

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.

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

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| 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 | (48.6) | (58.6) | (65.3) | (69.7) | 30.3 | 43.4 | 47.8 | 52.5 |
| 10YR BASIS | (49.1) | (59.6) | (69.1) | (75.4) | 32.2 | 45.1 | 51.7 | 58.6 |
| 30YR BASIS | (12.1) | (19.3) | (29.3) | (37.9) | (5.0) | 2.6 | 8.6 | 15.9 |
| 2/10 | (71.3) | (55.1) | (38.6) | (27.5) | 75.4 | 61.4 | 48.4 | 37.3 |
| 2/5 | (25.1) | (3.1) | 12.0 | 19.8 | 33.7 | 11.1 | (2.0) | (11.3) |
| 2/30 | (84.7) | (72.5) | (57.9) | (47.0) | 87.0 | 77.7 | 66.8 | 56.6 |
| 5/10 | (89.7) | (82.4) | (69.3) | (58.6) | 89.0 | 85.7 | 76.3 | 66.8 |
| 5/30 | (93.7) | (89.1) | (78.2) | (68.5) | 92.3 | 91.7 | 84.5 | 76.3 |
| 10/30 | (95.6) | (95.2) | (88.0) | (80.1) | 93.3 | 96.8 | 92.9 | 86.9 |
| TUF1^ | 32.3 | 45.6 | 50.8 | 49.6 | (36.6) | (51.2) | (58.4) | (60.4) |

^ 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 | 0.24 | 0.34 | 0.43 | 0.49 | 0.09 | 0.19 | 0.23 | 0.28 |
| 10YR BASIS | 0.24 | 0.36 | 0.48 | 0.57 | 0.10 | 0.20 | 0.27 | 0.34 |
| 30YR BASIS | 0.01 | 0.04 | 0.09 | 0.14 | 0.00 | 0.00 | 0.01 | 0.03 |
| 2/10 | 0.51 | 0.30 | 0.15 | 0.08 | 0.57 | 0.38 | 0.23 | 0.14 |
| 2/5 | 0.06 | 0.00 | 0.01 | 0.04 | 0.11 | 0.01 | 0.00 | 0.01 |
| 2/30 | 0.72 | 0.53 | 0.33 | 0.22 | 0.76 | 0.60 | 0.45 | 0.32 |
| 5/10 | 0.80 | 0.68 | 0.48 | 0.34 | 0.79 | 0.73 | 0.58 | 0.45 |
| 5/30 | 0.88 | 0.79 | 0.61 | 0.47 | 0.85 | 0.84 | 0.71 | 0.58 |
| 10/30 | 0.91 | 0.91 | 0.78 | 0.64 | 0.87 | 0.94 | 0.86 | 0.76 |
| TUF1^ | 0.10 | 0.21 | 0.26 | 0.25 | 0.13 | 0.26 | 0.34 | 0.36 |

^ See notes page

| 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 |
| 2yr Yield | 100.0 | 97.5 | 92.2 | 86.7 | (97.5) | (97.7) | (94.5) | (90.5) |
| 5yr Yield | 97.5 | 100.0 | 97.9 | 94.1 | (93.0) | (98.4) | (98.0) | (96.0) |
| 10yr Yield | 92.2 | 97.9 | 100.0 | 98.9 | (86.7) | (94.7) | (97.6) | (98.4) |
| 30yr Yield | 86.7 | 94.1 | 98.9 | 100.0 | (80.5) | (89.5) | (94.3) | (97.3) |
| ZT | (97.5) | (93.0) | (86.7) | (80.5) | 100.0 | 96.8 | 92.9 | 88.4 |
| ZF | (97.7) | (98.4) | (94.7) | (89.5) | 96.8 | 100.0 | 98.6 | 95.4 |
| ZN | (94.5) | (98.0) | (97.6) | (94.3) | 92.9 | 98.6 | 100.0 | 98.9 |
| ZB | (90.5) | (96.0) | (98.4) | (97.3) | 88.4 | 95.4 | 98.9 | 100.0 |
| emini SP | 83.4 | 79.0 | 67.4 | 56.6 | (84.3) | (85.0) | (77.7) | (68.7) |
| Dow Futures | 51.6 | 49.3 | 38.0 | 26.6 | (50.3) | (55.0) | (49.1) | (38.6) |
| USDJPY | 83.1 | 74.1 | 62.2 | 54.0 | (85.0) | (78.6) | (69.2) | (61.8) |
| EURUSD | (25.7) | (18.0) | (3.3) | 5.7 | 19.3 | 17.9 | 5.4 | (3.9) |
| EURJPY | 87.1 | 80.7 | 75.6 | 71.4 | (93.6) | (86.3) | (83.0) | (79.9) |
| Crude | 43.1 | 44.9 | 51.5 | 55.8 | (52.7) | (47.7) | (52.5) | (59.1) |

| 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 |
| 2yr Yield | | 0.95 | 0.85 | 0.75 | 0.95 | 0.96 | 0.89 | 0.82 |
| 5yr Yield | 0.95 | | 0.96 | 0.88 | 0.87 | 0.97 | 0.96 | 0.92 |
| 10yr Yield | 0.85 | 0.96 | | 0.98 | 0.75 | 0.90 | 0.95 | 0.97 |
| 30yr Yield | 0.75 | 0.88 | 0.98 | | 0.65 | 0.80 | 0.89 | 0.95 |
| ZT | 0.95 | 0.87 | 0.75 | 0.65 | | 0.94 | 0.86 | 0.78 |
| ZF | 0.96 | 0.97 | 0.90 | 0.80 | 0.94 | | 0.97 | 0.91 |
| ZN | 0.89 | 0.96 | 0.95 | 0.89 | 0.86 | 0.97 | | 0.98 |
| ZB | 0.82 | 0.92 | 0.97 | 0.95 | 0.78 | 0.91 | 0.98 | |
| emini SP | 0.70 | 0.62 | 0.45 | 0.32 | 0.71 | 0.72 | 0.60 | 0.47 |
| Dow Futures | 0.27 | 0.24 | 0.14 | 0.07 | 0.25 | 0.30 | 0.24 | 0.15 |
| USDJPY | 0.69 | 0.55 | 0.39 | 0.29 | 0.72 | 0.62 | 0.48 | 0.38 |
| EURUSD | 0.07 | 0.03 | 0.00 | 0.00 | 0.04 | 0.03 | 0.00 | 0.00 |
| EURJPY | 0.76 | 0.65 | 0.57 | 0.51 | 0.88 | 0.75 | 0.69 | 0.64 |
| Crude | 0.19 | 0.20 | 0.26 | 0.31 | 0.28 | 0.23 | 0.28 | 0.35 |



| SYM NAME | Symbol | Daily Correlations US Cash Treasuries | | | Daily Correlations US Bonds/Notes (CBOT) | | | Symbol | SYM NAME |
|------------|--------|--|---------|---------|---|-------|-------|--------|------------|
| | | 2yr | 5yr | 10yr | ZT | ZF | ZN | | |
| Schatz(2Y) | DGZ7 | (87.61) | (86.19) | (87.29) | 87.12 | 84.92 | 86.05 | DGZ7 | Schatz(2Y) |
| Bobl(5Y) | DLZ7 | (86.22) | (85.83) | (88.53) | 84.89 | 84.22 | 86.72 | DLZ7 | Bobl(5Y) |
| Bund(10Y) | DBZ7 | (79.24) | (81.66) | (87.03) | 77.54 | 80.28 | 85.31 | DBZ7 | Bund(10Y) |

| SYM NAME | Symbol | Daily R-Squared US Cash Treasuries | | | Daily R-Squared US Bonds/Notes (CBOT) | | | Symbol | SYM NAME |
|------------|--------|---------------------------------------|------|------|--|------|------|--------|------------|
| | | 2yr | 5yr | 10yr | ZT | ZF | ZN | | |
| Schatz(2Y) | DGZ7 | 0.77 | 0.74 | 0.76 | 0.97 | 0.72 | 0.74 | DGZ7 | Schatz(2Y) |
| Bobl(5Y) | DLZ7 | 0.74 | 0.74 | 0.78 | 0.72 | 0.71 | 0.75 | DLZ7 | Bobl(5Y) |
| Bund(10Y) | DBZ7 | 0.63 | 0.67 | 0.76 | 0.60 | 0.64 | 0.73 | DBZ7 | Bund(10Y) |

| Daily Correlations | | | | | |
|--------------------|--------|--------|--------|--------|--------------|
| Symbol | CLA | HOA | RBA | NGA | Sym Name |
| CLA | 100.0 | 94.0 | 85.2 | (22.5) | Crude Oil |
| HOA | 94.0 | 100.0 | 94.3 | (18.4) | Heating Oil |
| RBA | 85.2 | 94.3 | 100.0 | (29.1) | unleaded Gas |
| NGA | (22.5) | (18.4) | (29.1) | 100.0 | Nat Gas |
| DJIA | (34.2) | (33.1) | (26.6) | (36.3) | Dow Cash |
| SPC5 | 21.9 | 23.5 | 37.0 | (70.5) | S&P 500 Cash |
| EURUSD | 61.1 | 46.1 | 19.4 | 0.8 | € / \$ |
| EURJPY | 79.4 | 75.7 | 76.7 | (73.8) | € / ¥ |
| USDJPY | 34.2 | 41.8 | 61.7 | (72.0) | \$ / ¥ |

| Daily R-Squared | | | | | |
|-----------------|------|------|------|------|--------------|
| Symbol | CLA | HOA | RBA | NGA | Sym Name |
| CLA | | 0.88 | 0.73 | 0.05 | Crude Oil |
| HOA | 0.88 | | 0.89 | 0.03 | Heating Oil |
| RBA | 0.73 | 0.89 | | 0.08 | unleaded Gas |
| NGA | 0.05 | 0.03 | 0.08 | | Nat Gas |
| DJIA | 0.12 | 0.11 | 0.07 | 0.13 | Dow Cash |
| SPC5 | 0.05 | 0.06 | 0.14 | 0.50 | S&P 500 Cash |
| EURUSD | 0.37 | 0.21 | 0.04 | 0.00 | € / \$ |
| EURJPY | 0.63 | 0.57 | 0.59 | 0.54 | € / ¥ |
| USDJPY | 0.12 | 0.17 | 0.38 | 0.52 | \$ / ¥ |

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 = $\text{SHARESCALE}(\text{BUSP02}-(\text{FVA?}*.5), \text{INTEGER1}) * 32$? Where FVA? is the 5yr electronic lead month futures contract.

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

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

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

NOB2 = $(\text{TY} - (\text{US} * .7))$
 CQG Equation = $(\text{TYA} - (\text{USA} * .7))$
 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)

| Daily Correlations Treasury Basis^ | | | |
|---------------------------------------|-----------|------------|------------|
| | 5YR BASIS | 10YR BASIS | 30YR BASIS |
| emini SP | (12.5) | (9.5) | 33.0 |
| Dow Futures | 4.1 | 10.2 | 41.0 |
| USDJPY | (18.6) | (16.9) | 16.8 |
| EURUSD | 10.1 | (0.8) | (15.0) |
| EURJPY | (16.7) | (22.2) | 10.5 |
| Crude | (12.8) | (24.2) | (6.1) |
| TUF1^ | (0.3) | (5.8) | 35.7 |
| 2/10 | (2.5) | (7.9) | (24.2) |
| 2/5 | (37.2) | (39.1) | (29.8) |
| 2/30 | 11.7 | 6.6 | (19.1) |
| 5/10 | 26.3 | 19.4 | (13.2) |
| 5/30 | 32.9 | 27.4 | (9.3) |
| 10/30 | 41.1 | 37.8 | (3.1) |
| ZT | 30.3 | 32.2 | 30.3 |
| ZF | 43.4 | 45.1 | 43.4 |
| ZN | 47.8 | 51.7 | 47.8 |
| ZB | 52.5 | 58.6 | 52.5 |

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| Daily R-Squared Treasury Basis | | | |
|-----------------------------------|-----------|------------|------------|
| | 5YR BASIS | 10YR BASIS | 30YR BASIS |
| emini SP | 0.02 | 0.01 | 0.11 |
| Dow Futures | 0.00 | 0.01 | 0.17 |
| USDJPY | 0.03 | 0.03 | 0.03 |
| EURUSD | 0.01 | 0.00 | 0.02 |
| EURJPY | 0.03 | 0.05 | 0.01 |
| Crude | 0.02 | 0.06 | 0.00 |
| TUF1^ | 0.00 | 0.00 | 0.13 |
| 2/10 | 0.00 | 0.01 | 0.06 |
| 2/5 | 0.14 | 0.15 | 0.09 |
| 2/30 | 0.01 | 0.00 | 0.04 |
| 5/10 | 0.07 | 0.04 | 0.02 |
| 5/30 | 0.11 | 0.07 | 0.01 |
| 10/30 | 0.17 | 0.14 | 0.00 |
| ZT | 0.09 | 0.10 | 0.09 |
| ZF | 0.19 | 0.20 | 0.19 |
| ZN | 0.23 | 0.27 | 0.23 |
| ZB | 0.28 | 0.34 | 0.28 |

^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 | | 81.5 | 97.0 | 88.3 | 81.5 | 68.3 | 19.4 | 71.2 | 15.2 | 96.0 | 50.9 |
| 2/5 | 81.5 | | 65.6 | 44.7 | 33.2 | 15.1 | (7.3) | 62.6 | 53.9 | 68.1 | 20.6 |
| 2/30 | 97.0 | 65.6 | | 96.5 | 92.9 | 83.9 | 26.1 | 64.3 | (4.2) | 95.9 | 55.2 |
| 5/10 | 88.3 | 44.7 | 96.5 | | 98.9 | 93.1 | 35.8 | 59.2 | (20.2) | 92.9 | 61.9 |
| 5/30 | 81.5 | 33.2 | 92.9 | 98.9 | | 97.6 | 36.3 | 49.9 | (31.6) | 86.6 | 59.0 |
| 10/30 | 68.3 | 15.1 | 83.9 | 93.1 | 97.6 | | 35.4 | 34.2 | (46.9) | 73.9 | 52.3 |
| NOB1^ | 19.4 | (7.3) | 26.1 | 35.8 | 36.3 | 35.4 | | | | | |
| NOB2^ | 71.2 | 62.6 | 64.3 | 59.2 | 49.9 | 34.2 | | | | | |
| TUF^ | 15.2 | 53.9 | (4.2) | (20.2) | (31.6) | (46.9) | | | | | |
| FYT1^ | 96.0 | 68.1 | 95.9 | 92.9 | 86.6 | 73.9 | | | | | |
| FYT2^ | 50.9 | 20.6 | 55.2 | 61.9 | 59.0 | 52.3 | | | | | |

| 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 | | 0.66 | 0.94 | 0.78 | 0.66 | 0.47 | 0.04 | 0.51 | 0.02 | 0.92 | 0.26 |
| 2/5 | 0.66 | | 0.43 | 0.20 | 0.11 | 0.02 | 0.01 | 0.39 | 0.29 | 0.46 | 0.04 |
| 2/30 | 0.94 | 0.43 | | 0.93 | 0.86 | 0.70 | 0.07 | 0.41 | 0.00 | 0.92 | 0.31 |
| 5/10 | 0.78 | 0.20 | 0.93 | | 0.98 | 0.87 | 0.13 | 0.35 | 0.04 | 0.86 | 0.38 |
| 5/30 | 0.66 | 0.11 | 0.86 | 0.98 | | 0.95 | 0.13 | 0.25 | 0.10 | 0.75 | 0.35 |
| 10/30 | 0.47 | 0.02 | 0.70 | 0.87 | 0.95 | | 0.13 | 0.12 | 0.22 | 0.55 | 0.27 |
| NOB1^ | 0.04 | 0.01 | 0.07 | 0.13 | 0.13 | 0.13 | | | | | |
| NOB2^ | 0.51 | 0.39 | 0.41 | 0.35 | 0.25 | 0.12 | | | | | |
| TUF^ | 0.02 | 0.29 | 0.00 | 0.04 | 0.10 | 0.22 | | | | | |
| FYT1^ | 0.92 | 0.46 | 0.92 | 0.86 | 0.75 | 0.55 | | | | | |
| FYT2^ | 0.26 | 0.04 | 0.31 | 0.38 | 0.35 | 0.27 | | | | | |

^ See notes page

| | |
|----|------------|
| 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^ |