WHITE PAPER
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For professional investors

Short-term stock selection model boosts performance Enhanced Indexing

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Solid performance for Enhanced Indexing

One of Robeco's core Quant Investing strategies in developed markets is Robeco Enhanced Indexing. This strategy invests in global developed markets equities, and has a low tracking error against its benchmark, the MSCI World index. In recent years, performance has been strong. In this paper we focus on one element that distinguishes Robeco's strategy from those of others: our short-term stock selection model (SHOT). In this paper we show the added value of this model since its integration in the investment process in 2009.

Track record Robeco Global Enhanced Indexing

Annualized performance					*31-08-2014*
	YTD	1-year	3-year	5-year	Inception
Robeco Enhanced Indexing	13.05%	23.90%	21.26%	16.22%	8.07%
MSCI World (net return)	11.71%	21.22%	18.96%	14.29%	6.91%
Relative performance	1.34%	2.68%	2.30%	1.92%	1.17%
Information ratio		3.33	2.45	2.20	1.07
Tracking error		0.80%	0.94%	0.87%	1.10%

Source: Robeco Global Performance Measurement. Composite Enhanced Indexing Equities Global, gross of fees, based on net asset value, all figures in EUR, inception date November 2004. The value of your investments may fluctuate. Results obtained in the past are no guarantee for the future.

The short-term stock selection model

The SHOrt-Term stock selection model (SHOT) was developed in 2007 as a stand-alone performance driver for a holding period of one to three months[1]. It aims to distinguish factors not covered by the core stock selection model, which has an investment horizon of nine to twelve months. The model's structure is similar to that of the core stock selection model: it combines variables into themes, which are combined into a final model ranking.

The Robeco short-term selection model (SHOT)

Reversals + Liquidity + Revisions = SHOT model

Source: Robeco

The model identifies three themes: price reversal, liquidity and earnings revisions. They exploit market inefficiencies arising as a result of predictable patterns in investor behavior:

- *Price reversal*. Academic literature shows that stocks with high recent returns tend to underperform stocks with low recent returns. This theme exploits the systematic overreaction of investors and works especially well in a turbulent market environment. Although reversal is related to price momentum (which is part of the core model) as they are both based on price data, the two are uncorrelated as they focus on different look-back periods. As a result, including the short-term reversal effect in SHOT lowers the correlation between the two models. Moreover, we apply our integrated risk management technique to eliminate unrewarded risks.[2]
- *Liquidity*. The SHOT model likes stocks that have had more attention in the past one to three months. Academic articles have documented that abnormal trading volumes are usually caused by investors with material, non-public information. This is usually positive for stock prices. Because of this variable's short-term nature, it is not broadly applied in standard quantitative models.
- *Earnings revisions*. This theme exploits the empirical finding that stocks for which analysts have recently upgraded earnings forecasts tend to outperform, whereas those with negative revisions tend to underperform. Although the core model contains a similar theme, the theme in the SHOT model uses information over a shorter period. Here we also apply our integrated risk management technique to eliminate unrewarded risks.

In brief, SHOT likes stocks that have recently experienced a strong drawdown, favorable short-term earnings revisions and increased attention from investors.

[1] See also: Enhancement Quantitative Equity products with Robeco's Short-Term Selection Model (SHOT), 2009, Wilma de Groot, Bart van der Grient and Weili Zhou.
[2] See also: Short-term residual reversal, Journal of Financial Markets 16(3), 2013, David Blitz, Joop Huij, Simon Lansdorp and Marno Verbeek; Another Look at Trading Costs and Short-Term Reversal Profits, Journal of Banking and Finance 36(2), 2012, Wilma de Groot , Joop Huij and Weili Zhou.

SHOT's integration into quantitative equity strategies

In the investment process, we use the ranking of the core stock selection model as a starting point. Subsequently, we adjust this ranking - upwards or downwards - in accordance with the ranking produced by SHOT. In doing so, we apply a maximum adjustment of 20 percentage points.

To illustrate this, let us suppose we have an attractive stock with a ranking of 25% according to the core model (0% being most attractive and 100% least attractive). If SHOT identifies this stock as very attractive, we upgrade the ranking to 5%. If the stock is very unattractive according to SHOT, we lower the ranking to 45%. If the stock has a neutral ranking in the SHOT model, we do not make any changes. This approach impacts the portfolio in two ways:

- New over- (and under-) weights are applied to stocks deemed (un)attractive by both the core model and the SHOT model. Should two stocks have an identically attractive ranking in the core model, the stock with a higher ranking in the SHOT model is more likely to be included in the portfolio.
- SHOT also influences the neutralization of active positions. If the sell threshold of a portfolio is, for example, 60%, this means that overweights have to be removed when a stock drops to the 40% least attractive stocks. If we take the example of an overweighted stock that has seen its ranking deteriorate to 70%, its overweight would have to be neutralized. However, if the stock is highly ranked in the SHOT model, this does not necessarily have to happen. Similarly, an overweight in a stock with a ranking of 50% can be reduced if the SHOT ranking is unattractive. In this case, the SHOT model prompts an earlier sell. The SHOT model therefore helps to improve the timing of our buy and sell decisions.

Positive performance contribution since the start

The table below shows that the SHOT model performed well on a standalone basis since it was included in the model in March 2009. The model was able to separate the winners from the losers.

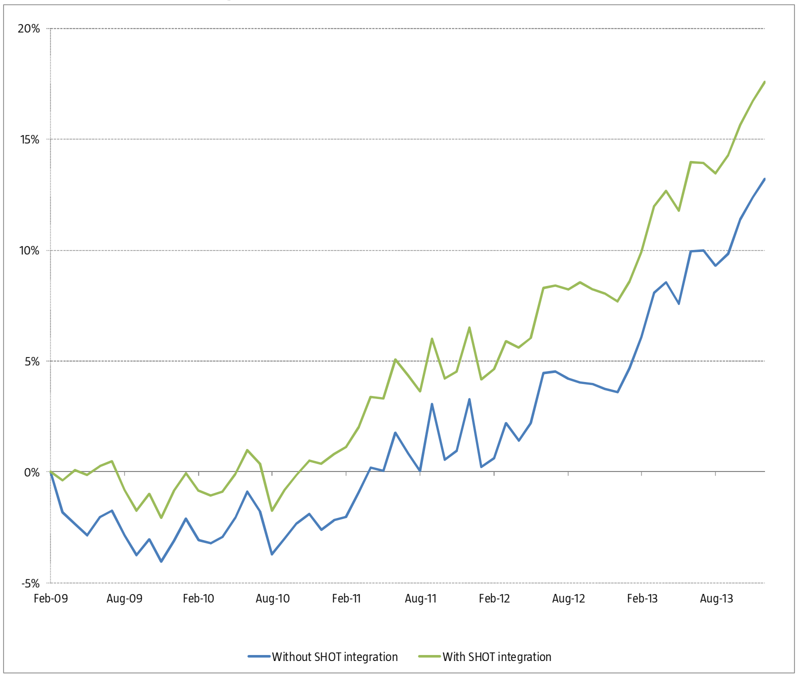
Performance top, bottom and top-minus-bottom 20% of SHOT, March 2009-August 2014

	Top	*Bottom*	*Top-Bottom*
Cumulative outperformance	9.34%	-8.15%	19.03%
Annualized outperformance	1.63%	-1.53%	3.21%
Annualized tracking error	2.23%	2.01%	3.81%
Annualized information ratio	0.73	-0.76	0.84

Source: Robeco. The table does not represent returns of an actual portfolio. It depicts returns of securities as ranked by the SHOT model, as used by the Quantitative Equities team. Securities ranked in the top or bottom quintile may or may not have been included in the actual portfolio. Results are shown gross of fees. Results would be reduced by application of fees and expenses incurred in the management of the account. Returns shown do not represent the results of actual trading. Actual results could have been different, and potentially lower than the hypothetical results that are presented.

Besides strong performance, SHOT also offers diversification as the correlation with the core stock selection model has been around 20% since March 2009. The chart shows that the incorporation of the SHOT model has made a positive contribution to performance.

Cumulative log performance of the top-minus-bottom 20% of the stock selection model with and without integration of SHOT, March 2009 - December 2013



Source: Robeco. The graph does not represent returns of an actual portfolio. It depicts returns of securities as ranked by the Stock Selection Model, as used by the Quantitative Equities team. We assume a 3-month holding period. Securities ranked in the top or bottom quintile may or may not have been included in the actual portfolio. Results are shown gross of fees. Results would be reduced by application of fees and expenses incurred in the management of the account. Returns shown do not represent the results of actual trading. Actual results could have been different, and potentially lower than the hypothetical results that are presented.

SHOT makes the difference

Robeco Enhanced Indexing shows a strong investment performance. Over the past five years, the integration of the short-term stock selection model (SHOT) in the investment process has contributed to this performance. Improving the timing of buy and sell decisions, SHOT differentiates Robeco's strategy from other strategies with similar investment objectives.

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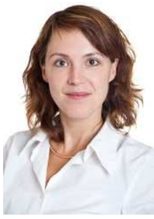

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