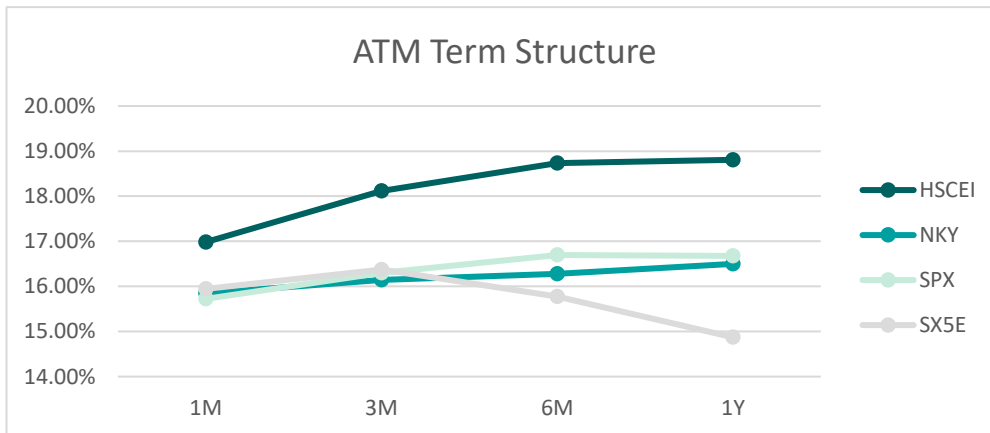
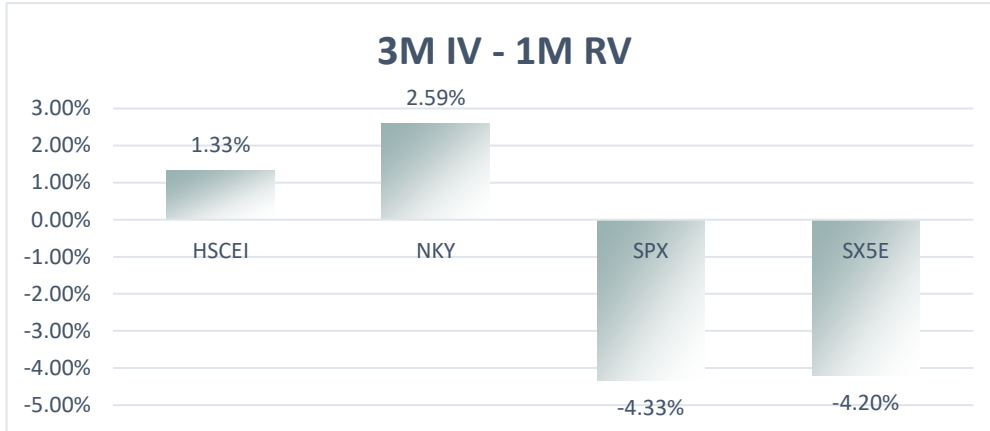


Equity Indices Overview

Date
08/20/2019

Index Name	3M IV - 1M RV	1M	3M	6M	1Y
HSCEI	1.33%	16.98%	18.12%	18.73%	18.81%
NKY	2.59%	15.85%	16.14%	16.28%	16.50%
SPX	-4.33%	15.72%	16.30%	16.70%	16.68%
SX5E	-4.20%	15.94%	16.37%	15.78%	14.87%



Index Name	3M ATM Vol		3M IV - 1M RV	
	Current	1y z-score	Current	1y z-score
HSCEI	18.12%	-0.69	1.33%	-0.22
NKY	16.14%	-0.16	2.59%	0.69
SPX	16.30%	0.52	-4.33%	-1.10
SX5E	16.37%	1.00	-4.20%	-2.29

Index Name	3M Norm Up Skew		3M Norm Down Skew		3M/12M IV Ratio	
	Current	1y z-score	Current	1y z-score	Current	1y z-score
HSCEI	-5.44%	-0.48	21.18%	2.62	103.82%	0.19
NKY	-13.66%	-1.06	29.22%	0.23	102.21%	-0.21
SPX	-27.87%	-1.13	38.63%	-0.54	102.30%	-0.64
SX5E	-28.84%	-2.30	32.49%	-0.90	90.82%	-1.27

Global Hedging Monitor

Top Movers		
Parameters	Current	1w delta/1y sigma
HSCEI 3M up skew	-5.44%	1.45
NKY 3M/12M IV	102.21%	0.94
HSCEI 3M/12M IV	103.82%	0.81
NKY 3M IV-1M RV	2.59%	0.40
SPX 3M down skew	38.63%	-0.65
SPX 3M IV-1M RV	-4.33%	-1.19
SX5E 3M IV-1M RV	-4.20%	-1.19
SX5E 3M up skew	-28.84%	-1.64

Extreme Parameters		
Parameters	Current	1y z-score
HSCEI 3M down skew	21.18%	2.62
SX5E 3M ATM	16.37%	1.00
NKY 3M IV-1M RV	2.59%	0.69
SPX 3M ATM	16.30%	0.52
SPX 3M up skew	-27.87%	-1.13
SX5E 3M/12M IV	90.82%	-1.27
SX5E 3M IV-1M RV	-4.20%	-2.29
SX5E 3M up skew	-28.84%	-2.30

Index Name	Dividend	Discount Rate	3M 85% IV	3M 95% IV	3M 110% IV	Spot Price
HSCEI	3.37%	2.23%	24.50%	19.78%	17.13%	10,132.80
NKY	4.49%	-0.02%	23.54%	18.34%	13.94%	20,677.20
SPX	1.97%	2.30%	25.60%	19.52%	11.76%	2,900.51
SX5E	1.37%	-0.26%	24.22%	19.05%	11.65%	3,350.23

Index Name	3M 95% Put			3M 95/85% Put Spread		
	Cost	ROP 3M	ROP 12M	Cost	% 85p 1y	% 85p 3y
HSCEI	1.92	0.00	0.00	1.42	0.40	0.13
NKY	1.94	0.00	1.22	1.43	3.57	1.19
SPX	1.77	0.21	7.86	1.21	1.98	0.66
SX5E	1.84	0.00	3.97	1.35	0.00	0.00

Index Name	3M 110/95% Collar			3M 110/95/85% Put Spread Collar		
	Cost	% 110c 1y	% 110c 3y	Cost	Down Skew	Up Skew
HSCEI	1.36	11.51	14.68	0.86	2.54	-0.48
NKY	1.74	2.78	14.81	1.23	0.34	-1.06
SPX	1.63	10.71	4.37	1.07	-0.48	-1.13
SX5E	1.73	13.10	7.41	1.24	-0.57	-2.30

Note:

Cost: Calculated as percentage of Spot price.

ROP: Return on Premium if indices fall to their respective 3m and 12m low at expiration.

ROP = MAX(Strike Price - 3M or 12M Index Low, 0) / Option Price where option price is the direct result of Black-Sholes formula without dividing the Spot Price.

% time 85p capped: % of time indices fell more than -15% over a rolling 3-m period in 1y and 3y.

% time 110c capped: % of time indices rose more than 10% over a rolling 3-m period in 1y and 3y.

Up Skew: (110 Implied Vol - 100 ATM Vol) / 100 ATM Vol

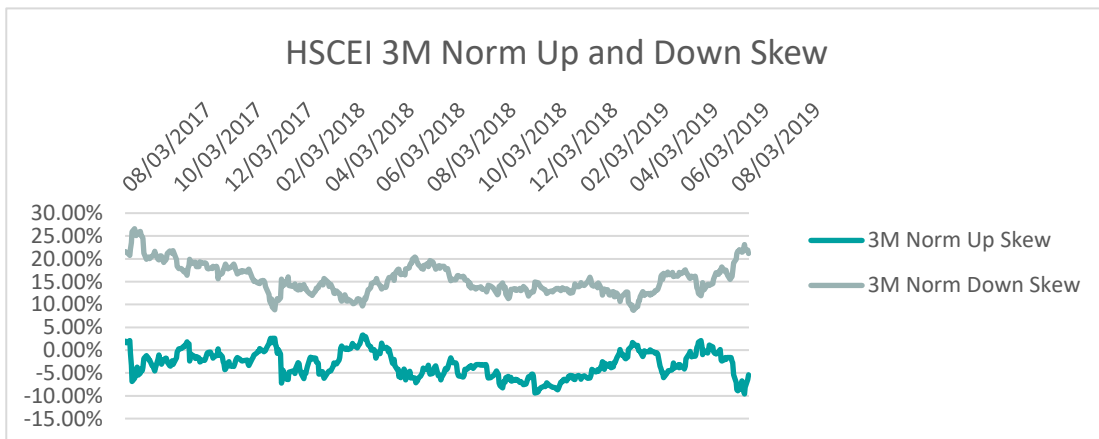
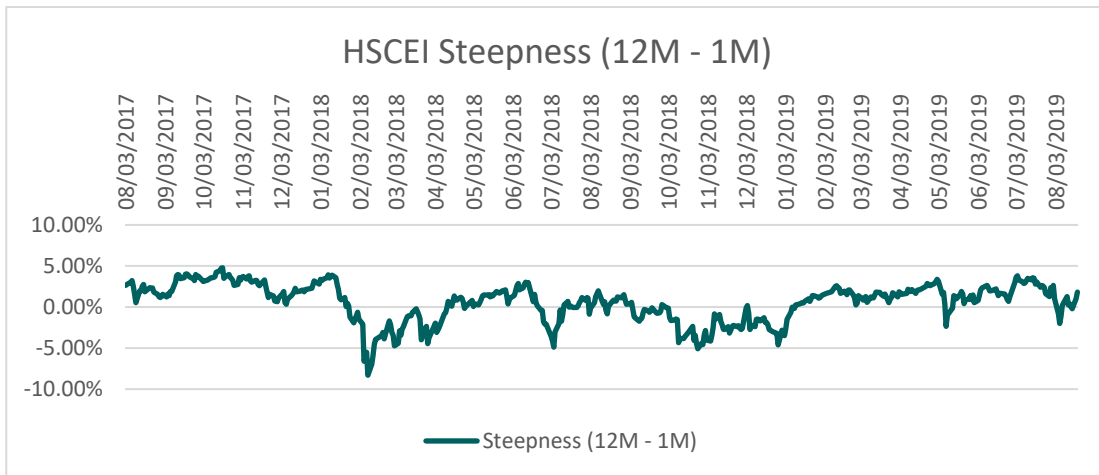
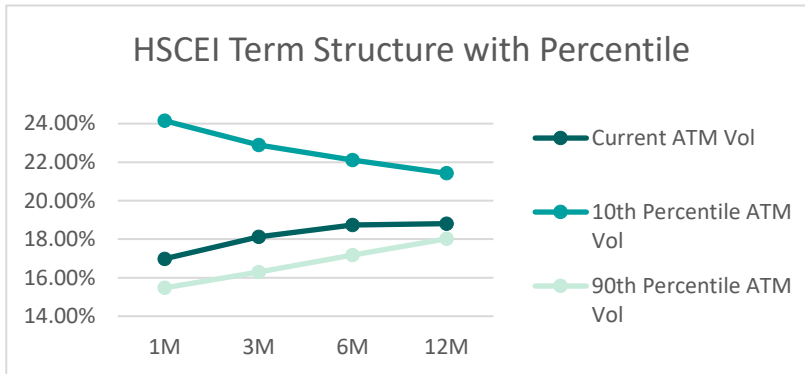
Down Skew: (95 Implied Vol - 100 ATM Vol) / 100 ATM Vol

(Up Skew and Down Skew in the above table is calculated as 1y z-score.)

HSCEI Vol Snapshot

Index Name	1M RV	3M ATM IV		3M IV - 1M RV		3M Up Skew	
		Current	1y z-score	Current	1y z-score	Current	1y z-score
HSCEI	16.79%	18.12%	-0.69	1.33%	-0.22	-5.44%	-0.48

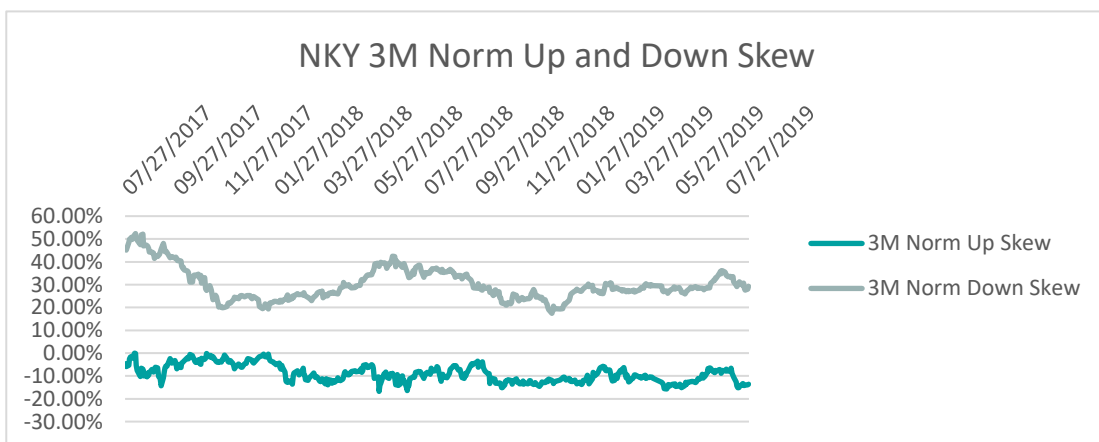
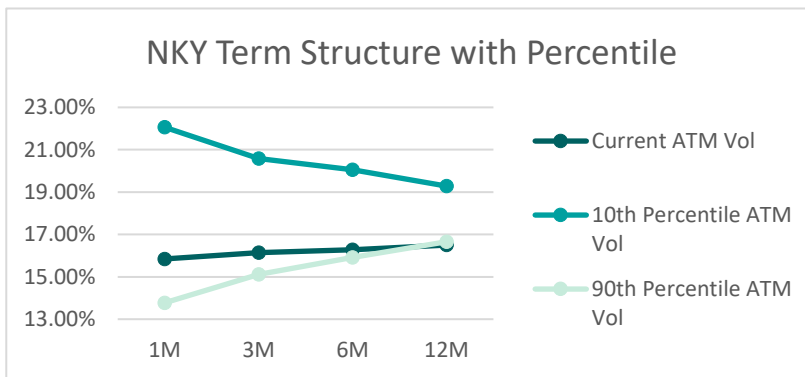
Index Name	3M Down Skew		12M/3M IV		Steepness		
	Current	1y z-score	Current	1y z-score	Current	10%	90%
HSCEI	21.18%	2.62	103.82%	0.19	1.82%	-2.73%	2.54%



NKY Vol Snapshot

Index Name	1M RV	3M ATM IV		3M IV - 1M RV		3M Up Skew	
		Current	1y z-score	Current	1y z-score	Current	1y z-score
NKY	13.56%	16.14%	-0.16	2.59%	0.69	-13.66%	-1.06

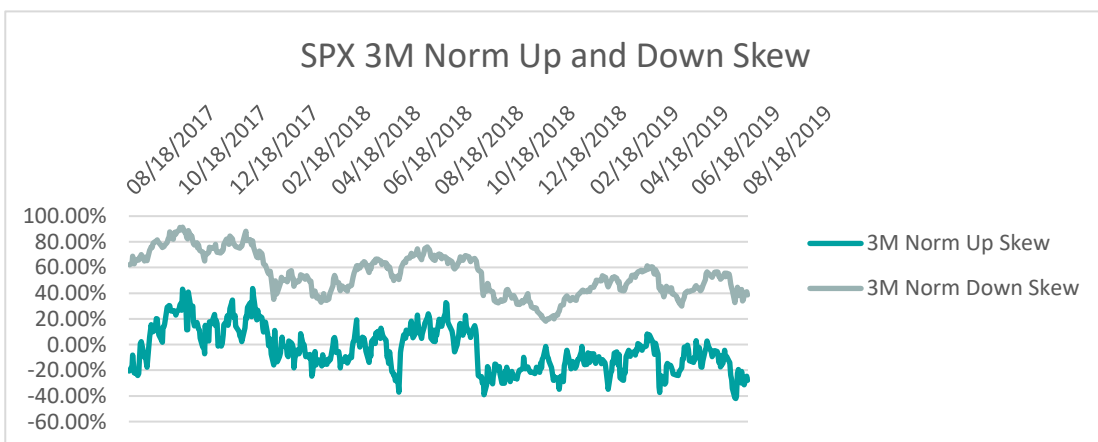
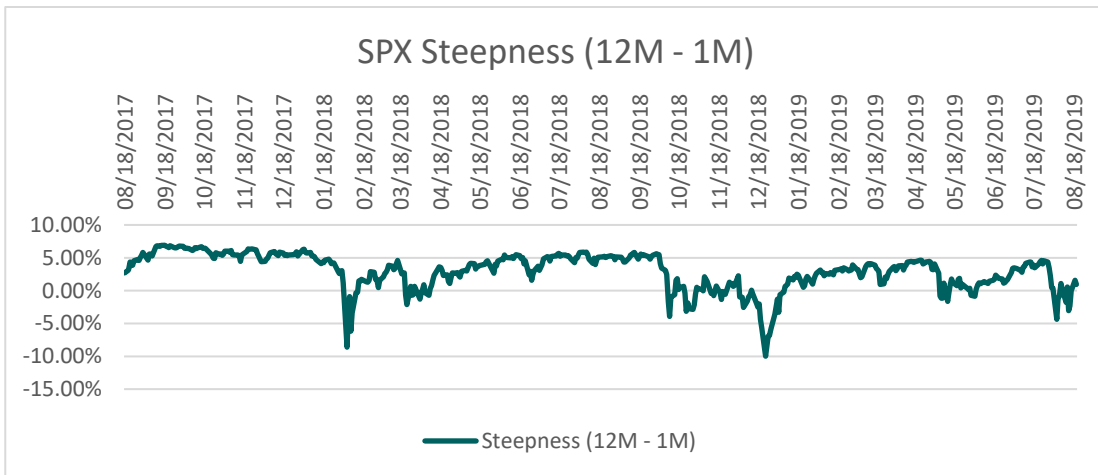
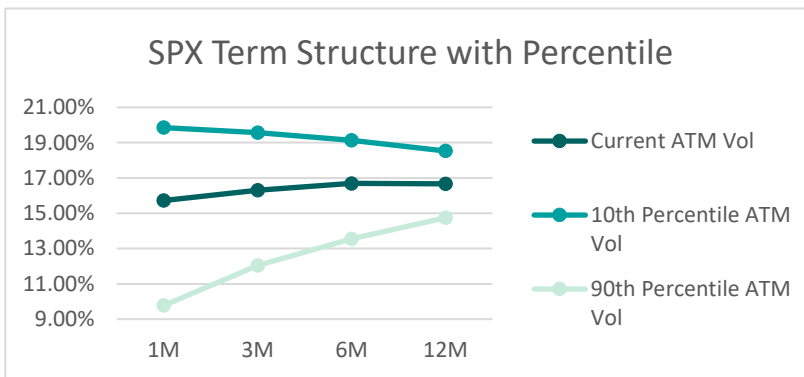
Index Name	3M Down Skew		12M/3M IV		Steepness		
	Current	1y z-score	Current	1y z-score	Current	10%	90%
NKY	29.22%	0.23	102.21%	-0.21	0.65%	-2.77%	2.88%



SPX Vol Snapshot

Index Name	1M RV	3M ATM IV		3M IV - 1M RV		3M Up Skew	
		Current	1y z-score	Current	1y z-score	Current	1y z-score
SPX	20.64%	16.30%	0.52	-4.33%	-1.10	-27.87%	-1.13

Index Name	3M Down Skew		12M/3M IV		Steepness		
	Current	1y z-score	Current	1y z-score	Current	10%	90%
SPX	38.63%	-0.54	102.30%	-0.64	0.95%	-1.32%	4.96%



SX5E Vol Snapshot

Index Name	1M RV	3M ATM IV		3M IV - 1M RV		3M Up Skew	
		Current	1y z-score	Current	1y z-score	Current	1y z-score
SX5E	20.57%	16.37%	1.00	-4.20%	-2.29	-28.84%	-2.30

Index Name	3M Down Skew		12M/3M IV		Steepness		
	Current	1y z-score	Current	1y z-score	Current	10%	90%
SX5E	32.49%	-0.90	90.82%	-1.27	-1.07%	-2.60%	3.20%

