

The Morning Email: Correlations & R-Squared

Table of Contents

| | | |
|-------------|--|------------------|
| Pg 1 | US Treasuries | |
| Pg 2 | US Treasuries & US Treasury Futures | |
| Pg 3 | US Treasuries, US Treasury Futures, & German Futures | |
| Pg 4 | Energy & Currencies | Currencies added |
| Pg 5 | Notes | |
| Pg 6 | US Treasury Basis | |
| Pg 7 | US Treasury Spreads | |
| Pg 8 | | |

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.

Conditionally formatted cells have been added. If there's an R-Squared greater than 80%, then, the cell will turn BLUE. What that's telling us is that there's an 80% chance that one of the instruments is causing the other to move. I've also formatted the cells to change color if there's a negative R-Squared (then, the cell will turn red). That tells us the two instruments are mirroring each other. 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

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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 | (77.8) | (77.3) | (74.9) | (42.0) | 67.6 | 64.5 | 59.7 | 31.3 |
| 10YR BASIS | 72.7 | 71.3 | 60.1 | 13.8 | (75.7) | (72.0) | (70.2) | (37.0) |
| 30YR BASIS | 23.1 | 21.5 | 5.9 | (29.0) | (34.1) | (30.3) | (27.2) | (6.0) |
| 2/10 | (97.9) | (96.0) | (86.7) | (47.9) | 96.6 | 94.1 | 88.5 | 56.9 |
| 2/5 | (96.5) | (94.0) | (84.3) | (46.1) | 94.2 | 91.6 | 85.4 | 52.8 |
| 2/30 | (97.8) | (96.2) | (87.2) | (46.2) | 96.3 | 93.6 | 88.2 | 55.5 |
| 5/10 | (98.1) | (96.7) | (87.6) | (48.7) | 97.4 | 95.0 | 89.8 | 59.1 |
| 5/30 | (97.6) | (96.3) | (87.5) | (45.8) | 96.3 | 93.5 | 88.6 | 56.0 |
| 10/30 | (94.4) | (93.5) | (85.3) | (40.4) | 92.3 | 89.1 | 84.7 | 50.0 |
| TUF1^ | (78.8) | (76.7) | (69.9) | (33.2) | 68.9 | 64.7 | 57.2 | 24.3 |

^ 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 | 0.60 | 0.60 | 0.56 | 0.18 | 0.46 | 0.42 | 0.36 | 0.10 |
| 10YR BASIS | 0.53 | 0.51 | 0.36 | 0.02 | 0.57 | 0.52 | 0.49 | 0.14 |
| 30YR BASIS | 0.05 | 0.05 | 0.00 | 0.08 | 0.12 | 0.09 | 0.07 | 0.00 |
| 2/10 | 0.96 | 0.92 | 0.75 | 0.23 | 0.93 | 0.89 | 0.78 | 0.32 |
| 2/5 | 0.93 | 0.88 | 0.71 | 0.21 | 0.89 | 0.84 | 0.73 | 0.28 |
| 2/30 | 0.96 | 0.93 | 0.76 | 0.21 | 0.93 | 0.88 | 0.78 | 0.31 |
| 5/10 | 0.96 | 0.93 | 0.77 | 0.24 | 0.95 | 0.90 | 0.81 | 0.35 |
| 5/30 | 0.95 | 0.93 | 0.77 | 0.21 | 0.93 | 0.87 | 0.79 | 0.31 |
| 10/30 | 0.89 | 0.87 | 0.73 | 0.16 | 0.85 | 0.79 | 0.72 | 0.25 |
| TUF1^ | 0.62 | 0.59 | 0.49 | 0.11 | 0.48 | 0.42 | 0.33 | 0.06 |

^ See notes page

| Symbol | Daily Correlations US Cash Treasuries (Yield) | | | | Daily Correlations US Bonds/Notes (CBOT) | | | | Exchange |
|-------------|--|-----------|------------|------------|---|--------|--------|--------|-------------|
| | 2yr Yield | 5yr Yield | 10yr Yield | 30yr Yield | ZT | ZF | ZN | ZB | |
| 2yr Yield | 100.0 | 99.7 | 95.0 | 63.5 | (98.7) | (97.8) | (94.7) | (70.0) | |
| 5yr Yield | 99.7 | 100.0 | 97.0 | 68.1 | (98.7) | (98.3) | (96.3) | (74.5) | |
| 10yr Yield | 95.0 | 97.0 | 100.0 | 82.2 | (93.8) | (95.5) | (96.5) | (84.4) | |
| 30yr Yield | 63.5 | 68.1 | 82.2 | 100.0 | (63.8) | (70.1) | (76.7) | (93.4) | |
| ZT | (98.7) | (98.7) | (93.8) | (63.8) | 100.0 | 99.5 | 97.3 | 75.1 | |
| ZF | (97.8) | (98.3) | (95.5) | (70.1) | 99.5 | 100.0 | 98.9 | 80.7 | |
| ZN | (94.7) | (96.3) | (96.5) | (76.7) | 97.3 | 98.9 | 100.0 | 87.5 | |
| ZB | (70.0) | (74.5) | (84.4) | (93.4) | 75.1 | 80.7 | 87.5 | 100.0 | |
| emini SP | 97.9 | 97.3 | 93.5 | 62.0 | (94.7) | (94.1) | (91.1) | (65.4) | CME |
| Dow Futures | 97.5 | 96.6 | 91.9 | 59.7 | (94.3) | (93.5) | (90.2) | (63.3) | CME/eCbot |
| USDJPY | 92.1 | 90.7 | 83.8 | 40.4 | (88.0) | (84.6) | (80.0) | (45.4) | Cash Market |
| EURUSD | (87.0) | (83.7) | (68.8) | (20.9) | 85.8 | 81.4 | 73.0 | 32.8 | Cash Market |
| EURJPY | 70.7 | 72.3 | 76.2 | 50.4 | (64.8) | (63.6) | (65.0) | (46.8) | Cash Market |
| Crude | (50.4) | (46.5) | (35.9) | (22.0) | 50.7 | 49.3 | 41.6 | 24.5 | CME/NYMEX |

| 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 | 0.99 | 0.99 | 0.90 | 0.40 | 0.97 | 0.96 | 0.90 | 0.49 |
| 5yr Yield | 0.99 | | 0.94 | 0.46 | 0.97 | 0.97 | 0.93 | 0.55 |
| 10yr Yield | 0.90 | 0.94 | | 0.68 | 0.88 | 0.91 | 0.93 | 0.71 |
| 30yr Yield | 0.40 | 0.46 | 0.68 | | 0.41 | 0.49 | 0.59 | 0.87 |
| ZT | 0.97 | 0.97 | 0.88 | 0.41 | | 0.99 | 0.95 | 0.56 |
| ZF | 0.96 | 0.97 | 0.91 | 0.49 | 0.99 | | 0.98 | 0.65 |
| ZN | 0.90 | 0.93 | 0.93 | 0.59 | 0.95 | 0.98 | | 0.76 |
| ZB | 0.49 | 0.55 | 0.71 | 0.87 | 0.56 | 0.65 | 0.76 | |
| emini SP | 0.96 | 0.95 | 0.87 | 0.38 | 0.90 | 0.88 | 0.83 | 0.43 |
| Dow Futures | 0.95 | 0.93 | 0.84 | 0.36 | 0.89 | 0.87 | 0.81 | 0.40 |
| USDJPY | 0.85 | 0.82 | 0.70 | 0.16 | 0.77 | 0.72 | 0.64 | 0.21 |
| EURUSD | 0.76 | 0.70 | 0.47 | 0.04 | 0.74 | 0.66 | 0.53 | 0.11 |
| EURJPY | 0.50 | 0.52 | 0.58 | 0.25 | 0.42 | 0.40 | 0.42 | 0.22 |
| Crude | 0.25 | 0.22 | 0.13 | 0.05 | 0.26 | 0.24 | 0.17 | 0.06 |



| SYM NAME | Symbol | Daily Correlations US Cash Treasuries | | | Daily Correlations US Bonds/Notes (CBOT) | | | Symbol | SYM NAME | Exchange |
|------------|--------|--|---------|---------|---|-------|-------|--------|------------|----------|
| | | 2yr | 5yr | 10yr | ZT | ZF | ZN | | | |
| Schatz(2Y) | DGZ7 | (92.10) | (93.58) | (92.61) | 92.02 | 91.46 | 90.97 | DGZ7 | Schatz(2Y) | EUREX |
| Bobl(5Y) | DLZ7 | (93.23) | (94.77) | (94.23) | 92.44 | 92.00 | 91.53 | DLZ7 | Bobl(5Y) | EUREX |
| Bund(10Y) | DBZ7 | (88.91) | (90.99) | (92.33) | 87.10 | 86.75 | 86.68 | DBZ7 | Bund(10Y) | EUREX |

| 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 | 0.85 | 0.88 | 0.86 | 0.97 | 0.84 | 0.83 | DGZ7 | Schatz(2Y) |
| Bobl(5Y) | DLZ7 | 0.87 | 0.90 | 0.89 | 0.85 | 0.85 | 0.84 | DLZ7 | Bobl(5Y) |
| Bund(10Y) | DBZ7 | 0.79 | 0.83 | 0.85 | 0.76 | 0.75 | 0.75 | DBZ7 | Bund(10Y) |

Energies

| Daily Correlations | | | | | |
|--------------------|--------|--------|--------|--------|--------------|
| Symbol | CLA | HOA | RBA | NGA | Sym Name |
| CLA | 100.0 | 93.2 | 94.1 | (28.9) | Crude Oil |
| HOA | 93.2 | 100.0 | 97.0 | (46.7) | Heating Oil |
| RBA | 94.1 | 97.0 | 100.0 | (37.0) | unleaded Gas |
| NGA | (28.9) | (46.7) | (37.0) | 100.0 | Nat Gas |
| DJIA | (48.7) | (73.1) | (71.3) | 50.1 | Dow Cash |
| SPC5 | (47.0) | (71.6) | (70.3) | 50.5 | S&P 500 Cash |
| EURUSD | 65.2 | 84.6 | 76.6 | (69.0) | € / \$ |
| EURJPY | 10.3 | (12.5) | (10.5) | 43.6 | € / ¥ |
| USDJPY | (34.5) | (58.8) | (52.5) | 66.4 | \$ / ¥ |

Energies

| Daily R-Squared | | | | | | |
|-----------------|------|------|------|------|--------------|-------------|
| Symbol | CLA | HOA | RBA | NGA | Sym Name | Exchange |
| CLA | | 0.87 | 0.89 | 0.08 | Crude Oil | CME Nymex |
| HOA | 0.87 | | 0.94 | 0.22 | Heating Oil | CME Nymex |
| RBA | 0.89 | 0.94 | | 0.14 | unleaded Gas | CME Nymex |
| NGA | 0.08 | 0.22 | 0.14 | | Nat Gas | CME Nymex |
| DJIA | 0.24 | 0.54 | 0.51 | 0.25 | Dow Cash | NYSE (Cash) |
| SPC5 | 0.22 | 0.51 | 0.49 | 0.25 | S&P 500 Cash | Cash |
| EURUSD | 0.42 | 0.72 | 0.59 | 0.48 | € / \$ | Cash |
| EURJPY | 0.01 | 0.02 | 0.01 | 0.19 | € / ¥ | Cash |
| USDJPY | 0.12 | 0.35 | 0.28 | 0.44 | \$ / ¥ | Cash |

Currencies

| Daily Correlations | | | | | |
|--------------------|--------|--------|--------|--------|----------|
| Symbol | EURUSD | EURJPY | USDJPY | GBPEUR | Sym Name |
| EURUSD | 100.0 | (47.9) | (87.7) | 2.2 | € / \$ |
| EURJPY | (46.9) | 100.0 | 84.2 | 9.3 | € / ¥ |
| USDJPY | (87.7) | 84.2 | 100.0 | 4.4 | \$ / ¥ |
| Euro | 98.9 | (48.5) | (87.4) | 7.5 | € |
| Yen | 89.2 | (80.5) | (99.1) | (6.7) | ¥ |
| Swiss Fr | 98.2 | (57.6) | (91.8) | 11.1 | CHF |
| Canadain \$ | 59.9 | 3.9 | (34.1) | 27.3 | C\$ |

Currencies

| Daily R-Squared | | | | | | |
|-----------------|--------|--------|--------|--------|----------|------------|
| Symbol | EURUSD | EURJPY | USDJPY | GBPEUR | Sym Name | Exchange |
| EURUSD | | 0.23 | 0.77 | 0.00 | € / \$ | Cash |
| EURJPY | 0.22 | | 0.71 | 0.01 | € / ¥ | Cash |
| USDJPY | 0.77 | 0.71 | | 0.00 | \$ / ¥ | Cash |
| Euro | 0.98 | 0.24 | 0.76 | 0.01 | € | CME/Globex |
| Yen | 0.79 | 0.65 | 0.98 | 0.00 | ¥ | CME/Globex |
| Swiss Fr | 0.96 | 0.33 | 0.84 | 0.01 | CHF | CME/Globex |
| Canadain \$ | 0.36 | 0.00 | 0.12 | 0.07 | C\$ | CME/Globex |

Currencies

| Daily Correlations | | | | | |
|--------------------|-------|-------|----------|-------------|----------|
| Symbol | Euro | Yen | Swiss Fr | Canadain \$ | Sym Name |
| Euro | 100.0 | 87.7 | 98.2 | 57.6 | € |
| Yen | 87.7 | 100.0 | 92.5 | 29.2 | ¥ |
| Swiss Fr | 98.2 | 92.5 | 100.0 | 53.0 | CHF |
| Canadain \$ | 60.8 | 34.5 | 56.9 | 100.0 | C\$ |

Currencies

| Daily R-Squared | | | | | | |
|-----------------|------|------|----------|-------------|----------|------------|
| Symbol | Euro | Yen | Swiss Fr | Canadain \$ | Sym Name | Exchange |
| Euro | | 0.77 | 0.96 | 0.33 | € | CME/Globex |
| Yen | 0.77 | | 0.86 | 0.09 | ¥ | CME/Globex |
| Swiss Fr | 0.96 | 0.86 | | 0.28 | CHF | CME/Globex |
| Canadain \$ | 0.37 | 0.12 | 0.32 | | C\$ | CME/Globex |

Notes:

EURUSD, EURJPY, USDJPY, & USDGBP are all cash market products.
Euro, Yen, Swiss Fr, Canadain \$, & 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?*1.5),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)

| Daily Correlations Treasury Basis^ | | | |
|---------------------------------------|-----------|------------|------------|
| | 5YR BASIS | 10YR BASIS | 30YR BASIS |
| emini SP | (80.5) | 70.6 | 13.4 |
| Dow Futures | (79.7) | 72.4 | 15.4 |
| USDJPY | (86.8) | 77.1 | 22.7 |
| EURUSD | 67.0 | (76.7) | (45.0) |
| EURJPY | (82.3) | 55.6 | (8.7) |
| Crude | 24.0 | (24.1) | (14.5) |
| TUF1^ | 97.0 | (48.0) | 9.4 |
| 2/10 | 75.5 | (77.0) | (33.0) |
| 2/5 | 75.7 | (73.8) | (26.8) |
| 2/30 | 78.1 | (79.8) | (34.2) |
| 5/10 | 74.8 | (78.5) | (36.7) |
| 5/30 | 78.4 | (81.4) | (36.8) |
| 10/30 | 81.9 | (83.7) | (36.1) |
| ZT | 67.6 | (75.7) | 67.6 |
| ZF | 64.5 | (72.0) | 64.5 |
| ZN | 59.7 | (70.2) | 59.7 |
| ZB | 31.3 | (37.0) | 31.3 |

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| Daily R-Squared Treasury Basis | | | |
|-----------------------------------|-----------|------------|------------|
| | 5YR BASIS | 10YR BASIS | 30YR BASIS |
| emini SP | 0.65 | 0.50 | 0.02 |
| Dow Futures | 0.63 | 0.52 | 0.02 |
| USDJPY | 0.75 | 0.59 | 0.05 |
| EURUSD | 0.45 | 0.59 | 0.20 |
| EURJPY | 0.68 | 0.31 | 0.01 |
| Crude | 0.06 | 0.06 | 0.02 |
| TUF1^ | 0.94 | 0.23 | 0.01 |
| 2/10 | 0.57 | 0.59 | 0.11 |
| 2/5 | 0.57 | 0.54 | 0.07 |
| 2/30 | 0.61 | 0.64 | 0.12 |
| 5/10 | 0.56 | 0.62 | 0.13 |
| 5/30 | 0.61 | 0.66 | 0.14 |
| 10/30 | 0.67 | 0.70 | 0.13 |
| ZT | 0.46 | 0.57 | 0.46 |
| ZF | 0.42 | 0.52 | 0.42 |
| ZN | 0.36 | 0.49 | 0.36 |
| ZB | 0.10 | 0.14 | 0.10 |

^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 | | 99.3 | 99.6 | 99.7 | 98.9 | 95.3 | (73.0) | 94.7 | 80.5 | 98.8 | 91.8 |
| 2/5 | 99.3 | | 98.5 | 98.1 | 97.1 | 93.1 | (69.3) | 94.2 | 81.9 | 98.0 | 92.1 |
| 2/30 | 99.6 | 98.5 | | 99.6 | 99.8 | 97.6 | (75.8) | 96.2 | 81.7 | 97.6 | 92.6 |
| 5/10 | 99.7 | 98.1 | 99.6 | | 99.4 | 96.0 | (74.8) | 94.3 | 79.0 | 98.6 | 90.9 |
| 5/30 | 98.9 | 97.1 | 99.8 | 99.4 | | 98.6 | (77.6) | 96.2 | 80.9 | 96.7 | 92.0 |
| 10/30 | 95.3 | 93.1 | 97.6 | 96.0 | 98.6 | | (80.0) | 96.7 | 81.8 | 91.5 | 91.5 |
| NOB1^ | (73.0) | (69.3) | (75.8) | (74.8) | (77.6) | (80.0) | | | | | |
| NOB2^ | 94.7 | 94.2 | 96.2 | 94.3 | 96.2 | 96.7 | | | | | |
| TUF^ | 80.5 | 81.9 | 81.7 | 79.0 | 80.9 | 81.8 | | | | | |
| FYT1^ | 98.8 | 98.0 | 97.6 | 98.6 | 96.7 | 91.5 | | | | | |
| FYT2^ | 91.8 | 92.1 | 92.6 | 90.9 | 92.0 | 91.5 | | | | | |

| 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 | | 0.99 | 0.99 | 0.99 | 0.98 | 0.91 | 0.53 | 0.90 | 0.65 | 0.98 | 0.84 |
| 2/5 | 0.99 | | 0.97 | 0.96 | 0.94 | 0.87 | 0.48 | 0.89 | 0.67 | 0.96 | 0.85 |
| 2/30 | 0.99 | 0.97 | | 0.99 | 1.00 | 0.95 | 0.57 | 0.93 | 0.67 | 0.95 | 0.86 |
| 5/10 | 0.99 | 0.96 | 0.99 | | 0.99 | 0.92 | 0.56 | 0.89 | 0.62 | 0.97 | 0.83 |
| 5/30 | 0.98 | 0.94 | 1.00 | 0.99 | | 0.97 | 0.60 | 0.93 | 0.65 | 0.93 | 0.85 |
| 10/30 | 0.91 | 0.87 | 0.95 | 0.92 | 0.97 | | 0.64 | 0.94 | 0.67 | 0.84 | 0.84 |
| NOB1^ | 0.53 | 0.48 | 0.57 | 0.56 | 0.60 | 0.64 | | | | | |
| NOB2^ | 0.90 | 0.89 | 0.93 | 0.89 | 0.93 | 0.94 | | | | | |
| TUF^ | 0.65 | 0.67 | 0.67 | 0.62 | 0.65 | 0.67 | | | | | |
| FYT1^ | 0.98 | 0.96 | 0.95 | 0.97 | 0.93 | 0.84 | | | | | |
| FYT2^ | 0.84 | 0.85 | 0.86 | 0.83 | 0.85 | 0.84 | | | | | |

^ 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^ |