



Introduction to the XTF Exchange Traded Fund (“ETF”) Ratings Methodology

The goal of the XTF ratings methodology is to present an objective and easy-to-understand framework for investors to evaluate Exchange Traded Funds (ETF). We have evaluated every ETF listed on US exchanges and rate all ETFs with a minimum of six-month trading history. Our ETF rating service is comprised of a Structural Integrity rating and an Investment Metric rating, which together make up the overall XTF Rating. The XTF Rating Service uses its own proprietary database as well as several market data vendors to rate ETFs. The proprietary database contains the composition history of each ETF, along with intraday trading and quote data for all US-traded ETFs and their components, and other related information.

1) Structural Integrity Analysis

The Structural Integrity analysis consists of the following data points (factors):

- a. Tracking error
- b. Efficiency: daily alpha before expenses
- c. Market Impact
- d. Concentration Risk
- e. Tax Efficiency: Capital Gains
- f. Expense Ratio
- g. Bid-Ask Ratio

These factor values are calculated and subsequently ranked on a percentile basis to rate each ETF with respect to all other ETFs within the same asset class. For every factor, each ETF is ranked such that the highest-ranking ETF in its class receives a 100 and the lowest-ranking ETF receives a 0. For example, if ETF X has the lowest tracking error (TE) with respect to its specified benchmark then it receives a 100 TE rating; the ETF with the highest tracking error receives a 0 TE rating. Evaluating each Structural Integrity component for each ETF, relative to all others within the same asset class, enables the investor to easily determine which ETF is more efficient on relative terms from a structural perspective.

Exhibit 1 – XTF Structural Integrity rating example for IWM (iShares Russell 2000)

Structural Integrity	Investment Metrics	Holdings & Sectors		
Structural Integrity Rating* : = 10				
	Value	Ranking		
Expense Ratio:	0.20%	90.40%	Number of Securities:	1955
Average Bid Ask Ratio:	0.02%	99.60%	Legal Structure:	Open-End Investment Company
Tracking Error:	0.41%	80.00%	12(d)1 Exemptive Relief:	Exempt
Concentration Risk:	2.10%	97.50%	Average Daily Volume:	105,306,500
Market Impact:	0.05%	99.60%	Dividend Amount:	\$0.15
Efficiency:	0.09 bps	55.20%	Dividend Date:	09/24/2008
Capital Gains Dist. %:	0.00%	100.00%		

a) Tracking Error

Tracking Error (TE) is based on at least six months of daily performance data. Each ETF has a stated benchmark that it uses as the basis for its investment strategy. For example, the iShares Russell 2000 Exchange Traded Fund uses the Russell 2000 Index as its benchmark. The goal of an ETF is to seek investment results that correspond generally to the price and yield performance, before fees and expenses, to its stated benchmark. The TE measure is important because it quantifies how well the ETF manager is tracking the benchmark. Since asset classes are often represented by particular benchmarks, TE can play an important role in the asset allocation decision; TE helps you choose which ETF fits most appropriately to your asset allocation strategy. The lower the TE, the better the ETF manager is replicating the stated benchmark; an ETF provider that consistently tracks its benchmark will have a very low TE. TE is computed as the standard deviation of the daily total return difference between the ETF and the corresponding benchmark. TE refers to these daily relative performance measures as the *consistency of the daily error*. Our TE calculation is based on the last six-months of daily errors.

Tracking Error Example

Exhibit 1 presents the structural integrity ratings for Barclay's Russell 2000 iShare (IWM). The TE is .41% or 41 basis points. Using standard assumptions, this implies that two out of every three (σ) of the daily errors of IWM's return are within .41% of the daily return of the underlying Russell 2000 benchmark; it also implies that 95% (2σ) of all daily errors lie within .82% of the Russell 2000 returns. The TE ranking for IWM is 80%, or well above the top third of all equity ETFs. This can be interpreted to mean that IWM has marginal room for improvement in its TE measure. Given the Russell 2000 small capitalization universe and the subsequent lack of liquidity of some of its constituent securities it is surprising to have a TE of this magnitude. However, the Russell 2000 is arguably one of the most popular small cap benchmarks and as a result there are plenty of several highly correlated derivative securities (futures, options, etc.) that can be used to hedge the IWM in lieu of the illiquid tail. This suggests that alternative sources of liquidity are being used by the fund manager to accurately track the index or perhaps that the entire basket is being replicated and the additional costs are reduced by securities lending or some other form of positive security selection criteria (see Efficiency).

b) Efficiency: daily alpha + expense ratio

Efficiency measures how well an ETF outperforms its stated benchmark *before* expenses. Since many ETFs do not hold every security in their benchmark, the ETF manager may use some security selection criteria to determine what to include in the ETF portfolio and how to handle dividends. Efficiency measures the ETF manager's ability to generate alpha. The main sources of outperformance are: security selection, securities lending, and use of swaps or derivatives to track the index. In the case of swaps or derivatives we refer to this as basket optimization. The higher the efficiency, the better; a high efficiency ranking illustrates the ETF manager's aptitude for implementing the techniques used to generate alpha. Daily alpha is the average *value of the daily error* for each ETF. To measure performance before expenses the ETF expense ratio is added to daily alpha.

Information Ratio (Efficiency/TE): Efficiency and Tracking Error work hand in hand to evaluate how well an ETF manager is able to consistently outperform the stated benchmark. The Information Ratio is similar in nature to the Sharpe Ratio: whereby the Sharpe Ratio measures risk-adjusted performance, the Information Ratio measures risk-adjusted outperformance. This ratio is relevant to investors because it indicates consistent outperformance of a stated benchmark and low tracking inefficiencies. This is an ideal combination for many long-term investors.

Efficiency Example

In Exhibit 1, IWM's efficiency result comes in at a daily .09 basis points (annualized 22.68 bps). This suggests that IWM did produce just enough outperformance to cover its expenses (20bps). Interestingly, IWM's positive efficiency produces a ranking of 55.2%, just slightly superior to half of all equity ETFs. The relative ranking of 55.2% suggests that IWM is about average as compared to other equity ETFs in the efficiency category. Further analysis explains the difficult role in efficiently optimizing a basket consisting of nearly 2000 securities. The fund manager has some flexibility whereby approximately the top 80% of the securities held are very liquid, but the remaining tail being highly illiquid, making this portion of the basket relatively difficult to optimize.

Market Impact

Market Impact (MI) quantifies the liquidity of each ETF. The MI measures the price impact of executing a hypothetical trade of 50,000 ETF shares. We estimate MI by multiplying daily ETF price volatility by the square root of the ratio of 50,000 shares to the average daily volume. The lower the MI, the better for the investor. Low MI means that price sensitivity to trade size is smaller for the ETF therefore its liquidity is higher. It serves as a proxy for trading efficiency: the ability to trade in and out of an ETF without negative performance impact.

Market Impact Example

The exhibit shows the MI for IWM as .05%. This number implies that a trade of 50,000 shares of IWM would produce a share price change of 5 basis points. Among equity ETFs, this is excellent and implies that IWM is very liquid. The MI relative ranking for IWM is 99.6% suggesting that IWM is among the most liquid equity ETFs in the market. Given that the Russell 2000 index is arguably one of the most popular small capitalization benchmarks, this liquidity is not surprising.

c) Concentration Risk

Concentration Risk (CR) measures the level of diversification of the underlying portfolio that comprises an ETF. CR uses the weights of each constituent security within the ETF as the basis for the measure. To compute the CR we use the average constituent weight and add the square root of the variance of constituent weights adjusted for the total number of constituent securities. The lower the weight of each constituent security, and the more securities, the better. The lower the CR, the better for the investor since a low CR means that the ETF is not overly sensitive to the performance of any single security.

Concentration Risk Example

IWM's concentration risk is 2.1% implying that the IWM has excellent diversification. Roughly, the 2.1% can be interpreted as the percentage of IWM that is exposed to unsystematic risk. IWM ranks among the highest within all equity ETFs coming in at 97.5%. IWM has excellent diversification which is logical given that the small cap universe contains approximately 2000 securities.

d) Tax Efficiency: Capital Gains

Tax Efficiency: Capital Gains (CG) is simply the cumulative capital gains distribution over the preceding twelve-month period divided by the average ETF price over the same period. Capital gains distributions should be minimized in order to enhance performance as much as possible. Our CG measure penalizes ETF providers that do not manage capital gains efficiently. Fortunately, most ETF providers are proficient at handling capital gains. The lower the CG, the better. A low CG measure means that the ETF provider has minimized the tax inefficiencies that accompany the distribution of capital gains.

Tax Efficiency: Capital Gain Example

As seen in Exhibit 1, IWM had no capital gains distributions in the last year. The ETF manager succeeded in preventing unnecessary capital gains taxes. The CG ranking for IWM is the best among equity ETFs. Other equity ETFs have done equally well and have also received the highest ranking.

e) Expense Ratio

Expense Ratio (ER) is a straightforward annualized measure of an ETF's expenses paid by shareholders. The more expensive an ETF, the less likely the ETF will be able to add value over its stated benchmark. ER allows the investor to judge how effectively an ETF manager handles the operational issues of the underlying securities. Our tracking of historical expenses reveals how well an ETF provider reduces costs over time. If the ER does not come down over time it suggests that the ETF provider is simply increasing margins and failing to pass on the savings to the investor. A high ER directly reduces investor returns; the lower the ER, the better.

Expense Ratio Example

Exhibit 1 shows the expense ratio for IWM: .2% or 20 bps per year. This is a relatively low expense ratio compared to other equity ETFs producing a ranking of 90.4% and putting IWM in the top 10% of all equity ETFs. The ETF manager is relatively successful at handling the costs inherent in the small capitalization universe.

f) Bid-Ask Ratio

The BA measures the hidden or implicit transaction cost of an ETF. At any given time, the investor will buy at the asking price and sell at the bid price, incurring a loss equal to the difference between the two prices. The Bid-Ask ratio (BA) is the asking price less the bid price divided by the mid-price of the ETF. Dividing by the mid-price puts the dollar amount in percentage terms so investors can easily relate the measure to returns. We compute the BA as a simple average of all intraday quotes over a one-month trailing period. Our tracking of historical BA spread reveals the marginal change in popularity. As an ETF attracts assets we expect the BA spread to reduce over time reflecting increased trading volume. The BA component complements our MI measure. The BA is directly related to transaction costs and inversely related to liquidity. The lower the BA, the better.

Bid-Ask Ratio Example

IWM's BA comes in at .02% or 2 basis points resulting in a very high ranking of 99.6%. IWM has close to the lowest BA among all equity ETFs. Not surprisingly, a low BA is consistent with the MI measure. Both imply that IWM is a very popular and liquid ETF.

Overall Structural Integrity Measure

Each ETF receives a raw measure for each of the metrics described above. We then produce a percentile rank for each ETF factor relative to other ETFs in the same asset class. Within each asset class, the investor can easily evaluate how each ETF compares with other ETFs for each metric. Finally we combine the ratings together using a proprietary weighting scheme to derive an aggregate Structural Integrity score. The highest scoring ETF in each asset class has the greatest Structural Integrity relative to all other ETFs in that asset class; the lowest rating has the least Structural Integrity. Our ratings methodology (for unleveraged ETFs) is based on the view of an average long-term investor. That is why our weighting scheme addresses the need to control the trade-off between turnover, performance, and tracking error. We assumed a five-year investment horizon and a 20 percent turnover rate. Then we determined how our structural components affect the risk-reward trade-off for the average investor. This comparative analysis was then used to compute our weighting scheme. Note also that an ETF does not have to produce the highest ranking in every measure to receive the highest overall score.

Overall Structural Rating Example

Using XTF's aggregation scheme we compute the overall ranking for IWM as shown in Exhibit 1. IWM has an overall structural rating of 10 out of a possible 10 compared to all other equity ETFs making IWM one of the best equity ETFs in the marketplace.

2) Investment Analysis

Our Investment Metrics analysis complements the Structural Integrity analysis to offers investors the most thorough of evaluation for ETFs available. Where the Structural Integrity analysis concentrates on the operational capabilities of each ETF, the Investment Metrics analysis rating focuses on performance and the investment fundamentals of each ETF. The Structural Integrity analysis applies the same metrics to evaluate all ETFs independent of asset class. However, the Investment Metrics analysis uses measurements which are tailored specifically for the ETF asset class. For example, the performance and momentum measures apply to all asset classes and are used on a percentile basis to rate all ETFs with respect to other ETFs within the same asset class. However, dividend yield (DY) is used only to rate ETFs in the equities and real estate classes. What is most important is that we use a consistent approach in evaluating ETFs within the same asset class, allowing an investor to make accurate assessments of ETFs. The Investment Metrics analysis consists of the following data points:

- a. Risk-adjusted performance – 6 months, 1 year, 3 year, and 5 year
- b. Momentum
- c. Earnings Yields (Equities only)
- d. Dividend Yields (Equities and Real Estate only)
- e. Diversification score (Commodity and Currencies only)
- f. Interest Rate Risk (Fixed Income only)
- g. Yield to Maturity (Fixed Income only)

Exhibit 2 – XTF Investment Metrics Example for IWM (iShares Russell 2000)

Structural Integrity	Investment Metrics	Holdings & Sectors			
Investment Metrics Rating: 6 Month* = 8.5					
		Value	Ranking		Value Ranking
Annualized Period Return:		0.30%		Momentum - Short Term:	-0.70% 83.80%
Standard Deviation:		29.50%		Earnings Yield:	2.54% 9.70%
Risk Adjusted Performance:		0.01	90.40%	Dividend Yield:	1.74% 50.40%

a) Risk Adjusted Performance (Sharpe Ratio)

Risk-adjusted performance is computed for four different periods. For each ETF that has been in existence for at least five years, the total annualized return is computed for 6-month, 1-year, 3-year, and 5-year periods. For those ETFs that don't have a five year history, we default to computing total returns over the longest historical period available. We then adjust each total return measure using risk computed from daily price volatilities over the corresponding period. The resulting risk-adjusted measures are then ranked by asset class for each time period using a 0-100 percentile. We present several time periods so investors can determine how well an ETF performed over different business cycle and investment environments. As the ETF market matures, we will be able to add more historical periods to increase our offering of information to investors.

Risk-Adjusted Performance Example

Risk-Adjusted performance (RAP) is the ratio of the annualized period return to the corresponding annualized standard deviation of daily returns. Exhibit 2 illustrates the 6 month investment rating information for the iShares Russell 2000 ETF (IWM). The left hand side of the table contains both the inputs used to compute the RAP6M along with the resulting RAP6M. The annualized return for the IWM is .30% and the corresponding annualized standard deviation is 29.50% resulting in a RAP6M of .01. A RAP6M of .01 ranks the IWM at 90.40% relative to all other equity ETFs. Keeping in mind the current economic climate, the IWM performed better than all but 10% of all other equity ETFs. This ranking implies that US domestic small cap stocks performed better than most other equity classes over the last six month period.

b) Momentum

For our technical indicator we use a momentum (M) based measure. In this case the higher the momentum the better; rapid price growth momentum is more attractive than slower growth over the same period. To measure the rate of change of momentum we compute the ratio of the one month price momentum (moving average) to the six month price momentum. A momentum based investor will prefer a ratio greater than one.

Momentum Example

Exhibit 2 presents a -.70% momentum for the IWM resulting in a rating of 83.80% relative to all ETFs in the same asset class. While this is a low score, the IWM has had an above average run relative to other equity ETFs which is reflected by the higher than average ranking. Exhibits 3 and 4 (below) show the momentum for the GLD and SHY respectively. Shorter term momentum for the GLD is very attractive relative to other commodity ETFs. The M for the SHY has a ranking of 81.6% which means that this shorter maturity fixed income ETF has performed very well relative to other fixed income ETF's.

c) Earnings Yield (Equity ETFs)

For each equity based ETF we compute the weighted earnings yield (EY). In order to include as many ETFs within our rating service as possible we use the underlying benchmark as a proxy whenever sufficient information is not available for the ETF. It is our view that higher the EY, the better, so our rankings are assigned accordingly. The ETF with the highest EY is given a rank of 100 and the lowest a rank of 0.

Earnings Yield Example

Exhibit 2 illustrates the EY for the IWM. The IWM EY is 2.54% which equates to a ranking of 9.7%. Over 90% of equity ETFs have a higher EY than the IWM. Some might interpret this to mean that relative to other equity asset classes the small cap stocks that comprise the IWM are not as attractive as other equity classes. However, small cap stocks are traditionally valued with respect to expectations of future earnings growth so we should expect the IWM to have a lower EY than most other equity ETF's. The results presented in Exhibit 2 corroborate that valuation dynamic.

d) Dividend Yield (Equity and Real Estate ETFs)

As with all of our investment metrics, we use the underlying benchmark as a proxy whenever sufficient information is not available for the ETF. We prefer higher DY to low DY as a relative value indicator. DY is also used by some investors to determine possible income generation capability. The ETF in each asset class with the highest DY is given a rank of 100 and the lowest a rank of 0.

Dividend Yield Example

In Exhibit 2, the DY for the IWM is 1.74% ranking it at 50.40%; nearly half of all equity ETFs have a higher DY than the IWM. Interpreted as an income generator, the IWM does not look as attractive as other equity ETFs. Using DY as a relative value measure implies that the IWM is in the middle of the pack. However, US domestic small cap stocks have traditionally used operating revenues to finance future growth rather than to pay dividends. A DY ranking of 50.40% for the IWM is actually higher than we might have expected *ex-ante*. Some might interpret this to mean that US domestic small cap stocks are slightly undervalued.

Exhibit 3 – XTF Investment Metrics Example for GLD (StreetTRACKS Gold Trust)

Structural Integrity	Investment Metrics	Holdings & Sectors			
Investment Metrics Rating: 6 Month* = 8.8					
	Value	Ranking		Value	Ranking
Annualized Period Return:	-11.50%		Momentum - Short Term:	-6.30%	94.10%
Standard Deviation:	31.50%		Diversification Score:	-47.20%	100.00%
Risk Adjusted Performance:	-0.36	58.80%			

e) Diversification Score (Commodity and Currency ETFs)

We consider commodity and currency ETFs to be outside the asset classes traditionally used in a well diversified portfolio. As a result we try to measure the diversification benefits of including these asset classes within such a portfolio. To do this we compute daily correlation of the ETF to an asset allocation benchmark (60% equity S&P 500 and 40% fixed income Lehman US aggregate). The Diversification Score (DS) benefits investors who consider adding commodities or currencies to their portfolio. The lower the DS the better - the ETF within an asset class that has the lowest DS is given a rank of 100 and the ETF with the highest DS score is assigned a rank of 0.

Diversification Score Example

Exhibit 3 illustrates the DS for the StreetTRACKS Gold Trust (GLD). The DS is -47.20% indicating a very low correlation resulting in a ranking of 100% relative to the other commodity ETF's. The GLD seems to be a very good diversifier relative to our reference portfolio.

Exhibit 4 – XTF Investment Metrics Example for SHY (iShares Lehman 1-3 Year Treasury Bond)

Structural Integrity	Investment Metrics	Holdings & Sectors	Rating & Overview		
Investment Metrics Rating: 6 Month* = 9.5					
	Value	Ranking		Value	Ranking
Annualized Period Return:	1.50%		Momentum - Short Term:	0.40%	81.60%
Standard Deviation:	2.90%		Yield to Maturity:	1.95%	8.70%
Risk Adjusted Performance:	0.51	93.80%	Interest Rate Risk:	0.21%	89.80%

f) Interest-rate risk (Fixed Income ETFs)

IR measures the sensitivity of the ETF to future changes in interest rates. To do this we compute Interest Rate Risk (IR) as the product of the securities effective duration and its yield volatility. When sufficient information for the ETF is unavailable we use the underlying benchmark. Also, it is sometimes necessary to use the price volatility as a substitute for the duration approach. The lower the IR, the better - the fixed income ETF with the lowest IR is given a rank of 100 and the fixed income ETF with the highest IR is assigned a rank of 0.

Interest Rate Risk Example

Exhibit 4 illustrates the IR for the iShares Lehman 1-3 Year Treasury Bond Fund (SHY). The IR is .21%, one of the lowest IR of all fixed income ETFs, hence a ranking of 89.80%. This is not surprising given the low duration of this portfolio.

g) Yield to Maturity (Fixed Income only)

In addition to IR, we also compute the weighted yield to maturity (YTM) of each fixed income ETF. When sufficient information for the ETF is unavailable we use the underlying benchmark. YTM helps the investor to form reasonable return expectations; YTM also offers some insight into the ETF's ability to generate income. While YTM is based on several assumptions it is still a useful measure for investors. In general, the higher the YTM the better. The fixed income ETF with the highest YTM receives the highest rank of 100 and the ETF with the lowest YTM receives the lowest rank of 0. Combining the YTM with the IR is a very useful tool for formulating risk adjusted expectations for the fixed income ETF universe.

Yield to Maturity Example

Exhibit 4 also illustrates the YTM for the SHY to be 1.95%. This results in a ranking of 8.7% relative to other fixed income ETFs. The ranking for YTM on the SHY is expectedly low; under most yield curve environments we would expect the SHY to have lower yields than longer-term fixed income ETFs.

Investment Metric Rating

The last measure computed within the Investment Metrics framework is an overall Investment Metrics rating. Employing a proprietary weighting scheme within each asset class we produce an aggregate rating for each ETF using the corresponding ranks for each metric. Each time horizon will have a unique investment metric rating due to the changing risk-adjusted performance. While we believe the ranking for each investment metric component to be useful and applicable to any investment decision, investors might find this overall rating most useful in performing preliminary analysis.

Investment Metric Example

Exhibit 2 presents the overall investment metric rating for the IWM for the six month period ending Q3 2008. The investment metric rating is 8.5. Over the last six months IWM has managed to outperform relative to other equity ETFs. This accurately reflects the case that small-caps have outperformed both mid- and large-caps stocks over the past 6 months. It also implies that some of the investment fundamentals of the IWM don't compare as favorably to all the other equity ETFs. Note that without the inputs to this overall rating there would be no way to perform meaningful attribution analysis.

Exhibit 5 – XTF Overall Rating Example for IWM (iShares Russell 2000)

IWM iShares Russell 2000 Overall Rating: 

Overview: The Fund seeks investment results that correspond generally to the price and yield performance, before fees and expenses, of the Russell 2000 Index. Uses a replication strategy to try to track the Index, which includes approximately 6% of the market capitalization of all US equity securities.

Inception Date: 5/22/2000	Geography: US 	Asset Class: Equity
Primary Exchange: NYSE Arca	Investment Philosophy: Passive Index	Capitalization: Small/Micro Cap
Issuer: Barclays Global Investors	Underlying Index: RUSSELL 2000 INDEX	Style: Core or Blend
Index Provider: Russell Investments	Index Composition: Cap-Weighted	

Overall Rating

The final step in our rating service is to combine the structural and investment rating for each ETF within each asset class. Since we developed all of the rankings by asset class we now aggregate them together using a proprietary weighting scheme that accounts for the relative importance of each metric. Again, we believe that the constituent inputs to this overall score to be potentially more useful for making informed investment decisions. However, investors will find the overall rating informative when performing preliminary analyses. In order to properly combine the structural and investment ratings we use only the six month period.

Overall Rating Example

Exhibit 5 presents the overall rating for the IWM of 9.9. The IWM compares favorably relative to other equity ETFs. When combining an above average investment rating with one of the highest structural ratings this results in an impressive overall rating. Again, the inputs to this rating must be provided in order for the investor to develop a more accurate interpretation.

Conclusion

Researching and rating ETFs is all we do and reflects our belief in the benefits of index based investing across markets, sectors and asset classes. We are driven by a desire to provide relevant, independent, timely and actionable research about ETFs using our proprietary methodology. We rate ETFs independently of asset class, geography and currency, following a disciplined, rules and fact based research and ratings process which we are seeking to establish as a global industry standard.

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