

On the Performance of Investment Grade Credit ETFs

For professional investors only

By Patrick Houweling, PhD, senior quantitative researcher

Introduction

Exchange Traded Funds (ETFs) are often said to be low-cost, low-tracking error alternatives to actively managed funds. For example, an ETF-provider mentions on its website¹: “Our approach is designed to provide portfolios with low portfolio turnover, accurate tracking, and lower costs.” In this memo we investigate this claim by comparing the performance of 20 Investment Grade Credit ETFs.² We show that these ETFs can only live up to their promise of charging low costs, but did not offer near-benchmark returns with small tracking errors. Using data since 2002, we show that the average ETF had an annualized tracking error of 1.4%. This implies that the probability of an underperformance of more than 1% is about once every 4 years. Further – and perhaps most importantly – we show that the average ETF underperformed its benchmark by more than the costs it charged: the average underperformance is 89 bps while the average costs are 18 bps. Finally, we argue that the true benchmark for actively managed funds is actually the average performance of passively managed funds.

ETFs

To the best of our knowledge^{3,4} 20 ETFs exist that have either a US or euro Investment Grade credits or corporates cash bond benchmark. These are listed in **Table 1**. There are several things worth noting. First, only 6 of these 20 ETFs started before 2009, evidencing the recent growth of, especially fixed income, ETFs. Second, iShares ETFs (managed by BlackRock) dominate the market: 11 out of 20 ETFs are iShares’ and their market share is about 95%. Third, almost every ETF has a unique benchmark. The benchmarks differ in many ways, e.g. in region (US or Europe), provider (iBoxx, Barclays or Merrill Lynch), maturity (all, short, medium or long), the inclusion of non-corporate credits, the inclusion of financials and the restriction to liquid bonds or even very liquid bonds (e.g. top 30). Only 3 ETFs share the same benchmark: CC4, IBCS and CRP all use the iBoxx EUR Liquid Corporates index.

Costs

ETFs are often said to charge lower costs than actively managed funds. In **Table 2** we investigate this claim by listing the total expense ratios (TERs) per ETF family.⁵ The costs of the ETFs are very similar and fall into a tight range from 15 to 20 bps per annum. To put these numbers into perspective, we obtain the average TER of Euro corporate bond funds from Morningstar. For institutional investors, the average equals 49 bps and for retail investors 117 bps.⁶ This shows that ETFs indeed have lower costs than mutual funds, although for institutional investors the differences are limited.

¹ <https://www.spdrs.com/product/fund.seam?ticker=SCPB>

² In a previous ROCK Note we analyzed the performance of High Yield ETFs, see “High Yield ETFs are not low-cost, low-tracking error alternatives to the Robeco High Yield Bonds fund”, April 2010.

³ Morningstar.com, ETFdb.com, ETFguide.com, ETF Landscape (BlackRock, 2010), Global ETF Handbook (JPMorgan, 2010)

⁴ Two ETFs are excluded from our analyses: Deutsche Bank’s “iBoxx Liquid Corporate 100 TR Index ETF” and ETFlab’s “iBoxx EUR Liquid Corporates Diversified”. Both ETFs started in February 2010, so that their data history is too short for our analyses.

⁵ Most ETFs within a family have identical TERs. There are only two exceptions, which are listed below Table 2.

⁶ The TER for retail investors also includes distribution fees, which are passed through to the distributor of the funds.

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ticker	full name	benchmark	start date	size
<i>ETFs with euro benchmark</i>				
CC4	Amundi ETF Euro Corporates	iBoxx EUR Liquid Corporates	Jun-09	108
IBCS	iShares € Corporate Bond	iBoxx EUR Liquid Corporates	Mar-03	3,323
IEBC	iShares Barclays Euro Corporate Bond	Barclays Capital Euro Corporate Bond	Mar-09	768
IE15	iShares Barclays Euro Corporate Bond 1-5	Barclays Capital Euro Corporate 1-5 Bond	Sep-09	59
IEXF	iShares Barclays Euro Corporate Bond ex-Financials	Barclays Capital Euro Corporate ex-Financials Bond	Sep-09	29
IEX5	iShares Barclays Euro Corporate Bond ex-Financials 1-5	Barclays Capital Euro Corporate ex-Financials 1-5 Bond	Sep-09	30
CRP	Lyxor ETF Euro Corporate Bond	iBoxx EUR Liquid Corporates	Apr-09	446
CNB	Lyxor ETF Euro Corporate Bond ex Financials	iBoxx EUR Liquid Corporates Non Financials	Nov-09	50
<i>ETFs with US benchmark</i>				
CLY	iShares 10+ Year Credit Bond Fund	BofA Merrill Lynch 10+ Year US Corporate & Yankees	Dec-09	10
CSJ	iShares Barclays 1-3 Year Credit Bond	Barclays Capital U.S. 1-3 Year Credit	Jan-07	6,048
CFT	iShares Barclays Credit Bond Fund	Barclays Capital U.S. Credit Bond	Jan-07	579
CIU	iShares Barclays Intermediate Credit Bond	Barclays Capital U.S. Intermediate Credit Bond	Jan-07	2,467
LQDE	iShares iBoxx \$ Corporate Bond	iBoxx \$ Liquid Investment Grade Top 30*	May-03	672
LQD	iShares iBoxx \$ Investment Grade Corporate Bond Fund	iBoxx \$ Liquid Investment Grade	Jul-02	12,276
ITR	SPDR Barclays Capital Intermediate Term Credit Bond ETF	Barclays Capital U.S. Intermediate Credit Bond	Feb-09	83
LWC	SPDR Barclays Capital Long Term Credit Bond ETF	Barclays Capital U.S. Long Credit	Mar-09	28
SCPB	SPDR Barclays Capital Short Term Corporate Bond ETF	Barclays Capital U.S. 1-3 Year Corporate Bond	Dec-09	102
VCIT	Vanguard Intermediate-Term Corporate Bond	Barclays Capital U.S. 5–10 Year Corporate Bond	Nov-09	184
VCLT	Vanguard Long-Term Corporate Bond	Barclays Capital U.S. Long Corporate	Nov-09	37
VCSH	Vanguard Short-Term Corporate Bond	Barclays Capital U.S. 1–5 Year Corporate Bond	Nov-09	433

Table 1: Investment Grade ETFs (size in million EUR for Euro ETFs and in million USD for US ETFs, as of March 31, 2010)

* Prior to December 4, 2007, LQDE was benchmarked to the iBoxx \$ Liquid Investment Grade Index

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	average	Amundi	iShares	Lyxor	SPDR	Vanguard
TER	17.9	16	20*	20	15**	15

Table 2: Total Expense Ratios (TER, in bps) of Investment Grade ETFs by family (as of December 31, 2009)

* iShares LQD had a TER of 15 bps

** SPDR SCPB had a TER of 12 bps

Tracking Errors

ETFs aim to track their benchmarks closely. In **Table 3** we check whether they indeed have been able to do so. Column 3 shows the annualized tracking errors of the ETFs since their inception until March 2010.^{7,8} **Panel A** reports that the average tracking error is equal to 1.40%. Clearly, the ETFs do not live up to their promise of closely tracking their benchmark, because this tracking error implies a substantial variation of an ETF's return around its benchmark. For instance, the probability of an underperformance of at least 1% is equal to once every 4 years.

Note that not all tracking errors are equally reliable, because of the short data history of some ETFs. Therefore, we calculate separate averages for ETFs that already existed prior to January 1, 2009 and ETFs that started after this date. According to **Panel B**, the 6 ETFs that have a longer data history even had an average tracking error of 2.33%, while the 14 youngest ETFs had a tracking error of 1.00%. So, apparently the high overall tracking error of 1.40% is not caused by the short data sample.

To get more insight in the possible explanations for the high average tracking error, we calculate the average tracking error for various groups of ETFs, see panels C to F. We analyze the effects of the number of benchmark constituents, the inclusion of financials, the average maturity of the benchmark constituents and the ETF family.

- **Panel C** shows that ETFs that are benchmarked to indices with more than 1000 constituents had the highest tracking error. This makes sense, because ETFs buy only a selection of the index constituents and the higher the number of constituents the harder it is to buy a large proportion of them. However, ETFs with benchmarks with less than 100 constituents do not have the lowest average tracking error.
- **Panel D** shows that ETFs that have benchmarks without financials had a lower tracking error than ETFs that do include financials in their benchmark. This is also a sensible result, because due to their high volatility in recent years, it is more difficult to track the performance of financials.
- **Panel E** indicates that short-maturity ETFs have done a better job tracking their benchmark than intermediate-maturity ETFs, which in turn have done better than long-maturity ETFs. The intuition here is that the higher the volatility of the constituents, the more difficult it is to track them.
- **Panel F** shows that notable differences exist between the ETF families. Amundi and Lyxor ETFs had the lowest tracking errors and iShares and SPDR ETFs the highest.

⁷ Realized total returns (based on market prices and paid dividends) for the ETFs were downloaded from Datastream. Benchmark returns were obtained from Bloomberg, except for the Barclays Capital U.S. 5–10 Year Corporate Bond Index, which is not available in Bloomberg. This index was therefore downloaded from the Barclays website (live.barcap.com).

⁸ For each ETF, the first month after inception is skipped, because the first-month returns were often erratic. Including the first month would increase the average tracking error to 1.44% and the average underperformance to –0.96%.

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	count	outperformance	tracking error
	(1)	(2)	(3)
Panel A: all ETFs			
	20	-0.89%	1.40%
Panel B: start date before January 1, 2009			
yes	6	-0.27%	2.33%
no	14	-1.16%	1.00%
Panel C: number of benchmark constituents			
<100	5	-0.39%	1.42%
100-1000	7	-0.47%	1.24%
>1000	8	-1.57%	1.53%
Panel D: benchmark excludes financials			
yes	3	-0.25%	0.38%
no	17	-1.00%	1.58%
Panel E: benchmark maturity			
any	9	-0.55%	1.49%
short	5	-0.87%	0.70%
intermediate	3	-1.32%	1.23%
long	3	-1.52%	2.48%
Panel F: ETF family			
Amundi	1	-0.62%	0.44%
iShares	11	-0.67%	1.61%
Lyxor	2	-0.51%	0.63%
SPDR	3	-2.56%	1.63%
Vanguard	3	-0.37%	1.25%

Table 3: Annualized outperformances and tracking errors of various groups of ETFs

Net outperformances

Not only do ETFs claim to have low tracking errors relative to their benchmarks, they also promise near-benchmark returns. In column 2 of **Table 3** we show the annualized outperformance (net of fees) of the ETFs since their inception. Again, the ETFs are disappointing, because, on average, they underperformed their benchmarks by -0.89% . This average underperformance is substantially larger than the average total expensive ratio of 0.18% bps, so that costs cannot be the only explanation.

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Like above for the tracking error, we analyze the average underperformance of various groups of ETFs, see panels B to F.

- **Panel B** shows that ETFs that existed prior to January 2009 had only a modest underperformance of -0.27% , which is still larger than their total expense ratio. Newer ETFs – those that started in 2009 – underperformed by -1.16% on average. This suggests that either 2009 was a tough year to keep up with the benchmark or that the entrants have less skill than the incumbents. To verify this, we calculate the average outperformance in 2009 of the 6 ETFs that started before 2009. This average outperformance is equal to -3.07% , so we may conclude that 2009 was indeed a tough year for tracking the benchmark.
- In **Panel C** we observe that ETFs with fewer constituents in their benchmark had a smaller underperformance: -0.39% for benchmarks with less than 100 constituents, -0.47% for benchmarks with 100 to 1000 constituents and -1.57% for benchmarks consisting of more than 1000 bonds. Like above, this suggests that it is easier to track an index with fewer constituents. The lower underperformance and lower tracking error of ETFs with “small” benchmarks do come with a disadvantage though: benchmarks with only a limited number of constituents (e.g. some benchmarks have only 30 or 40 constituents) are less diversified and are therefore more vulnerable to credit events in a single name. This poses an additional risk to investors.
- **Panel D** shows that ETFs, which have no financials in their benchmark, underperformed by -0.25% on average, whereas the other ETFs underperformed by -1.00% .
- **Panel E** confirms the maturity-effect found above for the tracking error: the longer the maturity of the benchmark the more the average ETF underperformed: short-term ETFs underperformed by -0.87% , medium-term ETFs by -1.32% and long-term ETFs by -1.52% . Combined with the evidence in Panel D this shows that having volatile constituents in the benchmark makes it harder to track it. A caveat on ETFs with a short-maturity benchmark is in order: investors choosing for such an ETF will get a low beta to the overall credit market, so that they will only profit partially from market movements even if their view on the market was right.
- In **Panel F** the underperformance is broken up by ETF family. SPDR’s ETFs underperformed most and Vanguard’s least.

Possible explanations

We discuss three explanations for the underperformance of the ETFs relative to their benchmarks:

1. **Fees and costs:** ETFs incur various fees and costs that negatively affect their returns. These fees and costs sum up to the total expense ratio and were listed in **Table 2**. However, this cannot be the only explanation, because the average underperformance of the ETFs is larger than the average total expense ratio.
2. **Index rebalancing:** A benchmark cannot be replicated: index providers regularly rebalance the index and assume that this can be done without costs. ETFs have to conduct actual transactions and thereby incur costs, especially bid-ask spreads. We have shown above that ETFs with benchmarks that contain many constituents had larger tracking errors and underperformed their benchmarks more. Further, benchmarks with volatile constituents (e.g. financials and long-term bonds) are more difficult to track, probably partly because of their higher transaction costs.
3. **Illiquidity:** Since corporate bonds are relatively illiquid securities, it can be difficult for the ETFs to buy or sell bonds at fair prices within a reasonable amount of time. Some anecdotic evidence for this explanation can be found when we look at 2009. In this year ETFs showed their largest underperformance. In 2009 the ETFs probably experienced a lot of inflow, because many investors started buying credits, attracted by the positive returns and the return of risk appetite. The ETFs may have experienced difficulties using the received cash to buy bonds, because of the relative illiquidity of the market. Having cash in a portfolio in an upward trending market causes underperformance, especially when inflows cause buying in a market with few sellers.

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What is the true benchmark?

Active managers are often criticized that the majority underperforms the benchmark. However, given the possible explanations listed above, we argue that it is actually quite hard to generate benchmark-like returns in the first place. And given the underperformance of ETFs documented in **Table 3**, this is both true for actively and passively managed funds. Therefore, we think that the performance of passively managed ETFs can be seen as the true benchmark for actively managed funds, because their performance incorporates the frictions described above. This also sheds new light on the alpha of actively managed funds, because according to this reasoning alpha should not be measured against the official benchmark but against a passively managed peer group.

Conclusions

Even though ETFs have a reputation as low-cost, low-tracking error index-trackers, we have shown that 20 Investment Grade ETFs can only live up to their first promise. On the other hand, they had high tracking errors and underperformed their benchmarks since 2002. We showed that especially ETFs that have benchmarks with financials, longer-maturity bonds and/or many constituents underperformed their benchmarks with large tracking errors.

So, ETFs with a benchmark with a small number of constituents underperformed less, but the disadvantage of such benchmarks is that they are less diversified and are therefore more vulnerable to credit events in a single name. Further, ETFs with short-maturity benchmarks also underperformed less and had a lower tracking error, but investors choosing for such an ETF will get a low beta to the overall market, so that they will only profit partially from market movements even if their view on the market was right.

Finally, given the underperformance of ETFs and the possible explanations for this underperformance (costs, index rebalancing, illiquidity), we argue that the true benchmark for actively managed funds is actually the average performance of passively managed funds.

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