

Supplementary Materials

Table S1. List of features used to describe the selected time series.

Feature	Description
Price mean	Mean value of scaled time series
Price median	Median value of scaled time series
Price standard deviation	Standard deviation of scaled time series
Price longest strike below mean	The length of the longest consecutive subsequence in each scaled time series that is smaller than the mean
Price longest strike above mean	The length of the longest consecutive subsequence in each scaled time series that is bigger than the mean
Price first location of max	The relative location of maximum value
Price ratio beyond 0.5 sigma	Ratio of values exceeding 0.5 standard deviation
Price ratio beyond 1 sigma	Ratio of values exceeding 1 standard deviation
Price ratio beyond 1.5 sigma	Ratio of values exceeding 1.5 standard deviation
Price ratio beyond 2 sigma	Ratio of values exceeding 2 standard deviations
Price ratio beyond 2.5 sigma	Ratio of values exceeding 2.5 standard deviations
Price ratio beyond 3 sigma	Ratio of values exceeding 3 standard deviations
Price ratio beyond 4 sigma	Ratio of values exceeding 4 standard deviations
Price skewness	Skewness of the scaled time series
Price kurtosis	Kurtosis of the scaled time series
Price count above mean	Number of values above mean value
Price count below mean	Number of values below mean value
Price first location of min	The relative location of minimum value
Price linear “intercept”	Intercept value of the linear least-squares fitting of the scaled time series versus time
Price linear “slope”	Beta coefficient of the linear least-squares fitting of the scaled time series versus time
Price sum values	Sum of scaled time series values

Table S2. Pearson correlation matrix of the min–max scaled prices.

	Alumi- num	Iron ore	Copper	Lead	Tin	Nickel	Zinc	Gold	Platinum	Silver	Crude oil	Aus. Coal	Uranium
Aluminum	1												
Iron ore	0.72	1											
Copper	0.81	0.90	1										
Lead	0.72	0.84	0.93	1									
Tin	0.62	0.85	0.92	0.92	1								
Nickel	0.86	0.71	0.76	0.69	0.56	1							
Zinc	0.77	0.61	0.82	0.81	0.70	0.73	1						
Gold	0.47	0.76	0.86	0.84	0.92	0.44	0.66	1					
Platinum	0.77	0.90	0.91	0.85	0.85	0.76	0.63	0.74	1				
Silver	0.59	0.85	0.90	0.84	0.92	0.56	0.62	0.92	0.85	1			
Crude oil	0.74	0.88	0.90	0.84	0.86	0.69	0.62	0.74	0.94	0.84	1		
Aus. Coal	0.71	0.85	0.86	0.85	0.89	0.56	0.62	0.77	0.82	0.80	0.85	1	
Uranium	0.79	0.76	0.77	0.75	0.61	0.89	0.67	0.50	0.79	0.61	0.73	0.63	1

Table S3. Loadings of original variables.

Variable	PC1	PC2	PC3
Price mean	-0.26	0.24	0.00
Price median	-0.10	0.41	-0.11
Price standard deviation	-0.27	-0.01	0.25
Price longest strike below mean	-0.12	-0.39	0.10
Price longest strike above mean	-0.12	-0.35	-0.18
Price first location of max	-0.16	-0.19	0.21
Price ratio beyond 0.5 sigma	-0.24	-0.28	-0.04
Price ratio beyond 1 sigma	-0.23	0.14	-0.26
Price ratio beyond 1.5 sigma	0.03	0.26	0.45
Price ratio beyond 2 sigma	0.22	0.11	0.25
Price ratio beyond 2.5 sigma	0.28	0.08	0.05
Price ratio beyond 3 sigma	0.27	-0.14	-0.21
Price ratio beyond 4 sigma	0.25	-0.12	-0.20
Price skewness	0.31	-0.07	0.02
Price kurtosis	0.30	-0.07	-0.12
Price count above mean	-0.18	0.09	-0.39
Price count below mean	0.18	-0.09	0.39
Price first location of min	0.00	-0.17	-0.20
Price linear “intercept”	0.15	0.36	-0.19
Price linear “slope”	-0.29	-0.14	0.16
Price sum values	-0.26	0.24	0.00

Table S4. PCA Scores of the different commodities.

Commodity	PC1	PC2	PC3
Aluminum	1.10	5.68	0.03
Coal, Australian	1.49	-0.19	0.17
Copper	-4.79	-0.10	-2.13
Crude oil, average	-1.24	1.73	1.07
Gold	-3.74	-2.93	1.99
Iron ore	1.37	0.02	3.88
Lead	-2.68	-0.98	-1.53
Nickel	6.02	-0.34	-1.02
Platinum	-1.83	2.51	-0.28
Silver	1.07	-1.80	0.50
Tin	-2.64	-1.69	-0.45
Uranium	5.63	-2.49	-1.24
Zinc	0.24	0.59	-0.99