Oslo Stock Exchange and the Weather

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Abstract

We investigate empirical links between the Oslo Stock Exchange (OSE) and the weather, asking whether daily returns on the market, or market trading activity, seems to be related to the weather. We find a positive correlation between the OSE and two measures of "bad weather": clouds and windchill. High windchill is also

Weather and the Stock Market

How can the weather can directly influ... the stock market?

When the weather influences the runni... the stock exchange: Hurricane Sandy i... October 2012. New York Stock Excha... closed for two days.

Prices of stocks on the market: The w... can influence stock prices through the ... flows of the firms on it. The same Hur... Sandy resulted in large future losses to... insurance companies, some of which ar... on the NYSE.
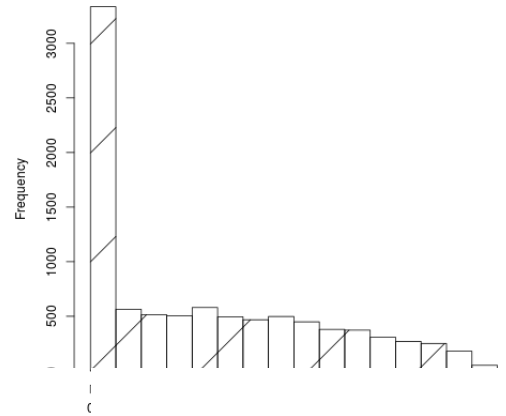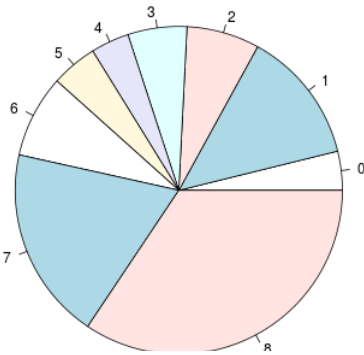
Behavioural finance

Alternative explanation for why the we... affects the stock market:

Ask whether the weather influences the "mood" of participants on the exchange.

If people trading on the exchange is facing a sunny spring day with wonderful weather, they may be more optimistic about the market than on one of those bleak, rainy fall days.
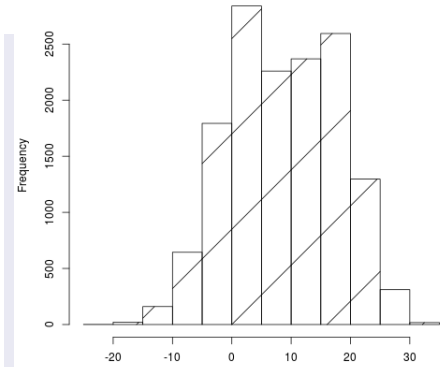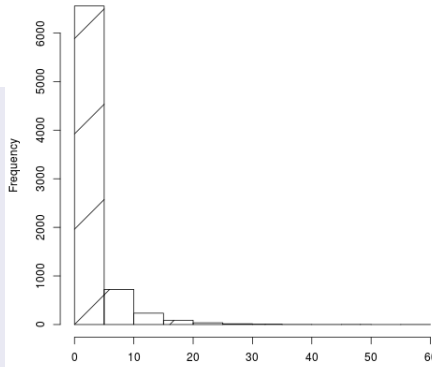
What is done?

Data: Stock returns, Oslo Stock Exchange Weather at Blindern, Oslo, 1980–2018.
Construct measures of weather "quality"
Estimate empirical link between measures of weather quality and stock returns.

Data for Blindern, Oslo, 1980–2018.

Regression

To investigate link between weather and stock returns, run the regression

$$R_{m,t} = a + bW_t + \varepsilon_t$$

where $R_{m,t}$ is return on stock market and W_t is the "weather" variable

	Dependent variable:				
	R_m^{EW}				
Temperature	−0.00001				
	(0.00002)				
Rain		−0.00003			
		(0.00003)			
Sunshine			0.0003		
			(0.0004)		
Cloud Coverage				−0.0001***	
				(0.00003)	
WindChill					−0.0001***
					(0.00002)
Constant	0.001***	0.001***	0.001***	0.002***	0.001***
	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0001)
Observations	9,776	5,232	6,325	9,438	9,776
Adjusted R²	−0.0001	0.0001	−0.0001	0.001	0.001

Note: *p<0.1; **p<0.05; ***p<0.01

Results for different regressions $R_{m,t} = a + bW_t + \varepsilon_t$ where R_{mt} is the return on the stock market (in percent), and W_t is a weather variable. The five weather variables are: Temperature: The difference between observed temperature and a "normal" temperature. Rain: Precipitation in mm. Sunshine: Fraction of day with sunshine. Cloud coverage: NN. Windchill: Difference between calculated Windchill and Windchill of normal temperature with zero wind.

Windchill
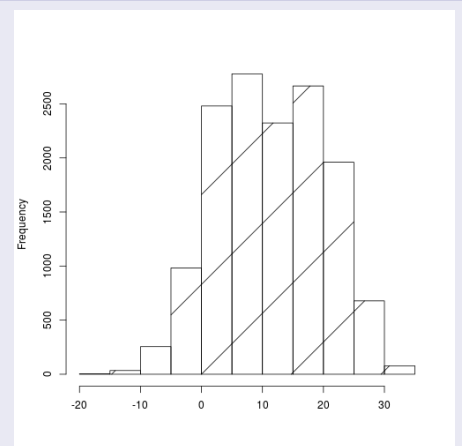
T_{wc}, the wind chill index, is calculated as:
$T_{wc} = 13.12 + 0.6215 T_a - 11.37 V^{0.16} + 0.3965 T_a V^{0.16}$
where T_a is the air temperature, and V is the wind speed at 10 metres altitude.

Conclusion

We investigate links between stock returns at the Oslo Stock Exchange and Oslo Weather.
We find that cloudy days and cold, windy days are associated with lower returns.
We make no claims about causality.