
VUU?

VS

2

200234

DCC-MIDAS

1)

2)

3)

2012)^[1]

(,

2008

2013

2015

1936

- - - - -

, 2018)^[2]

(, 2020)^[3]

(

(, 2017)^[4]

(, 2015)^[5]

Method)

(Network Analysis

(Watts, D. et al.)^[6]

(Kim H.

et al., 2002)^[7]

(Boginski V. et al., 2005; Aste T. et al., 2010)^[8-9]

(Schiavo S. et al., 2010; Cassi L. et al., 2012)^[10-11]

(, 2014)^[12]

(, 2015)^[13]

(, 2015)^[14]

DCC-MIDAS

1)

DCC-MIDAS

2) DCC-MIDAS

3)

DCC-MIDAS

DCC-MIDAS

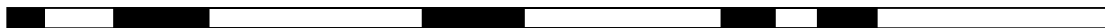
DCC-MIDAS

DCC-MIDAS

DCC-MIDAS

2008

:T DBBJ;



$$D_{ij} = \sqrt{2(1 - C_{ij}^t)} \quad (6)$$

$n-1$

1. GARCH-MIDACH

$$\varphi_k(w_1, w_2) = \frac{\left(\frac{k}{K}\right)^{w_1-1} \left(1 - \left(\frac{k}{K}\right)\right)^{w_2-1}}{\sum_{j=1}^K \left(\frac{k}{K}\right)^{w_1-1} \left(1 - \left(\frac{k}{K}\right)\right)^{w_2-1}}. \quad (10)$$

2. DCC-MIDAS

DCC-MIDAS DCC-MIDAS

Colacito et al.(2011)

$i \quad j$

$q_{i,j,t}$ GARCH(1,1)

$$q_{i,j,t} = \bar{\rho}_{i,j,t} (1 - a - b) + a \xi_{i,t-1} \xi_{j,t-1} + b q_{i,j,t-1} \quad (11)$$

$\xi_{i,t-1} \quad \xi_{j,t-1}$ GARCH-MIDAS

$\bar{\rho}_{i,j,t}$

$$\bar{\rho}_{i,j,t} = \sum_{k=1}^K \varphi_k(w_1, w_2) C_{i,j,t-1} \quad (12)$$

$C_{i,j,t-1}$

$$C_{i,j,t} = \frac{\prod_{k=t-N_t^{i,j}}^t \xi_{i,k} \xi_{j,k}}{\sqrt{\prod_{k=t-N_t^{i,j}}^t \xi_{i,k}^2} \sqrt{\prod_{k=t-N_t^{j,j}}^t \xi_{j,k}^2}} \quad (13)$$

$$\sqrt{\quad} \sqrt{\quad}. \quad (14)$$

2014 2021

(NLMY) (CJ) (HG) (GT) (YSJS)

(DZ) (JYDQ) (SPYL) (FZFZ) (QGZZ)

(YYSW) (GYSY) (JTYS) (FDC) (SYMY)

(XXFW) (JZCL) (JZZS) (DQSB)

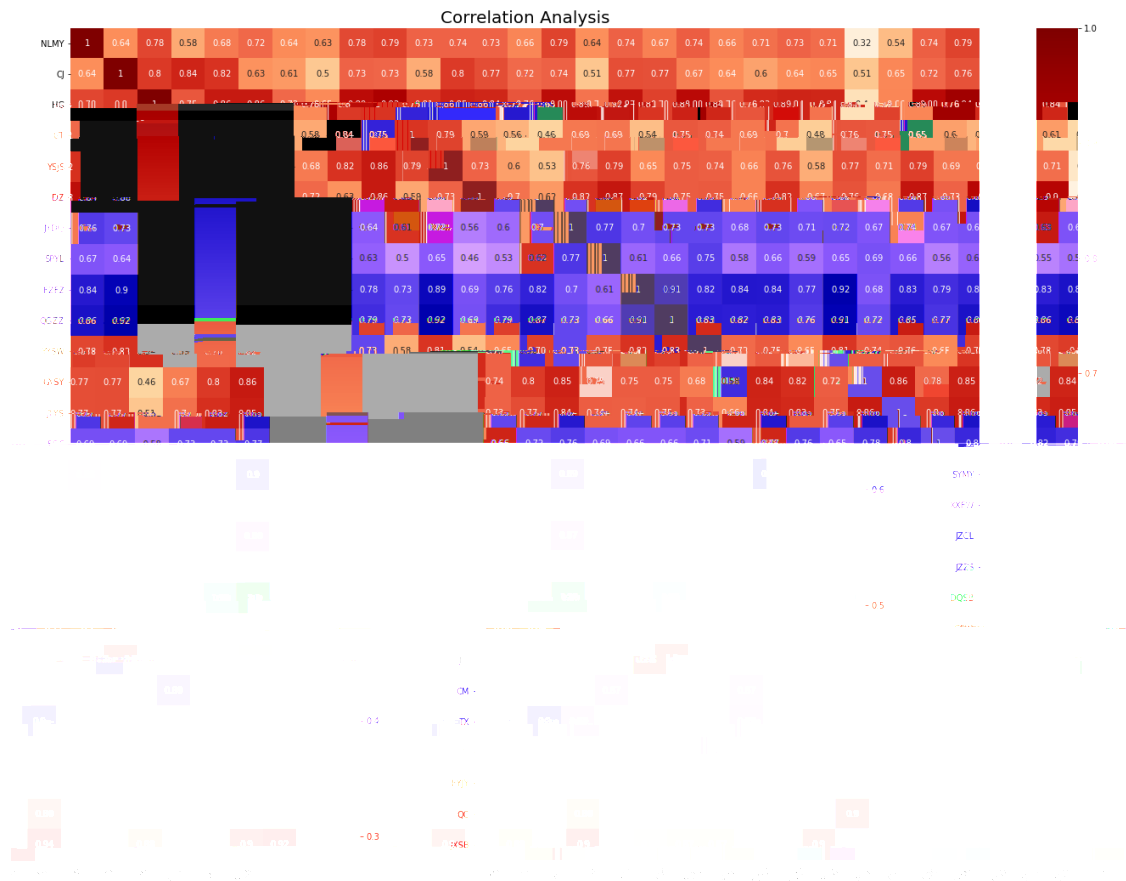
(GFJG) (JXJ) (CM) (TX) (YH) (FYJY) (QC)

(JXSB) 28 [] (801230)

27

iFinD

Python 3.9 Matlab 2020b UCINET 6.0



Q

0.7

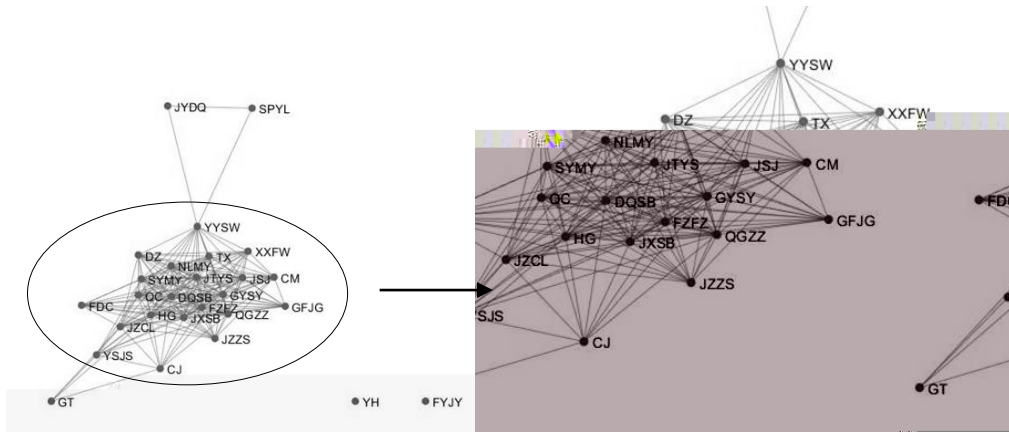
(YH)

(FYJY)

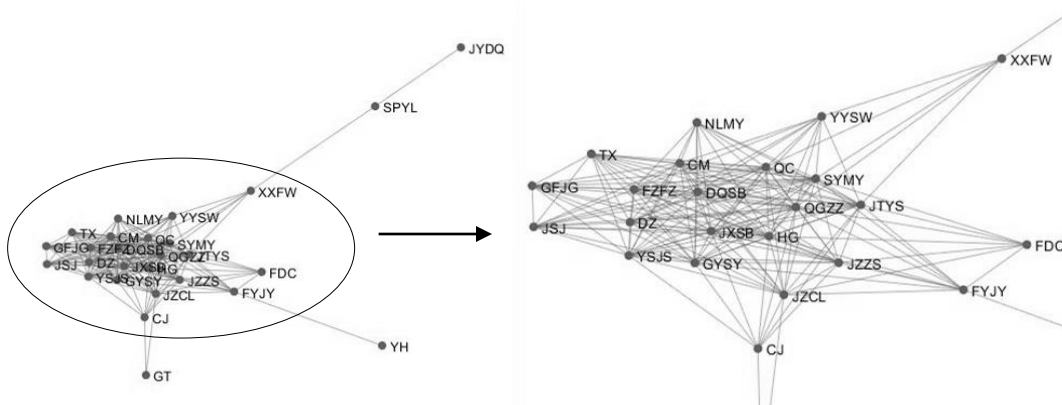
0.74

0.5

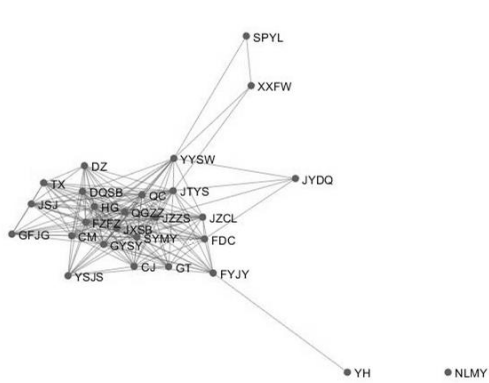
[]



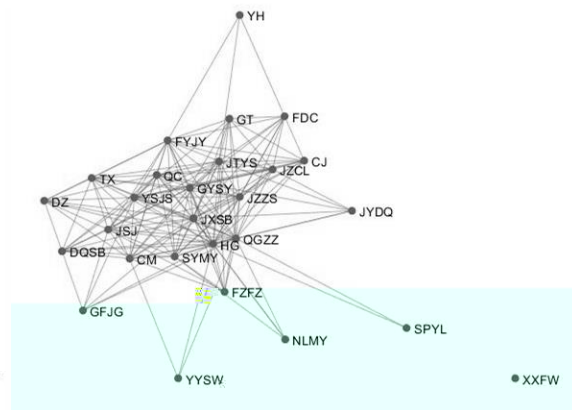
(2017)



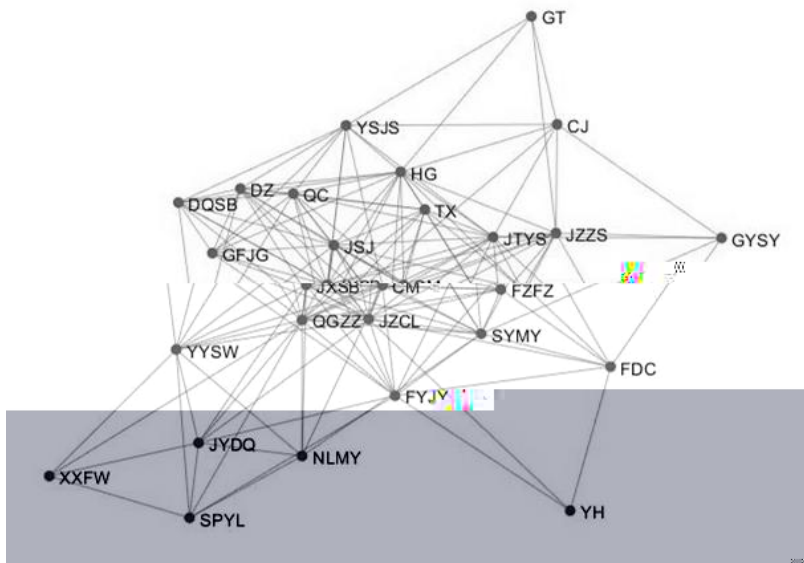
(2018)



(2019)



(2020)



(2021)

D

2014

2017

2018

2021

(2015 2018)

()

2017

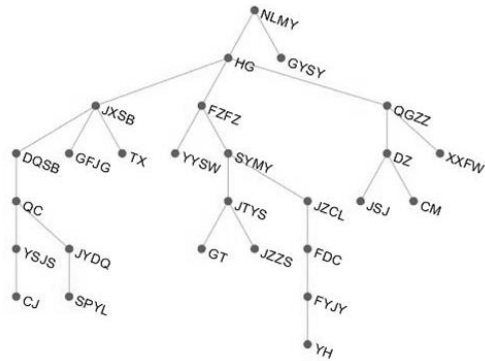
2018

2019

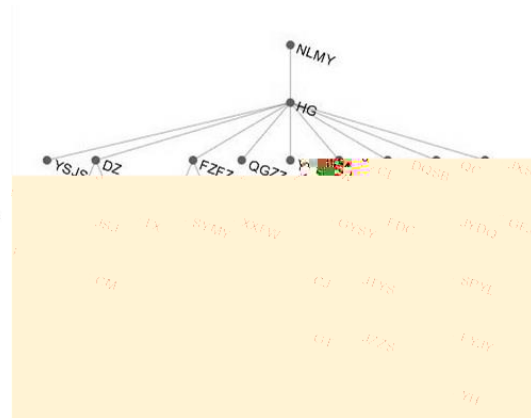
2014 2015

2016

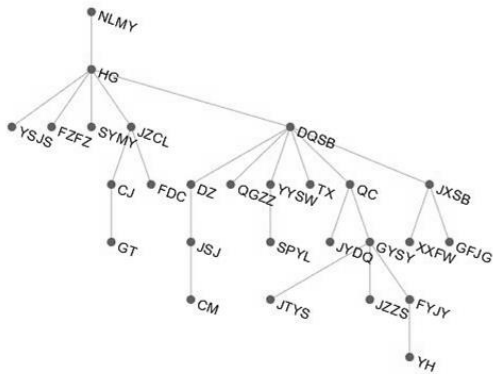
(Minimum Spanning Tree, MST)



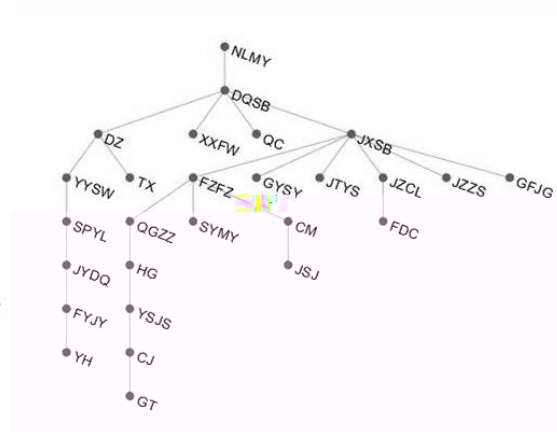
(2014)



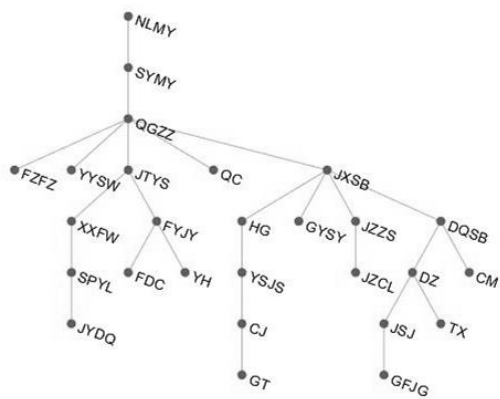
(2015)



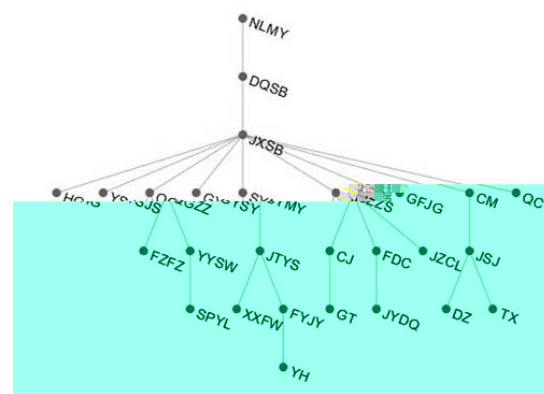
(2016)



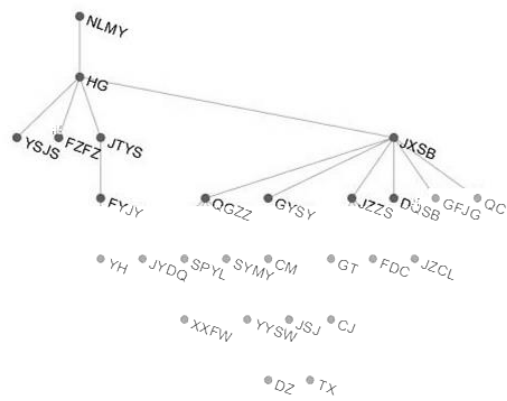
(2017)



(2018)

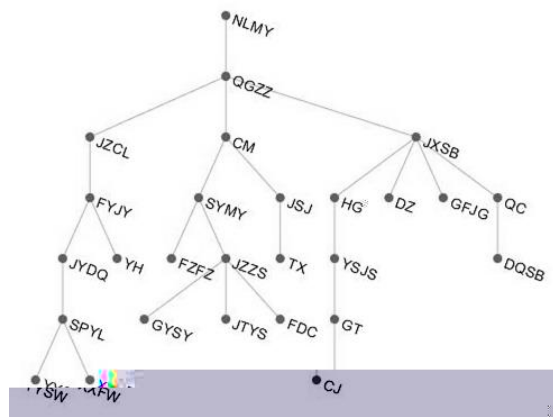


(2019)



(2020)

E2



(2021)

: DBCF?DBDC

(2018)

(2014 2021)

C2

Year	Degree	Closeness	Betweenness	Eigenvector
2014	33.38	40.79	5.03	16.20
2015	30.46	37.12	5.18	10.77
2016	26.92	33.35	13.36	11.96
2017	31.69	39.73	12.66	13.71
2018	35.08	40.40	12.34	16.02
2019	32.62	38.22	8.14	31.82
2020	47.69	51.05	10.09	19.73
2021	40.46	41.49	11.92	22.59

(%).

2020

47.69 51.05 2020

2016 13.36 2016

2019 2019 (

)

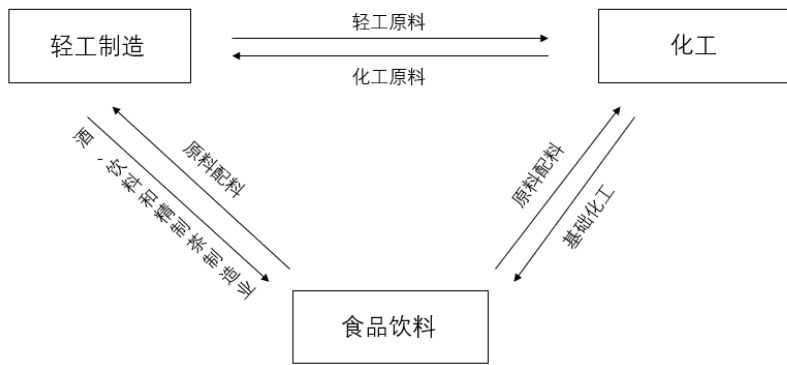
(2014 2021)

D2

Degree	Rank	Closeness	Rank	Betweenness	Rank	Eigenvector	Rank
50	16	61.905	17	0.038	21	25.777	16
46.154	19	59.091	20	0.279	19	22.289	19
80.769	2	81.25	2	3.398	7	35.803	2
26.923	22	52	23	0.028	23	12.417	22
50	16	60.465	19	0.435	18	24.463	17
65.385	10	68.421	10	0.5	15	31.439	10
26.923	22	54.167	22	1.736	13	12.273	23
7.692	24	41.935	25	0	24	2.372	25
76.923	7	78.788	7	2.199	11	35.114	7
84.615	1	83.871	1	8.204	3	36.004	1
65.385	10	68.421	10	8.404	2	28.09	14
76.923	7	76.471	9	2.749	10	34.244	9
80.769	2	81.25	2	4.04	5	35.373	5
42.308	20	61.905	17	14.769	1	20.191	20
76.923	7	78.788	7	2.199	11	35.114	7
7.692	24	48.148	24	0	24	3.767	24
80.769	2	81.25	2	4.04	5	35.373	5
50	16	63.415	15	0.712	14	23.715	18
65.385	10	68.421	10	0.5	15	31.439	10
38.462	21	56.522	21	0	24	20.026	21
53.846	15	63.415	15	0.038	21	27.538	15
57.692	14	65	14	0.086	20	28.969	13
61.538	13	66.667	13	0.439	17	29.966	12
3.846	27	28.889	27	0	24	0.07	27
7.692	24	40	26	7.692	4	1.191	26
80.769	2	81.25	2	3.373	8	35.795	3
80.769	2	81.25	2	3.373	8	35.795	3

DCC-MIDAS

(801030)



F2

(801120)

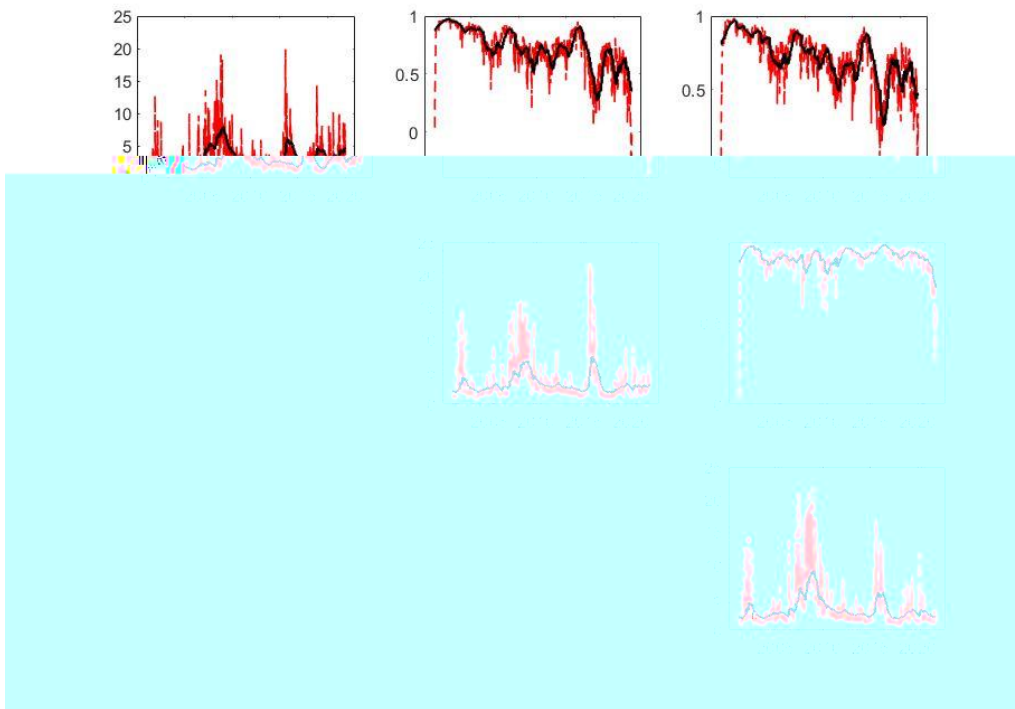
(801140)

E2	?	?	VUU?	VS		
mu	alpha	beta	theta	a	w	m
0.067613	0.10451	0.85161	0.19	0.39	1.9776	0.87189
0.041808	0.094062	0.86639	0.15	0.39	2.6569	1.1798

	0.012032	0.098545	0.86292	0.1644	2.6062	1.1512
DCC-MIDAS	a	b	w			
	0.05318	0.91727	2.1553			

a 0.05318 b 0.91727
a+b 0.9705 1

DCC-MIDAS



\mathcal{Q} ? ? $\mathcal{N}(0, \Sigma)$ VS

H ? ? 2

28%

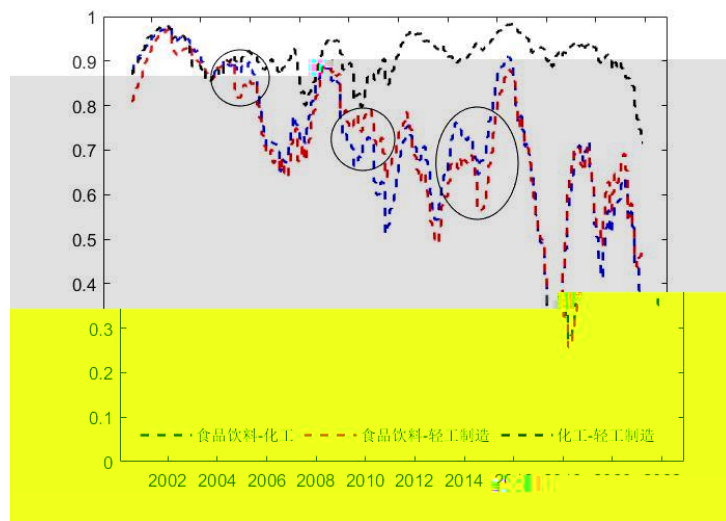
2020

2020

0.5

0

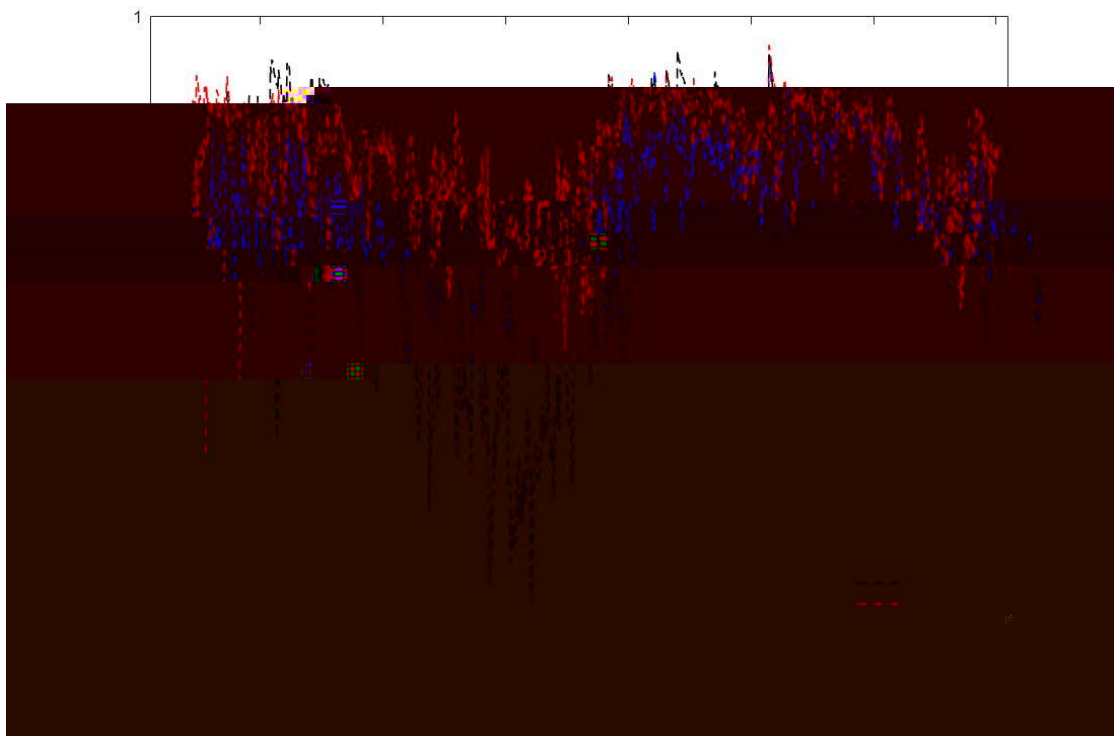
2020



12 ? ? 2

DCC-MIDAS

F2	?	?	VUU?	VS		
mu	alpha	beta	theta	w	m	
0.032141	0.1366	0.79117	0.15762	4.1787	0.87003	



K2 ? ? 2

	[0.4, 0.8]	2015~2018	2018
2018	0.8	2020	
2018	0	-0.2	
		2018	0.3
		2019	
			2019
	2019		

DCC-MIDAS

(2015)

(2020)

()

