Online Appendix

Table A1: Descriptive statistics of return series (5-min data, high frequency robustness testing)

|          | SSEA    | SSEB    | Oil     | Bitcoin | US dollar | Corn   |
|----------|---------|---------|---------|---------|-----------|--------|
| **Full sample period: July 1, 2019 – April 10, 2020** |         |         |         |         |           |        |
| Mean     | 7.37E-07| -2.16E-05| -6.98E-05| -3.22E-05| 2.15E-06  | 8.54E-06|
| STD      | 0.001   | 0.001   | 0.006   | 0.007   | 4.66E-04  | 0.002  |
| Maximum  | 0.020   | 0.046   | 0.131   | 0.257   | 0.019     | 0.065  |
| Minimum  | -0.091  | -0.103  | -0.140  | -0.506  | -0.014    | -0.055 |
| Skewness | -19.620 | -31.475 | -3.333  | -20.159 | 7.055     | 6.608  |
| Kurtosis | 1212.049| 2551.121| 162.286 | 1820.196| 495.269   | 606.862|
| JB test  | 8.85E+08***| 3.93E+09***| 6.88E+06***| 2.00E+09***| 1.47E+08***| 9.57E+07***|
| **P1: July 1, 2019 – November 16, 2019** |         |         |         |         |           |        |
| Mean     | 6.57E-06| -2.12E-05| 2.44E-06| -3.50E-05| 2.62E-06  | -7.91E-06|
| STD      | 0.001   | 0.001   | 0.006   | 0.006   | 3.28E-04  | 0.001  |
| Maximum  | 0.015   | 0.007   | 0.131   | 0.257   | 0.009     | 0.022  |
| Minimum  | -0.017  | -0.011  | -0.140  | -0.014  | -0.008    | -0.014 |
| Skewness | 0.892   | -1.541  | -0.786  | 9.231   | -2.424    | 2.173  |
| Kurtosis | 103.792 | 39.002  | 246.340 | 633.988 | 241.181   | 75.079 |
| JB test  | 3.02E+06***| 3.88E+05***| 8.35E+06***| 1.19E+08***| 1.69E+07***| 6.19E+05***|
| **P2: November 17, 2019 – December 30, 2019** |         |         |         |         |           |        |
| Mean     | 2.13E-05| 1.90E-06| 8.92E-05| -6.41E-05| -5.80E-06 | -3.92E-06|
| STD      | 0.001   | 0.001   | 0.003   | 0.004   | 2.50E-04  | 0.001  |
| Maximum  | 0.008   | 0.006   | 0.033   | 0.092   | 0.004     | 0.010  |
| Minimum  | -0.004  | -0.008  | -0.033  | -0.079  | -0.005    | -0.004 |
| Skewness | 0.803   | -1.181  | -0.283  | 4.137   | -6.075    | 1.742  |
| Kurtosis | 15.400  | 25.018  | 55.441  | 219.894 | 210.876   | 37.984 |
| JB test  | 1.53E+04***| 4.81E+04***| 1.09E+05***| 4.62E+06***| 4.26E+06***| 7.15E+05***|
| **P3: December 31, 2019 – April 10, 2020** |         |         |         |         |           |        |
| Mean     | -1.72E-05| -3.33E-05| -2.52E-04| -1.33E-05| 5.22E-06  | 3.97E-05|
| STD      | 0.002   | 0.002   | 0.008   | 0.010   | 0.001     | 0.003  |
| Maximum  | 0.020   | 0.046   | 0.075   | 0.137   | 0.019     | 0.065  |
| Minimum  | -0.091  | -0.103  | -0.121  | -0.506  | -0.014    | -0.055 |
| Skewness | -18.069 | -24.526 | -4.462  | -28.260 | 7.477     | 5.513  |
| Kurtosis | 748.611 | 1290.460| 84.789  | 1557.708| 317.621   | 350.672|
| JB test  | 1.16E+08***| 3.47E+08***| 6.11E+05***| 5.06E+08***| 2.07E+07***| 1.04E+07***|

Note: Returns are calculated by taking the first differences of logarithmic prices. SSEA is the Shanghai Stock Exchange A-share index; SSEB is the Shanghai Stock Exchange B-share index. Oil, the Chinese crude oil commodity futures traded in the Shanghai International Energy Exchange; Gold, the Chinese gold commodity futures; Corn, the Chinese corn commodity futures; Bitcoin, bitcoin traded in the Bitstamp cryptocurrency exchange; US dollar, US dollar currency index. STD denotes standard deviation. JB test is the Jarque-Bera normality test. E stands for scientific notation. *** represents significance at the 1% level.
## Table A2: Two-state regime switching model, SSEA (Estimation from data at 5-min intervals)

| Coef. | SSEA – Oil | SSEA – Bitcoin | SSEA – US dollar | SSEA - Corn |
|-------|------------|----------------|-----------------|------------|
|       | Reg 1 (i=1) | Reg 2 (i=2)   | Reg 1 (i=1)     | Reg 2 (i=2)| Reg 1 (i=1) | Reg 2 (i=2) |
| $u_i$ | -9.46E-05  | 1.73E-05      | -2.15E-06       | 8.28E-05   | 4.80E-07   | 9.04E-05    | 1.27E-05   | -5.50E-05 |
|       | (0.5785)   | (0.1648)      | (0.6891)        | (0.0867)   | (0.9334)   | (0.4884)    | (0.2797)   | (0.7884)   |
| $a_i$ | -0.040     | 0.016***      | 0.034***        | 0.239***   | 0.049***   | 0.083***    | 0.026      | -0.046     |
|       | (0.5234)   | (0.0083)      | (0.0000)        | (0.0000)   | (0.0000)   | (0.0000)    | (0.1396)   | (0.7110)   |
| $b_i$ | -0.005     | 0.004         | -8.77E-05       | -0.005     | 0.005      | -0.012      | 0.009      | -0.013     |
|       | (0.7774)   | (0.3088)      | (0.9745)        | (0.8267)   | (0.9231)   | (0.9860)    | (0.4408)   | (0.8777)   |
| $h_i^c$| -2.61E-04  | 1.10E-05      | -3.04E-05*      | -1.04E-05  | -6.93E-07  | 2.64E-05    | -2.46E-06  | -2.84E-05  |
|       | (0.6730)   | (0.4821)      | (0.0539)        | (0.8377)   | (0.3737)   | (0.6100)    | (0.7985)   | (0.8638)   |
| $a_i^c$| -0.063     | 0.008         | 0.001           | 0.054      | -0.001     | 0.001       | 0.001      | -0.047     |
|       | (0.6730)   | (0.4750)      | (0.0988)        | (0.3884)   | (0.1376)   | (0.9890)    | (0.9086)   | (0.5294)   |
| $b_i^c$| -0.004     | 0.009***      | 0.149***        | -0.004***  | 0.052      | -0.449***   |          |
|       | (0.0000)   | (0.1944)      | 0.0000          | (0.0000)   | (0.0179)   | (0.6017)    | (0.0000)   | (0.0298)   |
| $h_i$ | 1.39E-05*** | 7.34E-07***   | 3.26E-07***     | 7.42E-06***| 3.50E-07***| 1.03E-05***| 6.25E-07***| 2.26E-05***|
|       | (0.0000)   | (0.0000)      | (0.0000)        | (0.0000)   | (0.0000)   | (0.0000)    | (0.0000)   | (0.0000)   |
| $\gamma_{i,1}^c$ | -8.34E-06*** | -1.82E-07*** | -2.15E-07*** | -6.13E-06*** | -4.87E-08*** | -7.11E-06*** | -1.89E-07*** | -1.80E-05*** |
|       | (0.0000)   | (0.0000)      | (0.0000)        | (0.0000)   | (0.0000)   | (0.0000)    | (0.0000)   | (0.0000)   |
| $\gamma_{i,2}^c$ | 4.58E-05*** | 7.46E-07***   | 5.24E-07***     | 4.84E-06***| 3.87E-07***| 1.83E-05***| 1.34E-06***| 1.02E-04   |
|       | (0.0000)   | (0.0000)      | (0.0000)        | (0.0000)   | (0.0000)   | (0.0000)    | (0.0000)   | (0.0000)   |
| $h_i$ | 3.34E-04*** | 1.25E-06***   | 2.40E-06***     | 4.66E-04***| 7.70E-09***| 1.90E-06***| 3.84E-07***| 1.16E-05***|
|       | (0.0000)   | (0.0000)      | (0.0000)        | (0.0000)   | (0.0000)   | (0.0000)    | (0.0000)   | (0.0000)   |
| $\gamma_{i,1}^c$ | -2.60E-04*** | -6.19E-07*** | 2.13E-05***     | -4.65E-04***| -3.96E-09***| -1.26E-07***| -9.82E-08***| -8.51E-06***|
|       | (0.0000)   | (0.0000)      | (0.0000)        | (0.0000)   | (0.0000)   | (0.0000)    | (0.0000)   | (0.0019)   |
| $\gamma_{i,2}^c$ | 6.39E-05*** | 1.41E-06***   | 6.72E-07***     | 0.001***   | 8.49E-09***| 1.28E-06***| 7.65E-08***| 6.94E-05*   |
|       | (0.0015)   | (0.0000)      | (0.0000)        | (0.0000)   | (0.0000)   | (0.0000)    | (0.00174)  | (0.0560)   |
| $p_i$ | 0.013      | 0.132***      | 0.016           | 0.017      | -0.017*    | -4.11E-04  | 0.024*     | -0.087*    |
|       | (0.7830)   | (0.0000)      | (0.1193)        | (0.6393)   | (0.0775)   | (0.9984)    | (0.0594)   | (0.0522)   |
| $a_i$ | 1.451***   | 3.563***      | 2.784***        | 1.260***   | -2.917***  | 1.482***    | 3.528***   |
|       | (0.0096)   | (0.0000)      | (0.0000)        | (0.0000)   | (0.0000)   | (0.0000)    | (0.0000)   | (0.0053)   |
| $b_i$ | 0.001***   | -3.21E-05     | -2.28E-05       | -1.15E-05  | 1.23E-04***| 4.02E-04***| -7.85E-06  | -0.101*    |
|       | (0.0021)   | (0.3817)      | (0.8038)        | (0.9169)   | (0.0004)   | (0.7209)    | (0.0647)   |

**Log-l.**

65,924 | 149,701 | 191,562 | 70,013

**Hansen's**

0.0000 | 0.0000 | 0.0000 | 0.0000

**Note:** This table reports the estimation result of the two-state regime switching model. Estimation is done for five sample pairs consisting of one Shanghai Stock Exchange A- or B-share index and one commodity asset and results are separately shown. Coef. denotes model coefficients. SSEA index is the Shanghai Stock Exchange A-share index; SSEB index is the Shanghai Stock Exchange B-share index. Hansen (1992)'s standardised likelihood ratio test is employed to test the existence of regimes and associated p-value of test statistic is shown. E stands for scientific notation. Figures in parentheses are p values of significance check. ***, ** and * represent significance at the 1%, 5% and 10%, respectively.
| Coef. | SSEB – Oil | SSEB – Bitcoin | SSEB – US dollar | SSEB – Corn |
|-------|------------|---------------|-----------------|-------------|
|       | Reg 1 (i=1) | Reg 2 (i=2) | Reg 1 (i=1) | Reg 2 (i=2) | Reg 1 (i=1) | Reg 2 (i=2) | Reg 1 (i=1) | Reg 2 (i=2) |
| $u_i^s$ | 2.98E-05* | -2.47E-05* | -9.17E-06 | -8.62E-07 | -5.94E-06 | 1.45E-04 | -3.02E-05 | -1.03E-05 |
|       | (0.0602) | (0.0588) | (0.1155) | (0.9156) | (0.2023) | (0.1150) | (0.0173) | (0.5165) |
| $a_i^s$ | 0.085*** | 0.083*** | 0.077*** | 0.105*** | 0.102*** | 0.076*** | 0.080*** | 0.083*** |
|       | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| $b_i^s$ | 0.001 | -1.32E-04 | -1.52E-04 | 0.001 | -0.002 | 0.023 | 0.010 | -0.010 |
|       | (0.7976) | (0.0945) | (0.9592) | (0.2823) | (0.0128) | (0.4199) | (0.3737) | (0.2473) |
| $u_i^c$ | 1.50E-05 | 2.25E-05 | -5.08E-05** | -1.56E-05 | -6.98E-07 | 2.05E-05 | -1.39E-05 | -1.89E-06 |
|       | (0.4905) | (0.2823) | (0.4199) | (0.3737) | (0.6577) | (0.2473) | (0.8746) |
| $a_i^c$ | 0.018 | -0.003 | -0.041 | 0.008 | 1.36E-06 | 0.003 | 0.001 | 0.010 |
|       | (0.3633) | (0.8950) | (0.2259) | (0.7237) | (0.9990) | (0.9245) | (0.9650) | (0.1196) |
| $b_i^c$ | 0.020*** | 3.21E-04 | -0.007*** | 0.021*** | 0.005*** | 0.064 | -0.128*** | 0.185*** |
|       | (0.0000) | (0.09506) | (0.0000) | (0.0018) | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| $h_i^s$ | 9.62E-06*** | 4.83E-07*** | 2.07E-07*** | 3.97E-06*** | 2.01E-07*** | 4.07E-06*** | 3.73E-07*** | 1.19E-05*** |
|       | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| $\gamma_{i,1}^s$ | -9.32E-06*** | 9.59E-06*** | 3.45E-06*** | -3.70E-06*** | 8.76E-08** | 1.04E-06* | 2.26E-06* | -1.17E-05*** |
|       | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0620) | (0.0000) | (0.0000) |
| $\gamma_{i,2}^s$ | -8.72E-06*** | 7.42E-05*** | 6.38E-05*** | -3.40E-06*** | 2.56E-07*** | 3.38E-05* | 1.82E-04* | -1.06E-05*** |
|       | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| $h_i^c$ | 4.62E-04*** | 1.25E-06*** | 2.57E-06*** | 4.95E-04*** | 7.36E-05*** | 1.49E-06* | 3.49E-07*** |
|       | (0.0620) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| $\gamma_{i,1}^c$ | -4.61E-04*** | 3.97E-05*** | 2.37E-04*** | -4.94E-04*** | -3.74E-09** | -2.03E-07*** | 7.64E-07*** | 9.26E-06*** |
|       | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0230) | (0.0000) | (0.0000) |
| $\gamma_{i,2}^c$ | -4.58E-04*** | 4.73E-04*** | 0.001*** | -4.92E-04*** | 1.41E-08*** | 2.53E-06*** | 9.98E-05*** | 8.99E-06*** |
|       | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| $p_i$ | 0.066*** | 0.072*** | 0.012 | 0.010 | -0.010 | -0.003 | 0.028 | -0.001 |
|       | (0.0023) | (0.0002) | (0.3878) | (0.4499) | (0.3122) | (0.9910) | (0.2060) | (0.9690) |
| $a_i$ | 1.368*** | 3.296*** | 1.234*** | -5.496*** | 2.708*** | 2.010*** | 3.202*** | 1.629*** |
|       | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| $b_i$ | 7.40E-05*** | -4.76E-04*** | 1.91E-04*** | 0.001*** | -1.24E-04*** | -3.42E-04*** | -2.01E-04*** | 3.01E-04*** |
|       | (0.0092) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) |

Note: This table reports the estimation result of the two-state regime switching model. Estimation is done for five sample pairs consisting of one Shanghai Stock Exchange A- or B-share index and one commodity asset and results are separately shown. Coef. denotes model coefficients. SSEA index is the Shanghai Stock Exchange A-share index; SSEB index is the Shanghai Stock Exchange B-share index. Hansen (1992)'s standardised likelihood ratio test is employed to test the existence of regimes and associated p-value of test statistic is shown. E stands for scientific notation. Figures in parentheses are p values of significance check. ***, ** and * represent significance at the 1%, 5% and 10%, respectively.
Table A4: Logarithmic ratios of static information share measures at 5-min intervals: Ratios of information share measures between SSEA index and other assets

|       | Oil  | Bitcoin | US dollar | Corn    |
|-------|------|---------|-----------|---------|
| **P1: July 1, 2019 – November 16, 2019** |      |         |           |         |
| CS ratio | 0.022 | 4.601   | 0.511     | -3.621  |
| IS ratio | -2.672| 5.222   | 2.915     | -5.251  |
| ILS ratio | -5.388 | 1.242   | 4.809     | -3.261  |
| **P2: November 17, 2019 – December 30, 2019** |      |         |           |         |
| CS ratio | 1.117 | -0.929  | -3.025    | 1.538   |
| IS ratio | 0.231 | -5.663  | -3.886    | 3.502   |
| ILS ratio | -1.773 | -9.467  | -1.723    | 3.928   |
| **P3: December 31, 2019 – April 10, 2020** |      |         |           |         |
| CS ratio | 1.644 | 1.287   | 2.058     | -0.657  |
| IS ratio | 1.276 | -0.499  | 6.439     | -0.783  |
| ILS ratio | -0.736 | -3.571  | 8.762     | -0.251  |

**Changes in ratios between sub-periods**

**Ratios in P2 minus Ratios in P1**

|       | Oil  | Bitcoin | US dollar | Corn    |
|-------|------|---------|-----------|---------|
| CS ratio | Diff. | 1.095   | -5.53     | -3.536  | 5.159   |
| IS ratio | Diff. | 2.903   | -10.885   | -8.01   | 7.853   |
| ILS ratio | Diff. | 3.615   | -10.709   | -6.532  | 7.189   |

**Ratios in P3 minus Ratios in P2**

|       | Oil  | Bitcoin | US dollar | Corn    |
|-------|------|---------|-----------|---------|
| CS ratio | Diff. | 0.527   | 2.216     | 5.083   | -2.195  |
| IS ratio | Diff. | 1.045   | 5.164     | 10.325  | -4.285  |
| ILS ratio | Diff. | 1.037   | 5.896     | 10.485  | -4.179  |

Note: Logarithmic ratios of information share measures are calculated as the natural logarithms of ratios of static information share measures of Shanghai Stock Exchange A and B-share indices over the other five assets. CS, component share; IS, information share; ILS, information leadership share. Static information share measures are calculated based on estimates of the VECM at each sub-period. SSEA index is the Shanghai Stock Exchange A-share index; SSEB index is the Shanghai Stock Exchange B-share index. Diff. represents the result of subtraction in ratios.
### Table A5: Logarithmic ratios of static information share measures at 5-min intervals: Ratios of information share measures between SSEB index and other assets

|       | Oil      | Bitcoin | US dollar | Corn     |
|-------|----------|---------|-----------|----------|
| **P1: July 1, 2019 – November 16, 2019** |          |         |           |          |
| CS ratio | 0.022    | 4.601   | 0.511     | -3.621   |
| IS ratio  | -2.672   | 5.222   | 2.915     | -5.251   |
| ILS ratio | -5.388   | 1.242   | 4.809     | -3.261   |
| **P2: November 17, 2019 – December 30, 2019** |          |         |           |          |
| CS ratio | 1.117    | -0.929  | -3.025    | 1.538    |
| IS ratio  | 0.231    | -5.663  | -3.886    | 3.502    |
| ILS ratio | -1.773   | -9.467  | -1.723    | 3.928    |
| **P3: December 31, 2019 – April 10, 2020** |          |         |           |          |
| CS ratio | 1.644    | 1.287   | 2.058     | -0.657   |
| IS ratio  | 1.276    | -0.499  | 6.439     | -0.783   |
| ILS ratio | -0.736   | -3.571  | 8.762     | -0.251   |

**Changes in ratios between sub-periods**

| Ratios in P2 minus Ratios in P1 | Oil      | Bitcoin | US dollar | Corn     |
|---------------------------------|----------|---------|-----------|----------|
| CS ratio | Diff. 1.095 | -5.53   | -3.536    | 5.159    |
| IS ratio | Diff. 2.903 | -10.885 | -6.801    | 8.753    |
| ILS ratio | Diff. 3.615 | -10.709 | -6.532    | 7.189    |

| Ratios in P3 minus Ratios in P2 | Oil      | Bitcoin | US dollar | Corn     |
|---------------------------------|----------|---------|-----------|----------|
| CS ratio | Diff. 0.527 | 2.216   | 5.083     | -2.195   |
| IS ratio | Diff. 1.045 | 5.164   | 10.325    | -4.285   |
| ILS ratio | Diff. 1.037 | 5.896   | 10.485    | -4.179   |

Note: Logarithmic ratios of information share measures are calculated as the natural logarithms of ratios of static information share measures of Shanghai Stock Exchange A and B-share indices over the other five assets. CS, component share; IS, information share; ILS, information leadership share. Static information share measures are calculated based on estimates of the VECM at each sub-period. SSEA index is the Shanghai Stock Exchange A-share index; SSEB index is the Shanghai Stock Exchange B-share index. Diff. represents the result of subtraction in ratios.
Table A6: Means and standard deviations of logarithmic ratios of time varying information share measures at 5-min intervals, Ratios of information share measures between SSEA index and other assets

|                 | Oil       | Bitcoin   | US dollar | Corn    |
|-----------------|-----------|-----------|-----------|---------|
| **P1: July 1, 2019 – November 16, 2019** |           |           |           |         |
| CS ratio Mean   | 0.69      | 1.73      | -1.109    | -0.68   |
| STD             | 1.635     | 1.805     | 1.528     | 1.741   |
| IS ratio Mean   | -1.25     | -0.312    | -0.063    | -0.639  |
| STD             | 2.893     | 3.284     | 2.984     | 2.76    |
| ILS ratio Mean  | -3.881    | -4.1      | 2.092     | 0.083   |
| STD             | 2.572     | 3.007     | 2.921     | 2.208   |
| **P2: November 17, 2019 – December 30, 2019** |           |           |           |         |
| CS ratio Mean   | 0.955     | 1.716     | -2.106    | -0.416  |
| STD             | 1.631     | 1.536     | 1.207     | 1.406   |
| IS ratio Mean   | -0.067    | -0.453    | -2.329    | -0.382  |
| STD             | 2.804     | 3.016     | 2.358     | 2.538   |
| ILS ratio Mean  | -2.044    | -4.339    | -0.445    | 0.068   |
| STD             | 2.437     | 2.969     | 2.309     | 2.304   |
| **P3: December 31, 2019 – April 10, 2020** |           |           |           |         |
| CS ratio Mean   | 0.653     | 1.309     | -1.197    | -0.978  |
| STD             | 1.606     | 1.664     | 1.551     | 1.564   |
| IS ratio Mean   | -0.474    | -0.325    | -0.015    | -1.126  |
| STD             | 2.835     | 3.28      | 3.028     | 2.33    |
| ILS ratio Mean  | -2.255    | -3.266    | 2.364     | -0.297  |
| STD             | 2.572     | 3.234     | 2.965     | 1.754   |

**Changes in means between sub-periods**

**Means in P2 minus Means in P1**

|                  | CS ratio | IS ratio | ILS ratio |
|------------------|----------|----------|-----------|
| Diff.            | 0.265    | -0.022   | -0.997    |
| F-stat           | 524.283***| 1114.106***| 810.615***| 332.234***|

**Means in P3 minus Means in P2**

|                  | CS ratio | IS ratio | ILS ratio |
|------------------|----------|----------|-----------|
| Diff.            | -0.302   | -0.407   | 0.909     |
| F-stat           | 319.551***| 856.654***| 559.341***| 236.005***|

Note: Logarithmic ratios of information share measures are calculated as the natural logarithms of ratios of time varying information share measures of Shanghai Stock Exchange A and B-share indices over the other five assets. CS, component share; IS, information share; ILS, information leadership share. Time varying information share measures are computed based on time varying error correction coefficients from a rolling window procedure as well as the variance-covariance matrix of innovations derived from a two-state regime switching model. SSEA index is the Shanghai Stock Exchange A-share index; SSEB index is the Shanghai Stock Exchange B-share index. STD is standard deviation. Diff. represents the result of subtraction in means. F-stat denotes the F test statistic for the hypothesis testing on equality between means of different Sub-periods. *** denotes significance at the 1% level.
Table A7: Means and standard deviations of logarithmic ratios of time varying information share measures at 5-min intervals, Ratios of information share measures between SSEB index and other assets

|                              | Oil   | Bitcoin | US dollar | Corn  |
|------------------------------|-------|---------|-----------|-------|
| **P1: July 1, 2019 – November 16, 2019** |       |         |           |       |
| CS ratio Mean                | -0.005| 1.861   | -0.978    | 0.24  |
| CS ratio STD                 | 1.633 | 1.821   | 1.653     | 1.707 |
| IS ratio Mean                | -2.67 | -0.49   | -0.434    | 0.645 |
| IS ratio STD                 | 2.349 | 3.438   | 3.232     | 3.242 |
| ILS ratio Mean              | -5.33 | -4.702  | 1.087     | 0.809 |
| ILS ratio STD               | 1.852 | 3.271   | 3.168     | 3.096 |
| **P2: November 17, 2019 – December 30, 2019** |       |         |           |       |
| CS ratio Mean                | -0.077| 1.376   | -1.536    | -0.606|
| CS ratio STD                 | 1.512 | 1.795   | 1.881     | 1.505 |
| IS ratio Mean                | -1.226| -0.29   | -1.022    | -0.496|
| IS ratio STD                 | 2.369 | 3.47    | 3.56      | 2.775 |
| ILS ratio Mean              | -2.97 | -3.334  | 1.03      | 0.221 |
| ILS ratio STD               | 1.854 | 3.604   | 3.394     | 2.569 |
| **P3: December 31, 2019 – April 10, 2020** |       |         |           |       |
| CS ratio Mean                | 0.067 | 1.427   | -0.925    | -0.172|
| CS ratio STD                 | 1.811 | 1.779   | 1.781     | 1.579 |
| IS ratio Mean                | -1.407| 0.166   | 0.445     | 0.296 |
| IS ratio STD                 | 2.641 | 3.425   | 3.463     | 2.838 |
| ILS ratio Mean              | -2.948| -2.522  | 2.74      | 0.936 |
| ILS ratio STD               | 1.99  | 3.395   | 3.37      | 2.574 |
| **Changes in means between sub-periods** |       |         |           |       |
| Means in P2 minus Means in P1 |       |         |           |       |
| CS ratio Diff.               | -0.072| -0.485  | -0.558    | -0.846|
| F-stat                       | 457.620*** | 1271.815*** | 800.379*** | 533.094*** |
| IS ratio Diff.               | 1.444 | 0.2     | -0.588    | -1.141|
| F-stat                       | 628.906*** | 2621.249*** | 1575.733*** | 921.868*** |
| ILS ratio Diff.              | 3.033 | 1.368   | -0.057    | -0.588 |
| F-stat                       | 1545.506*** | 2075.055*** | 2181.237*** | 1114.447*** |
| Means in P3 minus Means in P2 |       |         |           |       |
| CS ratio Diff.               | 0.144 | 0.051   | 0.611     | 0.434 |
| F-stat                       | 283.069*** | 1044.275*** | 681.913*** | 468.359*** |
| IS ratio Diff.               | -0.181| 0.456   | 1.467     | 0.792 |
| F-stat                       | 184.215*** | 1301.346*** | 976.941*** | 634.140*** |
| ILS ratio Diff.              | -0.651| 0.812   | 1.71      | 0.715 |
| F-stat                       | 269.108*** | 407.429*** | 1519.163*** | 496.118*** |

Note: Logarithmic ratios of information share measures are calculated as the natural logarithms of ratios of time varying information share measures of Shanghai Stock Exchange A and B-share indices over the other five assets. CS, component share; IS, information share; ILS, information leadership share. Time varying information share measures are computed based on time varying error correction coefficients from a rolling window procedure as well as the variance-covariance matrix of innovations derived from a two-state regime switching model. SSEA index is the Shanghai Stock Exchange A-share index; SSEB index is the Shanghai Stock Exchange B-share index. STD is standard deviation. Diff. represents the result of subtraction in means. F-stat denotes the F test statistic for the hypothesis testing on equality between means of different Sub-periods. *** denotes significance at the 1% level.
Table A8: Static net spillovers of higher moments at 5-min intervals, Net spillovers from SSEA index to other assets

| Period                        | Oil       | Bitcoin   | US dollar | Corn     |
|-------------------------------|-----------|-----------|-----------|----------|
| **P1: July 1, 2019 – November 16, 2019** |           |           |           |          |
| Volatility spillover          | 17.812*** | 15.159*** | 0.001     | 0.423*** |
| Wald-test                     | 1152.89   | 3489.433  | 0.016     | 4917.586 |
| Skewness spillover            | 0.132     | -0.001    | 0.292***  | 0.116**  |
| Wald-test                     | 1.995     | 0.007     | 372.246   | 4.189    |
| Kurtosis spillover            | 0.747***  | 0.122***  | 0.006***  | 0.593*** |
| Wald-test                     | 1205.412  | 245.727   | 180.763   | 981.752  |

| **P2: November 17, 2019 – December 30, 2019** |           |           |           |          |
| Volatility spillover          | 14.368*** | 37.815*** | 0.131***  | 0.396*** |
| Wald-test                     | 246.743   | 1911.663  | 338.502   | 633.141  |
| Skewness spillover            | 1.027***  | -0.691**  | 1.153***  | 0.12     |
| Wald-test                     | 44.899    | 4.36      | 1289.524  | 1.338    |
| Kurtosis spillover            | 1.024***  | 0.041***  | 0.031***  | 0.376*** |
| Wald-test                     | 1121.09   | 28.15     | 519.182   | 305.442  |

| **P3: December 31, 2019 – April 10, 2020** |           |           |           |          |
| Volatility spillover          | 6.188***  | 5.768***  | -0.227    | 0.518*** |
| Wald-test                     | 4035.036  | 4059.974  | 184.379   | 140.04+04|
| Skewness spillover            | 0.203*    | -0.005    | 0.063***  | 0.127*   |
| Wald-test                     | 3.229     | 0.036     | 9.496     | 3.677    |
| Kurtosis spillover            | 0.380***  | 0.070***  | 0.001***  | 0.927*** |
| Wald-test                     | 845.629   | 156.604   | 8.979     | 1973.671 |

**Changes in spillovers between sub-periods**

| Spillovers in P2 minus Spillovers in P1 |           |           |           |          |
| Volatility spillover Diff.           | -3.444*** | 22.655*** | 0.130***  | -0.027***|
| Wald-test                             | 42.077    | 1170.689  | 213.678   | 4.613    |
| Skewness spillover Diff.              | 0.895***  | -0.689**  | 0.861***  | 0.004    |
| Wald-test                             | 38.198    | 4.322     | 984.468   | 0.001    |
| Kurtosis spillover Diff.              | 0.277***  | -0.082*** | 0.025***  | -0.218***|
| Wald-test                             | 1043.929  | 122.14    | 603.659   | 840.567  |

| Spillovers in P3 minus Spillovers in P2 |           |           |           |          |
| Volatility spillover Diff.           | -8.180*** | -32.046***| -0.358*** | 0.122*** |
| Wald-test                             | 93.472    | 1620.422  | 558.838   | 66.402   |
| Skewness spillover Diff.              | -0.824*** | 0.686**   | -1.090*** | 0.007    |
| Wald-test                             | 14.73     | 4.27      | 606.74    | 0.004    |
| Kurtosis spillover Diff.              | -0.643*** | 0.029***  | -0.029*** | 0.551*** |
| Wald-test                             | 1443.263  | 14.446    | 688.015   | 3211.889 |

Note: Net spillovers from the Shanghai Stock Exchange A- and B-share indices to other assets are calculated as the differences between absolute values of spillovers from A- and B-share indices to other assets and absolute values of spillovers of the other way around. Static spillovers are derived from estimates of an extended VAR(1) model. Time varying higher moments are obtained via a two-state regime switching model. SSEA index is the Shanghai Stock Exchange A-share index; SSEB index is the Shanghai Stock Exchange B-share index. Diff. represents the result of subtraction in spillovers. Wald-test denotes the Wald test statistic for the hypothesis testing of zero spillovers or differences. E stands for scientific notation. ***, ** and * denote significance at the 1%, 5% and 10% levels.
### Table A9: Static net spillovers of higher moments at 5-min intervals, Net spillovers from SSEB index to other assets

|                | Oil                  | Bitcoin              | US dollar             | Corn              |
|----------------|----------------------|----------------------|-----------------------|-------------------|
| **P1: July 1, 2019 – November 16, 2019** |                      |                      |                      |                   |
| Volatility spillover | 12.652***            | 2.112***             | -0.191***             | 0.04              |
| Wald-test         | 1317.912             | 329.981              | 144.296               | 0.631             |
| Skewness spillover | -0.124***            | 0.015                | 0.143***              | 0.253***          |
| Wald-test         | 14.234               | 0.748                | 95.48                 | 15.751            |
| Kurtosis spillover | 2.36E-04             | 0.008***             | -0.002***             | -0.004***         |
| Wald-test         | 0.027                | 62.833               | 14.146                | 19.149            |

| **P2: November 17, 2019 – December 30, 2019** |                      |                      |                      |                   |
| Volatility spillover | 2.071***             | 1.064***             | -0.488***             | -0.088            |
| Wald-test         | 1045.763             | 234.866              | 259.69                | 1.525             |
| Skewness spillover | 0.013                | 0.053                | 0.385***              | 0.721***          |
| Wald-test         | 0.051                | 1.704                | 369.715               | 65.192            |
| Kurtosis spillover | 3.77E-04             | 0.010***             | -7.56E-04             | -0.008***         |
| Wald-test         | 0.017                | 15.761               | 2.487                 | 21.307            |

| **P3: December 31, 2019 – April 10, 2020** |                      |                      |                      |                   |
| Volatility spillover | 1.952***             | 0.422***             | -1.127***             | 0.007             |
| Wald-test         | 1301.975             | 325.721              | 381.164               | 0.01              |
| Skewness spillover | -0.152***            | 0.037**              | -0.037                | 0.940***          |
| Wald-test         | 0.051                | 1.704                | 369.715               | 65.192            |
| Kurtosis spillover | 9.88E-05             | 0.006***             | -0.014***             | 8.00E-04          |
| Wald-test         | 0.013                | 175.231              | 295.954               | 0.788             |

#### Changes in spillovers between sub-periods

**Spillovers in P2 minus Spillovers in P1**

|                | Diff. | Wald-test         | Wald-test         | Wald-test         | Wald-test         |
|----------------|-------|-------------------|-------------------|-------------------|-------------------|
| Volatility spillover | -10.581*** | 1332.786 | 449.672 | 379.045 | 14.477 |
| Skewness spillover   | 0.137  | 0.039             | 0.242***          | 0.468***          |
| Kurtosis spillover   | 1.41E-04 | 0.001            | 9.30E-04***       | -0.004***         |
|                      | 0.004  | 0.449             | 47.712            | 3.300             |

**Spillovers in P3 minus Spillovers in P2**

|                | Diff. | Wald-test         | Wald-test         | Wald-test         | Wald-test         |
|----------------|-------|-------------------|-------------------|-------------------|-------------------|
| Volatility spillover | -0.120*** | 25.381          | 190.423           | 465.215           | 15.209            |
| Skewness spillover   | -0.165*** | -0.016           | -0.422***         | 0.218**           |
| Kurtosis spillover   | -2.78E-04 | -0.004*          | 0.013***          | 0.009***          |
|                      | 0.014  | 3.367             | 402.607           | 15.414            |
Note: Net spillovers from the Shanghai Stock Exchange A- and B-share indices to other assets are calculated as the differences between absolute values of spillovers from A- and B-share indices to other assets and absolute values of spillovers of the other way around. Static spillovers are derived from estimates of an extended VAR(1) model. Time varying higher moments are obtained via a two-state regime switching model. SSEA index is the Shanghai Stock Exchange A-share index; SSEB index is the Shanghai Stock Exchange B-share index. Diff. represents the result of subtraction in spillovers. Wald-test denotes the Wald test statistic for the hypothesis testing of zero spillovers or differences. E stands for scientific notation. ***, ** and * denote significance at the 1%, 5% and 10% levels.

Table A10: Means and standard deviations of time varying net spillovers of higher moments at 5-min intervals, Net spillovers from SSEA index to other assets

|                      | Oil          | Bitcoin      | US dollar    | Corn         |
|----------------------|--------------|--------------|--------------|--------------|
| **P1: July 1, 2019 – November 16, 2019** |              |              |              |              |
| Volatility spillover | 15.764***    | 7.771***     | -2.244***    | 0.247***     |
| Mean                 | 10.547       | 17.25        | 2.044        | 0.342        |
| STD                  | 0.432***     | -0.037***    | 0.067***     | 0.459***     |
| Skewness spillover   |              |              |              |              |
| Mean                 | 2.103***     | 0.007***     | 0.154***     | 0.859***     |
| STD                  | 3.474        | 1.221        | 0.653        | 1.152        |
| Kurtosis spillover   |              |              |              |              |
| Mean                 | 6.526***     | 3.782***     | -3.840***    | 0.311***     |
| STD                  | 3.767        | 5.938        | 9.256        | 0.373        |
| Skewness spillover   | 0.574***     | -0.079***    | 0.060***     | 0.222***     |
| Mean                 | 0.705***     | -0.795***    | -0.084***    | 0.381***     |
| STD                  | 0.753        | 1.894        | 0.572        | 0.285        |
| **Changes in means between sub-periods** |              |              |              |              |
| Volatility spillover | -5.061       | -7.043       | 0.688        | -0.119       |
| Diff.                | 1448.537***  | 11962.585*** | 188.762***   | 338.060***   |
| F-stat               | 670.868***   | 6017.315***  | 1704.882***  | 2019.829***  |
| Kurtosis spillover   | -1.398       | -0.802       | -0.238       | -0.478       |
| Diff.                | 3701.009***  | 1089.062***  | 2300.782***  | 1221.995***  |
| Means in P3 minus Means in P2 |              |              |              |              |
### Table A11: Means and standard deviations of time varying net spillovers of higher moments at 5-min intervals, Net spillovers from SSEB index to other assets

|                  | Oil          | Bitcoin      | US dollar     | Corn         |
|------------------|--------------|--------------|---------------|--------------|
| **P1: July 1, 2019 – November 16, 2019** |              |              |               |              |
| Volatility spillover | Mean | 24.792*** | 42.794*** | -1.031*** | 0.731*** |
|                  | STD          | 24.865       | 71.599        | 1.076        | 0.083       |
| Skewness spillover | Mean | 0.728*** | -0.016*** | 0.154*** | 2.531*** |
|                  | STD          | 1.405        | 0.126         | 0.152        | 1.998       |
| Kurtosis spillover | Mean | 0.799*** | 0.045*** | 0.222*** | 0.573*** |
|                  | STD          | 7.053        | 0.307         | 0.613        | 0.359       |
| **P2: November 17, 2019 – December 30, 2019** |              |              |               |              |
| Volatility spillover | Mean | 8.387*** | 1.162*** | -2.427*** | 0.180*** |
|                  | STD          | 15.532       | 1.957         | 2.371        | 0.213       |
| Skewness spillover | Mean | 0.493*** | 0.263*** | 0.167*** | 2.396*** |
|                  | STD          | 0.417        | 0.551         | 0.151        | 1.86        |
| Kurtosis spillover | Mean | 0.816*** | 0.284*** | 0.198*** | 0.293*** |
|                  | STD          | 1.381        | 0.479         | 0.426        | 0.261       |
| **P3: December 31, 2019 – April 10, 2020** |              |              |               |              |
| Volatility spillover | Mean | 12.974*** | 10.066*** | -3.935*** | -2.395*** |
|                  | STD          | 35.122       | 11.822        | 19.586       | 17.598      |
| Skewness spillover | Mean | 0.565*** | 0.148*** | 0.176*** | 3.605*** |
|                  | STD          | 0.523        | 0.407         | 0.219        | 3.044       |
| Kurtosis spillover | Mean | 0.405*** | 1.169*** | 0.739*** | 0.208*** |
|                  | STD          | 0.822        | 6.414         | 0.874        | 0.525       |

**Note:** Net spillovers from the Shanghai Stock Exchange A- and B-share indices to other assets are calculated as the differences between absolute values of spillovers from A- and B-share indices to other assets and absolute values of spillovers of the other way around. And time varying spillovers are derived via a rolling window procedure on an extended VAR(1) model. Time varying higher moments are obtained via a two-state regime switching model. The null hypothesis that means of net spillovers are zero is tested. Diff. represents the result of subtraction in means. F-stat denotes the F test statistic for the hypothesis testing on equality between means of different Sub-periods. E stands for scientific notation. *** denotes significance at the 1% level.
|                     | Diff.    |     |     |     |
|---------------------|----------|-----|-----|-----|
| **Volatility spillover** | -16.405  | -41.632 | -1.396 | -0.551 |
| F-stat              | 1.04E05*** | 4.30E04*** | 18.657*** | 9.190*** |
| **Skewness spillover** | -0.235   | 0.279  | 0.013 | -0.135 |
| F-stat              | 2350.599*** | 1321.959*** | 907.233*** | 198.842*** |
| **Kurtosis spillover** | 0.017    | 0.239  | -0.024 | -0.28 |
| F-stat              | 1.01E04*** | 29.683*** | 942.924*** | 849.493*** |

**Means in P3 minus Means in P2**

|                     | Diff.    |     |     |     |
|---------------------|----------|-----|-----|-----|
| **Volatility spillover** | 4.587    | 8.904 | -1.508 | -2.575 |
| F-stat              | 1.46E05*** | 3.816*** | 2.81E04*** | 6.21E04*** |
| **Skewness spillover** | 0.072    | -0.115 | 0.009 | 1.209 |
| F-stat              | 66.832*** | 1991.058*** | 1947.904*** | 800.702*** |
| **Kurtosis spillover** | -0.411   | 0.885  | 0.541 | -0.085 |
| F-stat              | 27.737*** | 1678.559*** | 904.712*** | 454.343*** |

Note: Net spillovers from the Shanghai Stock Exchange A- and B-share indices to other assets are calculated as the differences between absolute values of spillovers from A- and B-share indices to other assets and absolute values of spillovers of the other way around. And time varying spillovers are derived via a rolling window procedure on an extended VAR(1) model. Time varying higher moments are obtained via a two-state regime switching model. The null hypothesis that means of net spillovers are zero is tested. SSEA index is the Shanghai Stock Exchange A-share index; SSEB index is the Shanghai Stock Exchange B-share index. STD is standard deviation. Diff. represents the result of subtraction in means. F-stat denotes the F test statistic for the hypothesis testing on equality between means of different Sub-periods. E stands for scientific notation. *** denotes significance at the 1% level.