WHAT'S NEW IN VLAB 2018

ROB ENGLE, ROB CAPELLINI AND THE VLAB TEAM

vlab nyu

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V-Lab: Real-time Financial Volatility, Correlation, And Risk ... - NYU

https://vlab.stern.nyu.edu/en/

The Volatility Laboratory (V-Lab) provides real time measurement, modeling and forecasting of financial volatility, correlations and risk for a wide spectrum of ...

Systemic Risk Analysis ...

SYSTEMIC RISK ANALYSIS ... NYU Stern Systemic Risk ...

NYU Stern Systemic Risk ...

Dynamic MES systemic risk analysis for U.S. Financials ...

Systemic Risk Analysis Of ...

Global Dynamic MES systemic risk analysis for World Financials ...

Volatility overview see more

NYU Stern Volatility Institute Logo. Volatility Analysis ...

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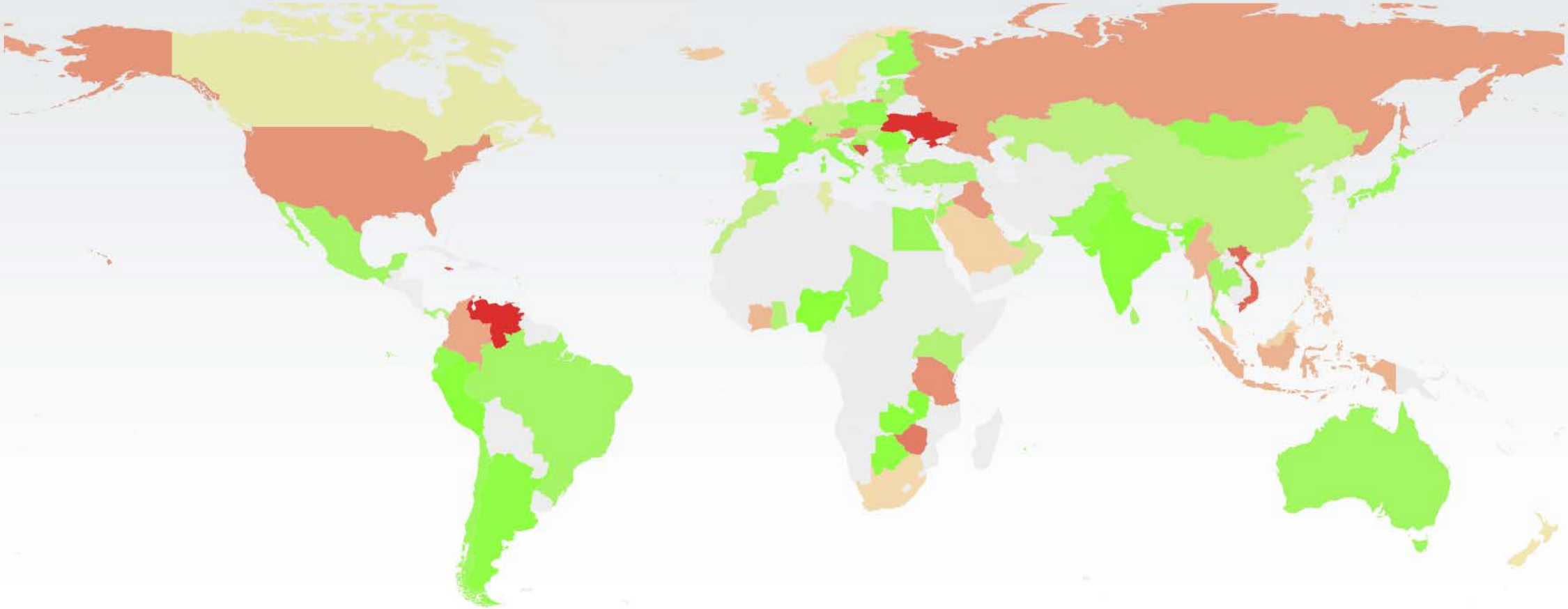
V-Lab Analyses ▼ | Documentation Related Sites ▼ | Language: ▼

Volatility Analysis ▼ GJR-GARCH ▼ Type a ticker or search (Wildcard=%) Go

Global Volatility

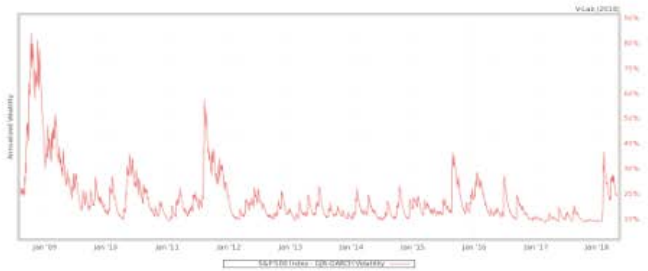
Region: World ▼

Now « »



Volatility Analysis

There are few guarantees in financial markets. However, we do know that volatility clusters and mean-reverts. But how long will it take to mean revert and, on average, to what level? Where are the 'host spots' of volatility in the world and in what sectors? We attempt to answer these questions and more in our Volatility Analysis section of V-Lab. Come see the many models meant to explain volatility and explore volatility dynamics.

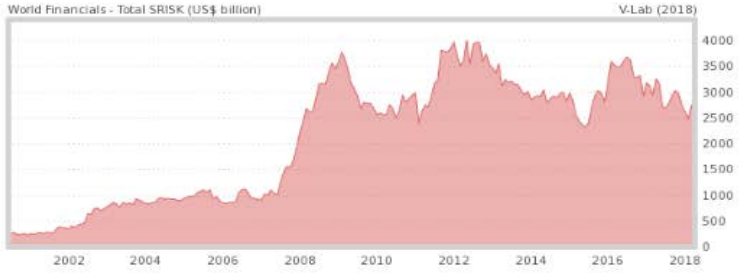


Correlation Analysis

The co-movement of asset prices is important in many financial market decisions, such as portfolio allocation, diversification, and hedging. In our Correlation Analysis section, we use econometric models to determine how these time series co-move, which assets are particularly correlated, and which are diverging in direction.

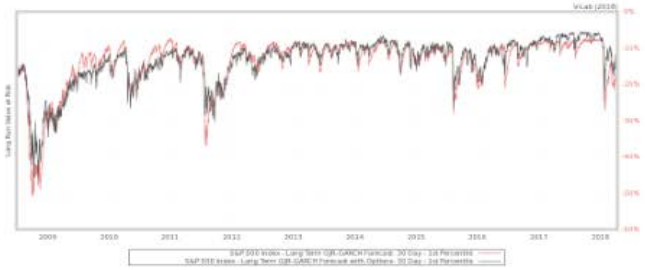
Systemic Risk Analysis

The Global Financial Crisis of 2008 revealed the degree of interconnectedness and fragility of the global financial system at the time. How badly would the equity values of financial institutions decline if there were another crisis today? What degree of capital shortfall would financial institutions suffer? Our Systemic Risk Analysis section of V-Lab simulates crises in domestic markets, as well as another global financial crisis, in an attempt to answer these questions.



Long-Run VaR Analysis

Often, volatility is assumed to grow with the square root of time. However, this assumes independence between observations each day (i.e. today's volatility has no bearing on what volatility will be tomorrow). Since this is not the case, one must defer to more sophisticted methods in order to estimate long-run volatility. Our Long-Run Value-at-Risk section simulates the 1 month and 1 year risk of holding financial assets, both using only returns and also conditioning average future volatility on current options market data.

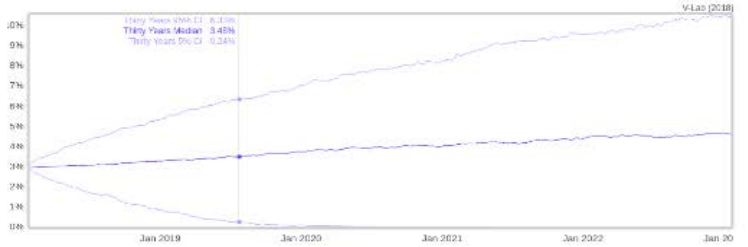


Liquidity Analysis

The liquidity of a financial asset reflects transaction costs and the ability to unwind large trades at reasonable prices. 'Liquidity spirals' often exacerbate stock market declines, such as what we saw in the last Global Financial Crisis. In the liquidity section we estimate and forecast the liquidity of a broad spectrum of financial assets.

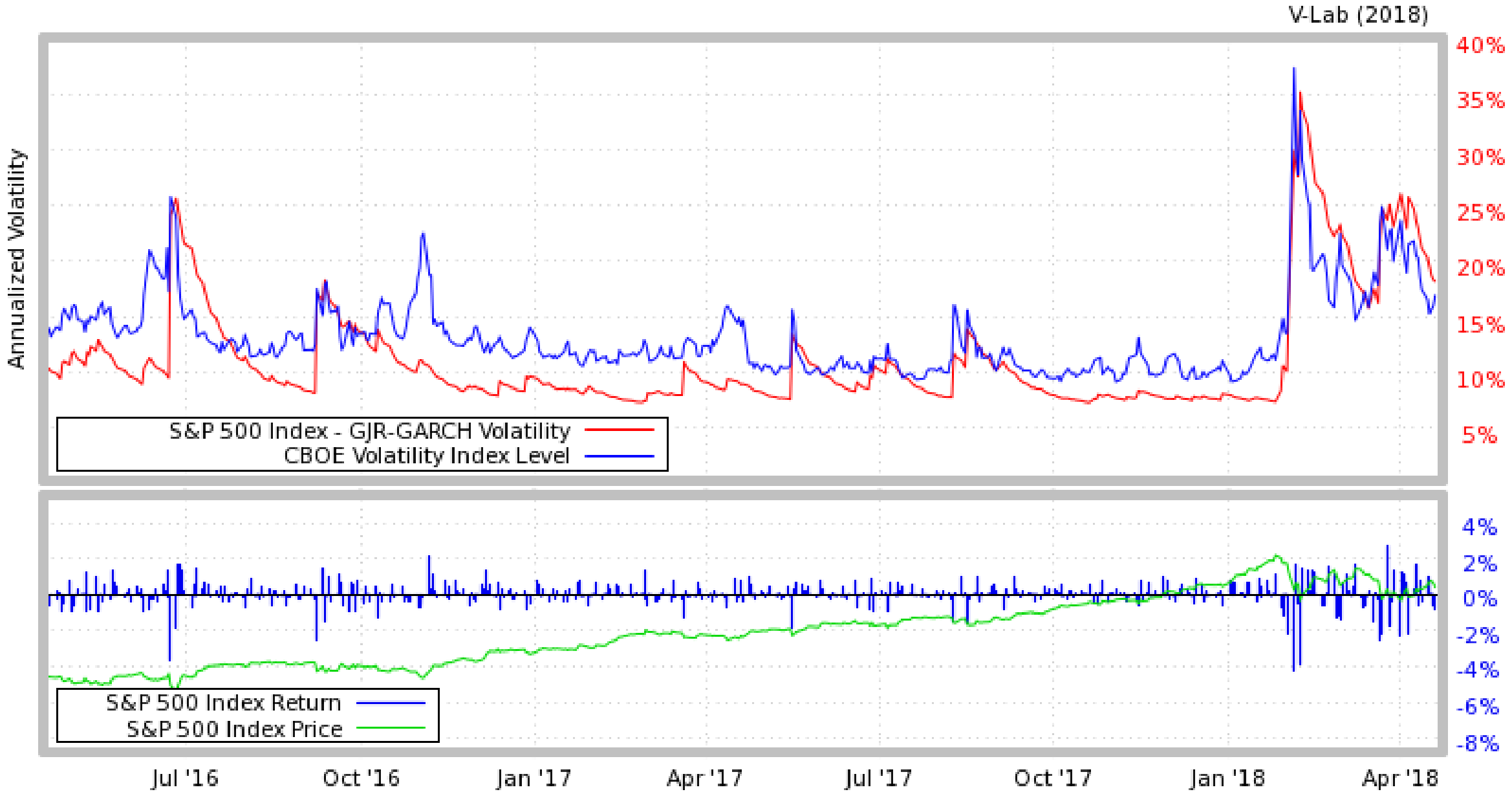
Fixed Income Analysis

The future direction of interest rates has large implications for the the determination of discount rates, asset pricing, and firm capital structure. In addition, interest rates and their term structure are often used to infer economic forecasts of inflation, recession, and other key indicators. But where are rates headed in the long term? We forecast the distribution of treasury rates up to 5 years ahead from a 6-month bill to 30-year bond in the Fixed Income Section. We show upper and lower confidence intervals for future rates.



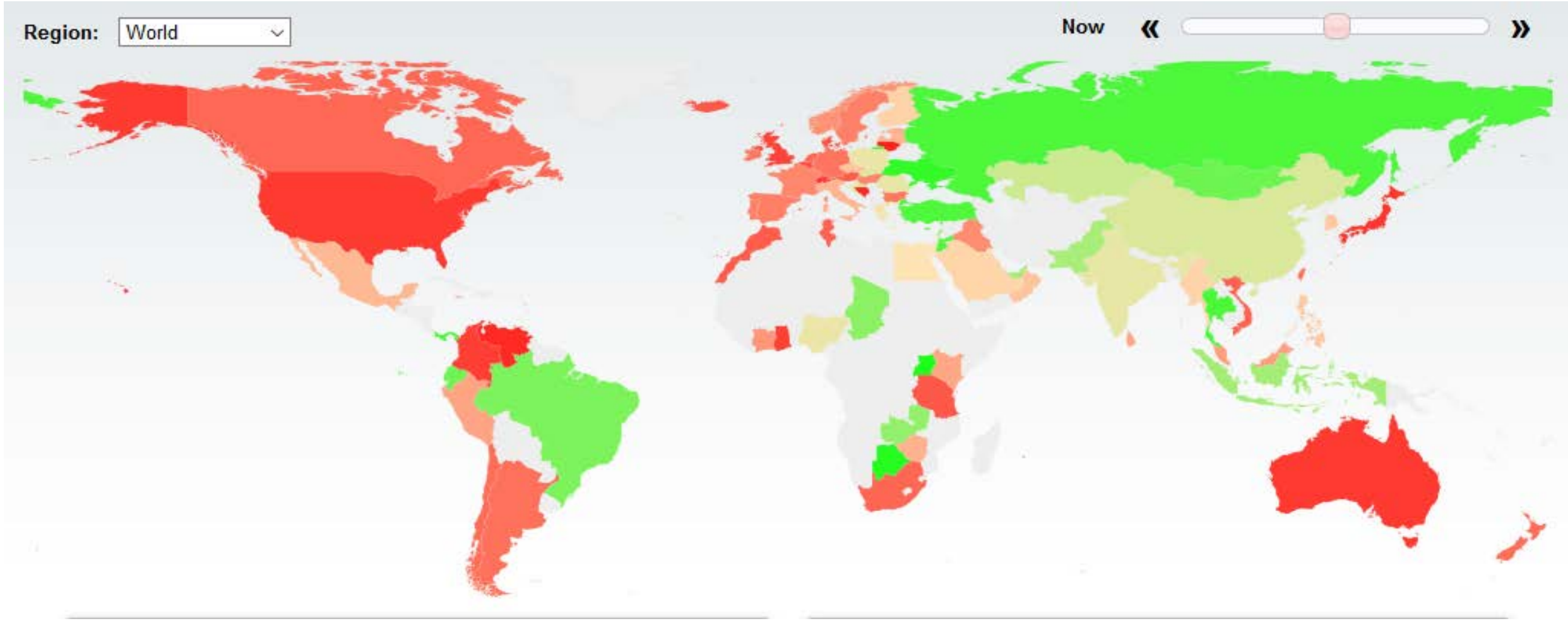
Climate Risk Analysis

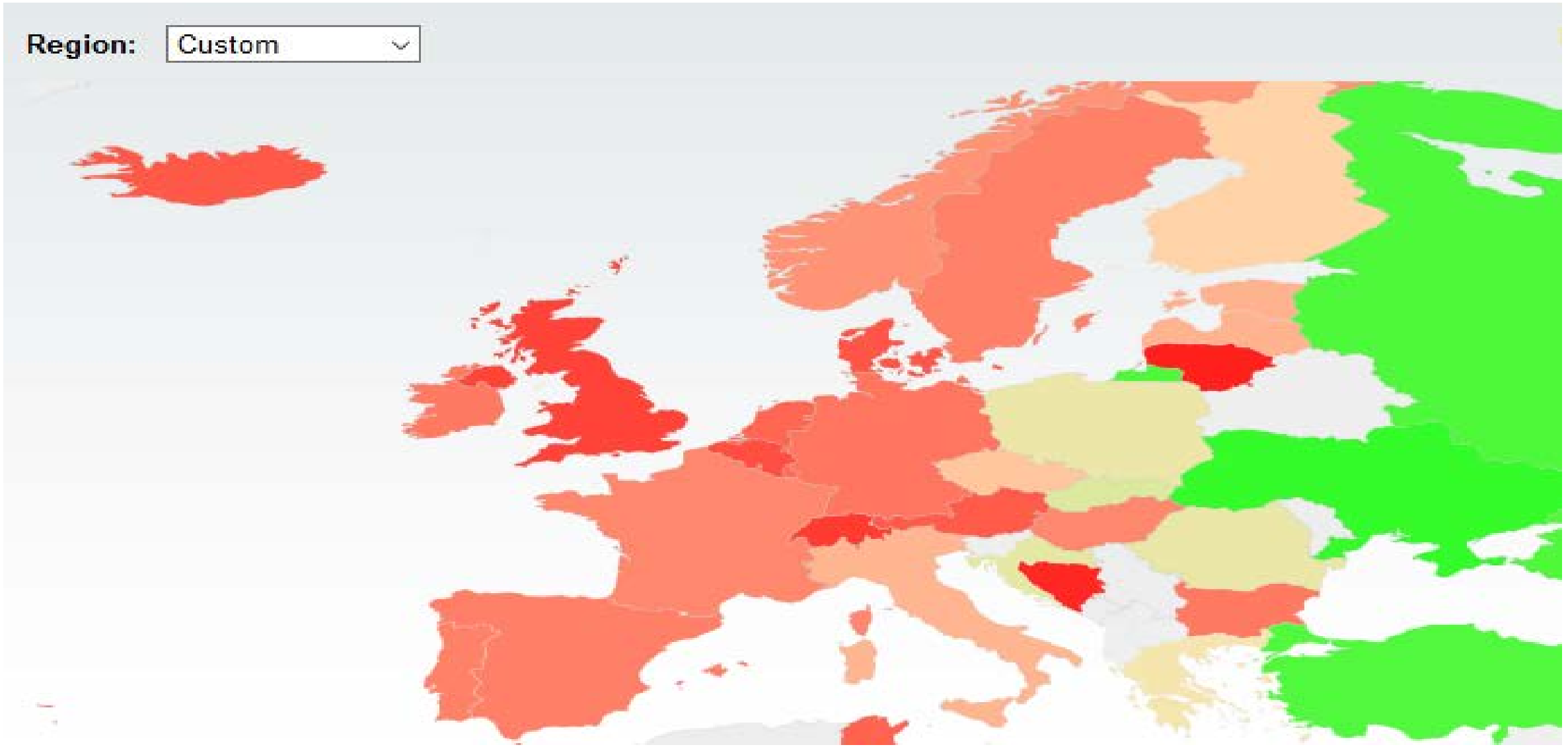
Climate change is effecting the world via stronger, more severe weather events, rising sea levels, and in many other ways. Are these events and the risks imposed by climate change properly reflected in asset prices? Environmental risks can be thought of as long run risks which influence portfolio decisions. In our Climate Risk Analysis section. We examine the performance of publicly traded environmental portfolios, which can serve as a measure of the new information on environmental risk and a mechanism to hedge these risks.


V-Lab (2018)
Annualized Volatility
40%
35%
30%
25%
20%
15%
10%
5%
S&P 500 Index - GJR-GARCH Volatility
CBOE Volatility Index Level
4%
2%
0%
-2%
-4%
-6%
-8%
S&P 500 Index Return
S&P 500 Index Price
Jul '16
Oct '16
Jan '17
Apr '17
Jul '17
Oct '17
Jan '18
Apr '18

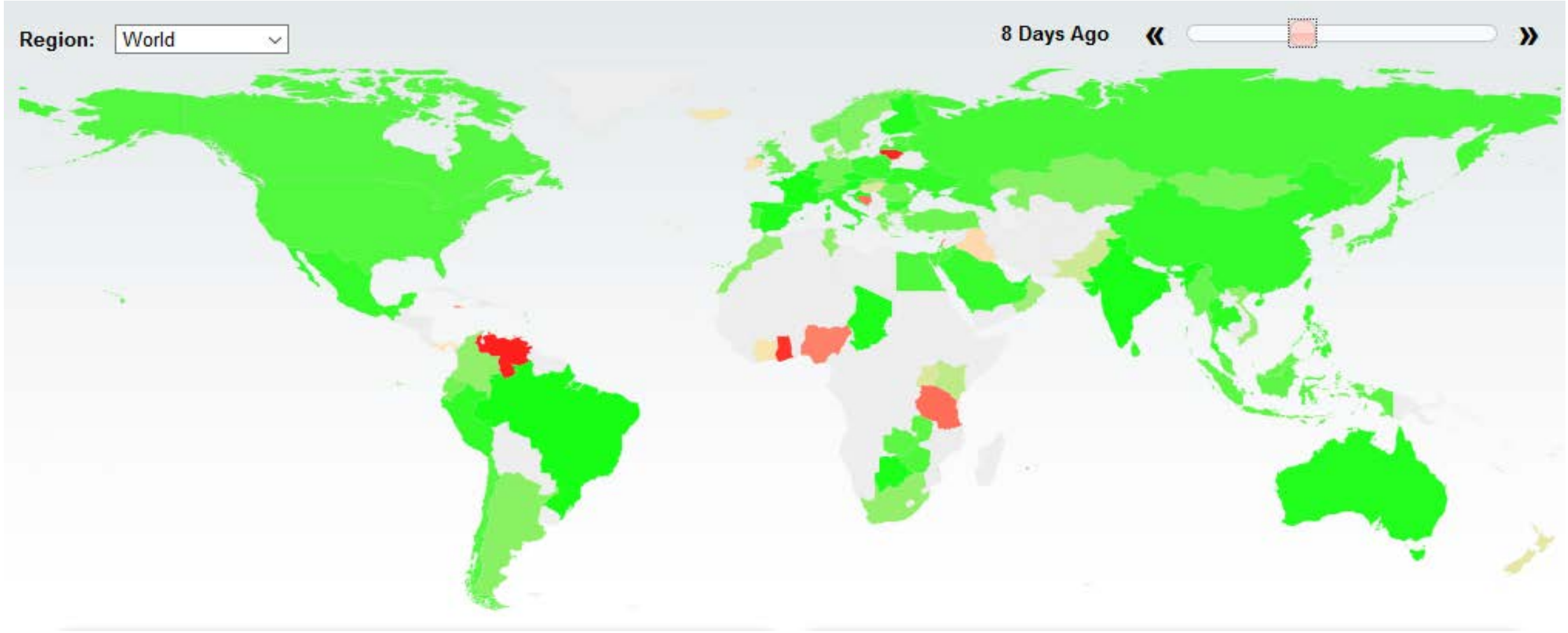
V-LAB VOLATILITY MAP FOR FEB 9,2018

GREEN MEANS PREDICTED VOLATILITY IS LOW RELATIVE TO PAST.




Region:
Custom

VOLATILITY MAP 8 DAYS EARLIER



VIX DERIVATIVES

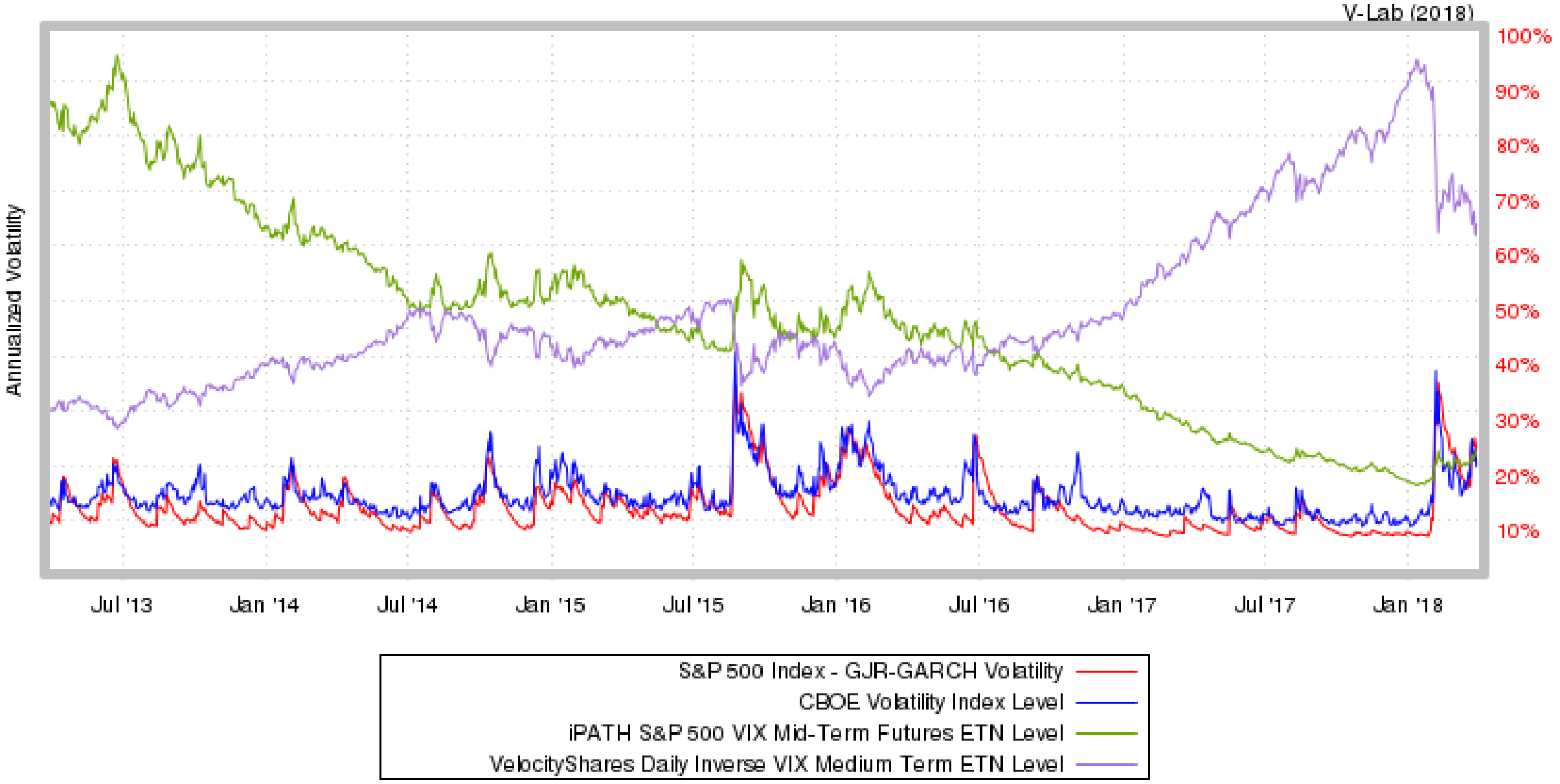
FUTURES depend upon future value of the VIX, i.e. the volatility predicted as of the expiration of the futures contract.

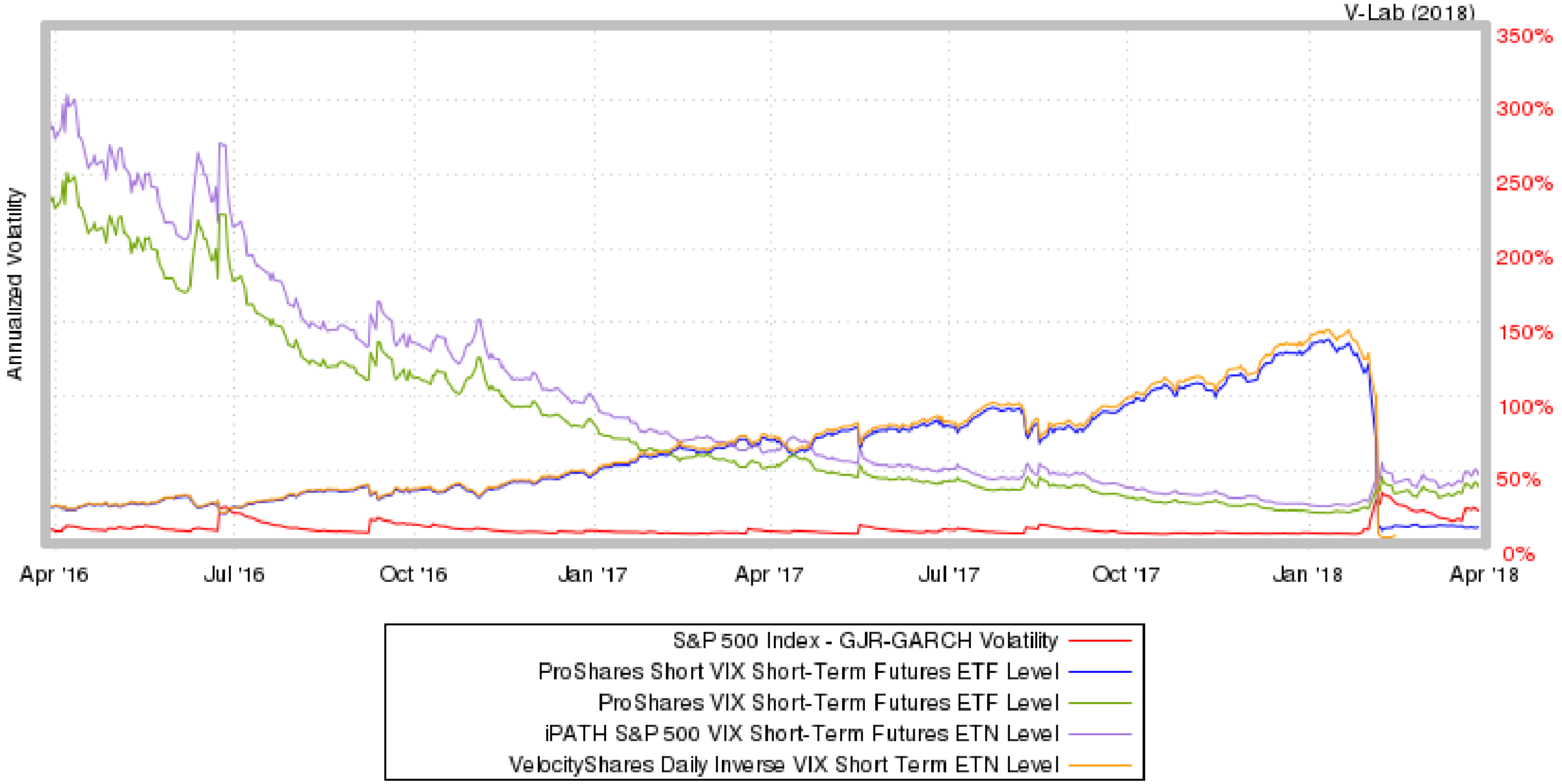
ETFs are stocks of companies that hold the underlying as assets

ETNs are debt of companies. The debt is callable and issuers can fail. The value is based on market prices of securities, VIX futures

ETNs can be long, short or levered. They can depend upon short term futures, medium term futures or long term futures.

DID THESE DERIVATIVES CAUSE THIS HIGH VOLATILITY?


V-Lab (2018)
Annualized Volatility
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
Jul '13
Jan '14
Jul '14
Jan '15
Jul '15
Jan '16
Jul '16
Jan '17
Jul '17
Jan '18
S&P 500 Index - GJR-GARCH Volatility
CBOE Volatility Index Level
iPATH S&P 500 VIX Mid-Term Futures ETN Level
VelocityShares Daily Inverse VIX Medium Term ETN Level


V-Lab (2018)
Annualized Volatility
350%
300%
250%
200%
150%
100%
50%
0%
Apr '16
Jul '16
Oct '16
Jan '17
Apr '17
Jul '17
Oct '17
Jan '18
Apr '18
S&P 500 Index - GJR-GARCH Volatility
ProShares Short VIX Short-Term Futures ETF Level
ProShares VIX Short-Term Futures ETF Level
iPATH S&P 500 VIX Short-Term Futures ETN Level
VelocityShares Daily Inverse VIX Short Term ETN Level

WHAT IS THE EXPLANATION FOR THIS?

Rising interest rates make stocks overvalued. Volatility in response to news is natural. Further volatility in response to threatened trade war is also natural.

The collapse of XIV is result of the rapid rise in volatility. It is often said that selling volatility is a profitable short career.

The ETNs were called on Feb 5 and billions of $ disappeared.

Credit Suisse, the issuer, was unable to hedge the dramatic change in volatility.

DID XIV CREATE THE VOLATILITY AND MARKET COLLAPSE?

I don’t think so although hedging by the issuers may have accelerated the decline.

Real unanticipated events occurred.

The high volatility continued after the demise of XIV.

The volatility extended to Europe and South America where these products were not traded.

SRISK FOR INSURANCE

THE ISSUE

There are important accounting characteristics of insurance companies, particularly life insurance companies.

Premiums are accumulated in investment funds such as variable annuities. These can be withdrawn often with penalties, and have payouts often at guaranteed levels.

These are reported in separate accounts which appear as both assets and liabilities. An estimate of the value of the guarantees is also recorded as a liability.

Including separate accounts as assets which require capital may overstate the need for capital. However ignoring them will understate the need for precautionary capital.

ANALYSIS

What is the right capital ratio for insurance companies?

Typical capital ratios in calm times when separate accounts are included are 6% and when separate accounts are excluded are 12% .

When 40% are included we get capital ratios of about 8% which is now the default on V-LAB.

Users can set this percentage anywhere between 0 and 100%.

INCLUDING SEPARATE ACCOUNTS

Systemic Risk Rankings for Apr 20, 2018 ☐ **View changes**

Institution	SRISK%	RNK ▲	SRISK ($ m)	LRMES	Beta	Cor	Vol	Lvg
Citigroup Inc	18.62	1	47,771.0	46.52	1.23	0.65	28.40	10.42
Prudential Financial Inc	15.85	2	40,669.4	48.40	1.30	0.71	26.70	18.14
MetLife Inc	10.69	3	27,419.4	43.78	1.13	0.66	24.26	14.43
Goldman Sachs Group Inc/The	9.93	4	25,489.0	48.02	1.28	0.73	28.71	10.31
Morgan Stanley	8.38	5	21,509.1	55.51	1.59	0.72	33.88	8.84
Lincoln National Corp	5.63	6	14,442.0	53.38	1.49	0.71	30.17	17.89
Voya Financial Inc	4.92	7	12,615.6	45.44	1.19	0.63	22.68	24.78
Bank of America Corp	4.36	8	11,198.8	46.07	1.21	0.62	32.30	7.65
Principal Financial Group Inc	4.16	9	10,666.0	46.62	1.23	0.72	26.52	14.75
JPMorgan Chase & Co	3.57	10	9,149.0	49.02	1.32	0.72	29.55	7.16

EXCLUDING SEPARATE ACOUNTS

Systemic Risk Rankings for Apr 20, 2018 ☐ **View changes**

Institution	SRISK%	RNK ▲	SRISK ($ m)	LRMES	Beta	Cor	Vol	Lvg
Citigroup Inc	26.90	1	47,771.0	46.52	1.23	0.65	28.40	10.42
Goldman Sachs Group Inc/The	14.35	2	25,489.0	48.02	1.28	0.73	28.71	10.31
Morgan Stanley	12.11	3	21,509.1	55.51	1.59	0.72	33.88	8.84
Prudential Financial Inc	9.09	4	16,140.1	48.40	1.30	0.71	26.70	11.38
Bank of America Corp	6.31	5	11,198.8	46.07	1.21	0.62	32.30	7.65
MetLife Inc	6.21	6	11,019.3	43.78	1.13	0.66	24.26	10.26
JPMorgan Chase & Co	5.15	7	9,149.0	49.02	1.32	0.72	29.55	7.16
Wells Fargo & Co	4.96	8	8,809.2	45.96	1.20	0.65	30.93	7.64
Lincoln National Corp	3.95	9	7,009.8	53.38	1.49	0.71	30.17	11.96
Voya Financial Inc	3.61	10	6,407.2	45.44	1.19	0.63	22.68	16.17

INCLUDING 40%

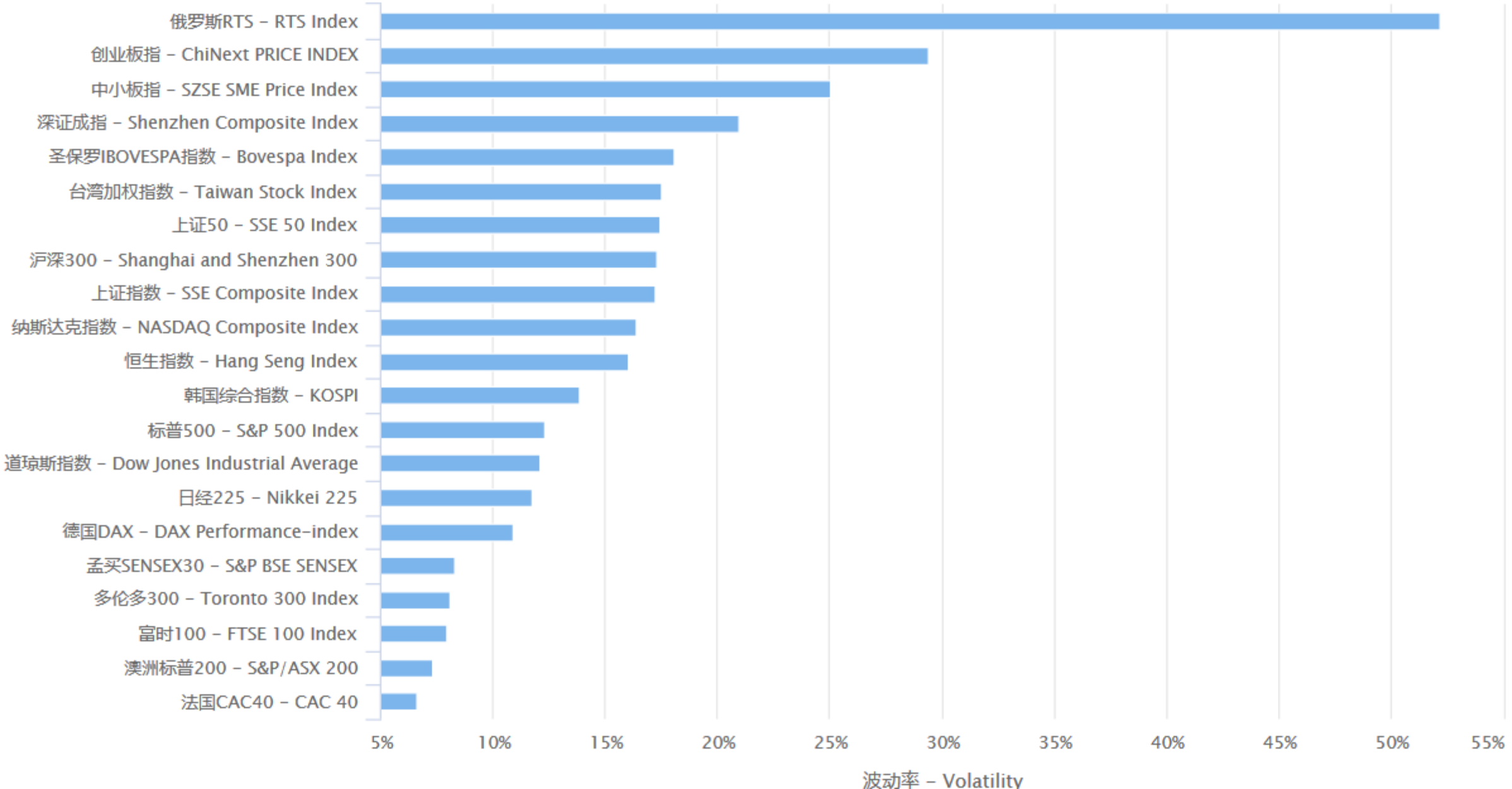
Systemic Risk Rankings for Apr 20, 2018 ☐ **View changes**

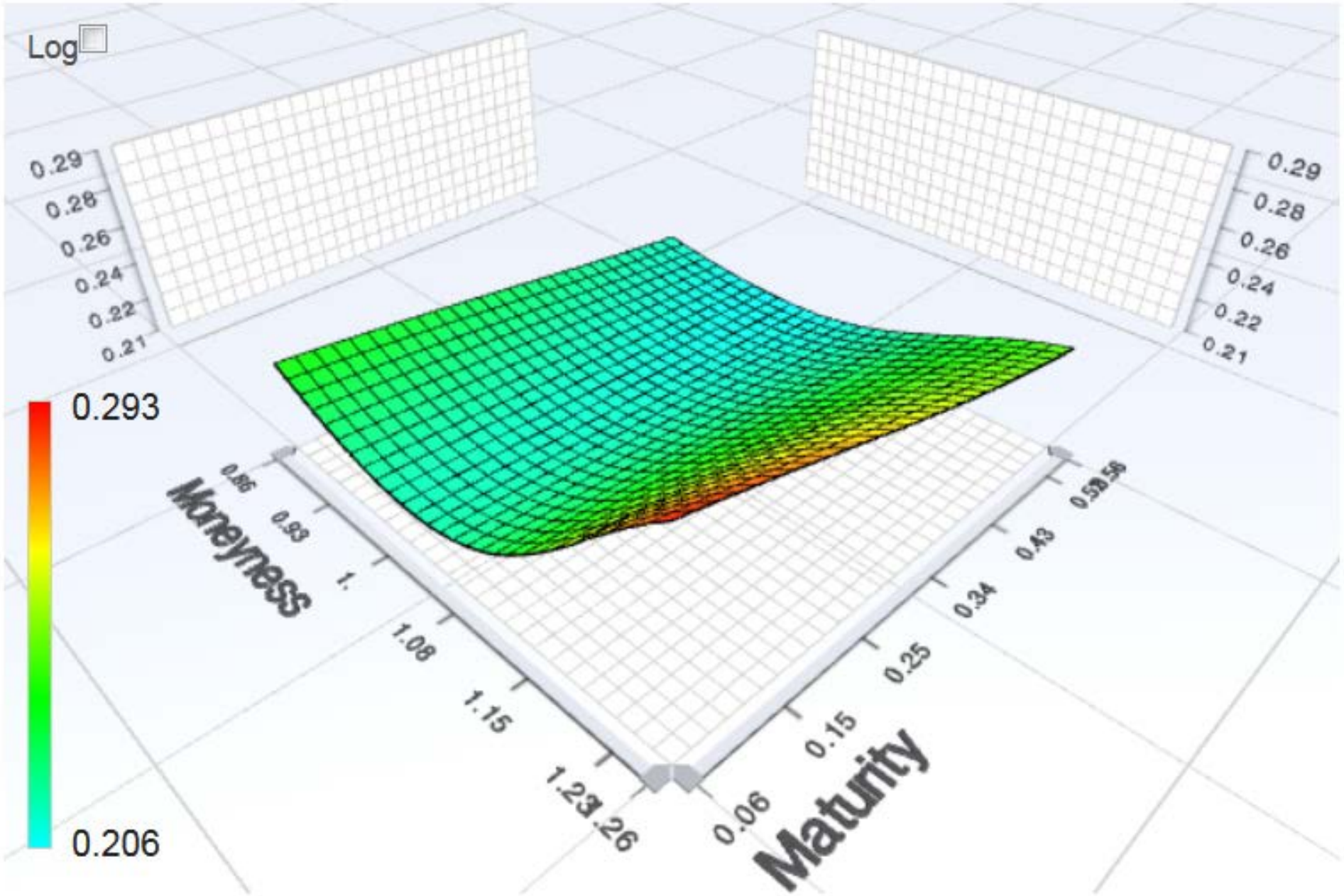
Institution	SRISK%	RNK ▲	SRISK ($ m)	LRMES	Beta	Cor	Vol	Lvg
Citigroup Inc	23.48	1	47,771.0	46.52	1.23	0.65	28.40	10.42
Prudential Financial Inc	12.76	2	25,951.8	48.40	1.30	0.71	26.70	14.08
Goldman Sachs Group Inc/The	12.53	3	25,489.0	48.02	1.28	0.73	28.71	10.31
Morgan Stanley	10.57	4	21,509.1	55.51	1.59	0.72	33.88	8.84
MetLife Inc	8.64	5	17,579.4	43.78	1.13	0.66	24.26	11.93
Bank of America Corp	5.50	6	11,198.8	46.07	1.21	0.62	32.30	7.65
Lincoln National Corp	4.91	7	9,982.7	53.38	1.49	0.71	30.17	14.33
JPMorgan Chase & Co	4.50	8	9,149.0	49.02	1.32	0.72	29.55	7.16
Voya Financial Inc	4.37	9	8,890.6	45.44	1.19	0.63	22.68	19.61
Wells Fargo & Co	4.33	10	8,809.2	45.96	1.20	0.65	30.93	7.64

LINKS TO VINSIGHT

波动率排名 – Volatility Ranking

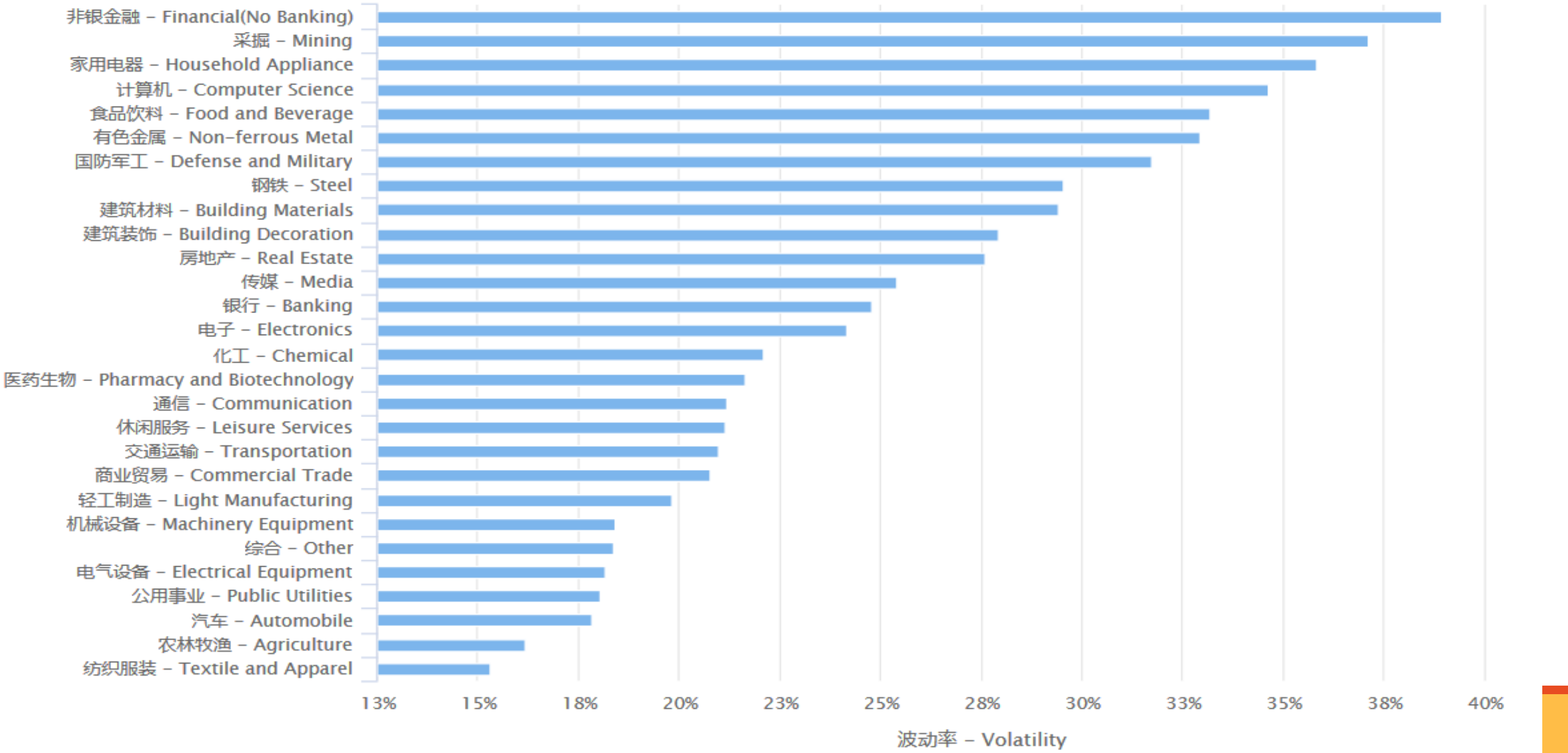
(点击柱状图查看历史数据 – click the bar to view history)



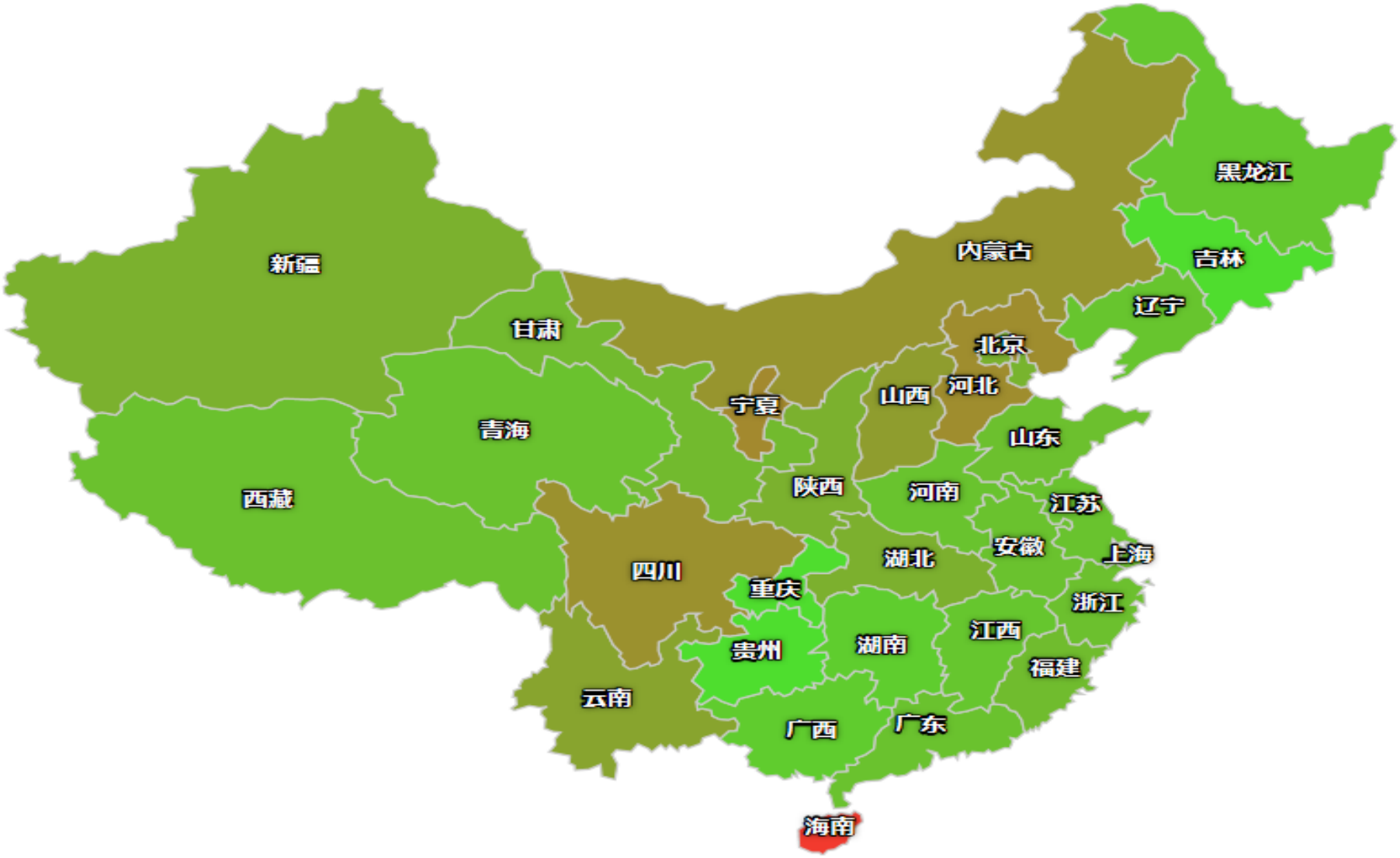

Log
0.29
0.28
0.26
0.24
0.22
0.21
0.293
0.206
Moneyness
0.86
0.93
1.
1.08
1.15
1.23
1.26
Maturity
0.06
0.15
0.25
0.34
0.43

波动率排名 – Volatility Ranking

(点击柱状图查看历史数据 – click the bar to view history)



中国内地地区波动率 – Mainland China Volatility



HOW MUCH IS TOO MUCH?

MANUSCRIPT BY

ROB ENGLE AND TIANYUE RUAN

SRISK

SRISK IS A MEASURE OF SYSTEMIC RISK FOR FINANCIAL INSTITUTIONS. IT MEASURES UNDERCAPITALIZATION USING EQUITY AND ACCOUNTING DATA AND IS A FUNCTION OF SIZE, LEVERAGE AND INTERCONNECTEDNESS OR RISK. IT IS A STRESS TEST BASED ON PUBLICLY AVAILABLE INFORMATION.

IF SRISK IS HIGH RELATIVE TO THE STOCK OF FINANCIAL ASSETS, THEN DELEVERAGING WILL BEGIN. IT MAY LEAD TO CREDIT RESTRICTION AND ULTIMATELY A FINANCIAL CRISIS.

WHAT IS THE CAPACITY OF A COUNTRY TO MANAGE UNDERCAPITALIZATION AND WHAT IS THE PROBABILITY OF A CRISIS?

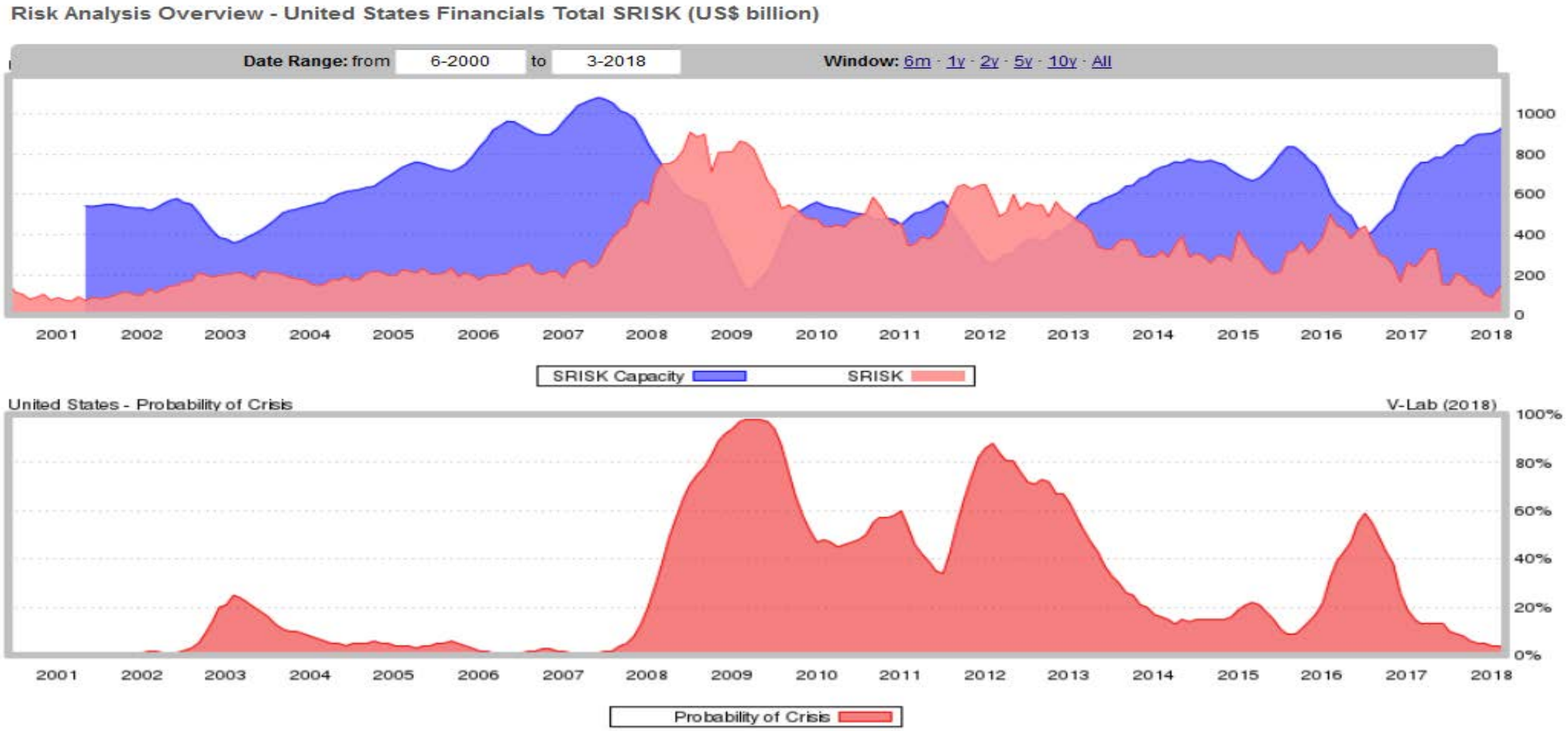
RESULTS

The paper estimates for 23 industrialized countries a panel Tobit model explaining the Romer and Romer(2017) crisis measure as a function of SRISK/Total Assets and country fixed effects.

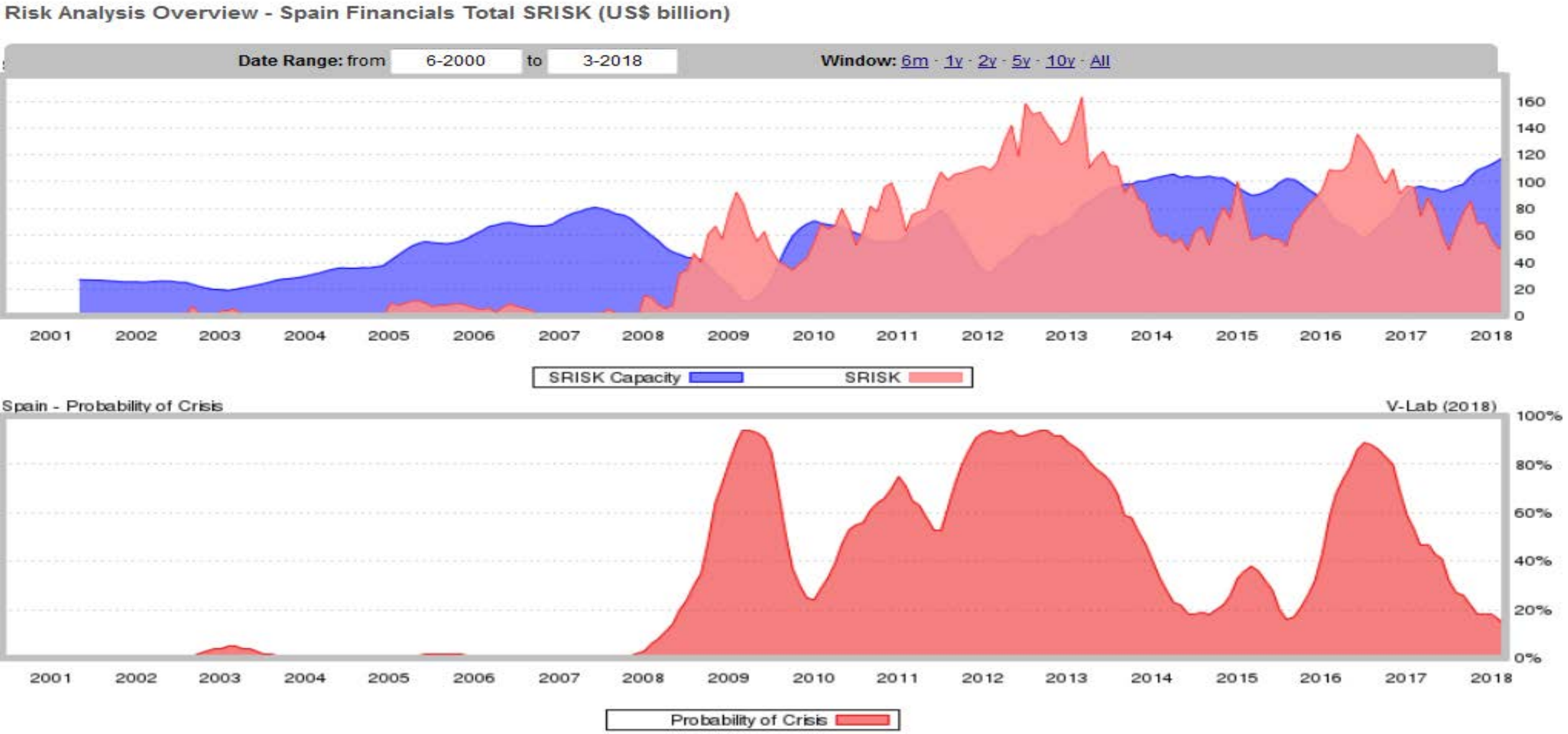
The result incorporates two externalities. The risk of one firm will depend upon the undercapitalization of other firms in the same country.

The risk of one country will depend upon the undercapitalization of all other countries.

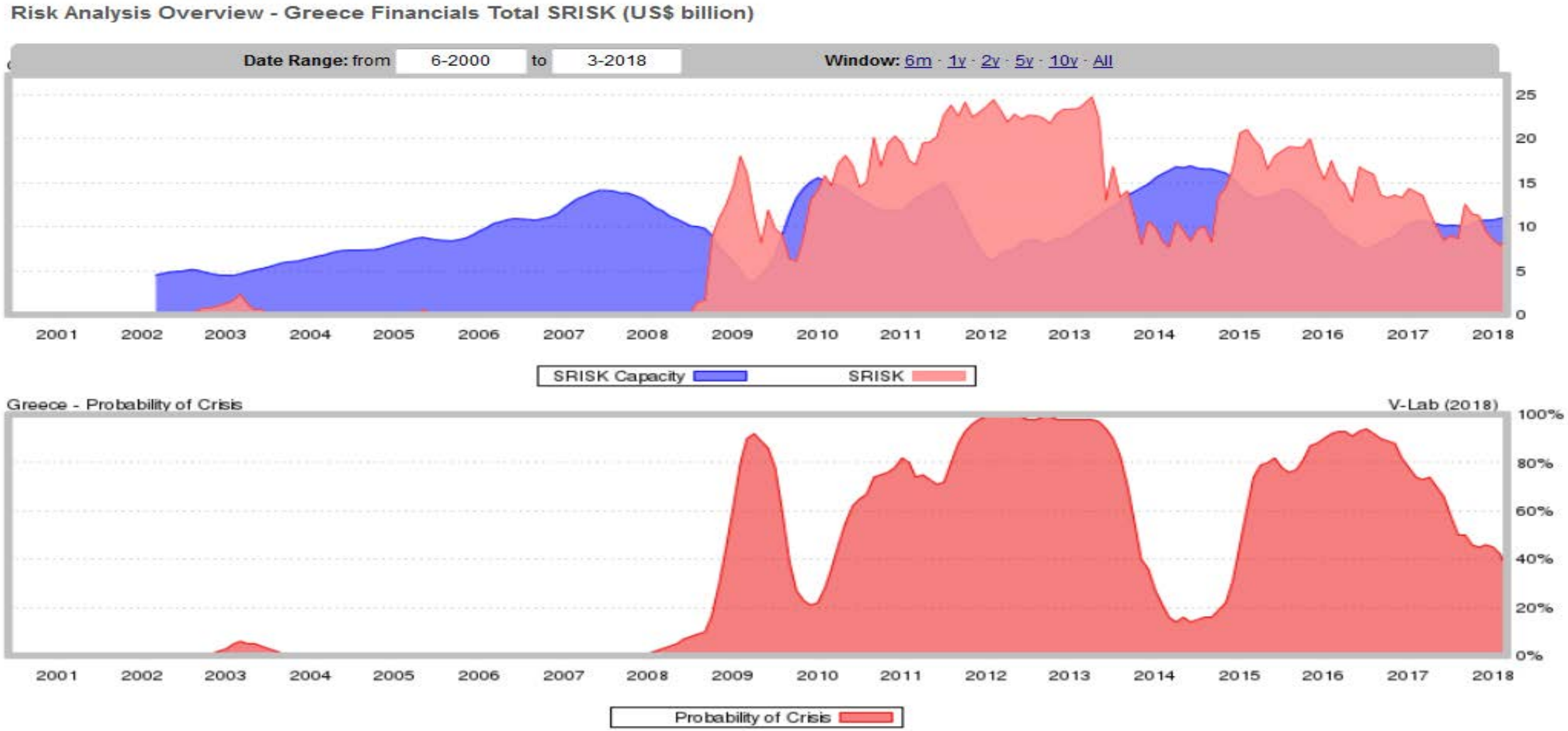
US SRISK Capacity and Probability of Crisis



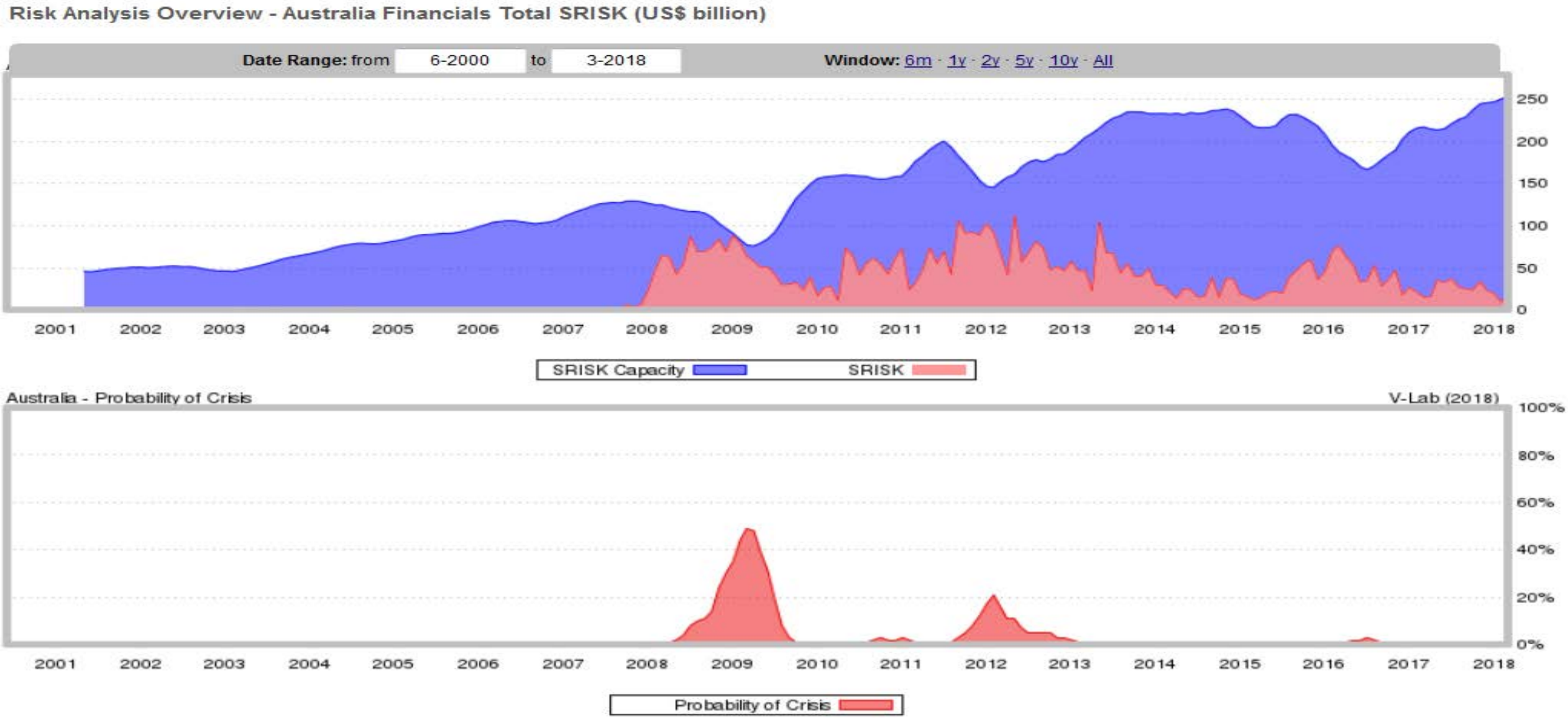
SPAIN SRISK Capacity and Probability of Crisis



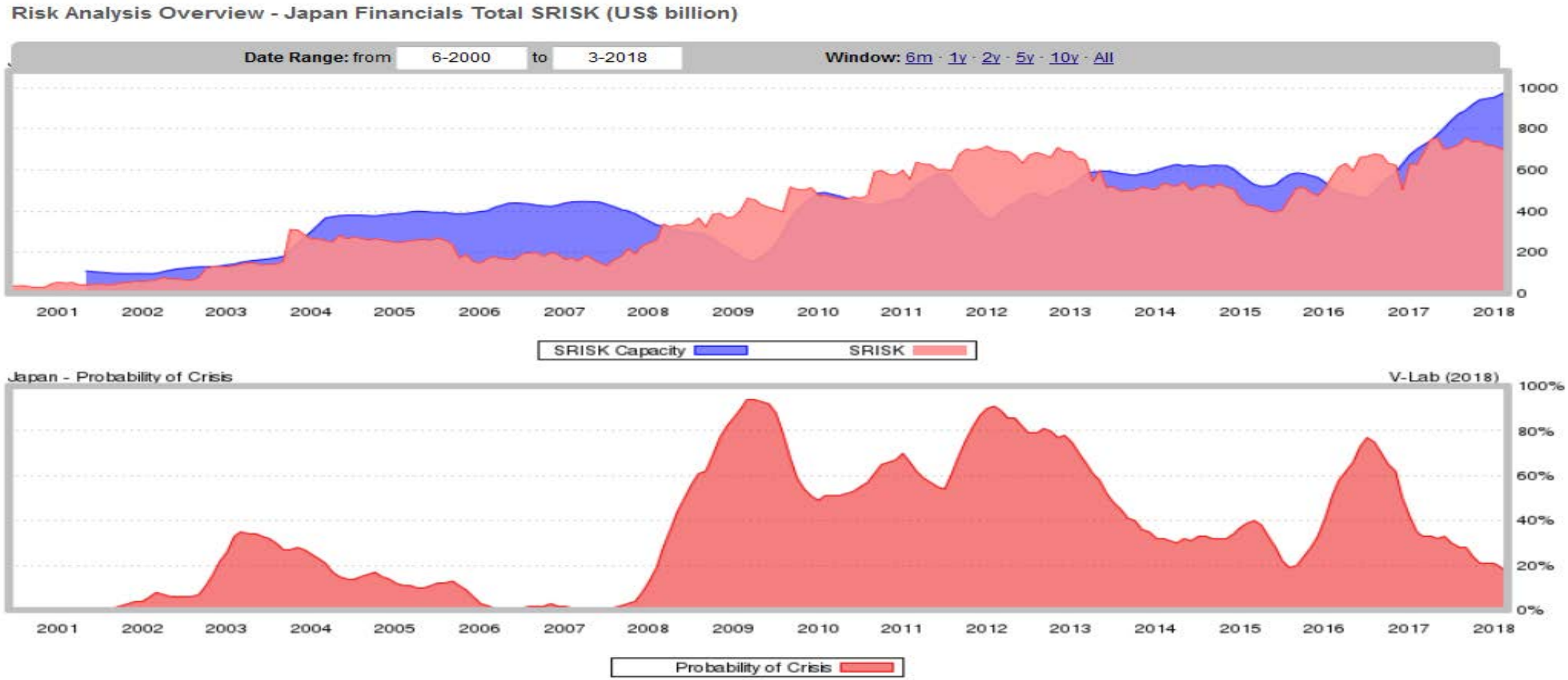
GREECE SRISK Capacity and Probability of Crisis



AUSTRALIA SRISK Capacity and Probability of Crisis



JAPAN – SRISK, CAPACITY, PROBABILITY



A FINANCIAL APPROACH TO CLIMATE RISK

NEW INITIATIVE of the VOLATILITY INSTITUTE
FIND AND EVALUATE
HEDGE PORTFOLIOS AND MAKE THIS PUBLIC

PRINCIPLE INVESTIGATORS: JOHANNES STROEBEL AND MYSELF

WITH HEEBUM LEE AND KONHEE CHANG

IN COLLABORATION WITH BRYAN KELLY AND STEFANO GIGLIO AT YALE

SUPPORTED BY GENEROUS GRANTS FROM:

GLOBAL RISK INSTITUTE, TORONTO

NORGES BANK UNDER THE NFI PROGRAM, OSLO

EVALUATION OF ENVIRONMENTAL FUNDS
VLAB.STERN.NYU.EDU/WELCOME/CLIMATE

GREEN ETFs

- ALTERNATIVE ENERGY
  - WIND
  - SOLAR
  - NUCLEAR
- LOW CARBON

MORNINGSTAR SELECTED FUNDS

- LOW EXPOSURE TO FOSSIL RESERVES
- CARBON FOOTPRINT < .5*SP500
- HIGH RANKING ON E MEASURE OF ESG
- INTERNATIONAL SUSTAINABLE

ALTERNATIVE ENERGY ETFs (RANKED BY 3Y RETURN)

Climate Risk

Last Update: April 27, 2018 at 12:46:04 AM GMT

Category: Alternative Energy Time period: 1Y | 3Y | 5Y | Max | Exp. Weight

Benchmark	Return	Vol	Sharpe Ratio
iShares MSCI EAFE ETF	4.51%	15.20%	0.12
SPDR S&P 500 ETF Trust	10.03%	13.23%	0.56
SPY:US - XLE:US	9.84%	15.69%	0.63
Stranded Assets	4.28%	16.70%	0.26

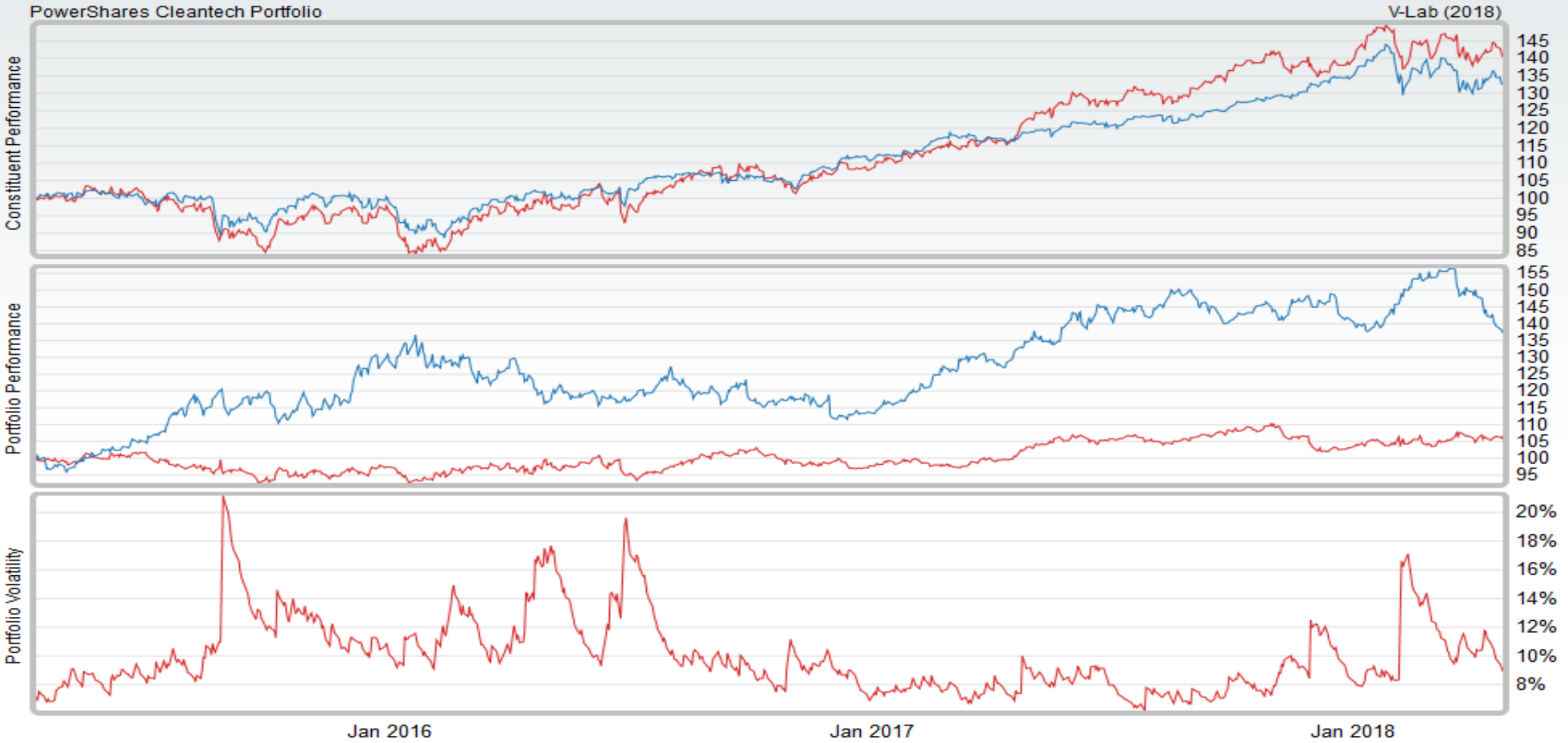
Security	Return	Vol	Sharpe Ratio	Fama-French Factors α	β	SMB	HML
PowerShares Cleantech Portfolio	12.18%	16.00%	0.60	1.65 (0.36)	0.92 (16.30)	0.30 (4.43)	0.08 (1.29)
First Trust Global Wind Energy ETF	10.34%	17.25%	0.45	-6.63 (-0.88)	0.93 (15.24)	-0.10 (-0.93)	0.03 (0.33)
VanEck Vectors Uranium+Nuclear Energy ETF	4.45%	13.94%	0.13	-9.46 (-1.37)	0.51 (13.59)	-0.24 (-3.52)	-0.11 (-1.30)
First Trust NASDAQ Clean Edge Green Energy Index Fund	1.27%	21.04%	-0.06	-11.25 (-1.49)	1.18 (30.79)	0.56 (9.61)	-0.13 (-1.71)
VanEck Vectors Global Alternative Energy ETF	0.18%	19.38%	-0.13	-12.55 (-1.75)	1.07 (15.78)	0.24 (2.60)	0.08 (0.94)
Powershares Global Clean Energy Portfolio	-0.77%	17.71%	-0.19	-12.58 (-1.95)	1.02 (17.91)	0.09 (1.12)	-0.04 (-0.56)
Powershares WilderHill Clean Energy Portfolio	-3.27%	22.34%	-0.26	-18.50 (-2.05)	1.14 (22.13)	0.71 (8.85)	0.07 (0.85)
PowerShares WilderHill Progressive Energy Portfolio	-3.71%	22.84%	-0.28	-16.05 (-2.24)	1.06 (12.12)	0.67 (5.69)	0.80 (9.09)

POWERSHARES CLEANTECH ENERGY APRIL 27 2018

Top 10 Holdings	
ABB Ltd	3.13%
Schneider Electric SE	3.13%
Siemens AG	3.08%
Kingspan Group PLC	3.05%
ANSYS Inc	3.05%
Xylem Inc	3.03%
Intertek Group PLC	3.02%
Sensata Technologies Holding PLC	3.02%
BorgWarner Inc	3.02%
Autodesk Inc	3.01%

POWERSHARES CLEANTECH PORTFOLIO CLIMATE RISK ANALYSIS

COMPARE



Climate Risk

Last Update: March 30, 2018 at 2:20:17 AM GMT

Category: All

Time period: 1Y | 3Y | 5Y | Max | Exp. Weight

Benchmark	Return	Vol	Sharpe Ratio
iShares MSCI EAFE ETF	6.38%	14.47%	0.26
SPDR S&P 500 ETF Trust	13.01%	12.42%	0.84
SPY:US - XLE:US	13.55%	14.40%	0.94
Stranded Assets	17.14%	15.09%	1.14

Security	Return	Vol	Sharpe Ratio	Fama-French Factors			
				α	β	SMB	HML
Akre Focus Fund	15.72%	12.57%	1.05	0.93 (0.43)	0.91 (53.07)	-0.00 (0.00)	-0.03 (-1.04)
First Trust Capital Strength ETF	14.30%	11.71%	1.00	0.19 (0.12)	0.86 (67.52)	-0.16 (-8.57)	-0.08 (-2.73)
PowerShares S&P 500 Quality Portfolio	13.34%	11.38%	0.95	-0.47 (-0.28)	0.85 (42.81)	-0.12 (-5.51)	-0.01 (-0.45)
PRIMECAP Odyssey Stock Fund	14.83%	12.64%	0.97	-1.19 (-0.73)	0.95 (65.12)	0.01 (0.47)	-0.01 (-0.43)
Vanguard FTSE Social Index Fund	14.17%	13.18%	0.88	-2.16 (-2.52)	1.03 (156.16)	-0.10 (-12.44)	-0.04 (-4.14)
PowerShares Cleantech Portfolio	11.58%	15.41%	0.58	-2.62 (-0.71)	0.98 (24.67)	0.24 (5.05)	0.09 (1.85)
First Trust Global Wind Energy ETF	15.23%	17.94%	0.71	-2.87 (-0.42)	0.99 (20.08)	-0.12 (-1.53)	0.05 (0.63)
Polen Growth Fund	15.15%	13.54%	0.93	-3.00 (-1.11)	0.99 (67.71)	-0.18 (-3.94)	-0.40 (-15.44)
Bridgeway Blue-Chip 35 Index Fund	11.99%	12.21%	0.77	-3.87 (-2.54)	0.95 (99.54)	-0.22 (-14.00)	0.04 (2.52)
Oakmark Fund	13.84%	13.59%	0.83	-4.12 (-1.87)	1.01 (30.98)	0.02 (0.62)	0.28 (13.11)
ClearBridge Dividend Strategy Fund	9.48%	10.83%	0.64	-4.24 (-2.36)	0.83 (72.93)	-0.18 (-11.38)	0.06 (2.79)

ALPHA IN FF THREE FACTOR MODEL

Average FF Alpha by Window Length					
Row Labels	1Y	3Y	5Y	EW	Max
Alternative Energy	-2.61	-14.86	-9.36	-13.01	-21.63
Fossil Fuel Free	-6.43	-6.04	-5.69	-5.70	-5.03
High Environmental Scor	-7.48	-8.41	-7.50	-7.50	-4.19
International Sustainable	-2.93	-3.18	-3.24	-3.66	-3.78
Low Carbon	-6.75	-5.60	-4.88	-5.41	-4.39

ARE THESE FUNDS CORRELATED WITH CC?

Security	Return	Vol	Sharpe Ratio	CC Cor	Fama-French Factors			
					α	β	SMB	HML
Gabelli ESG Fund Inc	7.32%	11.78%	0.40	0.18	-6.26 (-2.80)	0.86 (48.57)	0.04 (2.19)	0.02 (0.91)
First Trust NASDAQ Clean Edge Green Energy Index Fund	12.39%	22.98%	0.43	0.16	-5.53 (-0.74)	1.28 (32.33)	0.73 (11.83)	-0.11 (-1.54)
PowerShares Cleantech Portfolio	11.58%	15.41%	0.58	0.16	-2.62 (-0.71)	0.98 (24.67)	0.24 (5.05)	0.09 (1.85)
Powershares WilderHill Clean Energy Portfolio	5.14%	24.55%	0.11	0.14	-15.17 (-1.76)	1.27 (28.79)	0.92 (10.73)	0.08 (0.96)
Powershares Global Clean Energy Portfolio	8.95%	17.80%	0.36	0.14	-6.70 (-1.09)	1.09 (28.28)	0.23 (3.41)	-0.01 (-0.16)
PowerShares WilderHill Progressive Energy Portfolio	-1.47%	20.75%	-0.19	0.13	-16.55 (-2.87)	1.08 (19.04)	0.63 (8.09)	0.75 (10.08)
Vanguard PRIMECAP Core Fund	15.54%	13.26%	0.98	0.13	-4.35 (-1.67)	1.00 (61.85)	-0.05 (-2.13)	-0.11 (-4.73)
First Trust Global Wind Energy ETF	15.23%	17.94%	0.71	0.13	-2.87 (-0.42)	0.99 (20.08)	-0.12 (-1.53)	0.05 (0.63)
Hotchkis and Wiley Value Opportunities Fund	11.25%	13.13%	0.66	0.12	-9.29 (-1.87)	0.98 (17.77)	0.12 (3.00)	0.41 (12.46)
VanEck Vectors Global Alternative Energy ETF	10.54%	20.73%	0.38	0.12	-7.49 (-1.14)	1.23 (29.98)	0.34 (4.56)	0.03 (0.40)
iShares Global Clean Energy ETF	8.08%	21.07%	0.26	0.11	-11.74 (-1.42)	1.15 (26.00)	0.09 (0.96)	0.02 (0.22)

What is in their future?