



THE TRUE PERFORMANCE OF ETFs WITH LYXOR'S EFFICIENCY INDICATOR®

ETFs have attracted a growing number of providers to the market, leaving investors faced with a difficult question: how to select the most efficient ETF. In theory, ETFs following the same index should all provide very similar investment returns as they are designed to closely replicate the indices that they track. In practice, however, these returns can vary significantly.

In this context, to match market expectations, Lyxor has developed an 'ETF Efficiency Indicator', which is a comprehensive solution used to compare and evaluate all ETFs**.

3 CRITERIA TO MEASURE ETFs EFFICIENCY

The ETF efficiency combines tracking difference, tracking error and the key metric of secondary market liquidity in a single score (details on page 2). This score gives investors a probabilistic, easy-to-understand assessment of the likelihood of future performance against the index. It also enables a straightforward comparison between funds based on the same index.

The efficiency measure meets the increasingly sophisticated demands of investors and participants in Europe's ETF market.

ETF EFFICIENCY RANKING

In the table below Lyxor computes the ETF efficiency measure for 50 ETFs tracking the respective benchmark, using daily data over a one-year period (31 May 2012 - 31 May 2013). Methodology & calculation details on page 3.

Index	Index Performance	Ranking 1	Ranking 2	Ranking 3	Ranking 4	Ranking 5
MSCI EM.Mkts	8.86%	-0.87% LYXOR	-1.32% DB X	-1.67% UBS	-3.58% CREDIT SUISSE	-3.82% ISHARES
MSCI WORLD	21.90%	-0.28% LYXOR	-0.36% COMSTAGE	-0.42% DB X	-0.59% ISHARES	-0.62% UBS
MSCI USA	20.46%	0.04% LYXOR	-0.19% CREDIT SUISSE	-0.22% AMUNDI	-0.24% DB X	-0.59% UBS
S&P 500	20.61%	0.12%* HSBC	0.02% AMUNDI	-0.01% CREDIT SUISSE	-0.09% DB X	-0.16% ISHARES
MSCI EUROPE	28.60%	-0.10% LYXOR	-0.13% AMUNDI	-0.24% ISHARES	-0.28% SOURCE	-0.29% DB X
EURO STOXX 50	34.92%	0.61% AMUNDI	0.46% LYXOR	0.40% DB X	0.20% ISHARES	-0.69% ISHARES
CAC 40	36.38%	-0.38% LYXOR	-0.38% EASY ETF	-0.51% AMUNDI	-0.57% AMUNDI	-2.17% DB X
DAX	33.27%	-0.26% ETFLAB	-0.31% COMSTAGE	-0.40% ISHARES	-0.45% LYXOR	-0.54% DB X
FTSE 100	20.67%	-0.48% LYXOR	-0.51% DB X	-0.55% ISHARES	-0.58% HSBC	-0.87% UBS
FTSE MIB	37.93%	-0.18% LYXOR	-0.50% ISHARES	-0.58% DB X	-1.01% AMUNDI	

^(*) Lyxor is not included in the table as it is ranked #7 in terms of AuM but its ETF Efficiency stands at 0.13% i.e. above that of competitors.

Source Bloomberg and Lyxor - 31 May 2012 and 31 May 2013

** The rationale and construction of the indicator are detailed in an academic paper published by Thierry Roncalli, Head of Research & Development at Lyxor and Professor of Finance at the Evry University, and Marlene Hassine, ETF strategist. The academic paper can be downloaded from SSRN: <http://ssrn.com/abstract=2212596> or from REPEC <http://ideas.repec.org/p/pramprapa/44298.htm>

QUARTERLY ETF EFFICIENCY INDICATOR

ETF EFFICIENCY INDICATOR DEFINITION

- The Efficiency indicator is a measure of ETF efficiency combining these three performance characteristics that matter most to investors: performance (tracking difference versus the index), liquidity and tracking error. The Efficiency indicator is a risk measure consisting in applying a Value-At-Risk (VaR) to these 3 parameters defined as:

$$\text{Tracking difference} - \text{Liquidity Spread} - \text{Scaling factor}^1 \times \text{Tracking Error Volatility}$$

- The aim is to answer to investors three key questions when selecting an ETF
 - **Minimise underperformance versus the index (or maximise outperformance)**
 - **Minimise the tracking error versus the index**
 - **Minimise the trading cost (the bid/ask or liquidity spread)**
- The ETF Efficiency Indicator has been proposed in 2013 by Thierry Roncalli, head of research & development at Lyxor and professor of Finance at the Evry University, and Marlene Hassine, ETF strategist at Lyxor and member of the SFAF, in an academic publication untitled "Measuring Performance of Exchange Traded Funds".

THE EFFICIENCY INDICATOR IN PRACTICE

In the tables below Lyxor computes the ETF efficiency for 50 ETFs tracking the respective benchmark index, using daily data over a one-year period (May 31 2012-May 31 2013). The components of the efficiency measure calculation are also shown and the best scores in the relevant categories are highlighted.

Peer Group Analysis Methodology

Rankings are based on peer group analysis. One peer group was created for each benchmark index. Each peer group includes the 5 largest ETF share classes from the Top 20 ETF providers as defined by ETFGI, an independent research and consultancy firm. The 5 largest ETF share classes were defined according to the average daily Assets Under Management observed between 31 May 2012 and 31 May 2013. The performance of each ETF was determined by the change in Net Asset Value (NAV) from the NAV of 31 May 2012 and the NAV of 31 May 2013 with dividends reinvested.

The observed performances were net of management fees. For indices not denominated in EUR, Lyxor converted the currency value of each index into Euro using the Bloomberg index codes and the WM Reuters Forex Rate.

MSCI EMERGING MARKETS	Performance				
	8.86%				
Issuer	Isin code	Efficiency Indicator	Tracking Difference*	Liquidity Spread**	Tracking Error***
LYXOR	FR0010429068	-0.87%	-0.67%	0.13%	0.05%
DB X	LU0292107645	-1.32%	-1.08%	0.11%	0.08%
UBS	IE00B3Z3FS74	-1.67%	-1.24%	0.37%	0.04%
CREDIT SUISSE	LU0254097446	-3.58%	-1.78%	0.22%	0.96%
iSHARES	IE00B0M63177	-3.82%	-1.87%	0.11%	1.11%

How to read – If an ETF has an efficiency measure of -92basis points (bps), the probability that an investor faces a loss relative to the index of more than 92 basis points in a twelve month period is exactly 5%.

¹ the scaling factor is the confidence level of the Efficiency Indicator. If the confidence level is 95% then the scaling factor is 1.65

*Tracking Difference (in IOSCO terminology): Performance spread between the ETF and the benchmark

** Liquidity spread daily average of the first limit order spreads weighted by volumes for each listing place

*** Tracking Error (in IOSCO terminology): Volatility of the performance spread measures on a daily basis over a 1 year period

■ Each blue square shows which issuer is first for each category

QUARTERLY ETF EFFICIENCY INDICATOR

ETF EFFICIENCY DETAILS

In the tables below Lyxor computes the ETF efficiency for 50 ETFs tracking the respective benchmark index, using daily data over a one-year period (May 31 2012-May 31 2013).

MSCI WORLD		Performance 21.90%			
Issuer	Isin code	Efficiency Indicator	Tracking Difference	Liquidity Spread	Tracking Error
LYXOR 	FR0010315770	-0.28%	-0.17%	0.10%	0.01%
COMSTAGE	LU0392494562	-0.36%	0.03%	0.33%	0.03%
DB X	LU0274208692	-0.42%	-0.27%	0.12%	0.02%
ISHARES	IE00B0M62Q58	-0.59%	-0.20%	0.11%	0.17%
UBS	LU0340285161	-0.62%	-0.27%	0.24%	0.07%

MSCI USA		Performance 20.46%			
Issuer	Isin code	Efficiency Indicator	Tracking Difference	Liquidity Spread	Tracking Error
LYXOR 	FR0010296061	0.04%	0.15%	0.10%	0.00%
CREDIT SUISSE	IE00B52SFT06	-0.19%	0.00%	0.14%	0.03%
AMUNDI	FR0010688275	-0.22%	-0.05%	0.14%	0.02%
DB X	LU0274210672	-0.24%	0.01%	0.13%	0.07%
UBS	LU0136234654	-0.59%	-0.38%	0.16%	0.03%

S&P 500		Performance 20.61%			
Issuer	Isin code	Efficiency Indicator	Tracking Difference	Liquidity Spread	Tracking Error
HSBC 	IE00B5KQNG97	0.12%	0.30%	0.14%	0.03%
AMUNDI	FR0010892224	0.02%	0.16%	0.11%	0.02%
CREDIT SUISSE	IE00B5BMR087	-0.01%	0.16%	0.13%	0.03%
DB X	LU0490618542	-0.09%	0.11%	0.13%	0.04%
ISHARES	IE0031442068	-0.16%	-0.04%	0.06%	0.03%

MSCI EUROPE		Performance 28.60%			
Issuer	Isin code	Efficiency Indicator	Tracking Difference	Liquidity Spread	Tracking Error
LYXOR 	FR0010261198	-0.10%	0.03%	0.10%	0.02%
AMUNDI	FR0010655696	-0.13%	0.08%	0.12%	0.06%
ISHARES	IE00B1YZSC51	-0.24%	0.00%	0.13%	0.07%
SOURCE	IE00B60SWY32	-0.28%	-0.04%	0.16%	0.05%
DB X	LU0274209237	-0.29%	-0.06%	0.14%	0.05%

EURO STOXX 50		Performance 34.92%			
Issuer	Isin code	Efficiency Indicator	Tracking Difference	Liquidity Spread	Tracking Error
AMUNDI 	FR0010654913	0.61%	0.77%	0.07%	0.05%
LYXOR	FR0007054358	0.46%	0.64%	0.07%	0.07%
DB X	LU0274211217	0.40%	0.56%	0.10%	0.04%
ISHARES	IE0008471009	0.20%	0.38%	0.08%	0.06%
ISHARES	DE0005933956	-0.69%	0.01%	0.06%	0.39%

QUARTERLY ETF EFFICIENCY INDICATOR

CAC 40		Performance 36.38%			
Issuer	Isin code	Efficiency Indicator	Tracking Difference	Liquidity Spread	Tracking Error*
LYXOR 	FR0007052782	-0.38%	-0.32%	0.04%	0.02%
EASY ETF	FR0010150458	-0.38%	-0.21%	0.12%	0.03%
AMUNDI	FR0007080973	-0.51%	-0.18%	0.08%	0.15%
AMUNDI	FR0010878033	-0.57%	-0.20%	0.10%	0.16%
DB X	LU0322250985	-2.17%	-1.90%	0.11%	0.10%

DAX		Performance 33.27%			
Issuer	Isin code	Efficiency Indicator	Tracking Difference	Liquidity Spread	Tracking Error
ETFLAB 	DE000ETFL011	-0.26%	-0.20%	0.05%	0.01%
COMSTAGE	LU0378438732	-0.31%	-0.22%	0.07%	0.01%
DBX	LU0274211480	-0.54%	-0.47%	0.05%	0.02%
ISHARES	DE0005933931	-0.40%	-0.21%	0.04%	0.09%
LYXOR	LU0252633754	-0.45%	-0.35%	0.07%	0.02%

FTSE 100		Performance 20.67%			
Issuer	Isin code	Efficiency Indicator	Tracking Difference	Liquidity Spread	Tracking Error
LYXOR 	FR0010438127	-0.48%	-0.29%	0.14%	0.03%
DB X	LU0292097234	-0.51%	-0.34%	0.12%	0.02%
ISHARES	IE0005042456	-0.55%	-0.44%	0.06%	0.03%
HSBC	IE00B42TW061	-0.58%	-0.41%	0.13%	0.02%
UBS	IE00B3X0KQ36	-0.87%	-0.50%	0.35%	0.02%

FTSE MIB		Performance 37.93%			
Issuer	Isin code	Efficiency Indicator	Tracking Difference	Liquidity Spread	Tracking Error
LYXOR 	FR0010010827	-0.18%	-0.08%	0.07%	0.02%
ISHARES	IE00B1XNH568	-0.50%	-0.19%	0.14%	0.11%
DB X	LU0274212538	-0.58%	-0.34%	0.16%	0.05%
AMUNDI	FR0010892208	-1.01%	-0.82%	0.14%	0.04%

ETFGI, an independent research and consultancy firm aimed at providing services to the Exchange-Traded Fund (ETF) industry. All currency conversions are made at the rate published by The WM Company.

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