

The background of the slide features a dark blue and black abstract design. It includes a line graph with white circular markers and a bar chart with blue bars. A large, semi-transparent white 'L' shape is positioned on the left side of the text area. The overall aesthetic is modern and professional, typical of a financial or data-related presentation.

# ANALYZING EXCHANGE TRADED FUNDS THAT FOLLOW ESG FRAMEWORK

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# DEFINING EXCHANGE TRADED FUNDS

## ETF Growth

Assets in U.S. funds have ballooned in recent years



Source: Bloomberg

\*As of Sept. 25

Bloomberg

- Basket of securities that trade on an exchange, just like a stock.
- Often tracks an underlying index, although they can invest in any number of industry sectors or use various strategies.
- Can contain all types of investments including stocks, commodities, or bonds.
- More cost-effective and more liquid when compared to mutual funds.

# DEFINING ESG INVESTING

Environmental – Social - Governance

## Environmental

- Carbon emissions
- Water stress levels
- Renewable energy use

## Social

- Employee turnover
- Gender equality
- Number of employees unionized

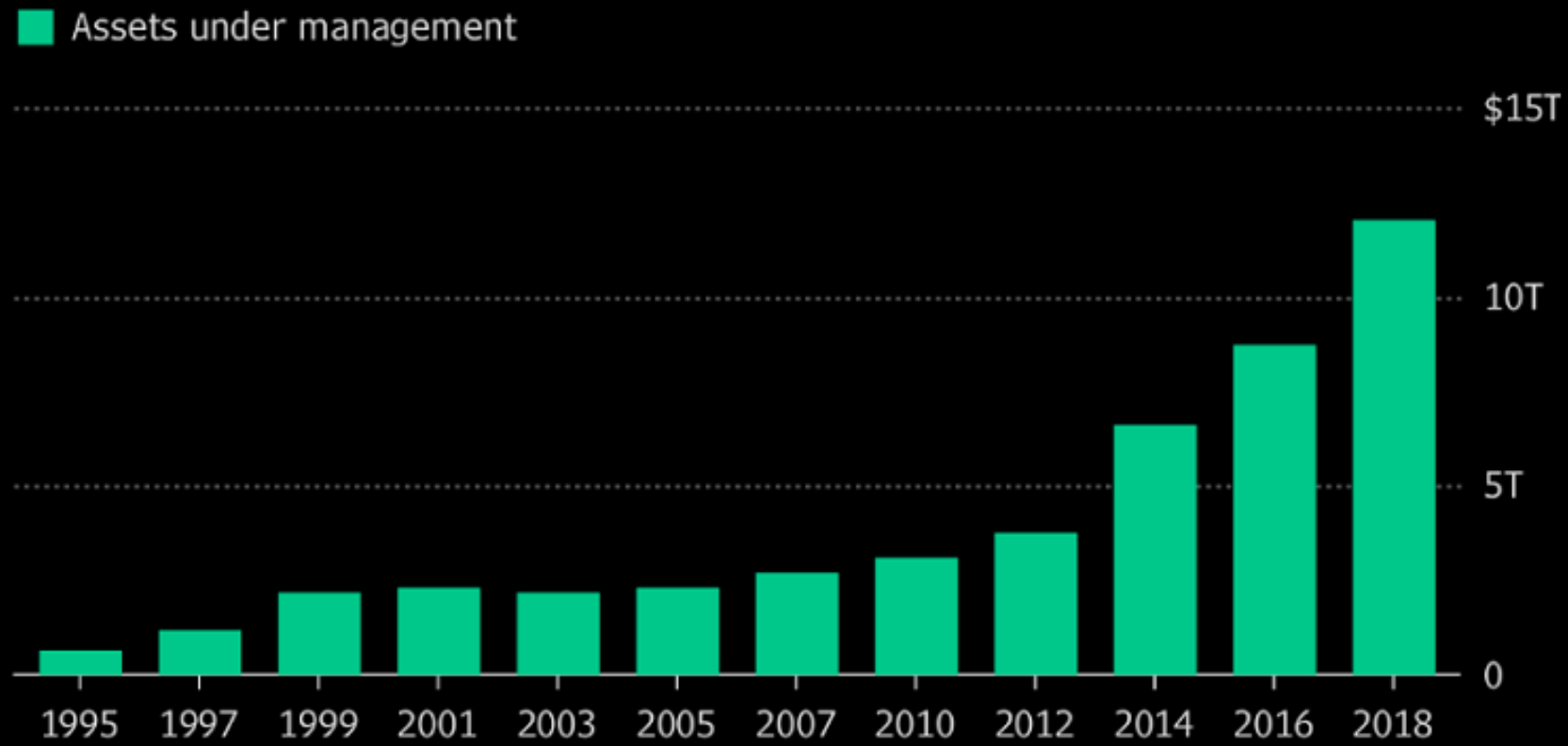
## Governance

- Number of independent directors
- Director meeting assistance
- Director average age

# ESG INVESTING GROWTH

## Sustainable Growth

Investors using socially responsible criteria hit \$12 trillion in U.S. assets



Source: US SIF

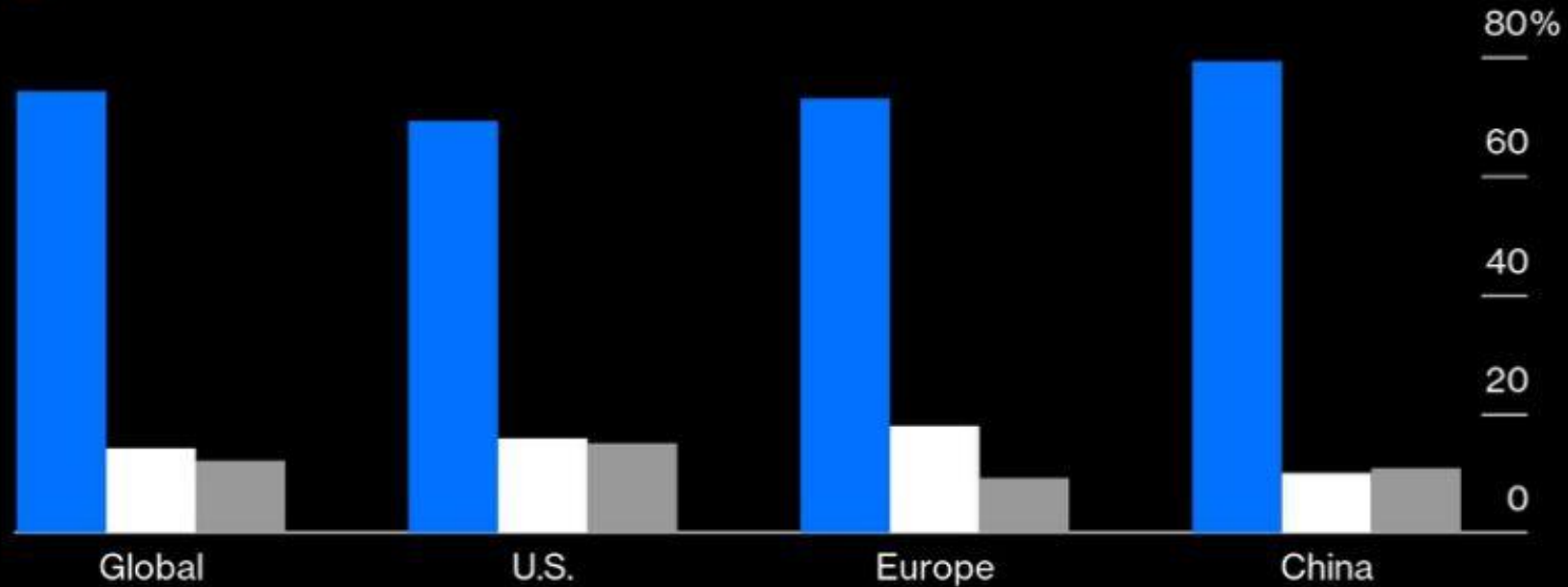
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# ESG INVESTING GROWTH

## Seeking to Make a Difference

"Do you plan to increase your allocation to ESG investments (not limited to ESG ETFs) over the next year?"

■ Yes ■ No ■ Not Sure



Source: BBH

**Bloomberg**Opinion

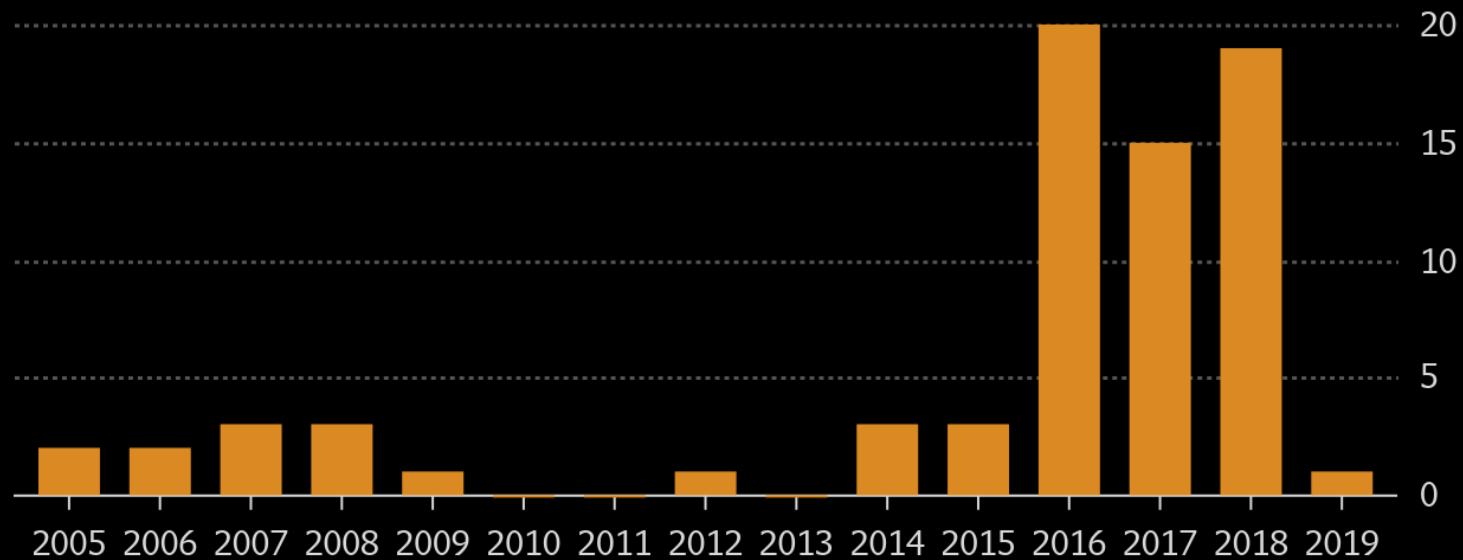
# IMPACT INVESTING ETFs

Environmental, social and governance-focused ETFs allow investors to achieve diversification while owning companies that follow specific ESG criteria.

## ESG Explosion

ESG ETFs have multiplied in recent years as more products come to market

■ Number of active ESG ETFs, by year of creation



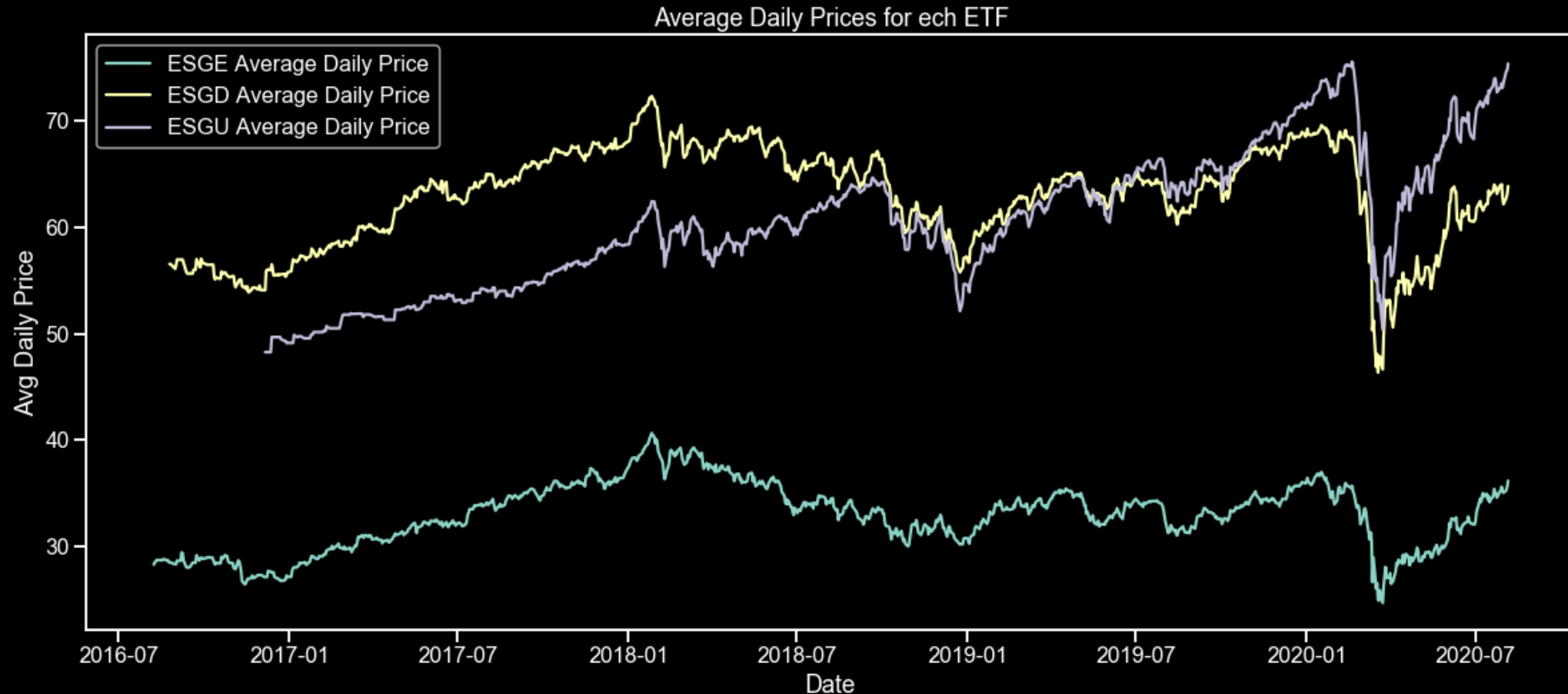
Source: Bloomberg

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# ESG ETFs FOR OUR ANALYSIS

Dataset Name	Meaning
ESGE	ESG Emerging Markets Exchange Traded Fund
ESGD	ESG Europe, Australia, Far East Exchange Traded Fund
ESGU	ESG U.S.A. Exchange Traded Fund
VIX	CBOE Volatility Index

# ESG ETFs FOR OUR ANALYSIS





# ESG ETFs FOR OUR ANALYSIS

	Daily Returns ESGE	Daily Returns ESGD	Daily Returns ESGU	Daily Change VIX
Daily Returns ESGE	1.000000	0.839141	0.754810	-0.587733
Daily Returns ESGD	0.839141	1.000000	0.854945	-0.611633
Daily Returns ESGU	0.754810	0.854945	1.000000	-0.584727
Daily Change VIX	-0.587733	-0.611633	-0.584727	1.000000

From the correlation plot we can observe the following two points:

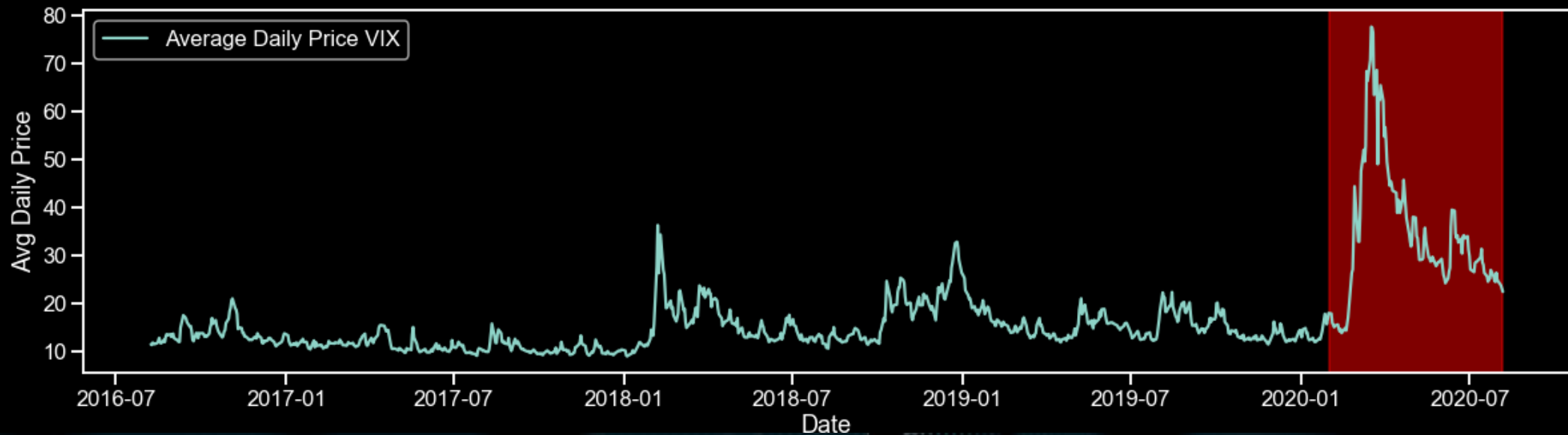
1. The three different ETF's are strongly positively correlated
2. The three different ETF's are strongly negatively correlated with the daily change of the VIX

# PURPOSE OF THE ANALYSIS

1. Which period since 2016 has had the greatest volatility as measured by the VIX Index?
2. Prior to the period of greatest volatility. Is there a significant difference in the means of daily returns between the three different Exchange Traded Funds?
3. During the period of greatest volatility. Is there a significant difference in the means of daily returns between the three different Exchange Traded Funds?

# ASSESSING PERIODS OF HIGH VOLATILITY

Which period (months) since 2016 has had the greatest volatility as measured by the VIX Index?



- From February 2020 until recent day is the period where we see the greatest level of volatility in the markets.

# PERFORMING THE TEST (PERIOD 1)

Prior to the period of greatest volatility. Is there a significant difference in the means of daily returns between the three different Exchange Traded Funds?

## Assumptions:

- The data is approximately normal
- The period for this test is from August 2016 to January 2020
- Each group is dependent to each other, as shown by its correlations

## Results:

We see evidence that at least one of the daily return means of the three different ETF's in this period is significantly different. In this case is the ESGU ETF.

ETF	MEAN	RISK
ESGE	0.0338%	0.995%
ESGD	0.0308%	0.708%
ESGU	0.0540%	0.765%

# PERFORMING THE TEST (PERIOD 2)

During the period of greatest volatility. Is there a significant difference in the means of daily returns between the three different Exchange Traded Funds?

## Assumptions:

- The data is approximately normal
- The period for this test is from February 2020 to August 2020
- Each group is dependent to each other, as shown by its correlations

## Results:

We see evidence that at least one of the daily return means of the three different ETF's in this period is significantly different. In this case is the ESGD ETF.

ETF	MEAN	RISK
ESGE	0.0902%	2.665%
ESGD	0.0022%	2.532%
ESGU	0.0857%	2.855%

# CONCLUSION

## Period 1

- The ESGU ETF daily return is the one that is significantly different from the others, and for the same measure of risk it seems that it outperforms both the ESGE and the ESGD ETFs (as measured by the daily mean return).

## Period 2

- The ESGD daily return mean is the one that is significantly different from the others, we can see that the daily return for this ETF has underperformed the daily mean returns of the other ETFs.

Period 1

ETF	MEAN	RISK
ESGE	0.0338%	0.995%
ESGD	0.0308%	0.708%
ESGU	0.0540%	0.765%

Period 2

ETF	MEAN	RISK
ESGE	0.0902%	2.665%
ESGD	0.0022%	2.532%
ESGU	0.0857%	2.855%

# NEXT POSSIBLE STEPS

- Instead of conducting the analysis in terms of days, increase the time horizon and compare the weekly and monthly returns for this period for each ETF.
- Compare the daily return means of ESG ETF's to other ETF's that don't follow ESG criteria.
- Compare the mean return between actively managed ESG funds and passively managed ESG funds and search for any significant difference.





THANK YOU