Do Corporate ESG Initiatives Really Matter in the United States Stock Market?

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Research Question

Environmental, social, and corporate governance (ESG) initiatives have become a key component in corporate affairs since they became commonplace in the 1980s, with the increase in these policies leading to increased institutional ownership (Cheffins 2011: 11; Gompers, Ishii & Metrick 2011: 34). This research examines if firms with strong ESG initiatives outperform market fundamentals in the United States stock market by examining an exchange-traded fund (ETF) that tracks companies with strong ESG initiatives.

Data

The data used for this research was obtained from Yahoo Finance and converted to an annualized frequency, beginning in 2007. The funds selected for this analysis were **DSI**, **SPY**, and **QQQ**. DSI is an exchange-traded fund that tracks publicly-traded companies with strong ESG initiatives, while SPY and QQQ track the S&P 500 and NASDAQ indices, respectively. Ticker symbol **^IRX** was also selected, which is the annualized yield of 3-month United States Treasury Bills. This symbol will be used to represent the risk-free rate for our models.

Methods

To examine the relationship between corporate ESG policies and market fundamentals, we employ a cross-sectional regression approach using the capital-asset pricing model (CAPM). The CAPM model is used to explain the relationship between systematic market risk and the expected return of a given asset, while a cross-sectional regression model assumes that the variables being explained have the same time period. The CAPM model does have some issues to be aware of, such as assuming a linear interpretation of risk-and-return and that markets are dominated by rational investors.

The regression models used in this research can be expressed as the following equations:

$$DSI_t - R_{f,t} = (SPY_t - R_{f,t}) + e_t$$

$$DSI_t - R_{f,t} = (QQQ_t - R_{f,t}) + e_t$$

where DSI_t represents DSI at time t, SPY_t represents SPY at time t, and QQQ_t represents QQQ at time t. R_{ft} represents the risk-free rate, represented by the yield of 3-month U.S. Treasury Bills, at time t. Finally, e_t represents a standard error term at time t for the regression models.

For our visualizations, Figure 1 was constructed by taking the square root of the residuals from our regression model estimates, while Figure 2 was constructed by scaling the ETF data to a base year of 2007. The visualizations and results can be seen in the following sections.

Visualizations
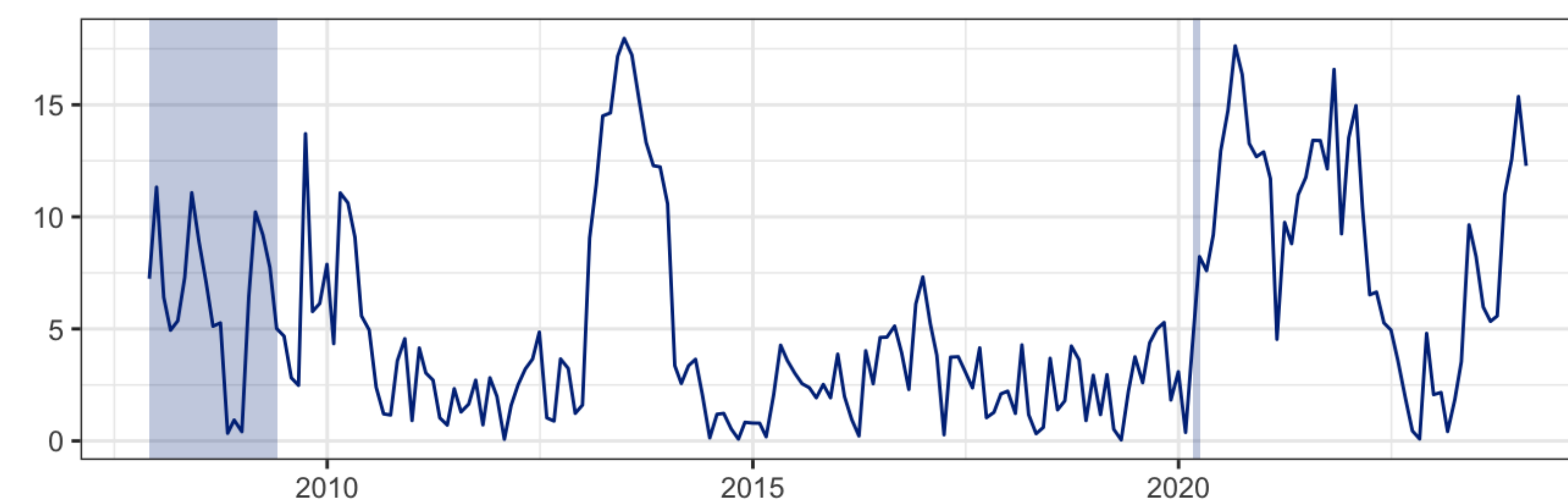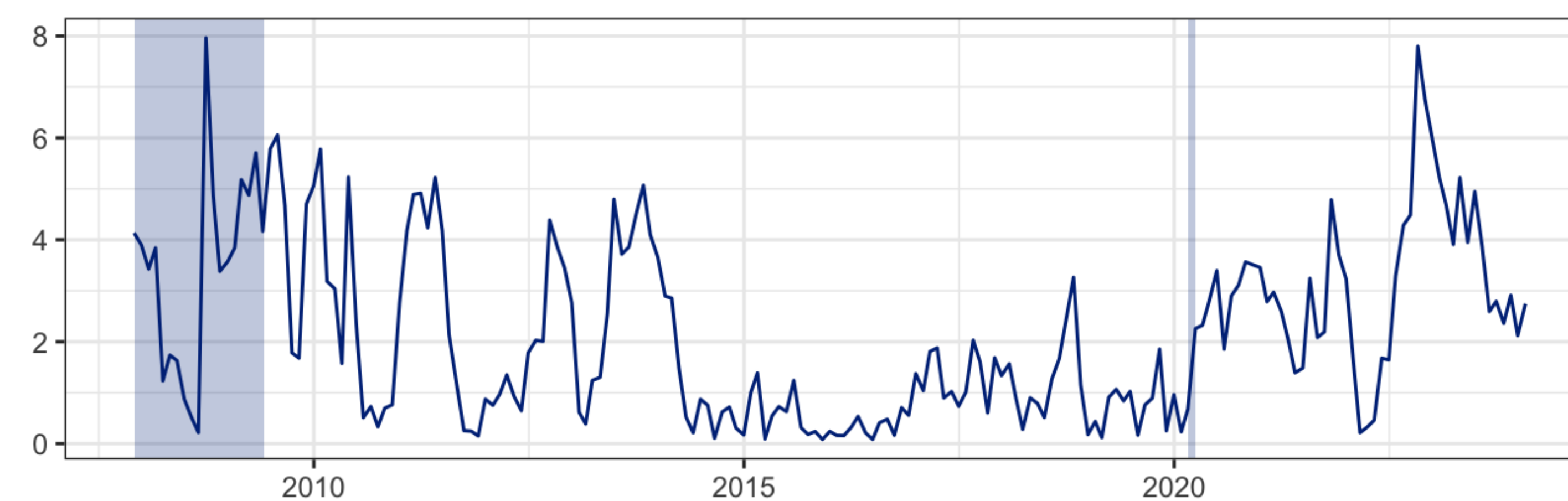
Data source: Yahoo Finance

Figure 1: Price Shocks of DSI Against SPY (top) and QQQ (bottom). Economic Recessions Shaded in Blue.
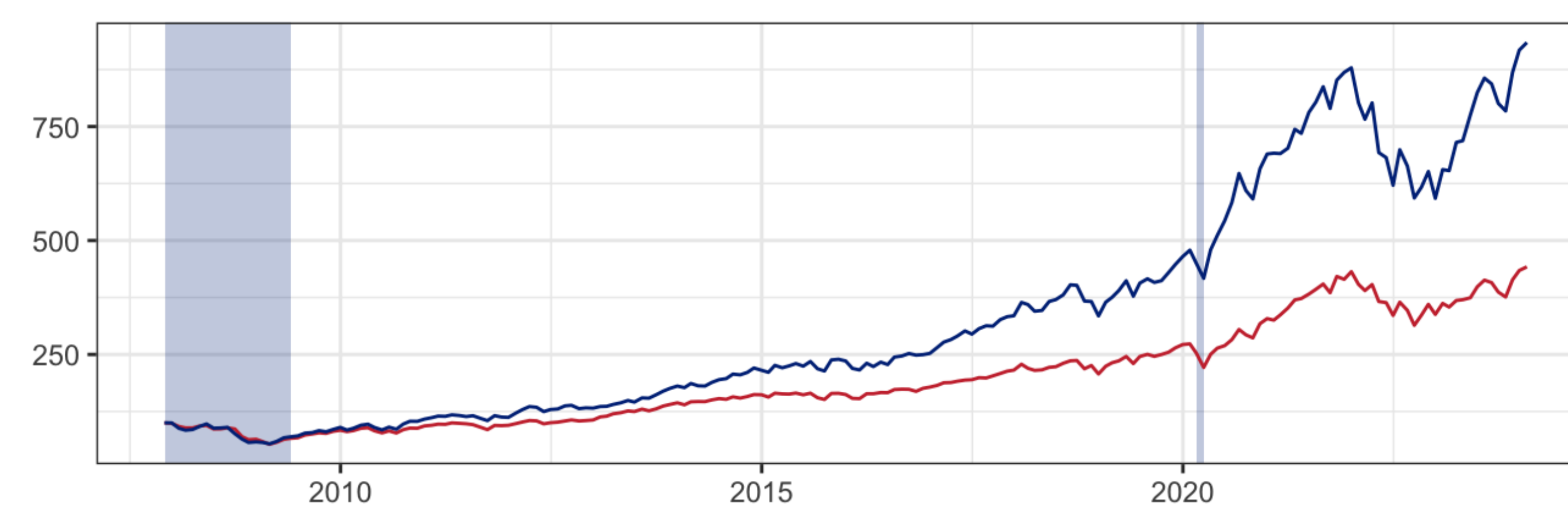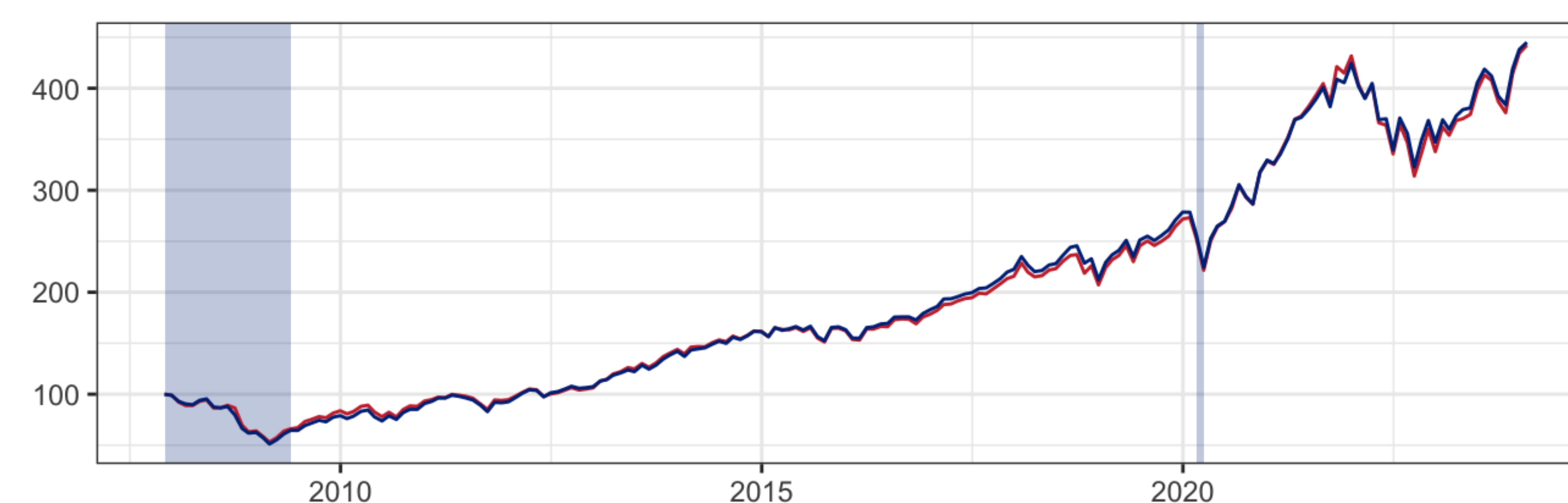
Data source: Yahoo Finance

Figure 2: Growth of DSI (red line) vs. SPY (top, blue line) and QQQ (bottom, blue line). Economic Recessions Shaded in Blue.

Results

Regression Model Estimates

	Dependent variable:	
	(1)	(2)
First Model	1.023[***]	
	(0.012)	
Second Model		0.763[***]
		(0.024)
Constant	-1.348[***]	-3.175[***]
	(0.239)	(0.646)
Observations	195	195
R^2	0.974	0.837
Adjusted R^2	0.974	0.836
Residual Std. Error (df = 193)	2.830	7.097
F Statistic (df = 1; 193)	7,257.968[***]	991.502[***]
Note:	$p<0.1$; **$p<0.05$;** $p<0.01$	

- The regression model estimates show that at least 83 percent of DSI's performance is explained by the performance of SPY (97.4%) and QQQ (83.6%), as indicated by the adjusted R-squared values for both models.
- Figure 2 shows that DSI is more correlated to the S&P 500 index than to the NASDAQ index.
- DSI **underperforms** the S&P 500 and NASDAQ in the long-term, as the constant values of our models are **negative**.

Conclusion

In Figures 1 & 2, DSI appears to underperform the NASDAQ more than against the S&P 500, likely due to the technology-driven nature of the NASDAQ. This observation in Figure 1 can be seen in the larger frequency of deviations from DSI's performance.

In conclusion, a portfolio only consisting of firms with strong corporate ESG policies **underperform** market fundamentals over a 10-year-plus period.

References

Cheffins, Brian R. 2011. "The History of Corporate Governance." University of Cambridge Faculty of Law Working Paper. 11-13. http://ssrn.com/abstract=1975404.

Gompers, Paul A., Joy L. Ishii & Andrew Metrick. "Corporate Governance and Equity Prices." National Bureau of Economic Research Working Paper 8449. 1-68. https://www.nber.org/papers/w8449.