10/31/2007 5:37

The Morning Email: Correlations & R-Squared

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One contract may be correlating with another but does that mean there's causation? Is one causing the other?

That's what the R-Squared is for. Read R-Squared as follows: let's say, CLA and DJIA have an R-Squared of 0.44. That means there's a 44% chance that one is causing the market movement of the other.

You will always see a positive number for the R-Squared. If a correlation is a (negative) number, for example, (87.9) that means the two commodities are mirroring each other, not correlating. For example, today (which is 06/06/2007) the RBA and DJIA have a (87.9)% correlation. The R-Squared is 0.77. Therefore the two instruments are mirroring each other 88% of the time, and there's a 77% chance that one is causing the other.

I will be conditionally formatting the cells over the next few day. After they are complete if an R-Squared cell if > say, 90, then it will turn colors. That way, traders can do a quick glance at the matrixes to see if there's something they should be watching that day.
--Thanks, Jim

Want something added? Let me know: jgoulding@ghco.com

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US Treasuries

Symbol	Daily Correlations US Cash Treasuries (Yield)				Daily Correlations US Bonds/Notes (CBOT)			
	2yr Yield	5yr Yield	10yr Yield	30yr Yield	ZT	ZF	ZN	ZB
5YR BASIS	15.2	(0.2)	18.6	19.9	(10.5)	(2.5)	(9.6)	(27.9)
10YR BASIS	(33.9)	(46.8)	(57.3)	(61.0)	12.1	27.5	34.3	39.5
30YR BASIS	17.0	(1.1)	3.8	(1.4)	(40.0)	(22.3)	(22.7)	(29.3)
2/10	(69.1)	(48.4)	(27.5)	(5.1)	57.9	48.7	35.8	23.1
2/5	(66.0)	(39.8)	(31.0)	(13.9)	59.9	45.8	38.1	36.5
2/30	(79.7)	(62.9)	(43.6)	(19.1)	67.3	61.3	49.8	36.6
5/10	(46.0)	(41.0)	(11.8)	8.9	32.3	33.4	18.5	(4.1)
5/30	(73.8)	(67.6)	(44.2)	(19.2)	59.1	60.4	48.5	29.1
10/30	(86.2)	(80.2)	(67.8)	(43.8)	73.7	75.0	68.7	56.8
TUF1^	29.8	14.5	31.0	27.1	(37.5)	(25.9)	(33.0)	(48.4)

^ See notes page

Symbol	Daily R-Squared US Cash Treasuries (Yield)				Daily R-Squared US Bonds/Notes (CBOT)			
	2yr Yield	5yr Yield	10yr Yield	30yr Yield	ZT	ZF	ZN	ZB
5YR BASIS	0.02	0.00	0.03	0.04	0.01	0.00	0.01	0.08
10YR BASIS	0.12	0.22	0.33	0.37	0.01	0.08	0.12	0.16
30YR BASIS	0.03	0.00	0.00	0.00	0.16	0.05	0.05	0.09
2/10	0.48	0.23	0.08	0.00	0.33	0.24	0.13	0.05
2/5	0.44	0.16	0.10	0.02	0.36	0.21	0.15	0.13
2/30	0.64	0.40	0.19	0.04	0.45	0.38	0.25	0.13
5/10	0.21	0.17	0.01	0.01	0.10	0.11	0.03	0.00
5/30	0.54	0.46	0.20	0.04	0.35	0.36	0.24	0.08
10/30	0.74	0.64	0.46	0.19	0.54	0.56	0.47	0.32
TUF1^	0.09	0.02	0.10	0.07	0.14	0.07	0.11	0.23

^ See notes page

	Daily Correlations US Cash Treasuries (Yield)				Daily Correlations US Bonds/Notes (CBOT)				
Symbol	2yr Yield	5yr Yield	10yr Yield	30yr Yield	ZT	ZF	ZN	ZB	**Exchange**
2yr Yield	100.0	95.2	88.5	74.5	(93.0)	(94.0)	(89.9)	(82.8)	
5yr Yield	95.2	100.0	95.4	85.3	(89.1)	(96.0)	(94.2)	(86.3)	
10yr Yield	88.5	95.4	100.0	95.8	(86.4)	(93.6)	(96.5)	(95.3)	
30yr Yield	74.5	85.3	95.8	100.0	(76.7)	(85.1)	(91.1)	(94.3)	
ZT	(93.0)	(89.1)	(86.4)	(76.7)	100.0	97.5	95.2	90.1	
ZF	(94.0)	(96.0)	(93.6)	(85.1)	97.5	100.0	98.6	92.3	
ZN	(89.9)	(94.2)	(96.5)	(91.1)	95.2	98.6	100.0	97.0	
ZB	(82.8)	(86.3)	(95.3)	(94.3)	90.1	92.3	97.0	100.0	
emini SP	25.0	44.1	35.4	36.2	(22.4)	(36.8)	(34.8)	(23.5)	CME
Dow Futures	29.0	46.8	38.9	40.8	(25.3)	(39.4)	(37.6)	(27.5)	CME/eCbot
USDJPY	86.8	83.9	80.5	74.4	(90.3)	(89.6)	(87.7)	(83.5)	Cash Market
EURUSD	(19.8)	(4.8)	(17.2)	(8.4)	9.4	2.7	7.8	20.4	Cash Market
EURJPY	28.7	39.1	27.4	31.6	(39.4)	(44.2)	(39.1)	(26.8)	Cash Market
Crude	(23.0)	(3.8)	(16.0)	(11.9)	25.3	11.8	16.7	30.2	CME/NYMEX

	Daily R-Squared US Cash Treasuries (Yield)				Daily R-Squared US Bonds/Notes (CBOT)			
Symbol	2yr Yield	5yr Yield	10yr Yield	30yr Yield	ZT	ZF	ZN	ZB
2yr Yield		0.91	0.78	0.55	0.86	0.88	0.81	0.69
5yr Yield	0.91		0.91	0.73	0.79	0.92	0.89	0.74
10yr Yield	0.78	0.91		0.92	0.75	0.88	0.93	0.91
30yr Yield	0.55	0.73	0.92		0.59	0.72	0.83	0.89
ZT	0.86	0.79	0.75	0.59		0.95	0.91	0.81
ZF	0.88	0.92	0.88	0.72	0.95		0.97	0.85
ZN	0.81	0.89	0.93	0.83	0.91	0.97		0.94
ZB	0.69	0.74	0.91	0.89	0.81	0.85	0.94	
emini SP	0.06	0.19	0.13	0.13	0.05	0.14	0.12	0.06
Dow Futures	0.08	0.22	0.15	0.17	0.06	0.16	0.14	0.08
USDJPY	0.75	0.70	0.65	0.55	0.81	0.80	0.77	0.70
EURUSD	0.04	0.00	0.03	0.01	0.01	0.00	0.01	0.04
EURJPY	0.08	0.15	0.08	0.10	0.16	0.20	0.15	0.07
Crude	0.05	0.00	0.03	0.01	0.06	0.01	0.03	0.09

US Treasuries, US Treasury Futures, & German Futures

		Daily Correlations			Daily Correlations					
		US Cash Treasuries			US Bonds/Notes (CBOT)					
SYM NAME	Symbol	2yr	5yr	10yr	ZT	ZF	ZN	Symbol	SYM NAMI	Exchange
Schatz(2Y)	DGZ7	(91.50)	(91.41)	(85.89)	93.06	94.16	92.00	DGZ7	Schatz(2Y)	EUREX
Bobl(5Y)	DLZ7	(89.85)	(91.16)	(91.95)	90.88	93.48	94.55	DLZ7	Bobl(5Y)	EUREX
Bund(10Y)	DBZ7	(84.26)	(87.46)	(94.13)	86.69	90.22	94.06	DBZ7	Bund(10Y)	EUREX

		Daily R-Squared			Daily R-Squared				
		US Cash Treasuries			US Bonds/Notes (CBOT)				
SYM NAME	Symbol	2yr	5yr	10yr	ZT	ZF	ZN	Symbol	SYM NAME
Schatz(2Y)	DGZ7	0.84	0.84	0.74	0.97	0.89	0.85	DGZ7	Schatz(2Y)
Bobl(5Y)	DLZ7	0.81	0.83	0.85	0.83	0.87	0.89	DLZ7	Bobl(5Y)
Bund(10Y)	DBZ7	0.71	0.76	0.89	0.75	0.81	0.88	DBZ7	Bund(10Y)

Energy & Currencies

Energies

Symbol	Daily Correlations CLA	HOA	RBA	NGA	Sym Name
CLA	100.0	98.0	99.3	68.5	Crude Oil
HOA	98.0	100.0	98.7	71.1	Heating Oil
RBA	99.3	98.7	100.0	72.0	unleaded Gas
NGA	68.5	71.1	72.0	100.0	Nat Gas
DJIA	66.2	65.8	64.8	76.2	Dow Cash
SPC5	66.6	66.0	65.4	72.0	S&P 500 Cash
EURUSD	82.4	89.5	86.4	74.9	€ / $
EURJPY	59.0	65.9	64.9	86.1	€ / ¥
USDJPY	(15.2)	(13.0)	(10.2)	48.2	$ / ¥

Energies

Symbol	Daily R-Squared CLA	HOA	RBA	NGA	Sym Name	Exchange
CLA		0.96	0.99	0.47	Crude Oil	CME Nymex
HOA	0.96		0.97	0.51	Heating Oil	CME Nymex
RBA	0.99	0.97		0.52	unleaded Gas	CME Nymex
NGA	0.47	0.51	0.52		Nat Gas	CME Nymex
DJIA	0.44	0.43	0.42	0.58	Dow Cash	NYSE (Cash)
SPC5	0.44	0.44	0.43	0.52	S&P 500 Cash	Cash
EURUSD	0.68	0.80	0.75	0.56	€ / $	Cash
EURJPY	0.35	0.43	0.42	0.74	€ / ¥	Cash
USDJPY	0.02	0.02	0.01	0.23	$ / ¥	Cash

Currencies

Symbol	Daily Correlations EURUSD	EURJPY	USDJPY	GBPEUR	Sym Name
EURUSD	100.0	85.3	7.2	(46.7)	€ / $
EURJPY	85.3	100.0	58.1	(37.2)	€ / ¥
USDJPY	7.2	58.1	100.0	0.0	$ / ¥
Euro	99.8	87.3	11.2	(46.6)	€
Yen	(37.8)	(78.5)	(90.7)	8.5	¥
Swiss Fr	93.8	79.2	5.5	(41.7)	CHF
Canadain $	94.3	76.1	(2.5)	(25.0)	C$

Currencies

Symbol	Daily R-Squared EURUSD	EURJPY	USDJPY	GBPEUR	Sym Name	Exchange
EURUSD		0.73	0.01	0.22	€ / $	Cash
EURJPY	0.73		0.34	0.14	€ / ¥	Cash
USDJPY	0.01	0.34		0.00	$ / ¥	Cash
Euro	1.00	0.76	0.01	0.22	€	CME/Globex
Yen	0.14	0.62	0.82	0.01	¥	CME/Globex
Swiss Fr	0.88	0.63	0.00	0.17	CHF	CME/Globex
Canadain $	0.89	0.58	0.00	0.06	C$	CME/Globex

Currencies

Symbol	Daily Correlations Euro	Yen	Swiss Fr	Canadain $	Sym Name
Euro	100.0	(42.3)	94.6	94.1	€
Yen	(42.3)	100.0	(38.7)	(31.5)	¥
Swiss Fr	94.6	(38.7)	100.0	85.2	CHF
Canadain $	93.9	(30.9)	85.2	100.0	C$

Currencies

Symbol	Daily R-Squared Euro	Yen	Swiss Fr	Canadain $	Sym Name	Exchange
Euro		0.18	0.89	0.89	€	CME/Globex
Yen	0.18		0.15	0.10	¥	CME/Globex
Swiss Fr	0.89	0.15		0.73	CHF	CME/Globex
Canadain $	0.88	0.10	0.73		C$	CME/Globex

Notes:
EURUSD, EURJPY, USDJPY, & USDGBP are all cash market products.
Euro, Yen, Swiss Fr, Canandian $, & BP are all CME products.

Notes

1) ALL Correlations are based on 10 day historical
2) CQG quotes prices in 32nds. That means you won't see "*32" on the end of my equations. I don't need to multiply by 32 to see the correct quote.

TUF1 = Cash2yr Yield - 5 Year Futures
CQG Equation = SHARESCALE(BUSP02-(FVA?*.5),INTEGER1)*32?Where FVA? is the 5yr electronic lead month futures contract.

FYT1 = (FV*1.5)-TY)
CQG Equation = ((FVA?*1.5)-TYA?)
Where: FV = 5 yr electronic futures; TY = 10 yr electronic futures

FYT2 = ((5 yr cash - (TY*.7))
CQG Equation ((BUS05P-(TYA*.7))
Where: 5 yr cash = OTR; TY = 10 yr electronic futures

NOB1 = (10 yr cash - (US*.7))
CQG Equation = (BUS10P-(USA*.7))
Where: US = 30 yr electronic futures; 10 yr cash = OTR

NOB2 = (TY-(US*.7))
CQG Equation = (TYA-(USA*.7))
Where: TY = 10 yr electronic futures; US = 30 yr electronic futures

FAQ
Q: Why do I have a column titled 'q' in certain places?
A: Those are q formulas I use within CQG. CQG is the engine behind my morning emails. They provide the quotes, I provide the formulas.

Q: Why are certain cells colored?
A: They help me identify what formula's need to be changed by hand and which are automated. There are over 9,000 formula's working behind the scenes to deliver the morning emails. I need some kind of system assist me in identifying certain formula's that need to be adjusted on new issues, rolls etc. I also use a color pattern for the treasuries to help with quick visual interpretation.

Sym Name = Symbol Name

BASIS is conversion factor.
Basis = Cash Price - (Futures Price * Conversion Factor)

US Treasury Basis

Daily Correlations Treasury Basis^				q
	5YR BASIS	10YR BASIS	30YR BASIS	
emini SP	(68.3)	(13.6)	(29.6)	
Dow Futures	(62.6)	(17.2)	(29.2)	
USDJPY	1.4	(11.0)	34.8	
EURUSD	(88.7)	34.6	(27.6)	
EURJPY	(70.9)	23.6	(2.9)	
Crude	(80.6)	6.1	(53.7)	
TUF1^	81.4	(5.2)	70.5	4
2/10	(2.5)	(18.9)	(29.2)	45
2/5	(45.8)	(13.1)	(53.7)	47
2/30	(4.3)	(5.3)	(26.3)	46
5/10	57.0	(19.4)	15.3	48
5/30	28.4	1.8	0.1	49
10/30	(7.1)	23.1	(15.6)	44
ZT	(10.5)	12.1	(10.5)	
ZF	(2.5)	27.5	(2.5)	
ZN	(9.6)	34.3	(9.6)	
ZB	(27.9)	39.5	(27.9)	

Daily R-Squared Treasury Basis			
	5YR BASIS	10YR BASIS	30YR BASIS
emini SP	0.47	0.02	0.09
Dow Futures	0.39	0.03	0.09
USDJPY	0.00	0.01	0.12
EURUSD	0.79	0.12	0.08
EURJPY	0.50	0.06	0.00
Crude	0.65	0.00	0.29
TUF1^	0.66	0.00	0.50
2/10	0.00	0.04	0.09
2/5	0.21	0.02	0.29
2/30	0.00	0.00	0.07
5/10	0.32	0.04	0.02
5/30	0.08	0.00	0.00
10/30	0.00	0.05	0.02
ZT	0.01	0.01	0.01
ZF	0.00	0.08	0.00
ZN	0.01	0.12	0.01
ZB	0.08	0.16	0.08

^See Notes Page

Daily Correlations
US Cash Treasuries Spreads (Yield)

Symbol	2/10	2/5	2/30	5/10	5/30	10/30	NOB1^	NOB2^	TUF^	FYT1^	FYT2^
2/10		88.1	97.0	76.8	83.8	72.8	1.2	28.5	(13.5)	83.2	(0.7)
2/5	88.1		84.5	37.3	55.1	61.4	(32.6)	(13.9)	(53.8)	52.3	(44.3)
2/30	97.0	84.5		75.7	91.2	87.3	3.2	23.1	(19.4)	76.5	(3.1)
5/10	76.8	37.3	75.7		89.6	59.4	46.5	74.6	46.3	92.3	58.6
5/30	83.8	55.1	91.2	89.6		89.0	30.1	46.6	11.1	79.2	29.1
10/30	72.8	61.4	87.3	59.4	89.0		6.8	7.8	(27.5)	48.5	(7.4)
NOB1^	1.2	(32.6)	3.2	46.5	30.1	6.8					
NOB2^	28.5	(13.9)	23.1	74.6	46.6	7.8					
TUF^	(13.5)	(53.8)	(19.4)	46.3	11.1	(27.5)					
FYT1^	83.2	52.3	76.5	92.3	79.2	48.5					
FYT2^	(0.7)	(44.3)	(3.1)	58.6	29.1	(7.4)					

Daily R-Squared
US Cash Treasuries Spreads (Yield)

Symbol	2/10	2/5	2/30	5/10	5/30	10'30	NOB1^	NOB2^	TUF^	FYT1^	FYT2^
2/10		0.78	0.94	0.59	0.70	0.53	0.00	0.08	0.02	0.69	0.00
2/5	0.78		0.71	0.14	0.30	0.38	0.11	0.02	0.29	0.27	0.20
2/30	0.94	0.71		0.57	0.83	0.76	0.00	0.05	0.04	0.58	0.00
5/10	0.59	0.14	0.57		0.80	0.35	0.22	0.56	0.21	0.85	0.34
5/30	0.70	0.30	0.83	0.80		0.79	0.09	0.22	0.01	0.63	0.08
10/30	0.53	0.38	0.76	0.35	0.79		0.00	0.01	0.08	0.24	0.01
NOB1^	0.00	0.11	0.00	0.22	0.09	0.00					
NOB2^	0.08	0.02	0.05	0.56	0.22	0.01					
TUF^	0.02	0.29	0.04	0.21	0.01	0.08					
FYT1^	0.69	0.27	0.58	0.85	0.63	0.24					
FYT2^	0.00	0.20	0.00	0.34	0.08	0.01					

^ See notes page

notes for Jim

q	
6	5YR BASIS
2	10YR BASIS
9	30YR BASIS
45	2/10
47	2/5
46	2/30
48	5/10
49	5/30
44	10/30
4	TUF1^
50	FYT1^
3	FYT2^
1	NOB1^
33	NOB2^