

TPA-RRG Report

- **What is hot and what is not.**

TPA-RRG captures the inevitable movement of stocks into and out of favor.

- **Scores and ranking**

Clients can quickly see which stocks are showing the best and worst relative strength characteristics. TPA found that using RRG's was very beneficial, but cumbersome, so we simplified the process by creating a score for each stock and sector.



- **The best of both worlds – RRG & TPA**

Now, clients can use TPA-RRG scores and rankings to identify stocks that are not only moving into favor, but are also technically positive.



- **TPA-RRG analyzes every stock in the Russell 1000 and 25 major sector & subsector ETFs**

Find more in-depth explanations and links to instructional videos below.

THE REPORT

Market

The S&P500 is definitely on a bullish trend with no cracks evident.



Sector, Top 20 and Bottom 20

Most of the underperforming sectors and stocks are interest-rate related: Home Construction, REITs and Utilities.

- Home Construction benefits from lower interest rates due to increased demand as mortgages make home-buying less expensive and lower rates also lower costs for home builders.
- REITs and Utilities are equity substitutes for interest rate securities (bonds). As rates rise, it draws in yield buyers. When rates drop, yield buyers turn to REITs and Utilities as a substitute.

The first and second charts below shows that the 10-Year yield has moved up 22% from 3.6% to 4.4% since the first week in September.

Chart 3, 4, and show that IYR (REITs), ITB (Home Construction), and XLU (Utilities) all severely underperformed as rates rose from early September.

US 10 YEAR YIELD



US 10 YEAR YIELD - ZOOM



RELATIVE PERFORMANCE OF IYR VS S&P500



RELATIVE PERFORMANCE OF ITB VS S&P500



RELATIVE PERFORMANCE OF XLU VS S&P500



TPA-RRG TOP 20 & BOTTOM 20 (table below)

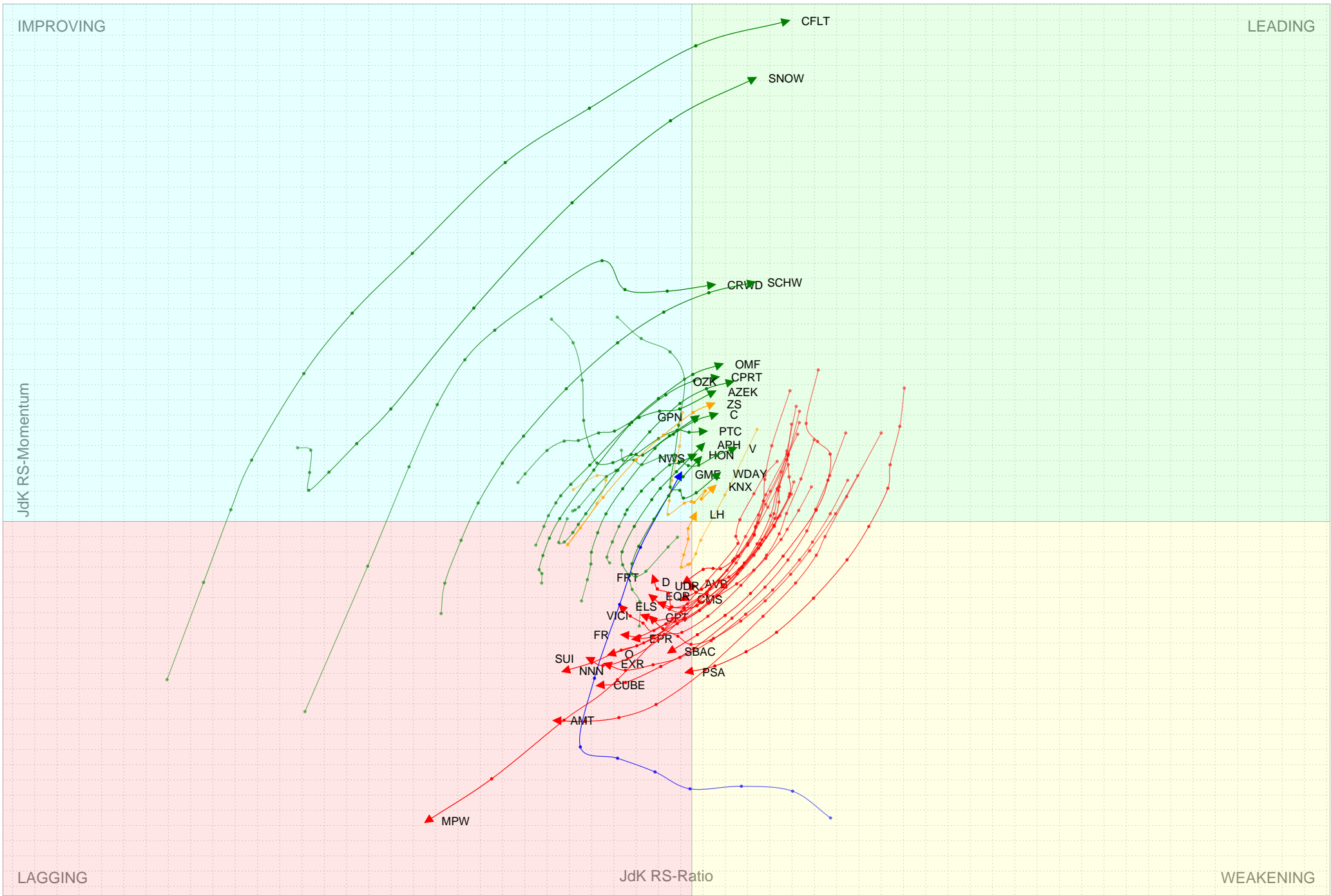
Buy	Prices as of 12/13/24							STOCK	SECTOR	TOTAL
Sell	TOP 20							TPA-RRG	TPA-RRG	TPA-RRG
Code	Name	Last	RRG Ratio	RRG Momentum	Quadrant	Mkt Cap (\$MIL)	TPA Sector	SCORE	SCORE	SCORE
LH	Labcorp Holdings Inc.	232.01	100.15	100.23	Leading	\$19,405	Health Care	11.13	-2.01	9.11
GME	GameStop Corp	27.99	99.48	101.55	Improving	\$12,506	Retail	5.75	2.01	7.76
KNX	Knight-Swift Transportation Holdin	55.43	101.00	101.14	Leading	\$8,974	Transportation	4.45	3.01	7.46
APH	Amphenol Corporation	73.63	100.49	102.51	Leading	\$88,769	Technology	5.36	2.00	7.36
WDAY	Workday Inc	273.67	101.19	101.56	Leading	\$73,070	Tech-Software	5.03	2.02	7.05
NWS	News Corp	31.43	100.35	102.07	Leading	\$17,874	Communication Services	4.99	2.01	6.99
GPN	Global Payments Inc.	114.21	100.23	103.43	Leading	\$29,066	Technology	4.94	2.00	6.94
AZEK	AZEK Company Inc	53.51	100.97	104.26	Leading	\$7,653	Industrial	4.85	2.01	6.86
HON	Honeywell International Inc	227.62	100.10	102.18	Leading	\$148,009	Industrial	4.79	2.01	6.80
CRWD	CrowdStrike Holdings Inc	368.02	100.94	107.78	Leading	\$90,647	Tech-Software	4.61	2.02	6.62
SNOW	Snowflake Inc	167.67	102.79	114.57	Leading	\$55,348	Internet	4.60	2.02	6.62
CFLT	Confluent Inc - Ordinary Shares Cla	30.49	104.27	116.46	Leading	\$10,001	Technology	4.56	2.00	6.56
OMF	OneMain Holdings Inc	55.68	101.29	105.16	Leading	\$6,646	Financial	4.54	2.00	6.55
SCHW	Charles Schwab Corp.	79.54	102.73	107.85	Leading	\$141,554	Financial	4.54	2.00	6.54
PTC	PTC Inc	198.68	100.57	102.97	Leading	\$23,867	Technology	4.53	2.00	6.54
C	Citigroup Inc	71.01	101.05	103.52	Leading	\$134,298	Financial	4.53	2.00	6.53
ZS	Zscaler Inc	198.54	100.93	103.86	Leading	\$30,464	Tech-Software	4.50	2.02	6.52
OZK	Bank OZK	46.79	101.77	104.59	Leading	\$5,308	Financial	4.50	2.00	6.51
CPRT	Copart Inc.	61.23	101.11	104.74	Leading	\$58,997	Industrial	4.48	2.01	6.49
V	Visa Inc	314.74	101.91	102.40	Leading	\$617,215	Technology	4.45	2.00	6.46

Buy	Prices as of 12/13/24							STOCK	SECTOR	TOTAL
Sell	BOTTOM 20							TPA-RRG	TPA-RRG	TPA-RRG
CMS	CMS Energy Corp	67.32	99.59	97.44	Lagging	\$20,114	Utilities	-3.61	-2.02	-5.62
D	Dominion Energy Inc	54.04	99.68	98.00	Lagging	\$45,394	Utilities	-3.81	-2.02	-5.82
MPW	Medical Properties Trust Inc	3.98	88.11	90.14	Lagging	\$2,390	Real Estate	-3.11	-3.02	-6.13
NNN	NNN REIT Inc	42.58	94.29	95.08	Lagging	\$7,985	Real Estate	-3.16	-3.02	-6.18
SUI	Sun Communities Inc.	122.20	95.36	95.49	Lagging	\$15,567	Real Estate	-3.17	-3.02	-6.19
AVB	Avalonbay Communities Inc.	226.42	99.93	97.93	Lagging	\$32,205	Real Estate	-3.20	-3.02	-6.21
ELS	Equity Lifestyle Properties Inc.	67.92	96.82	97.20	Lagging	\$12,976	Real Estate	-3.21	-3.02	-6.23
AMT	American Tower Corp.	197.16	93.89	93.45	Lagging	\$92,131	Real Estate	-3.21	-3.02	-6.23
FR	First Industrial Realty Trust Inc.	52.80	96.93	96.27	Lagging	\$6,988	Real Estate	-3.23	-3.02	-6.25
EXR	Extra Space Storage Inc.	158.20	96.16	95.30	Lagging	\$33,536	Real Estate	-3.24	-3.02	-6.26
FRT	Federal Realty Investment Trust.	114.25	98.27	98.16	Lagging	\$9,707	Real Estate	-3.25	-3.02	-6.27
CUBE	CubeSmart	46.27	95.83	94.61	Lagging	\$10,464	Real Estate	-3.25	-3.02	-6.27
VICI	VICI Properties Inc	31.13	97.82	96.90	Lagging	\$32,816	Real Estate	-3.25	-3.02	-6.27
EQR	Equity Residential Properties Trust	73.28	98.17	97.54	Lagging	\$27,805	Real Estate	-3.26	-3.02	-6.27
EPR	EPR Properties	45.12	97.43	96.13	Lagging	\$3,417	Real Estate	-3.26	-3.02	-6.28
O	Realty Income Corp.	55.34	96.33	95.63	Lagging	\$48,434	Real Estate	-3.27	-3.02	-6.28
UDR	UDR Inc	44.47	98.58	97.31	Lagging	\$14,673	Real Estate	-3.29	-3.02	-6.30
CPT	Camden Property Trust	120.17	98.17	96.84	Lagging	\$12,820	Real Estate	-3.29	-3.02	-6.31
PSA	Public Storage	317.62	99.82	95.05	Lagging	\$55,642	Real Estate	-3.43	-3.02	-6.45
SBAC	SBA Communications Corp	214.28	99.01	95.72	Lagging	\$23,040	Real Estate	-3.50	-3.02	-6.52

Relative Rotation Graph for Top 20 and Bottom 20 is provided below.

Also, use the following link that shows RRG over time - how stocks move in and out of favor over time:

<https://youtu.be/YX7fNLwHPkE>



69.5 70.5 71.5 72.5 73.5 74.5 75.5 76.5 77.5 78.5 79.5 80.5 81.5 82.5 83.5 84.5 85.5 86.5 87.5 88.5 89.5 90.5 91.5 92.5 93.5 94.5 95.5 96.5 97.5 98.5 99.5 100.5 101.5 102.5 103.5 104.5 105.5 106.5 107.5 108.5 109.5 110.5 111.5 112.5 113.5 114.5 115.5 116.5 117.5 118.5 119.5 120.5 121.5 122.5 123.5 124.5 125.5 126.5 127.5 128.5

117.0
116.5
116.0
115.5
115.0
114.5
114.0
113.5
113.0
112.5
112.0
111.5
111.0
110.5
110.0
109.5
109.0
108.5
108.0
107.5
107.0
106.5
106.0
105.5
105.0
104.5
104.0
103.5
103.0
102.5
102.0
101.5
101.0
100.5
100.0
99.5
99.0
98.5
98.0
97.5
97.0
96.5
96.0
95.5
95.0
94.5
94.0
93.5
93.0
92.5
92.0
91.5
91.0
90.5
90.0
89.5
89.0
88.5
88.0

TPA-RRG 25 SECTOR ETFS

TPA-RRG U.S. SECTOR & SUBSECTOR ETFS		12/14/24				
Code	Name	Last	RRG Ratio	RRG Momentum	Quadrant	TPA-RRG SCORE
XME	Metals & Mining	62.03	100.85	102.09	30.41	3.03
IYT	Transportation	70.10	101.29	101.49	37.82	3.01
CLOU	Cloud Computing	25.11	105.05	104.84	63.35	2.03
FDN	Internet	254.16	105.17	103.67	68.77	2.02
IGV	Software	105.77	105.87	103.32	55.41	2.02
XLY	Consumer Discretionary	235.49	104.68	102.25	76.65	2.02
XLE	Energy	89.22	96.83	101.68	32.50	2.01
SOCL	Social Media	44.66	97.69	101.57	59.69	2.01
XRT	Retail	83.27	98.21	101.02	59.57	2.01
XOP	Oil&Gas E&P	135.96	94.22	102.57	41.00	2.01
OIH	Oil Services	283.89	92.11	101.63	40.81	2.01
XLI	Industrial	137.43	101.68	100.38	38.99	2.01
HACK	Cyber Security	76.83	103.18	101.24	64.64	2.01
XLC	Communications	100.94	102.05	101.36	63.77	2.01
XLF	Financials	49.54	103.57	101.20	48.93	2.00
XLK	TECH	239.05	98.97	100.31	57.57	2.00
SMH	SEMI	249.49	95.90	99.23	53.29	-2.01
XLP	Staples	82.04	96.79	98.34	51.24	-2.01
MOO	Agribusiness	70.51	94.96	98.56	42.65	-2.01
PPH	Pharma	87.82	92.96	96.55	33.84	-2.01
XLV	Health Care	140.99	94.05	96.93	30.38	-2.01
ITA	Aerospace & Defense	148.37	100.74	99.07	41.91	-2.01
XLB	Materials	89.23	96.97	98.79	27.84	-2.01
XLU	Utilities	77.64	100.71	98.13	36.30	-2.02
TAN	Solar	35.07	86.16	95.78	43.40	-2.03
IYR	Real Estate	97.61	99.22	97.24	38.67	-3.02
ITB	Home Construction	113.02	99.42	96.86	32.10	-3.04

TPA-RRG U.S. SECTOR & SUBSECTOR ETFs - HISTORY

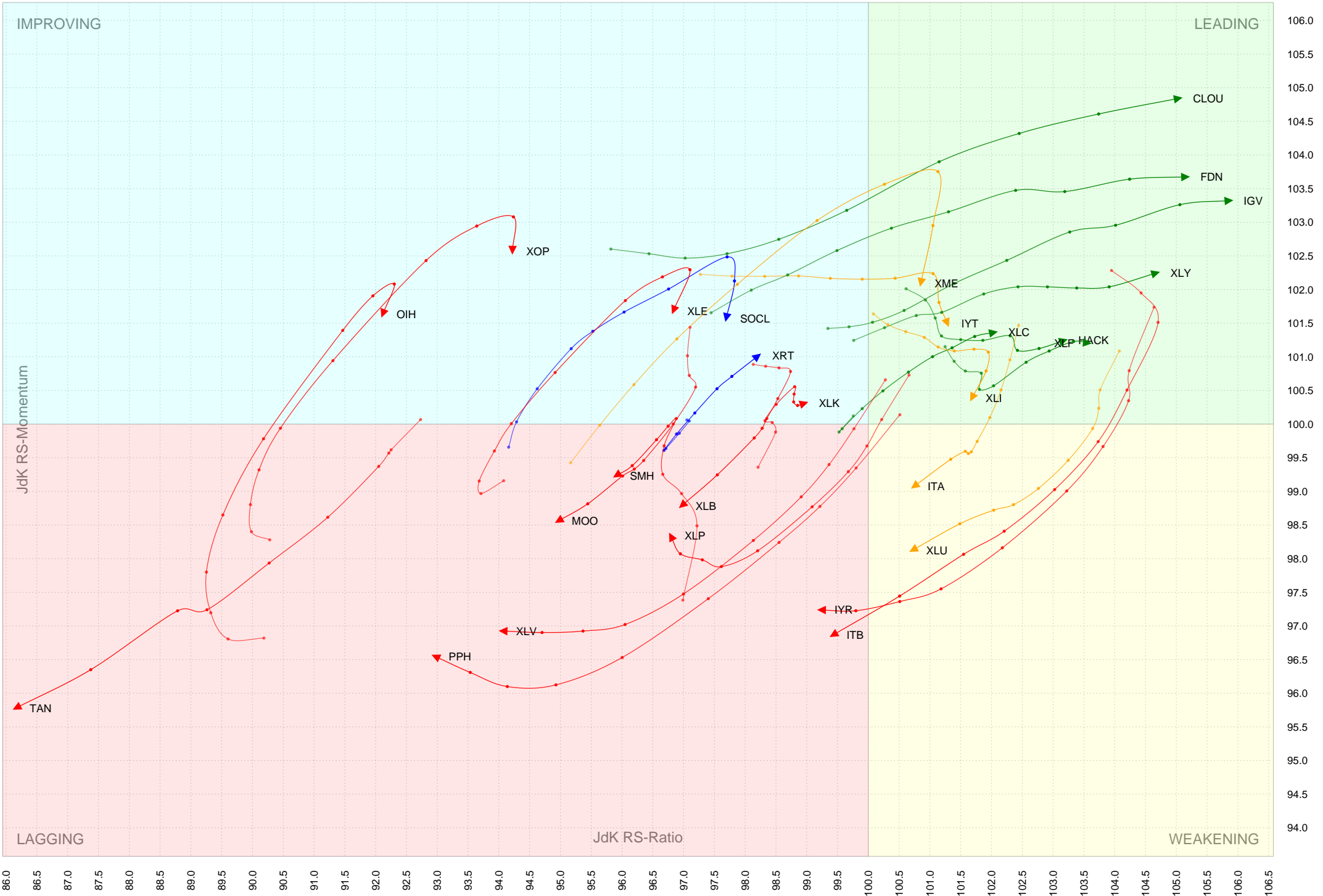
Rank	6/21/24	6/28/24	7/5/24	7/12/24	7/19/24	7/26/24	8/2/24	8/9/24	8/16/24	8/23/24	8/30/24	9/6/24	9/13/24	9/20/24	9/27/24	10/4/24	10/11/24	10/18/24	10/25/24	11/1/24	
Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code
1	XLU	XLK	XLK	XLK	XLK	TAN	IYR	IYR	XLK	XLF	PPH	ITB	ITB	ITB	ITB	XLV	XLV	XLY	XLY	IGV	
2	SOCL	SOCL	SOCL	SOCL	IYR	IYR	TAN	HACK	IYR	ITA	XLI	IYR	IYR	ITA	XLV	XLF	XLP	HACK	IGV	XLY	
3	XLK	SMH	XLU	XLU	TAN	SMH	XLK	IGV	XLY	XLY	ITA	XLV	XLP	XLF	XLP	HACK	XLI	HACK	XLI	HACK	
4	MOO	XLU	TAN	IYR	XLY	XLY	XLV	ITB	XLV	TAN	OIH	PPH	ITA	XLF	PPH	ITB	XLI	IYR	XLI	HACK	
5	TAN	MOO	SMH	SMH	IGV	XLK	PPH	CLOU	IGV	FDN	XLF	XLP	XLP	XLV	XLP	FDN	IYR	XLP	XME	ITB	
6	PPH	XLP	IYR	TAN	SMH	IGV	CLOU	XLV	XLU	XLK	XLE	XLU	PPH	PPH	TAN	IYR	ITB	FDN	FDN	XME	
7	XLP	ITA	XLY	XLY	XLV	PPH	XLY	PPH	XLI	ITB	XLU	XLF	XLF	IYR	IYR	PPH	XLU	XLU	SOCL	FDN	
8	ITA	TAN	XLC	XLB	PPH	XLP	IGV	XLK	ITA	XLI	ITB	XLV	XLI	FDN	HACK	PPH	CLOU	CLOU	SOCL	SOCL	
9	XLY	PPH	XLV	PPH	XRT	XLV	HACK	XLY	XLF	PPH	HACK	CLOU	XLI	IYT	CLOU	CLOU	FDN	ITB	IYT	CLOU	
10	IYR	XLV	HACK	XRT	MOO	MOO	XRT	XLU	TAN	XLU	XLB	MOO	IYT	XLU	HACK	XLY	IGV	ITA	ITB	IYT	
11	XLV	XRT	PPH	OIH	XLP	XLF	ITA	MOO	XRT	SMH	XLP	XLI	XLB	CLOU	ITA	XLU	IYT	IYT	ITA	ITA	
12	XLC	XLY	FDN	IGV	XLB	HACK	XLI	ITA	XOP	CLOU	XOP	IYT	MOO	MOO	XLU	IYT	CLOU	MOO	IYR	XLC	
13	IGV	XLC	ITA	XLB	FDN	XLB	XLV	XLF	PPH	XOP	IGV	XLB	XRT	FDN	XLB	ITB	TAN	SOCL	MOO	XLF	
14	HACK	HACK	CLOU	HACK	OIH	ITA	XLB	XLB	XLE	XRT	XLK	HACK	CLOU	XLB	IYT	XLC	XLY	IGV	XLU	XLB	
15	SMH	CLOU	XRT	IYT	ITA	XRT	MOO	XLP	FDN	OIH	CLOU	XLY	HACK	HACK	IGV	XRT	ITA	XLF	XLF	MOO	
16	CLOU	IYR	IYT	CLOU	HACK	XLI	XLF	XLI	SMH	XLP	SOCL	IGV	IGV	IGV	XLY	MOO	XLC	XLB	XLB	XLK	
17	IYT	IYT	XLP	MOO	IYT	FDN	FDN	SOCL	XME	HACK	SMH	XLC	XLY	XLC	XLI	IGV	MOO	XRT	XLK	TAN	
18	OIH	IGV	MOO	FDN	SOCL	OIH	XLP	FDN	HACK	IYR	XLC	XRT	XLC	XLY	MOO	XLI	XLF	XOP	TAN	XRT	
19	XLE	OIH	IGV	XLP	CLOU	IYT	XME	XLE	XLP	SOCL	FDN	FDN	FDN	XRT	TAN	XRT	XLC	XLC	XLC	XLU	
20	XOP	FDN	OIH	ITA	ITB	XLU	OIH	IYT	IYT	XLV	ITA	XLE	XLE	XLE	XLC	XLB	XLB	XLE	XLE	SMH	
21	XLF	XLF	XLF	ITB	XLU	CLOU	XLE	OIH	SOCL	IYT	XRT	XME	XME	XOP	XME	XLE	XLE	OIH	XRT	XLE	
22	XRT	XLI	XLB	XME	XME	SOCL	XOP	XRT	XLB	XME	XLV	SOCL	XOP	OIH	SOCL	XME	OIH	XLK	XOP	XOP	
23	XLB	XLB	XLI	XLC	XLC	ITB	IYT	XOP	OIH	XLB	IYR	XOP	SOCL	XME	XLE	XLK	XME	TAN	OIH	OIH	
24	XLI	ITB	XME	XLF	XLF	XLC	SOCL	XME	ITB	XLE	IYT	TAN	OIH	TAN	XOP	XOP	XME	XME	SMH	IYR	
25	FDN	XME	ITB	XLI	XLI	XME	ITB	SMH	XLC	XLC	TAN	OIH	TAN	SOCL	OIH	SOCL	XLK	XLV	XLP	XLP	
26	ITB	XLE	XLE	XLE	XLE	XLE	SMH	TAN	CLOU	IGV	MOO	SMH	XLK	XLK	OIH	SOCL	SMH	SMH	XLV	XLV	
27	XME	XOP	XOP	XOP	XOP	XOP	XLC	XLC	MOO	MOO	XME	XLK	SMH	SMH	SMH	SMH	SMH	PPH	PPH	PPH	

TPA-RRG U.S. SECTOR & SUBSECTOR ETFs - HISTORY

Rank	6/21/24	6/28/24	7/5/24	11/8/24	11/15/24	11/22/24	11/29/24	12/6/24	12/13/24	12/20/24	12/27/24	1/3/25	1/10/25	1/17/25	1/24/25	1/31/25	2/7/25	2/14/25	2/21/25	2/28/25	
Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code
1	XLU	XLK	XLK	FDN	FDN	CLOU	CLOU	CLOU	XME												
2	SOCL	SOCL	SOCL	IGV	IGV	XME	XME	XME	IYT												
3	XLK	SMH	XLU	XLY	XLC	FDN	FDN	IYT	CLOU												
4	MOO	XLU	TAN	XLC	XME	IYT	IYT	IGV	FDN												
5	TAN	MOO	SMH	XLI	XOP	XOP	SOCL	FDN	IGV												
6	PPH	XLP	IYR	XME	CLOU	OIH	XOP	XOP	XLY												
7	XLP	ITA	XLY	CLOU	XLE	XLE	IGV	XLY	XLE												
8	ITA	TAN	XLC	MOO	SOCL	IGV	OIH	XLE	SOCL												
9	XLY	PPH	XLV	IYT	XLY	SOCL	XLE	XLF	XRT												
10	IYR	XLV	HACK	XLE	IYT	XLF	XRT	XLC	XOP												
11	XLV	XRT	PPH	XLB	SMH	XLY	XLY	OIH	OIH												
12	XLC	XLY	FDN	SOCL	XLK	HACK	XLF	SOCL	XLI												
13	IGV	XLC	ITA	HACK	HACK	XLC	XLC	HACK	HACK												
14	HACK	HACK	CLOU	XLK	XLB	XRT	HACK	XRT	XLC												
15	SMH	CLOU	XRT	XLF	XLI	XLI	XLI	XLI	XLF												
16	CLOU	IYR	IYT	XRT	XLF	XLK	XLK	XLK	XLK												
17	IYT	IYT	XLP	ITA	ITA	ITA	ITA	ITA	SMH												
18	OIH	IGV	MOO	SMH	XRT	XLB	XLB	XLP	XLP												
19	XLE	OIH	IGV	XLU	XLU	SMH	MOO	SMH	MOO												
20	XOP	FDN	OIH	XOP	MOO	MOO	SMH	XLU	PPH												
21	XLF	XLF	XLF	IYR	ITB	XLU	XLU	PPH	XLV												
22	XRT	XLI	XLB	OIH	TAN	ITB	TAN	XLV	ITA												
23	XLB	XLB	XLI	ITB	OIH	IYR	XLV	MOO	XLB												
24	XLI	ITB	XME	TAN	IYR	TAN	IYR	XLB	XLU												
25	FDN	XME	ITB	XLP	XLP	XLP	ITB	ITB	TAN												
26	ITB	XLE	XLE	XLV	XLV	XLV	PPH	TAN	IYR												
27	XME	XOP	XOP	PPH	PPH	PPH	XLP	IYR	ITB												

Relative Rotation Graph for 27 major sector & subsector ETFs provided below.

Also, use the following link that shows RRG over time - how sectors & subsectors move in and out of favor over time: <https://youtu.be/x54r2rOo2eY>



Click [HERE](#) for the entire Russell 1000 TPA-RRG Score and Rank Report.

What are RRG's?

Julius de Kempnaer developed Relative Rotational Graphs (RRG) in 2004 and thousands of investors use RRG's. *"Relative Rotation Graphs, commonly referred to as RRGs, are a unique **visualization tool for relative strength analysis**. Chartists can use RRGs to analyze the relative strength trends of several securities against a common benchmark, and against each other. The real power of this tool is its ability to plot relative performance on one graph and show true rotation. We have all heard of sector and asset class rotation, but it is hard to visualize this "rotation" sequence on linear charts. **RRGs use four quadrants to define the four phases of a relative trend. True rotations can be seen as securities move from one quadrant to the other over time.**"* - Stockcharts

What are TPA-RRG scores?

TPA recognizes the power of RRG's to highlight stocks and sectors moving in and out of favor, but also notes the shortcoming of having to examine many RRG's to decide where to invest. TPA has developed TPA-RRG Scores to be able to rank stocks and sectors in terms of relative strength. *TPA-RRG scores are constructed to focus on stocks and sectors as they move from negative to positive and positive to negative.* Scoring also allows ranking so investors can focus on the best and worst areas of the market.

How are TPA-RRG scores created?

TPA uses not only the **RS Ratio** and **RS Momentum** of each stock to make its forecast, TPA also uses certain characteristics on each stock's RS to calculate its score. The following measures are used to calculate the TPA-RRG score:

1. **RRG ANGLE** - Represents the current position of the security on the RRG chart based on the points of the compass:
 - 0-90 Degrees = Leading Quadrant
 - 90-180 Degrees = Weakening Quadrant
 - 180-270 Degrees = Lagging Quadrant
 - 270-360 Degrees = Improving Quadrant
2. **RRG DISTANCE** - This number represents how far away the security is from the centre of the RRG chart (ie the benchmark). One of the observations is that higher alpha comes from those components that make bigger arcs around the benchmark. We will ignore those closest to the centre.
3. **RRG ANGLE ROC** - The Angle Rate of Change measures the distance of the angle of the current data point of a security, to the previous data point. The greater the value, the larger the distance between the two data points.
4. **RRG HEADING** - This is the direction that the arrow is pointing to (where the RS is headed), again based on the points of the compass, and is one of the most useful measures:

- 0 degrees = North (up) - positive
 - 45 degrees = Northeast – less positive
 - 90 degrees = East (right) - positive
 - 180 degrees = South (down) - negative
 - 270 degrees = West (left) - negative
5. **RRG VELOCITY** This is the vector difference – or distance – between the last two data points on the line; with the longest having the highest relative momentum:

How investors can use TPA-RRG

1. The Sector analysis lets clients focus on the best and avoid the worst areas of the market
2. TPA-RRG ranks the entire Russell 1000 and provides the Top 20 and Bottom 20 stocks so investors can see the best and worst stocks to make sure they are taking advantage of opportunities and not getting into trouble.
3. We also look at the top and bottom stocks through a standard technical analysis to avoid stocks that are overbought, oversold or at other technical trouble spots.
4. Finally, we provide TPA-RRG Scores and rankings for the stocks in the most used 25 sector and subsector ETFs. This analysis is especially helpful for investors who are focused on specific areas of the market.

You can learn more about RRG's with these links:

[Relative Rotation Graphs \(RRG\) – explanation video](#)

[RRG – written explanation](#)

Included in the Weekly TPA-RRG Report

1. The weekly TPA RRG Report will provide RRG Scores, Rankings, RRG's and a RRG Video for:
 - 25 Major Sector and Subsector ETFs
 - Top 20 & Bottom 20 stocks in the Russell 1000 - based on TPA's RRG and Trend-Range analysis
2. The report will also include:
 - TPA RRG scores and rankings for the *focus stocks* in the 11 major sectors ETFs and 14 major subsectors ETFs. *Provided in a separate PDF*
3. ***Finally, TPA will provide a weekly commentary on TPA-RRG Scores and Rankings***

Turning Point Analytics Disclaimer

Turning Point Analytics (TPA) is only one of many tools that an investor should use to make a final investment decision. TPA is an overlay on top of a client's good fundamental or macro analysis. TPA does not create or provide fundamental analysis. The information in this communication may include technical analysis. Technical analysis is a discipline that studies the past trading history of a security while trying to forecast future price action. Technical analysis does not consider the underlying fundamentals of the security in question and it does not provide information reasonably sufficient upon

which to base an investment decision. Investors should not rely on technical analysis alone while making an investment decision. Before making an investment decision, investors should consider reviewing all publicly available information regarding the security in question, including, but not limited to, the underlying fundamentals of the security and other information which is available in filings with the Securities and Exchange Commission. The information and analysis contained in reports provided by TPA are copyrighted and may not be duplicated or redistributed for any reason without the express written consent of TPA. The information in this communication is for institutional or sophisticated investors only. By accepting this communication, the recipient agrees not to forward, and/or copy the information to any other person, except as permitted, or required by law. TPA does not guarantee accuracy or completeness. TPA is a publisher of technical research and has no investment banking or advisory relationship with any company mentioned in any report. Reports are neither a solicitation to buy nor an offer to sell securities. Past performance is in no way indicative of future results. Opinions expressed are subject to change without notice. TPA will provide, upon request, the details of any past recommendations. TPA's analysis and recommendations should not be used as the sole reason to buy or sell any security. TPA may compensate brokers and intermediaries for sales and marketing services. You understand and acknowledge that there is a very high degree of risk involved in trading securities and/or currencies. The Company, the authors, the publisher, and all affiliates of Company assume no responsibility or liability for your trading and investment results. It should not be assumed that the methods, techniques, or indicators presented will be profitable or that they will not result in losses. Statements, data, and analysis made by TPA or in its publications, are made as of the date stated and are subject to change without notice. TPA and/or its officers and employees may, from time to time acquire, hold, or sell a position in the securities mentioned herein. Upon request, TPA will furnish specific information in this regard. TPA will not be held liable for losses caused by conditions and/or events that are beyond TPA's control, including, but not limited to, war, strikes, natural disasters, new government restrictions, market fluctuations, and communications disruptions.