

# Why You Should Prefer Low Volatility ETFs

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Low volatility ETFs have become popular in recent years because of the risk return tradeoff involved in investing in those ETFs compared to traditional index investment. This research has examined the performance of six popular low volatility ETFs from 2012 until 2016 and compared them to their benchmarks in terms of risk and return in order to examine whether an investor has been better off investing in those ETFs rather than following their benchmarks. Four of the examined ETFs invest in U.S. stocks and the other two invest in other developed and emerging markets. The ETFs comparison has been conducted using sharp risk-return index and the CAPM model. Results have pointed out that not only five of the low volatility ETFs have exposed their investors to lower risk, they have also produced higher average returns. The advantage of investing in low volatility ETFs is prominent in the U.S. stock market. All three sizes of stocks categories (Large, Mid, and Small Capitalization) low volatility ETFs have outperformed their indexes bench marks in terms of risk and returns. For the non-U.S. stock investing, according to the CAPM model, while no advantage has been found for investing in low volatility ETFs for developed countries excluding U.S. and Canada, significant lower systematic risk was found for emerging markets.

Keywords: low volatility ETFs, risk return anomaly, large cap stocks ETF, mid cap stocks ETF, low cap stocks ETF

#### Introduction

In recent years low volatility stocks have become more and more popular among investor who seeks steady growth with as little as possible volatility. Achieving those goals along with a substantial diversification power may be possible throughout investing in the fast-growing industry of low volatility ETFs. The extent of the growth of the low volatility ETFs industry from 2012 until 2016 can be seen by looking at their traded volumes. For example, the well-known USMV<sup>1</sup>, average daily volume in 2016 was 3.9 million shares while only 0.3 million shares were traded daily in 2012. Similarly, SPLV<sup>2</sup>, average daily volume, has been growing from one million shares in 2012 to 2.7 in 2016.

In addition to diversification, low volatility ETFs should offer lower risk than index investing strategy. These merits of low volatility ETFs are most welcomed by investors, however, most of them associate low volatility stocks with low returns and for that reason they rather follow the major indexes. The perception that a portfolio that contains lower risk can achieve higher return than the index bench-mark counter to the fundamental economic principle that risk is compensated with higher expected return. For decades, the standard model of risk-return relationship has been to use the Capital Assets Pricing Model-CAPM (Sharp, 1964).

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<sup>&</sup>lt;sup>1</sup> iShares edge MSCI min vol USA ETF.

<sup>&</sup>lt;sup>2</sup> Power Shares S&P500 low volatility ETF.

According to the CAPM the risk variable "beta" is linearly related to returns. The higher the "beta" of an individual stock or portfolio, the higher expected return.

### **Literature Review**

The question of low volatility ETFs popularity in recent years can be partially explained by the economic surrounding around the globe of low interest rates. Because of low global interest rates, investors that seek relatively "safe" investment have limited profitable low volatility investments opportunities outside the stocks markets. The stocks markets offer the traditional relatively low risk portfolio of high dividend paying stocks and the relatively new financial industry of low volatility ETFs. It might be the case that when interest rates will rise enough to satisfy the low volatility preference of some investors, he or she would neglect the stock market in favor of the credit market. In such case, the low volatility ETFs industry size might decrease and returns will demonstrate normality according to the risk involved. Another possible explanation for the flourish of the low volatility ETFs industry from 2012 to 2016 is the continuation of the stocks rally that started in 2009. As the rally continues for a growing period, more investors start to question the continuation of the rally and therefore the preference to be entrenched at low volatility investment that might exhibit lower falls than the traditional indexes when correction of the markets will occur.

There are two ways to construct low volatility portfolios: 1) past volatilities of stocks are measured and then the low volatility stocks are picked for the portfolio if they have lower volatility relative to the broader U.S. or non-U.S. equity markets; 2) the second method to construct low volatility ETFs is using Markowitz's (1952) mean variance optimization. This method is based on the principle that covariation between individual stocks determines the entire portfolio risk. According to the model low correlation stocks are reducing dramatically portfolio risk along with relatively small reduction of the portfolio expected return. Today, the two methods described above are used to construct low volatility ETFs portfolios, which is the issue of the current research paper.

Past researches have tried to explain why low volatility and low beta stocks have offered high average returns associated with lower risk than high volatility and high beta stocks. Ang, Hodrick, Xing, and Zhang (2006; 2009) find that high volatility stocks have had "abysmally low returns" in U.S. samples and in international markets. Blitz and Vliet (2007) provide an analysis of the volatility anomaly across regions. Baker, Bradley, and Wurgler (2011) have proposed explanation to the low volatility that combines the average investor's preference for risk and the typical institutional investor's mandate to maximize the ratio of excess returns and tracking error relative to a fixed benchmark without resorting to leverage. No extensive research has been conducted on low volatility ETFs since they started to develop in 2011 and the number of such ETFs is growing ever since, insinuating that investors are realizing their benefits.

## **Research Methods**

In the following research, the performance and risk of six major low volatility ETFs are measured. Those ETFs were chosen because they represent investment in various segments of the U.S. market and also non-U.S. developed and emerging markets and because they are leading this segment in market value<sup>3</sup>. The chosen ETFs are: USMV (MSCI minimum volatility USA), SPLV (S&P low volatility), XMLV (S&P Mid Cap low volatility), XSLV (S&P Small Cap low volatility), EFAV (MSCI min volatility EAFE), and EEMV (MSCI min

<sup>&</sup>lt;sup>3</sup> More than 400 million dollars each.

volatility emerging markets). We start our analysis by calculating average monthly returns and standard deviations of our six low volatility ETFs and compare them to their bench marks. Then we apply the "market model" in order to examine "Alphas" and "Betas" of our low volatility ETFS.

#### **Research Results**

Table 1 summarizes the average monthly return for each ETF and their bench marks<sup>4</sup> from 2012 until 2016. The bench marks chosen and presented in Table 1, represent the broader market bench marks which are traditionally very popular among investors and are considered substitute investment opportunities for the described low volatility ETFs. For example, USMV follows MSCI USA minimum volatility index and SPLV follows S&P500 low volatility index. Both indexes pick their stocks from the S&P500<sup>5</sup>.

	USMV	SPLV	XMLV	XSLV	EFAV	EEMV
Assets <sup>1</sup>	14,747	7,638	530	437	7,345	3,840
Benchmark	S&P500	S&P500	M.C 400	R 2000	EAFE	EEM
$2016^3$	2.53	2.24	2.65	2.06	1.08	1.93
2010	(1.61)	(1.61)	(2.22)	(1.90)	(0.49)	(2.39)
2015	0.405	0.23	0.25	0.15	0.16	-1.37
2015	(-0.15)	(-0.15)	(-0.64)	(-0.87)	(-0.51)	(1.71)
2014	1.50	1.34	1.44	1.03	0.96	0.95
2014	(0.96)	(0.96)	(0.79)	(0.34)	(0.00)	(0.42)
2012	1.29	1.26	1.21	1.86	0.75	-0.78
2013	(0.92)	(0.92)	(1.64)	(2.03)	(0.94)	(-0.94)
2012	1.24	1.35	N/A	N/A	1.15	1.31
2012	(1.49)	(1.49)			(1.42)	(0.66)
•	1.22	1.18	1.25	1.15	0.79	0.41
Average return	(0.93)	(0.93)	(0.81)	(0.67)	(0.46)	(0.84)
<b>C</b>	7.15	6.57	5.64	5.19	4.16	2.01
Compound return	(4.91)	(4.91)	(4.04)	(3.41)	(2.35)	(4.27)
Charles of actions	2.49	2.76	3.16	3.43	3.01	3.82
Stand dev. of return	(3.07)	(3.07)	(3.44)	(4.18)	(3.89)	(4.73)
Mari	5.98	6.87	7.64	9.34	7.23	9.22
Max	(8.29)	(8.29)	(8.31)	(7.75)	(7.82)	(12.96)
ν.	-4.53	-5.04	-5.80	-5.69	-7.48	-9.32
Min	(-6.26)	(-6.26)	(-5.78)	(-8.84)	(-11.14)	(-10.70)
Sharp	0.48	0.42	0.39	0.33	0.26	0.10
Index	(0.30)	(0.30)	(0.23)	(0.16)	(0.11)	(0.17)

Average Monthly Return of Examined ETFs and Their Benchmarks

*Notes.* 1. Assets in millions of U.S. dollars as for 1.7.16; 2. M.C 400 = Mid Cup 400 Index. R 2000 = Russell 200 Small Cup Index. EAFE = MSCI EAFE Index composed of large- and mid-capitalization developed market equities, excluding the U.S. and Canada. EEM = MSCI emerging markets Index; 3. Average monthly returns; 4. The average monthly return of the bench mark is shown in the brackets; 5. The compound return includes years 2012-2016; 6. Sharp Index is the average calculation of  $\frac{R-rf}{\sigma R}$  (Return minus risk free rate divided by the standard deviation of the return).

Table 1 results show that except for EEMV the other five ETFs have produced a higher average monthly return and compound return along with a smaller risk. In terms of risk return ratio represented by the sharp index, except

Table 1

<sup>&</sup>lt;sup>4</sup> The average monthly return of the Bench marks appears in Table1 in brackets.

<sup>&</sup>lt;sup>5</sup> XMLV follows S&P Mid Cap 400 low volatility index and XSLV follows S&P Small Cap 600 low volatility index. EFAV follows the MSCI EAFE Minimum Volatility Index composed of developed market equities that have lower volatility characteristics relative to the broader developed equity markets, excluding the U.S. and Canada. EEMV tracks the investment results of the MSCI emerging markets minimum volatility index.

for EEMV, the other five ETFs have gained investors a better risk return ratios. That means that any investor that wants to invest in indexes of the U.S. capital market, large, middle, or small market capitalization, is better off if he or she invests in their low volatility ETFs counterparts. For large cup U.S. stocks, the only year that the S&P500 has outperformed the USMV and SPLV ETFs was 2012 while in all other examined years the opposite has occurred with much larger average monthly return differences. XMLV and XSLV have outperformed their bench marks Mid Cup 400 and Russell 200 indexes, for the years 2014-2016, failing to do so in 2013. Similar results have been found for the non-U.S. and Canada large stocks ETFs (EFAV). The risk return ratio represented by the sharp index is more than double 0.26 than its bench mark 0.11. The only low volatility ETF that disappointed investors in the examined period was EEMV which includes emerging markets firms, producing a lower average sharp than the popular EEM ETF. Since all the U.S. low volatility ETFs have outperformed their benchmark, a long-short strategy can be constructed. In that strategy, the investor prolongs the better performing stock or ETF and shortened the S&P500 index from 2012 until 2016 he or she would have gained 30.4% return associated with a very low risk<sup>6</sup>. Similarly, long-short portfolio that includes long on SPLV, XMLV, and XSLV and short on their bench marks, would have produced 21.8%, 20.9%, and 23.5% returns respectively.

Next, low volatility ETFs weekly returns are tested for excess return over their bench marks and "Betas"<sup>7</sup>, using the market model and the results are summarized in Tables 2 till 4.

$$R_{ETF} - Rf = \alpha + \beta (R_{B.M} - Rf)$$

where:  $R_{ETF}$  = weekly return of the low volatility ETF,  $R_{B.M}$  = weekly returns on the bench mark index, Rf = risk free rate.

Table 2 shows that for the entire examined period (2012-2016) both large cap low volatility ETFs (USMV and SPLV) have achieved a positive statistically significant weekly abnormal return (0.12 and 0.18 respectively). Both ETFs have achieved those abnormal returns with 28-29 percent lower risk than the risk involved in investing in the S&P500<sup>8</sup>. Analyzing the results year by year demonstrates that for both USMV and SPLV a positive significant abnormal return was achieved in 2014 and 2016 with a lower consistent significant lower risk for all the tested years. These results are consistent with the results summarized in Table 1 and have proven an abnormal return measured by the well-known market model exists. Table 3 summarizes regressions results for Mid Cap and Small Cap U.S. stocks low volatilities ETFs (XMLV and XSLV).

Table 3 shows that for both Mid and Small Cap stocks, low volatility ETFs have gained better returns for the entire sample with lower risk (26 and 31 percent less risk than their bench marks), making ETFS superior to the indexes they follow. The XMLV has significantly outperformed its bench mark Mid Cap 400 index in 2014 and 2016; however, the associated risk was much lower than the index for all years of the ETF existence. The XSLV has outperformed its bench mark Russel 2000 index for, as mentioned before, the entire period of time and nearly significant outperformance in 2016. Again, the XSLV has offered its investors much lower risk for each of its existence years. Table 4 summarizes regressions results for EAFE<sup>9</sup> and EEM<sup>10</sup> stocks low volatilities ETFs (EFAV and EEMV).

<sup>&</sup>lt;sup>6</sup> The risk might rise if the economics conditions change. If the low volatility ETFs perform worse than the index losses may be accumulated.

<sup>&</sup>lt;sup>7</sup> The systematic risk factor of the CAPM model.

<sup>&</sup>lt;sup>8</sup> The  $\beta$ s are 0.72 and 0.71 for USMV and SPLV respectively.

<sup>&</sup>lt;sup>9</sup> EAFE is developed countries excluding U.S. and Canada stocks index.

<sup>&</sup>lt;sup>10</sup> EEM is emerging markets stocks index.

ETF	Year	¢	β	F	$R^2$	adj R <sup>2</sup>	Ν
USMV	2012-2016	0.12* (3.27)	0.72* (33.49)	1122	0.82	0.82	234
	2016	0.35* (2.70)	0.70* (10.88)	118	0.83	0.82	26
	2015	0.11 (1.31)	0.71* (16.27)	265	0.84	0.83	52
	2014	0.14* (2.61)	0.75* (22.09)	488	0.90	0.90	52
	2013	0.00 (0.026)	0.83* (12.28)	150	0.75	0.74	52
	2012	0.08 (1.08)	0.67* (16.84)	284	0.83	0.83	52
SPLV	2012-2016	0.18* (2.45)	0.71* (25.12)	631	0.73	0.73	234
	2016	0.36* (2.18)	0.70* (8.54)	73	0.75	0.74	26
	2015	0.08 (0.82)	0.74* (13.95)	194	0.79	0.79	52
	2014	0.17* (2.134)	0.71* (13.89)	193	0.79	0.79	52
	2013	-0.03 (-0.27)	0.84* (9.13)	84	0.62	0.61	52
	2012	0.09 (1.06)	0.60* (11.88)	141	0.74	0.73	52

Large U.S. Stocks Low Volatility ETFs Regressions Results

*Notes.* 1. USMV = MSCI minimum volatility USA, SPLV=S&P500 low volatility; 2. \* = statistically significant at 95% confidence level; 3. The T statistics appears in the brackets.

## Table 3

Mid Cap and Small Cap U.S. Stocks Low Volatility ETFs Regressions Results

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ETF	Year	α	β	F	R <sup>2</sup>	adj R <sup>2</sup>	Ν	
XMLV	2013-2016	0.16* (2.75)	0.74* (24.15)	583	0.77	0.77	182	
	2016	0.35* (2.22)	0.67* (8.84)	78	0.77	0.76	26	
	2015	0.14 (1.29)	0.73* (13.48)	182	0.78	0.78	52	
	2014	0.23* (3.10)	0.72* (16.76)	281	0.84	0.84	52	
	2013	-0.03 (-0.22)	0.83* (10.32)	106	0.70	0.69	52	
	2013-2016	0.16* (2.66)	0.69* (23.96)	574	0.76	0.76	182	
XSLV	2016	0.30 (1.90)	0.63* (9.52)	91	0.79	0.78	26	
	2015	0.14 (1.01)	0.67* (11.48)	132	0.72	0.71	52	
	2014	0.16 (1.66)	0.70* (14.36)	206	0.80	0.80	52	
	2013	0.08 (0.77)	0.76* (12.29)	151	0.77	0.76	52	

*Notes.* 1. XMLV = S&P Mid Cap low volatility, XSLV=S&P Small Cap low volatility; 2. \* = statistically significant at 95% confidence level; 3. The T statistics appears in the brackets.

Table 2

Non-U.S. EAFE and Emerging Markets Stocks Low Volatility ETFs Regressions Results							
ETF	Year	α	β	F	R <sup>2</sup>	adj R <sup>2</sup>	Ν
EFAV	2012-2016	0.18 (1.95)	-0.09 (-1.30)	1.71	0.07	0.00	234
EEMV	2012-2016	0.06 (1.60)	0.73* (53.29)	2840	0.92	0.92	234
	2016	0.08 (0.98)	0.69* (25.29)	639	0.96	0.96	26
	2015	0.00 (0.05)	0.76* (36.34)	1320	0.96	0.96	52
	2014	0.06 (1.07)	0.69* (23.74)	564	0.91	0.91	52
	2013	0.04 (0.41)	0.80* (20.11)	404	0.88	0.88	52
	2012	0.17 (1.92)	0.67* (18.16)	329	0.85	0.85	52

Table 4

Notes. 1. EFAV = MSCI minimum volatility EAFE, EEMV = MSCI minimum volatility emerging markets; 2. \* = statistically significant at 95% confidence level; 3. The T statistics appears in the brackets.

Table 4 shows that there is no return or risk advantage investing in low volatility ETF (EFAV) over investing in MSCI non-U.S. and Canada developed countries index (EAFE). This result was true for the entire examined period and also for all specific years<sup>11</sup>. On the other hand, investing in low volatility EEMV ETF has proven fertile to investors in terms of risk, since it produced a significant averaging 27% less risk than investing in MSCI emerging market index. No statistically significant abnormal return has been found for this ETF over its bench mark.

## **Discussion and Conclusions**

Low volatility ETFs have become popular in recent years because investors seek lower risk in their portfolios compared to traditional index investment. The industry of low volatility ETFs has started to emerge mostly in 2011 and is expanding ever since. This research has examined the performance of six popular low volatility ETFs, four of them invest in U.S. stocks and the other two invest in other developed and emerging markets. First, the author has documented monthly average returns and standard deviations of those six ETFs and compared them to their bench marks return. Five of six low volatility ETFs have proven better return to risk ratio than their bench marks. Second, the market model is being used in order to measure abnormal return and risk. Results have pointed out that not only five of the low volatility ETFs have exposed their investors to a lower risk, four of them have also produced higher statistically significant returns. The advantage of investing in low volatility ETFs is prominent in the U.S. stock market. All three sizes of stocks categories (Large, Mid, and Small Capitalization) low volatility ETFs have outperformed their indexes bench marks in terms of risk and returns. For the non-U.S. stock investing, while the CAPM analysis has not found any advantages for the large cap non-U.S. and Canada low volatility ETF, significant lower risk was found for emerging markets low volatility ETF over its bench mark. Finally, the reported abnormal return of low volatility ETFs occurred in the examined years, however that phenomena can be reversed if the economics conditions change.

<sup>&</sup>lt;sup>11</sup> The specific years do not appear in the table since they did not produce any statistically significant results.

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