The Morning Email: Correlations & R-Squared

Table of Contents

One contract may be correlating with another but does that mean there's causation. You must ask, "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.

Conditionally formatted cells:
If there's an R-Squared equal to or greater than 80%, then, the cell will turn BLUE. That tells us that there's an 80% chance that one of the instruments is causing the other to move. HOWEVER, the gold and currency pages are set to 70% or greater. Lastly, If the cell is any other color, just ignore it. Other colors are 'notes' for me. --Thanks, Jim

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

	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	(77)	(74)	(45)	(7)	67	57	45	9
10YR BASIS	37	4	(53)	(82)	(36)	(8)	15	54
30YR BASIS	37	4	(55)	(88)	(35)	(5)	20	59
2/10	(76)	(44)	23	70	68	36	8	(47)
2/5	3	39	83	91	(14)	(48)	(69)	(91)
2/30	(82)	(54)	12	63	76	46	19	(37)
5/10	(96)	(79)	(21)	34	92	73	51	(5)
5/30	(95)	(77)	(18)	38	92	71	48	(8)
10/30	(92)	(73)	(13)	43	89	67	42	(12)
TUF1^	(70)	(37)	29	70	58	26	(1)	(55)

^ See notes page

	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	59	54	20	0	45	33	21	1
10YR BASIS	13	0	28	67	13	1	2	29
30YR BASIS	14	0	30	77	12	0	4	35
2/10	57	20	5	49	46	13	1	22
2/5	0	16	69	82	2	24	48	82
2/30	68	29	1	40	57	21	4	14
5/10	93	62	4	12	85	53	26	0
5/30	91	59	3	14	84	51	23	1
10/30	84	53	2	18	79	44	18	2
TUF1^	50	13	8	49	34	7	0	31

^ See notes page

	Daily Correlations US Cash Treasuries (Yield)				Daily Correlations US Bonds/Notes (CBOT)				
	2yr Yield	5yr Yield	10yr Yield	30yr Yield	ZT	ZF	ZN	ZB	Exchange
2yr Yield	100	91	44	(9)	(98)	(86)	(69)	(18)	
5yr Yield	91	100	76	30	(94)	(98)	(91)	(54)	
10yr Yield	44	76	100	84	(53)	(79)	(92)	(93)	
30yr Yield	(9)	30	84	100	1	(35)	(60)	(91)	
ZT	(98)	(94)	(53)	1	100	92	78	31	
ZF	(86)	(98)	(79)	(35)	92	100	96	64	
ZN	(69)	(91)	(92)	(60)	78	96	100	83	
ZB	(18)	(54)	(93)	(91)	31	64	83	100	
emini SP	79	89	67	23	(83)	(88)	(80)	(49)	CME
Dow Futures	79	86	63	18	(82)	(86)	(77)	(45)	CME/eCbot
USDJPY	85	90	62	15	(90)	(89)	(79)	(42)	Cash Market
EURUSD	(87)	(73)	(23)	24	87	75	58	9	Cash Market
EURJPY	38	56	62	42	(43)	(53)	(55)	(48)	Cash Market
Crude	(6)	20	45	43	(7)	(24)	(33)	(50)	CME/NYMEX

	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
2yr Yield		83	0	1	96	74	47	3
5yr Yield	83	1	58	9	89	95	82	29
10yr Yield	20	58		70	28	62	84	86
30yr Yield	1	9	70		0	12	36	82
ZT	96	89	28	0		85	61	9
ZF	74	95	62	12	85		91	41
ZN	47	82	84	36	61	91		69
ZB	3	29	86	82	9	41	69	
emini SP	63	79	45	5	70	78	64	24
Dow Futures	62	74	39	3	67	74	59	21
USDJPY	73	81	38	2	80	79	63	17
EURUSD	75	53	5	6	76	56	33	1
EURJPY	14	31	38	17	18	28	30	23
Crude	0	4	20	18	0	6	11	25

	Symbol	Daily Correlations US Cash Treasuries 2yr	5yr	10yr	Daily Correlations US Bonds/Notes (CBOT) ZT	ZF	ZN	Symbol		Exchange
Schatz(2Y)	DG	(56)	(81)	(92)	61	81	89	DG	Schatz(2Y)	EUREX
Bobl(5Y)	DL	(8)	(44)	(88)	18	53	72	DL	Bobl(5Y)	EUREX
Bund(10Y)	DB	6	(32)	(80)	5	43	64	DB	Bund(10Y)	EUREX

	Symbol	Daily R-Squared US Cash Treasuries 2yr	5yr	10yr	Daily R-Squared US Bonds/Notes (CBOT) ZT	ZF	ZN	Symbol	
Schatz(2Y)	DG	31	65	85	37	66	79	DG	Schatz(2Y)
Bobl(5Y)	DL	1	20	77	3	28	52	DL	Bobl(5Y)
Bund(10Y)	DB	0	10	65	0	18	41	DB	Bund(10Y)

How does this work on the ROLL? Formula's track the highest volume individual contract. For example, if we are rolling from Dec 2007 to March 2007, for the eCBOT, then, the day up to the 'top step change' Dec07 will be the highest volume traded contract. On the day of the switch, Mch08 will be the highest volume traded contract.

The formula will mix Dec07 and Mch08 until we've reached the 10th day of the change over. We always roll on the last trading day of the month. In this case it would be November 30th. So, by the tenth trading day of December the formula will have tracked the Mch08 contract entirely.

However, it doesn't matter. All that I'm concerned with is the highest volume contract and that's what the formulas track.

Furthermore, it works the same way for the Bund, Bobl, and Schatz; whatever contract is the highest volume contract, that's the contract the formula will take its data from.

Energies Daily Correlations

	CLA	HOA	RBA	NGA	
CLA	100	97	67	25	Crude Oil
HOA	97	100	79	9	Heating Oil
RBA	67	79	100	(29)	unleaded Gas
NGA	25	9	(29)	100	Nat Gas
DJIA	49	64	90	(60)	Dow Cash
SPC5	60	77	93	(56)	S&P 500 Cash
EURUSD	33	13	(42)	80	€ / $
EURJPY	75	78	76	(14)	€ / ¥
USDJPY	36	50	85	(62)	$ / ¥
GCA	51	39	(17)	74	Gold

Energies Daily R-Squared

	CLA	HOA	RBA	NGA		Exchange
CLA		94	45	6	Crude Oil	CME / Nymex
HOA	94		62	1	Heating Oil	CME / Nymex
RBA	45	62		8	unleaded Gas	CME / Nymex
NGA	6	1	8		Nat Gas	CME / Nymex
DJIA	24	41	81	37	Dow Cash	NYSE (Cash)
SPC5	36	59	87	31	S&P 500 Cash	Cash
EURUSD	11	2	18	63	€ / $	Cash
EURJPY	56	60	58	2	€ / ¥	Cash
USDJPY	13	25	73	38	$ / ¥	Cash
GCA	26	16	3	55	Gold	Comex

Currencies Daily Correlations

	EURUSD	EURJPY	USDJPY	GBPEUR	
EURUSD	100	0	(65)	(77)	€ / $
EURJPY	0	100	76	25	€ / ¥
USDJPY	(65)	76	100	69	$ / ¥
Euro	93	15	(50)	(68)	€
Yen	66	(75)	(99)	(71)	¥
Swiss Fr	94	(16)	(74)	(81)	CHF
Canadain $	(42)	72	82	34	C$

Currencies Daily R-Squared

	EURUSD	EURJPY	USDJPY	GBPEUR		Exchange
EURUSD		0	42	60	€ / $	Cash
EURJPY	0		57	6	€ / ¥	Cash
USDJPY	42	57		48	$ / ¥	Cash
Euro	87	2	25	46	€	CME/Globex
Yen	43	56	99	50	¥	CME/Globex
Swiss Fr	89	3	54	66	CHF	CME/Globex
Canadain $	18	51	68	12	C$	CME/Globex

Currencies Daily Correlations

	Euro	Yen	Swiss Fr	Canadain $	
Euro	100	48	94	(20)	€
Yen	48	100	72	(81)	¥
Swiss Fr	94	72	100	(43)	CHF
Canadain $	(20)	(81)	(43)	100	C$

Currencies Daily R-Squared

	Euro	Yen	Swiss Fr	Canadain $		Exchange
Euro		23	89	4	€	CME/Globex
Yen	23		52	66	¥	CME/Globex
Swiss Fr	89	52		18	CHF	CME/Globex
Canadain $	4	66	18		C$	CME/Globex

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

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

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

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.

US Treasury Basis

Daily Correlations

Treasury Basis^

	5YR BASIS	10YR BASIS	30YR BASIS	q
emini SP	(63)	7	13	
5$ Dow Futures	(60)	11	17	
USDJPY	(64)	16	19	
EURUSD	39	(64)	(54)	
EURJPY	(51)	(34)	(22)	
Crude	(4)	(37)	(22)	
TUF1^	55	(69)	(70)	4
2/10	53	(75)	(79)	45
2/5	(1)	(61)	(69)	47
2/30	58	(72)	(77)	46
5/10	67	(58)	(58)	48
5/30	67	(59)	(61)	49
10/30	65	(60)	(67)	44
ZT	67	(36)	67	
ZF	57	(8)	57	
ZN	45	15	45	
ZB	9	54	9	

Daily R-Squared

Treasury Basis

	5YR BASIS	10YR BASIS	30YR BASIS	Exchange
emini SP	39	0	2	Globex
5$ Dow Futures	36	1	3	Globex
USDJPY	41	3	4	Cash
EURUSD	15	41	30	Cash
EURJPY	26	11	5	Cash
Crude	0	14	5	CME / NYMEX
TUF1^	31	47	49	CME / NYMEX
2/10	28	56	63	BrokerTec
2/5	0	37	48	BrokerTec
2/30	34	52	59	BrokerTec
5/10	45	33	33	BrokerTec
5/30	44	35	38	BrokerTec
10/30	42	36	45	BrokerTec
ZT	45	13	45	Globex
ZF	33	1	33	Globex
ZN	21	2	21	Globex
ZB	1	29	1	Globex

^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		61	99	88	90	91	71	96	94	94	88
2/5	61		52	17	22	29	41	41	56	38	49
2/30	99	52		93	95	96	70	97	92	97	88
5/10	88	17	93		100	96	64	95	84	95	81
5/30	90	22	95	100		98	64	95	84	97	82
10/30	91	29	96	96	98		64	94	82	97	84
NOB1^	71	41	70	64	64	64					
NOB2^	96	41	97	95	95	94					
TUF^	94	56	92	84	84	82					
FYT1^	94	38	97	95	97	97					
FYT2^	88	49	88	81	82	84					

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		37	98	78	81	83	50	91	88	89	77
2/5	37		27	3	5	8	17	16	31	14	24
2/30	98	27		86	89	92	49	94	84	94	78
5/10	78	3	86		99	93	41	90	70	91	65
5/30	81	5	89	99		97	41	91	70	94	68
10/30	83	8	92	93	97		41	88	67	95	70
NOB1^	50	17	49	41	41	41					
NOB2^	91	16	94	90	91	88					
TUF^	88	31	84	70	70	67					
FYT1^	89	14	94	91	94	95					
FYT2^	77	24	78	65	68	70					

^ See notes page

Gold

	Daily Correlations	
Symbol	GC	Exchange
emini SP	(42)	Globex
5$ Dow Futures	(44)	Globex
WTI Crude	51	Glbx / Nymx
Brent Crude	15	ICE
USDJPY	(42)	Cash
EURUSD	82	Cash
EURJPY	16	Cash
Euro	94	Globex
Yen	39	Globex
Swiss Fr	90	Globex
Canadain $	(16)	Globex
2yr Yield	(79)	Broker Tec
5yr Yield	(59)	Broker Tec
10yr Yield	(6)	Broker Tec
30yr Yield	35	Broker Tec
ZT	70	Globex
ZF	51	Globex
ZN	30	Globex
ZB	(20)	Globex

	Daily R-Squared	
Symbol	GC	Exchange
emini SP	17	Globex
$ Dow Futures	19	Globex
WTI Crude	26	Glbx / Nymx
Brent Crude	2	ICE
USDJPY	17	Cash
EURUSD	67	Cash
EURJPY	3	Cash
Euro	88	Globex
Yen	15	Globex
Swiss Fr	81	Globex
Canadain $	2	Globex
2yr Yield	62	Broker Tec
5yr Yield	35	Broker Tec
10yr Yield	0	Broker Tec
30yr Yield	12	Broker Tec
ZT	49	Globex
ZF	26	Globex
ZN	9	Globex
ZB	4	Globex

This matrix is set-up to have the cells automatically highlight themselves if there's an R-Squared greater than 70%.

Note: YG old ecbot gold, now on CME (used to be eCbot). GC is Globex/Nymex Gold.

Currencies

Daily Correlations

Symbol	USDJPY	EURUSD	EURJPY	Euro	Yen	Swiss Fr	Canadian $	Exchange
USDJPY		(65)	76	(50)	(99)	(74)	82	Cash
EURUSD	(65)		0	93	66	94	(42)	Cash
EURJPY	76	0		15	(75)	(16)	72	Cash
Euro	(50)	93	15		48	94	(20)	Globex
Yen	(99)	66	(75)	48		72	(81)	Globex
Swiss Fr	(74)	94	(16)	94	72		(43)	Globex
Canadain $	82	(42)	72	(20)	(81)	(43)		Globex
emini SP	91	(58)	70	(45)	(89)	(65)	92	Globex
5$ Dow Futures	89	(60)	65	(47)	(86)	(66)	91	Globex
WTI Crude	36	33	75	53	(35)	29	64	Glbx / Nymx
Brent Crude	68	(6)	68	16	(66)	(12)	89	ICE
2yr Yield	85	(87)	38	(80)	(84)	(94)	65	BTEC
5yr Yield	90	(73)	56	(60)	(89)	(78)	82	BTEC
10yr Yield	62	(23)	62	(6)	(64)	(23)	76	BTEC
30yr Yield	15	24	42	37	(19)	28	39	BTEC
ZT	(90)	87	(43)	74	89	90	(73)	Globex
ZF	(89)	75	(53)	57	89	74	(85)	Globex
ZN	(79)	58	(55)	37	82	53	(84)	Globex
ZB	(42)	9	(48)	(14)	46	(2)	(67)	Globex

Daily R-Squared

Symbol	USDJPY	EURUSD	EURJPY	Euro	Yen	Swiss Fr	Canadian $
USDJPY		42	57	25	99	54	68
EURUSD	42		0	87	43	89	18
EURJPY	57	0		2	56	3	51
Euro	25	87	2		23	89	4
Yen	99	43	56	23		52	66
Swiss Fr	54	89	3	89	52		18
Canadain $	68	18	51	4	66	18	
emini SP	84	34	49	20	79	42	85
5$ Dow Futures	79	36	43	22	73	43	83
WTI Crude	13	11	56	28	12	8	40
Brent Crude	46	0	46	2	44	1	79
2yr Yield	73	75	14	65	70	89	42
5yr Yield	81	53	31	36	80	61	68
10yr Yield	38	5	38	0	41	5	58
30yr Yield	2	6	17	14	4	8	15
ZT	80	76	18	55	80	82	54
ZF	79	56	28	32	80	54	73
ZN	63	33	30	13	67	28	71
ZB	17	1	23	2	21	0	45

If there's an R-Squared greater than 70%, the cell will automatically highlight to blue.

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^

This page contains notes for me.

US Index Futures

Daily Correlations

	Globex Emini SP	Globex 5$ Dow Futrs	Exchange
USDJPY	91	89	Cash
EURUSD	(58)	(60)	Cash
EURJPY	70	65	Cash
Euro	(45)	(47)	Globex
Yen	(89)	(86)	Globex
Swiss Fr	(65)	(66)	Globex
Canadain $	92	91	Globex
WTI Crude	47	44	Glbx / Nymx
Brent Crude	78	75	ICE
2yr Yield	79	79	BTEC
5yr Yield	89	86	BTEC
10yr Yield	67	63	BTEC
30yr Yield	23	18	BTEC
ZT	(83)	(82)	Globex
ZF	(88)	(86)	Globex
ZN	(80)	(77)	Globex
ZB	(49)	(45)	Globex
GC	(42)	(44)	Glbx / Comex

R-Squared

	Globex Emini SP	Globex 5$ Dow Futrs	Exchange
USDJPY	84	79	Cash
EURUSD	34	36	Cash
EURJPY	49	43	Cash
Euro	20	22	Globex
Yen	79	73	Globex
Swiss Fr	42	43	Globex
Canadain $	85	83	Globex
WTI Crude	22	19	Glbx / Nymx
Brent Crude	61	56	ICE
2yr Yield	63	62	BTEC
5yr Yield	79	74	BTEC
10yr Yield	45	39	BTEC
30yr Yield	5	3	BTEC
ZT	70	67	Globex
ZF	78	74	Globex
ZN	64	59	Globex
ZB	24	21	Globex
GC	17	19	Glbx / Comex