in the study are:

1. Growth
2. Value
3. Small capitalizations
4. Large capitalizations

This review illustrates the diversification benefits of the Anti-Benchmark which generally:

- provides a combination of return improvement and volatility reduction
- has the lowest pair-wise correlation among all portfolios
- has the highest pair-wise tracking error among all portfolios, across all regions

In fact this analysis shows that the AB does what it says on the tin, achieving maximum diversification. The Most Diversified Portfolio (MDP) is by definition the non-diversifiable portfolio. This means that:

- The MDP is a diversifier to all other strategies
- The MDP will seek an even exposure to all risk factors available
- The only way to be highly correlated to the MDP, is to be the MDP

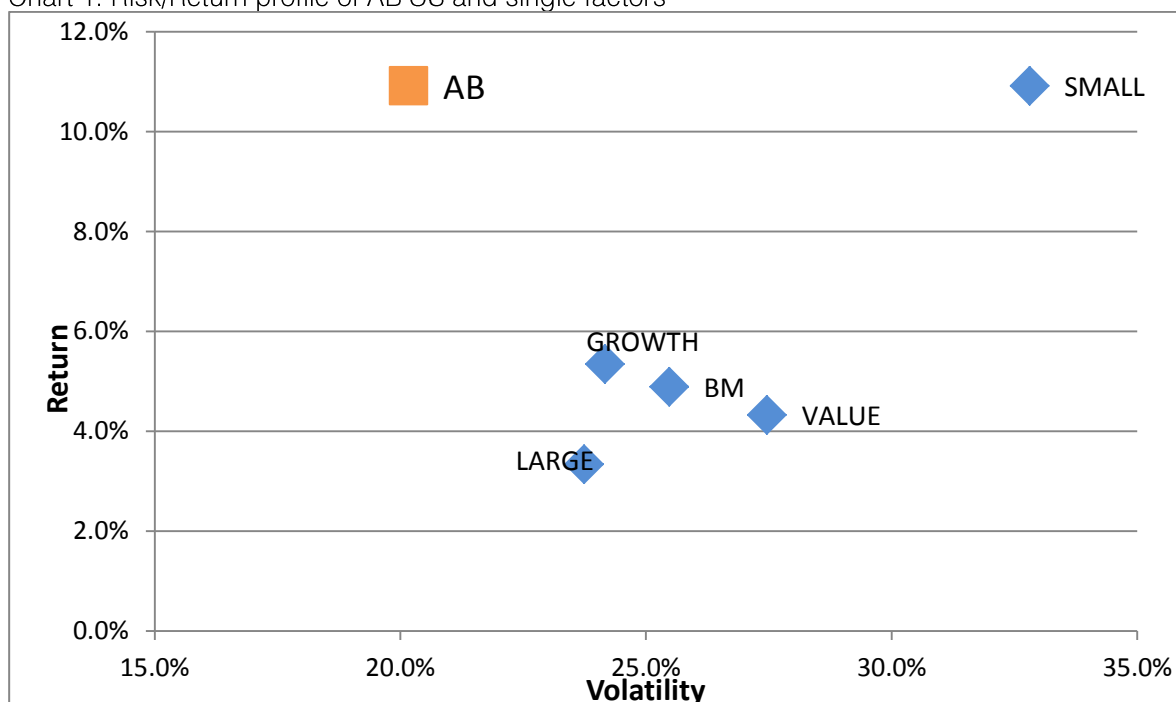
¹ TOBAM's Diversification Ratio measures a portfolio's or index's diversification. It is supported by original research and is based on a mathematical definition of diversification. TOBAM's "Anti-Benchmark" Most Diversified Portfolio[®] maximizes this Diversification Ratio. Maximizing diversification 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.

AB US versus US factors

We look at the period 31/12/2007 – 31/10/2013 using daily data. The indices used are:

Growth: MSCI Daily TR Net Growth USA
 Value : MSCI Daily TR Net Value USA
 Small : MSCI Daily TR Net Small Cap USA (proxy)
 Large : MSCI USA Large Cap Net Total Return (proxy)
 Benchmark: MSCI USA TR Net USA

Chart 1: Risk/Return profile of AB US and single factors



Source: Bloomberg, TOBAM

Table 1: pair-wise correlation and average tracking error, US region

Correlation	AB	BM	SMALL	LARGE	VALUE	GROWTH	Average	Avg Tracking Error
AB		92%	90%	89%	90%	91%	91%	12.1%
BM	92%		94%	99%	99%	99%	97%	7.0%
SMALL	90%	94%		91%	94%	92%	92%	14.0%
LARGE	89%	99%	91%		98%	98%	95%	8.2%
VALUE	90%	99%	94%	98%		95%	95%	8.7%
GROWTH	91%	99%	92%	98%	95%		95%	8.4%

Source: TOBAM

The chart and table show the diversifying properties of the Anti-Benchmark, which efficiency clearly stands out, which exhibits the lowest correlations and second highest average tracking error to the other strategies in the US region.

AB World versus world factors

We look at the period 31/12/2007 – 31/10/2013 using daily data. The indices used are:

Growth: MSCI Daily TR Net Growth World
 Value : MSCI Daily TR Net Value World
 Small : MSCI Daily TR Net Small Cap World (proxy)
 Large : MSCI World Large Cap Net Total Return (proxy)
 Benchmark: MSCI World TR Net

Chart 2: Risk/Return profile of AB World and single factors



Source: Bloomberg, TOBAM

Table 2: pair-wise correlation and average tracking error, world region

Correlation	AB	BM	SMALL	LARGE	VALUE	GROWTH	Average	Avg Tracking Error
AB		92%	91%	92%	85%	87%	89%	12.3%
BM	92%		98%	99%	90%	91%	94%	7.9%
SMALL	91%	98%		95%	85%	87%	91%	9.6%
LARGE	92%	99%	95%		91%	92%	94%	8.2%
VALUE	85%	90%	85%	91%		96%	89%	12.5%
GROWTH	87%	91%	87%	92%	96%		91%	10.4%

Source: TOBAM

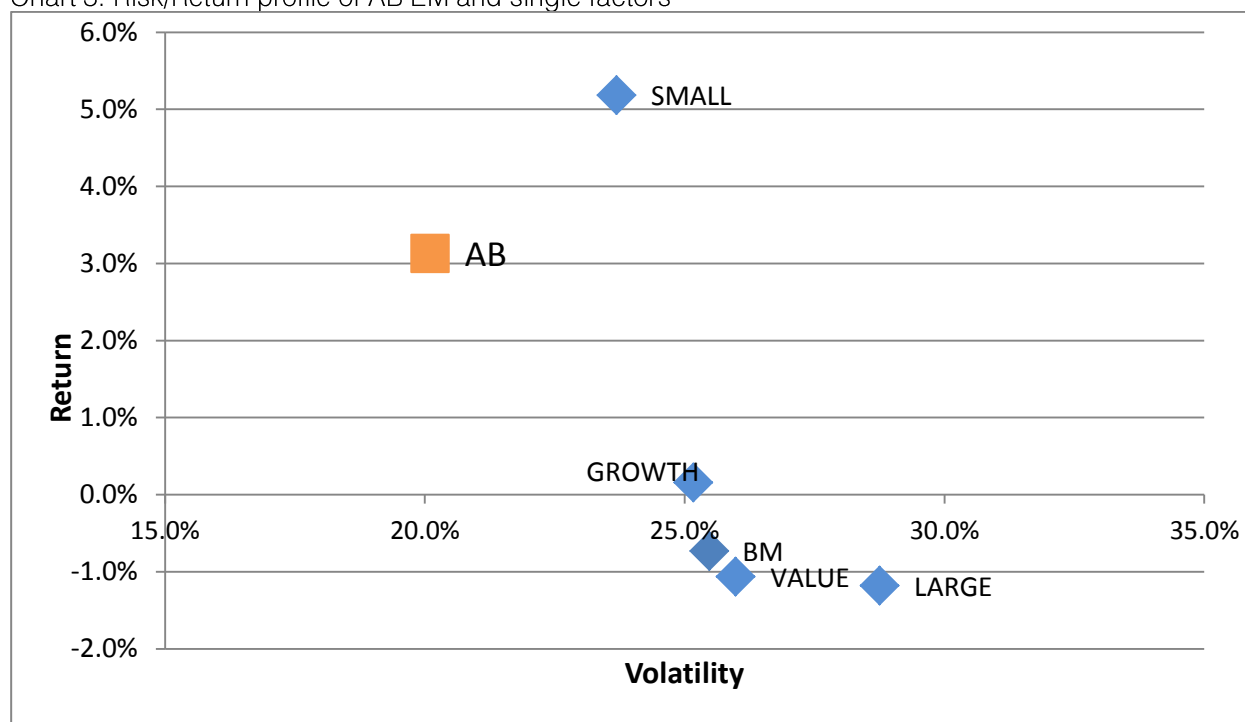
The chart and table show the diversifying properties of the Anti-Benchmark, which efficiency clearly stands out, which exhibits the lowest average correlation and second highest average tracking error to other strategies in the World region.

AB EM versus emerging factors

We look at the period 31/12/2007 – 31/10/2013 using daily data. The indices used are:

Growth: MSCI Daily TR Net Growth EM
 Value : MSCI Daily TR Net Value EM
 Small : MSCI Daily TR Net Small Cap EM (proxy)
 Large : MSCI EM Large Cap Net Total Return (proxy)
 Benchmark: MSCI EM TR Net

Chart 3: Risk/Return profile of AB EM and single factors



Source: Bloomberg, TOBAM

Table 2: pair-wise correlation and average tracking error, EM region

Correlation	AB	BM	SMALL	LARGE	VALUE	GROWTH	Average	Avg Tracking Error
AB		91%	92%	87%	91%	91%	90%	11.5%
BM	91%		97%	98%	100%	100%	97%	5.4%
SMALL	92%	97%		93%	97%	97%	95%	7.8%
LARGE	87%	98%	93%		98%	98%	95%	9.0%
VALUE	91%	100%	97%	98%		99%	97%	6.1%
GROWTH	91%	100%	97%	98%	99%		97%	6.0%

Source: TOBAM

The chart and table show the diversifying properties of the Anti-Benchmark, which efficiency clearly stands out, which exhibits the lowest average correlation and highest average tracking error to other strategies in the Emerging Market region

For more information

TOBAM is an asset management company offering innovative investment capabilities whose aim is to maximize diversification. 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 company manages over \$4.9 billion via its Anti-Benchmark strategies for institutional clients worldwide. Its team includes twenty financial professionals.

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