

## The Morning Email: TERM TEDS & Dirty TEDS

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Want something added? Let me know: [jgoulding@ghco.com](mailto:jgoulding@ghco.com)

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| Treasury Futures and Cash |                 |            |                |           |
|---------------------------|-----------------|------------|----------------|-----------|
|                           | Last<br>Decimal | Last<br>32 | Last<br>Yield* | MDuration |
| ZT                        | 108.9906        | 108.3170   | 0.701          | 1.75      |
| ZF                        | 119.0531        | 119.0170   | 1.408          | 1.41      |
| ZN                        | 124.6875        | 124.2200   | 1.611          | 6.15      |
| 2y                        | 99.9906         | 99.3170    | 0.879          | 1.93      |
| 5y                        | 100.4531        | 100.1450   | 1.651          | 4.72      |
| 10y                       | 101.0781        | 101.0250   | 2.623          | 8.69      |

| Eurodollars (ED) |               |                   |                   |                     |       |            |
|------------------|---------------|-------------------|-------------------|---------------------|-------|------------|
|                  | Last<br>Price | Last Imp<br>Yield | Days til<br>Expr. | Fraction<br>of year | Month |            |
| EDAH09           | 98.660        | 1.340             | 26                | 0.071               | MAR   |            |
| EDAM09           | 98.665        | 1.335             | 117               | 0.320               | JUN   | White Pack |
| EDAU09           | 98.620        | 1.380             | 208               | 0.569               | SEP   |            |
| EDAZ09           | 98.495        | 1.505             | 299               | 0.819               | DEC   |            |
| EDAH10           | 98.415        | 1.585             | 390               | 1.068               | MAR   |            |
| EDAM10           | 98.240        | 1.760             | 481               | 1.317               | JUN   | Red Pack   |
| EDAU10           | 98.045        | 1.955             | 572               | 1.566               | SEP   |            |
| EDAZ10           | 97.815        | 2.185             | 663               | 1.816               | DEC   |            |
| EDAH11           | 97.645        | 2.355             | 754               | 2.065               | MAR   |            |
| EDAM11           | 97.435        | 2.565             | 845               | 2.314               | JUN   | Green Pack |
| EDAU11           | 97.240        | 2.760             | 943               | 2.583               | SEP   |            |
| EDAZ11           | 97.060        | 2.940             | 1034              | 2.832               | DEC   |            |
| EDAH12           | 96.970        | 3.030             | 1125              | 3.082               | MAR   |            |
| EDAM12           | 96.855        | 3.145             | 1216              | 3.331               | JUN   | Blue Pack  |
| EDAU12           | 96.790        | 3.210             | 1307              | 3.580               | SEP   |            |
| EDAZ12           | 96.665        | 3.335             | 1398              | 3.829               | DEC   |            |
| EDAH13           | 96.615        | 3.385             | 1489              | 4.079               | MAR   |            |
| EDAM13           | 96.580        | 3.420             | 1580              | 4.328               | JUN   | Gold Pack  |
| EDZU13           | 96.505        | 3.495             | 1671              | 4.577               | SEP   |            |
| EDZZ13           | 96.395        | 3.605             | 1762              | 4.827               | DEC   |            |

|            | Last Yield | Net Yield | Last Price |                |
|------------|------------|-----------|------------|----------------|
| White Pack | 1.414      | -4.500    | 9861.000   | Pack<br>Prices |
| Red Pack   | 1.906      | -3.875    | 9812.875   |                |
| Green Pack | 2.710      | -2.250    | 9734.500   |                |
| Blue Pack  | 3.250      | -1.750    | 9682.000   |                |
| Gold Pack  |            | -0.625    | 9651.125   |                |

Red pack is a 2yr proxy  
 Gold pack is a 10yr proxy  
 Red /Gold is a 2/10 proxy  
 Blue pack is a 5yr proxy  
 Blue/Gold is a 5/10 proxy

Notes

\* Futures use CTD for Last Yield

IF : '#VALUE!', then, no quote being provided by exchange.

If color of cell is orange, it's simply a 'note' for me.

**How many ways can you hedge the TED? Let me count...there's lots and lots, like:**

- 1 Regression
  - 2 Engineered
  - 3 Strip with and without Stubs
  - 4 Convexity Bias
  - 5 Weighted
  - 6 Unweighted
- and more...

Most of us are interested in the *unweighted hedge* which is simply a curve trade hedge. There are so many ways to hedge the TED trade that I can't possibly list them all.

If you email me and ask for a specific hedge, I'll get it to you.

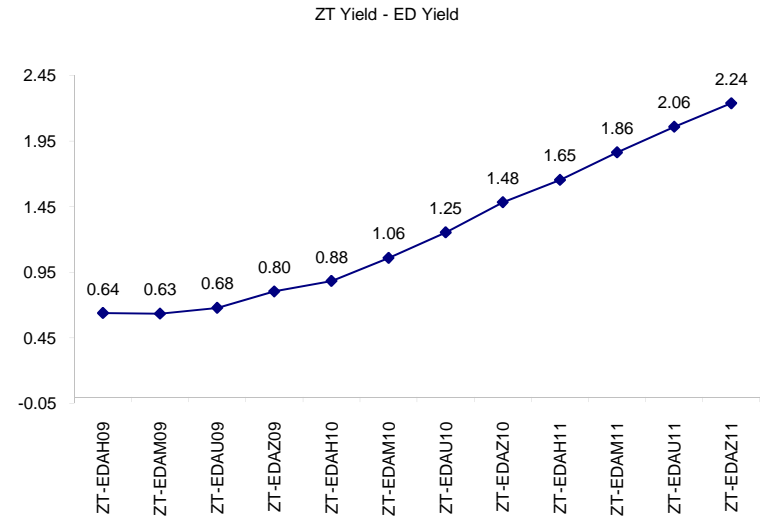
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#### **Correlations (Important)**

Correlations for the US Cash Treasuries are done on a YIELD basis. Therefore, you'll see negative values. The reason for this is due to the new issues. Every new issue takes too long to 'catch up' because the correlation formula looks back 10days. So, it's much easier to formulate the correlations based on yield than price.

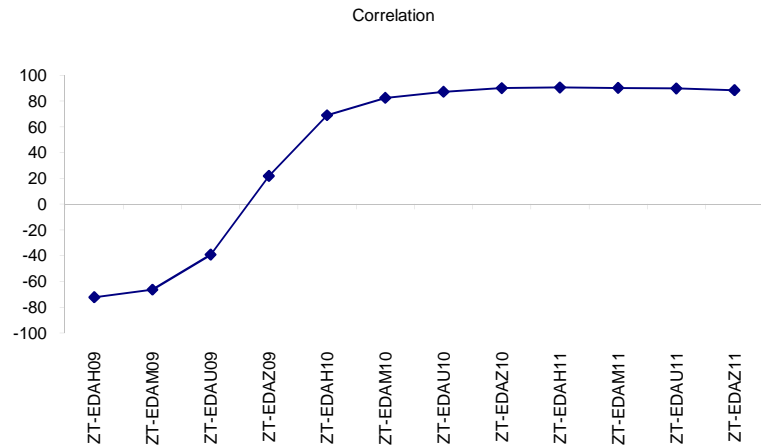
|        | ZT           |              |             |                        |
|--------|--------------|--------------|-------------|------------------------|
|        | Spread Price | Spread Yield | Spread Name | Correlation* (percent) |
| EDAH09 | 10.331       | 0.64         | ZT-EDAH09   | -72.207                |
| EDAM09 | 10.326       | 0.63         | ZT-EDAM09   | -66.286                |
| EDAU09 | 10.371       | 0.68         | ZT-EDAU09   | -39.142                |
| EDAZ09 | 10.496       | 0.80         | ZT-EDAZ09   | 21.846                 |
| EDAH10 | 10.576       | 0.88         | ZT-EDAH10   | 68.979                 |
| EDAM10 | 10.751       | 1.06         | ZT-EDAM10   | 82.441                 |
| EDAU10 | 10.946       | 1.25         | ZT-EDAU10   | 87.134                 |
| EDAZ10 | 11.176       | 1.48         | ZT-EDAZ10   | 90.039                 |
| EDAH11 | 11.346       | 1.65         | ZT-EDAH11   | 90.526                 |
| EDAM11 | 11.556       | 1.86         | ZT-EDAM11   | 90.145                 |
| EDAU11 | 11.751       | 2.06         | ZT-EDAU11   | 89.801                 |
| EDAZ11 | 11.931       | 2.24         | ZT-EDAZ11   | 88.358                 |

Price = Outright Decimal Price - Euro Contract Price  
 Yield = ABS (Proxy Yield - Implied Euro Contract yield)  
 \*Correlation = ED Correlation to Treasury Future over 10 days



|        | ED Duration as Fraction of year |      | ZT Duration | Spread Duration |  |
|--------|---------------------------------|------|-------------|-----------------|--|
| EDAH09 | 0.071                           | 1.75 | 1.68        | ZT-EDAH09       |  |
| EDAM09 | 0.320                           | 1.75 | 1.43        | ZT-EDAM09       |  |
| EDAU09 | 0.569                           | 1.75 | 1.18        | ZT-EDAU09       |  |
| EDAZ09 | 0.819                           | 1.75 | 0.93        | ZT-EDAZ09       |  |
| EDAH10 | 1.068                           | 1.75 | 0.68        | ZT-EDAH10       |  |
| EDAM10 | 1.317                           | 1.75 | 0.43        | ZT-EDAM10       |  |
| EDAU10 | 1.566                           | 1.75 | 0.19        | ZT-EDAU10       |  |
| EDAZ10 | 1.816                           | 1.75 | (0.06)      | ZT-EDAZ10       |  |
| EDAH11 | 2.065                           | 1.75 | (0.31)      | ZT-EDAH11       |  |
| EDAM11 | 2.314                           | 1.75 | (0.56)      | ZT-EDAM11       |  |
| EDAU11 | 2.583                           | 1.75 | (0.83)      | ZT-EDAU11       |  |
| EDAZ11 | 2.832                           | 1.75 | (1.08)      | ZT-EDAZ11       |  |

The farther away from 0 the spread duration is the riskier the trade.

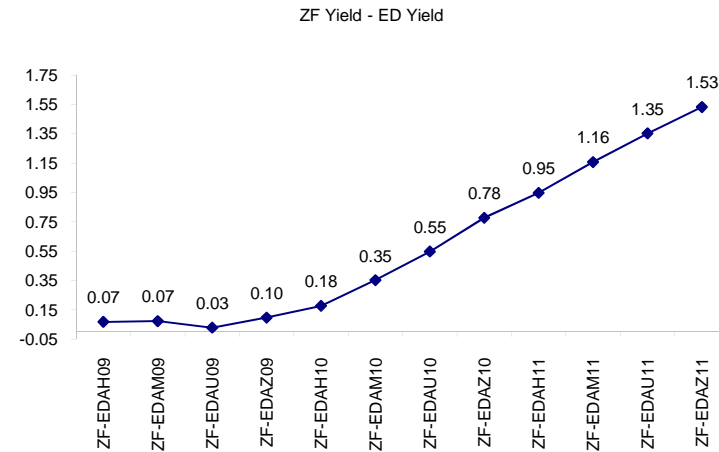


|        | ZF           |              |             |                        |
|--------|--------------|--------------|-------------|------------------------|
|        | Spread Price | Spread Yield | Spread Name | Correlation* (percent) |
| EDAH09 | 20.393       | 0.07         | ZF-EDAH09   | -80.181                |
| EDAM09 | 20.388       | 0.07         | ZF-EDAM09   | -73.376                |
| EDAU09 | 20.433       | 0.03         | ZF-EDAU09   | -42.943                |
| EDAZ09 | 20.558       | 0.10         | ZF-EDAZ09   | 22.424                 |
| EDAH10 | 20.638       | 0.18         | ZF-EDAH10   | 72.041                 |
| EDAM10 | 20.813       | 0.35         | ZF-EDAM10   | 85.786                 |
| EDAU10 | 21.008       | 0.55         | ZF-EDAU10   | 90.329                 |
| EDAZ10 | 21.238       | 0.78         | ZF-EDAZ10   | 93.109                 |
| EDAH11 | 21.408       | 0.95         | ZF-EDAH11   | 94.556                 |
| EDAM11 | 21.618       | 1.16         | ZF-EDAM11   | 95.355                 |
| EDAU11 | 21.813       | 1.35         | ZF-EDAU11   | 95.644                 |
| EDAZ11 | 21.993       | 1.53         | ZF-EDAZ11   | 95.010                 |

Price = Outright Decimal Price - Euro Contract Price

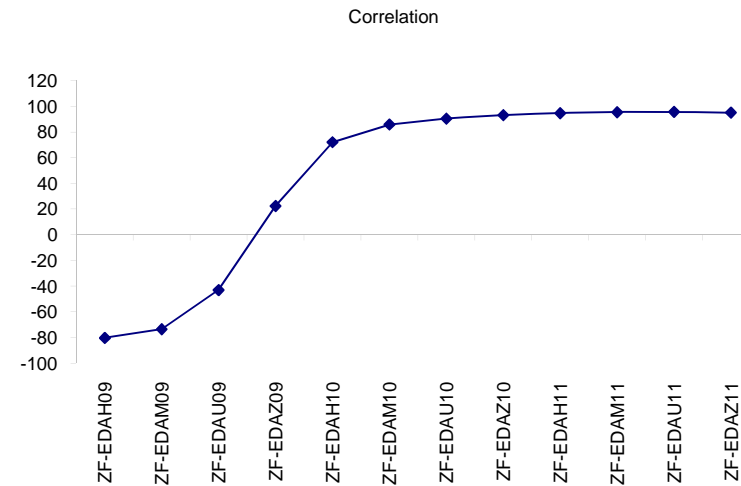
Yield = ABS (Proxy Yield - Implied Euro Contract yield)

\*Correlation = ED Correlation to Treasury Future over 10 days



|        | ED Duration as Fraction of year |      | ZF Duration | Spread Duration |           |
|--------|---------------------------------|------|-------------|-----------------|-----------|
| EDAH09 | 0.071                           | 1.41 | 1.34        | 1.34            | ZF-EDAH09 |
| EDAM09 | 0.320                           | 1.41 | 1.09        | 1.09            | ZF-EDAM09 |
| EDAU09 | 0.569                           | 1.41 | 0.84        | 0.84            | ZF-EDAU09 |
| EDAZ09 | 0.819                           | 1.41 | 0.59        | 0.59            | ZF-EDAZ09 |
| EDAH10 | 1.068                           | 1.41 | 0.34        | 0.34            | ZF-EDAH10 |
| EDAM10 | 1.317                           | 1.41 | 0.09        | 0.09            | ZF-EDAM10 |
| EDAU10 | 1.566                           | 1.41 | (0.16)      | (0.16)          | ZF-EDAU10 |
| EDAZ10 | 1.816                           | 1.41 | (0.41)      | (0.41)          | ZF-EDAZ10 |
| EDAH11 | 2.065                           | 1.41 | (0.66)      | (0.66)          | ZF-EDAH11 |
| EDAM11 | 2.314                           | 1.41 | (0.91)      | (0.91)          | ZF-EDAM11 |
| EDAU11 | 2.583                           | 1.41 | (1.18)      | (1.18)          | ZF-EDAU11 |
| EDAZ11 | 2.832                           | 1.41 | (1.42)      | (1.42)          | ZF-EDAZ11 |

The farther away from 0 the spread duration is the riskier the trade.

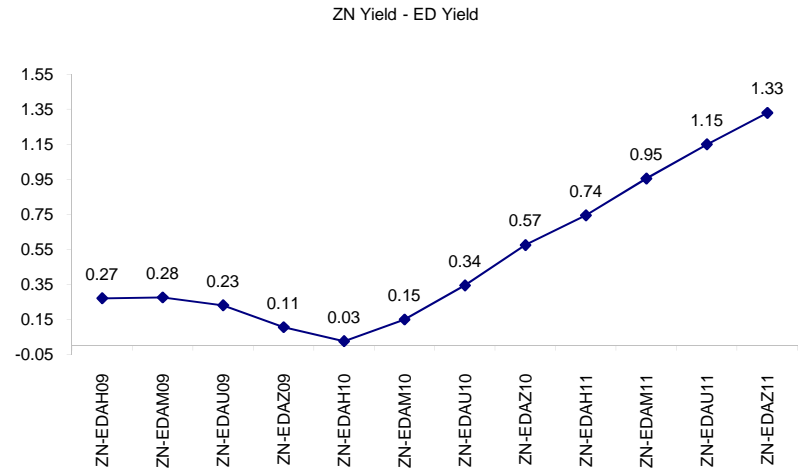


|        | ZN           |              |             | Correlation*<br>(percent) |
|--------|--------------|--------------|-------------|---------------------------|
|        | Spread Price | Spread Yield | Spread Name |                           |
| EDAH09 | 26.028       | 0.27         | ZN-EDAH09   | -81.366                   |
| EDAM09 | 26.023       | 0.28         | ZN-EDAM09   | -73.940                   |
| EDAU09 | 26.068       | 0.23         | ZN-EDAU09   | -41.584                   |
| EDAZ09 | 26.193       | 0.11         | ZN-EDAZ09   | 25.784                    |
| EDAH10 | 26.273       | 0.03         | ZN-EDAH10   | 76.329                    |
| EDAM10 | 26.448       | 0.15         | ZN-EDAM10   | 89.860                    |
| EDAU10 | 26.643       | 0.34         | ZN-EDAU10   | 93.869                    |
| EDAZ10 | 26.873       | 0.57         | ZN-EDAZ10   | 95.788                    |
| EDAH11 | 27.043       | 0.74         | ZN-EDAH11   | 96.955                    |
| EDAM11 | 27.253       | 0.95         | ZN-EDAM11   | 97.685                    |
| EDAU11 | 27.448       | 1.15         | ZN-EDAU11   | 97.621                    |
| EDAZ11 | 27.628       | 1.33         | ZN-EDAZ11   | 97.075                    |

Price = Outright Decimal Price - Euro Contract Price

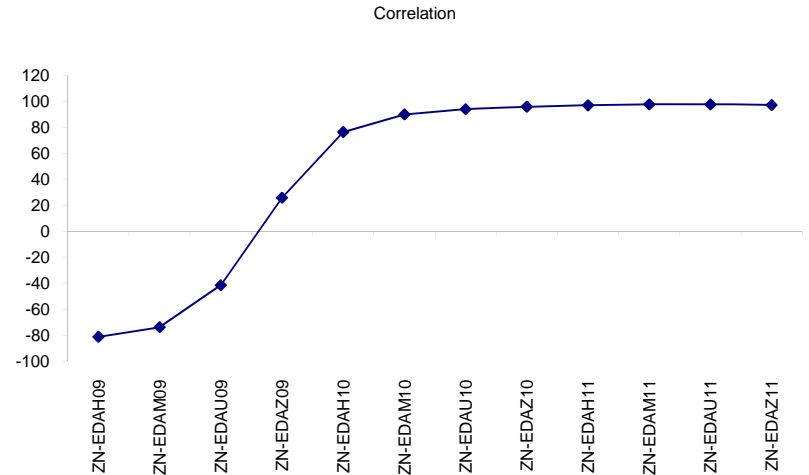
Yield = ABS (Proxy Yield - Implied Euro Contract yield)

\*Correlation = ED Correlation to Treasury Future over 10 days



|        | ED Duration as Fraction of year |             | ZN Duration | Spread Duration |  |
|--------|---------------------------------|-------------|-------------|-----------------|--|
|        | Fraction of year                | ZN Duration |             |                 |  |
| EDAH09 | 0.071                           | 6.15        | 6.08        | ZN-EDAH09       |  |
| EDAM09 | 0.320                           | 6.15        | 5.83        | ZN-EDAM09       |  |
| EDAU09 | 0.569                           | 6.15        | 5.58        | ZN-EDAU09       |  |
| EDAZ09 | 0.819                           | 6.15        | 5.33        | ZN-EDAZ09       |  |
| EDAH10 | 1.068                           | 6.15        | 5.08        | ZN-EDAH10       |  |
| EDAM10 | 1.317                           | 6.15        | 4.83        | ZN-EDAM10       |  |
| EDAU10 | 1.566                           | 6.15        | 4.59        | ZN-EDAU10       |  |
| EDAZ10 | 1.816                           | 6.15        | 4.34        | ZN-EDAZ10       |  |
| EDAH11 | 2.065                           | 6.15        | 4.09        | ZN-EDAH11       |  |
| EDAM11 | 2.314                           | 6.15        | 3.84        | ZN-EDAM11       |  |
| EDAU11 | 2.583                           | 6.15        | 3.57        | ZN-EDAU11       |  |
| EDAZ11 | 2.832                           | 6.15        | 3.32        | ZN-EDAZ11       |  |

The farther away from 0 the spread duration is the riskier the trade.



|        | 2y           |              |             |                        |
|--------|--------------|--------------|-------------|------------------------|
|        | Spread Price | Spread Yield | Spread Name | Correlation* (percent) |
| EDAH09 | 1.331        | 0.46         | 2y-EDAH09   | 68.800                 |
| EDAM09 | 1.326        | 0.46         | 2y-EDAM09   | 61.777                 |
| EDAU09 | 1.371        | 0.50         | 2y-EDAU09   | 32.490                 |
| EDAZ09 | 1.496        | 0.63         | 2y-EDAZ09   | -28.744                |
| EDAH10 | 1.576        | 0.71         | 2y-EDAH10   | -69.023                |
| EDAM10 | 1.751        | 0.88         | 2y-EDAM10   | -79.557                |
| EDAU10 | 1.946        | 1.08         | 2y-EDAU10   | -83.567                |
| EDAZ10 | 2.176        | 1.31         | 2y-EDAZ10   | -86.708                |
| EDAH11 | 2.346        | 1.48         | 2y-EDAH11   | -88.580                |
| EDAM11 | 2.556        | 1.69         | 2y-EDAM11   | -90.085                |
| EDAU11 | 2.751        | 1.88         | 2y-EDAU11   | -91.057                |
| EDAZ11 | 2.931        | 2.06         | 2y-EDAZ11   | -90.456                |

Price = Outright Decimal Price - Euro Contract Price

Yield = ABS (Proxy Yield - Implied Euro Contract yield)

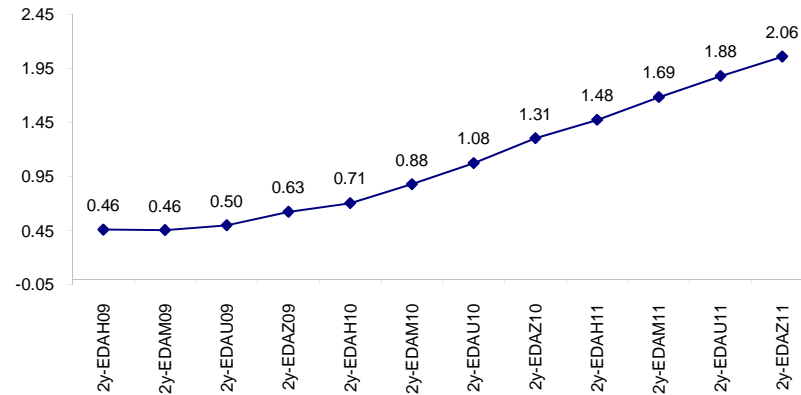
\*Correlation = ED Correlation to Treasury Future over 10 days.

ED Duration as

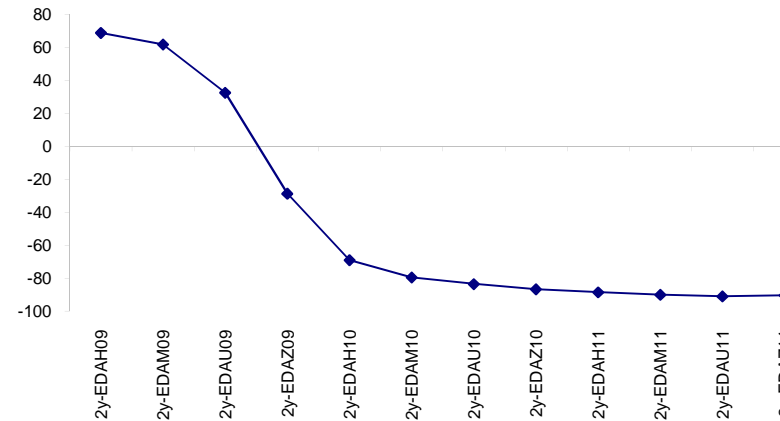
|        | Fraction of year | 2Y Duration | Spread Duration |           |
|--------|------------------|-------------|-----------------|-----------|
| EDAH09 | 0.071            | 1.93        | 1.86            | 2y-EDAH09 |
| EDAM09 | 0.320            | 1.93        | 1.61            | 2y-EDAM09 |
| EDAU09 | 0.569            | 1.93        | 1.36            | 2y-EDAU09 |
| EDAZ09 | 0.819            | 1.93        | 1.11            | 2y-EDAZ09 |
| EDAH10 | 1.068            | 1.93        | 0.86            | 2y-EDAH10 |
| EDAM10 | 1.317            | 1.93        | 0.61            | 2y-EDAM10 |
| EDAU10 | 1.566            | 1.93        | 0.36            | 2y-EDAU10 |
| EDAZ10 | 1.816            | 1.93        | 0.11            | 2y-EDAZ10 |
| EDAH11 | 2.065            | 1.93        | (0.14)          | 2y-EDAH11 |
| EDAM11 | 2.314            | 1.93        | (0.39)          | 2y-EDAM11 |
| EDAU11 | 2.583            | 1.93        | (0.66)          | 2y-EDAU11 |
| EDAZ11 | 2.832            | 1.93        | (0.91)          | 2y-EDAZ11 |

The farther away from 0 the spread duration is the riskier the trade.

ZT Yield - ED Yield



Correlation



|        | 5y           |              |             |                        |
|--------|--------------|--------------|-------------|------------------------|
|        | Spread Price | Spread Yield | Spread Name | Correlation* (percent) |
| EDAH09 | 1.793        | 0.31         | 5y-EDAH09   | 72.180                 |
| EDAM09 | 1.788        | 0.32         | 5y-EDAM09   | 65.468                 |
| EDAU09 | 1.833        | 0.27         | 5y-EDAU09   | 36.454                 |
| EDAZ09 | 1.958        | 0.15         | 5y-EDAZ09   | -25.336                |
| EDAH10 | 2.038        | 0.07         | 5y-EDAH10   | -68.175                |
| EDAM10 | 2.213        | 0.11         | 5y-EDAM10   | -80.081                |
| EDAU10 | 2.408        | 0.30         | 5y-EDAU10   | -84.567                |
| EDAZ10 | 2.638        | 0.53         | 5y-EDAZ10   | -87.687                |
| EDAH11 | 2.808        | 0.70         | 5y-EDAH11   | -89.586                |
| EDAM11 | 3.018        | 0.91         | 5y-EDAM11   | -90.963                |
| EDAU11 | 3.213        | 1.11         | 5y-EDAU11   | -91.486                |
| EDAZ11 | 3.393        | 1.29         | 5y-EDAZ11   | -90.681                |

Price = Outright Decimal Price - Euro Contract Price

Yield = ABS (Proxy Yield - Implied Euro Contract yield)

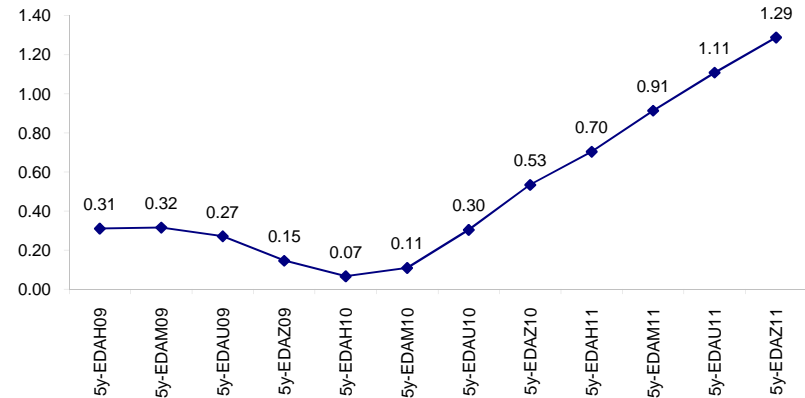
\*Correlation = ED Correlation to Treasury Future over 10 days

ED Duration as

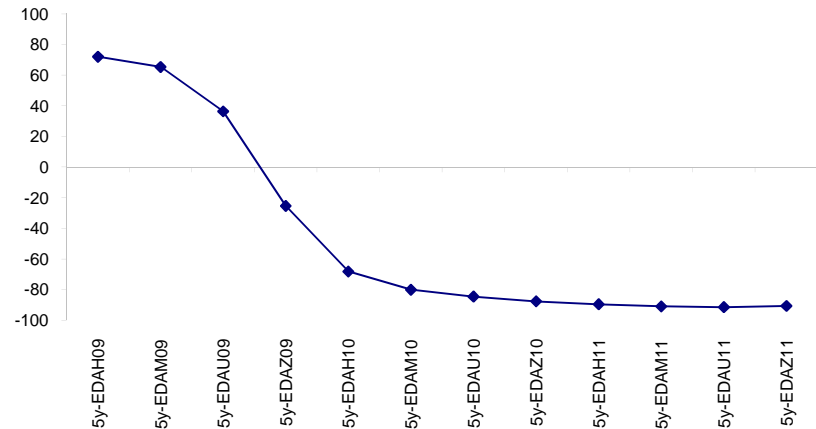
|        | Fraction of year | 5Y Duration | Spread Duration |           |
|--------|------------------|-------------|-----------------|-----------|
| EDAH09 | 0.071            | 4.72        | 4.65            | 5y-EDAH09 |
| EDAM09 | 0.320            | 4.72        | 4.40            | 5y-EDAM09 |
| EDAU09 | 0.569            | 4.72        | 4.15            | 5y-EDAU09 |
| EDAZ09 | 0.819            | 4.72        | 3.90            | 5y-EDAZ09 |
| EDAH10 | 1.068            | 4.72        | 3.65            | 5y-EDAH10 |
| EDAM10 | 1.317            | 4.72        | 3.40            | 5y-EDAM10 |
| EDAU10 | 1.566            | 4.72        | 3.15            | 5y-EDAU10 |
| EDAZ10 | 1.816            | 4.72        | 2.90            | 5y-EDAZ10 |
| EDAH11 | 2.065            | 4.72        | 2.65            | 5y-EDAH11 |
| EDAM11 | 2.314            | 4.72        | 2.40            | 5y-EDAM11 |
| EDAU11 | 2.583            | 4.72        | 2.14            | 5y-EDAU11 |
| EDAZ11 | 2.832            | 4.72        | 1.89            | 5y-EDAZ11 |

The farther away from 0 the spread duration is the riskier the trade.

5y - ED Yield



Correlation

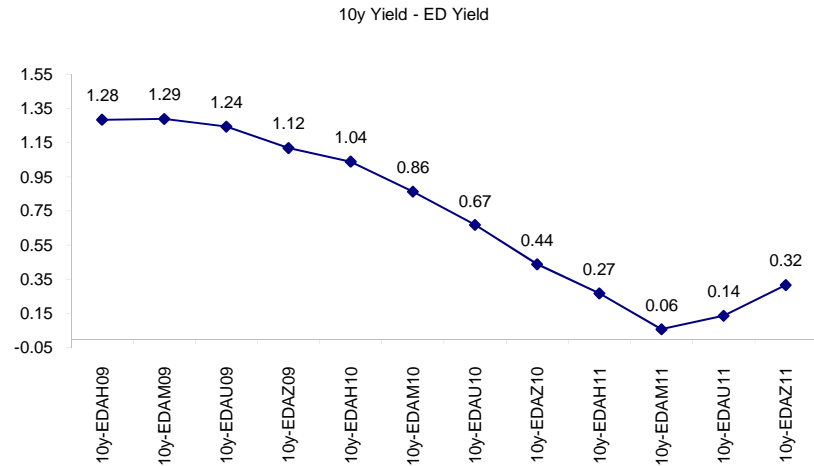


|        | 10y          |              |             |                        |
|--------|--------------|--------------|-------------|------------------------|
|        | Spread Price | Spread Yield | Spread Name | Correlation* (percent) |
| EDAH09 | 1.793        | 1.28         | 10y-EDAH09  | 77.571                 |
| EDAM09 | 1.788        | 1.29         | 10y-EDAM09  | 70.553                 |
| EDAU09 | 1.833        | 1.24         | 10y-EDAU09  | 40.966                 |
| EDAZ09 | 1.958        | 1.12         | 10y-EDAZ09  | -22.530                |
| EDAH10 | 2.038        | 1.04         | 10y-EDAH10  | -67.686                |
| EDAM10 | 2.213        | 0.86         | 10y-EDAM10  | -80.611                |
| EDAU10 | 2.408        | 0.67         | 10y-EDAU10  | -85.100                |
| EDAZ10 | 2.638        | 0.44         | 10y-EDAZ10  | -87.950                |
| EDAH11 | 2.808        | 0.27         | 10y-EDAH11  | -89.822                |
| EDAM11 | 3.018        | 0.06         | 10y-EDAM11  | -91.255                |
| EDAU11 | 3.213        | 0.14         | 10y-EDAU11  | -91.719                |
| EDAZ11 | 3.393        | 0.32         | 10y-EDAZ11  | -91.087                |

Price = Outright Decimal Price - Euro Contract Price

Yield = ABS (Proxy Yield - Implied Euro Contract yield)

\*Correlation = ED Correlation to Treasury Future over 10 days



|        | ED Duration as Fraction of year |                 |      |            |
|--------|---------------------------------|-----------------|------|------------|
|        | 10Y Duration                    | Spread Duration |      |            |
| EDAH09 | 0.071                           | 8.69            | 8.62 | 10y-EDAH09 |
| EDAM09 | 0.320                           | 8.69            | 8.37 | 10y-EDAM09 |
| EDAU09 | 0.569                           | 8.69            | 8.12 | 10y-EDAU09 |
| EDAZ09 | 0.819                           | 8.69            | 7.88 | 10y-EDAZ09 |
| EDAH10 | 1.068                           | 8.69            | 7.63 | 10y-EDAH10 |
| EDAM10 | 1.317                           | 8.69            | 7.38 | 10y-EDAM10 |
| EDAU10 | 1.566                           | 8.69            | 7.13 | 10y-EDAU10 |
| EDAZ10 | 1.816                           | 8.69            | 6.88 | 10y-EDAZ10 |
| EDAH11 | 2.065                           | 8.69            | 6.63 | 10y-EDAH11 |
| EDAM11 | 2.314                           | 8.69            | 6.38 | 10y-EDAM11 |
| EDAU11 | 2.583                           | 8.69            | 6.11 | 10y-EDAU11 |
| EDAZ11 | 2.832                           | 8.69            | 5.86 | 10y-EDAZ11 |

The farther away from 0 the spread duration is the riskier the trade.

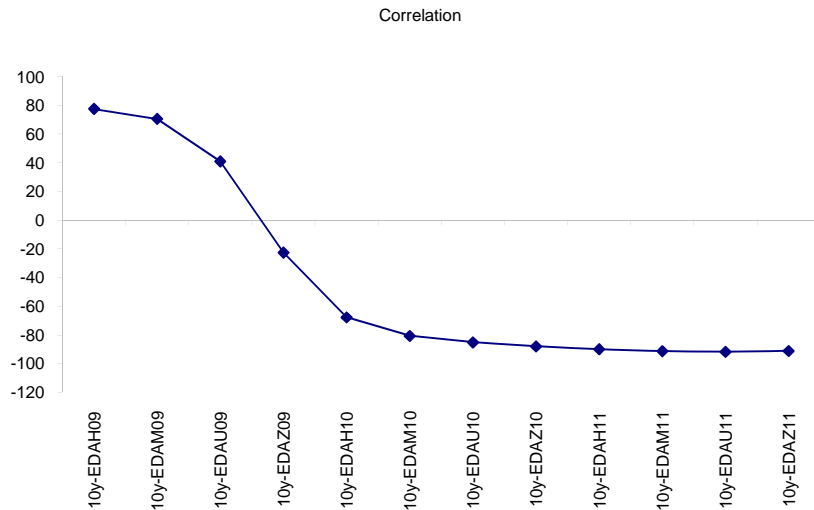


Chart values show the differences between ED contract and Treasury Futures contract. Those values can be seen in the table at the bottom of the chart. Each cash treasury is then plotted on the chart to compare differences in the durations and basis point values.

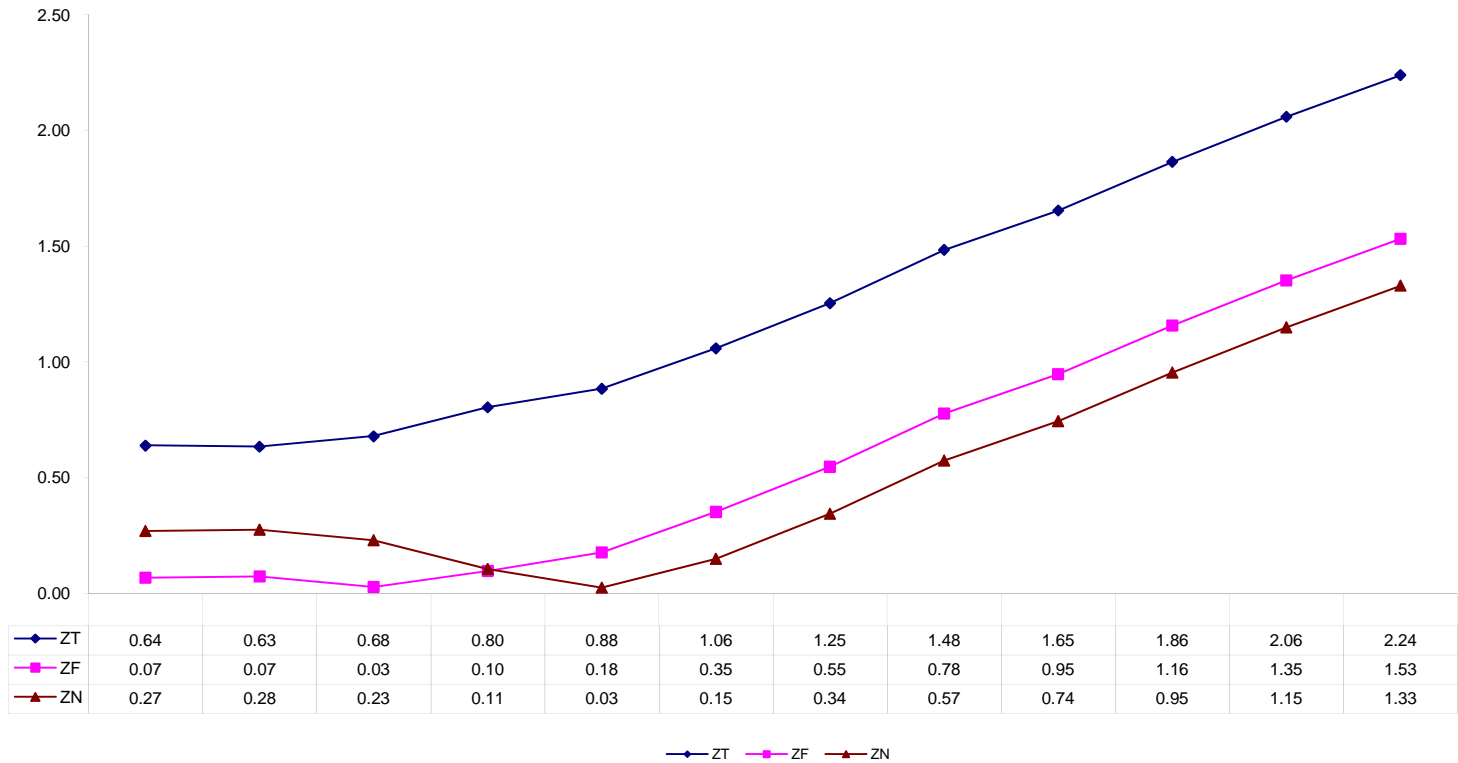
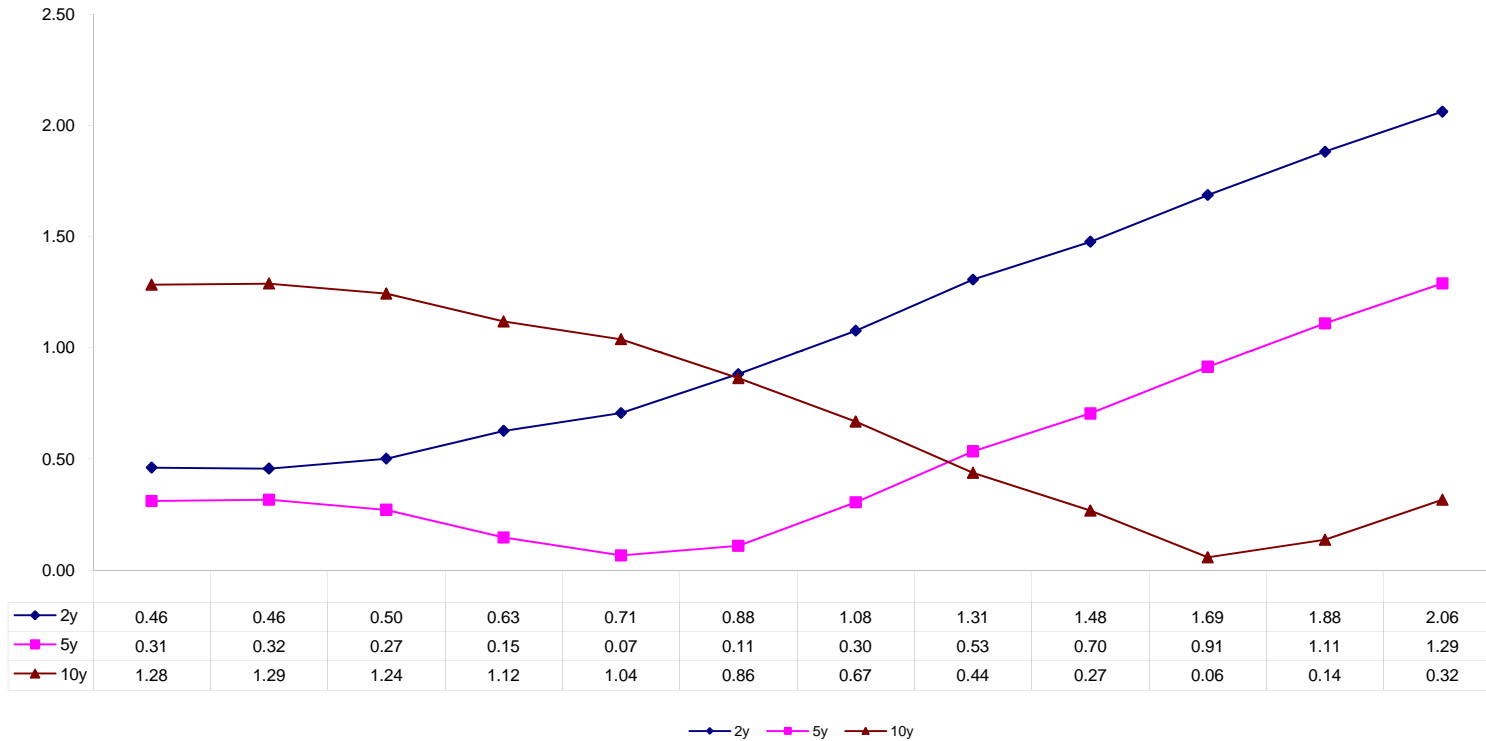
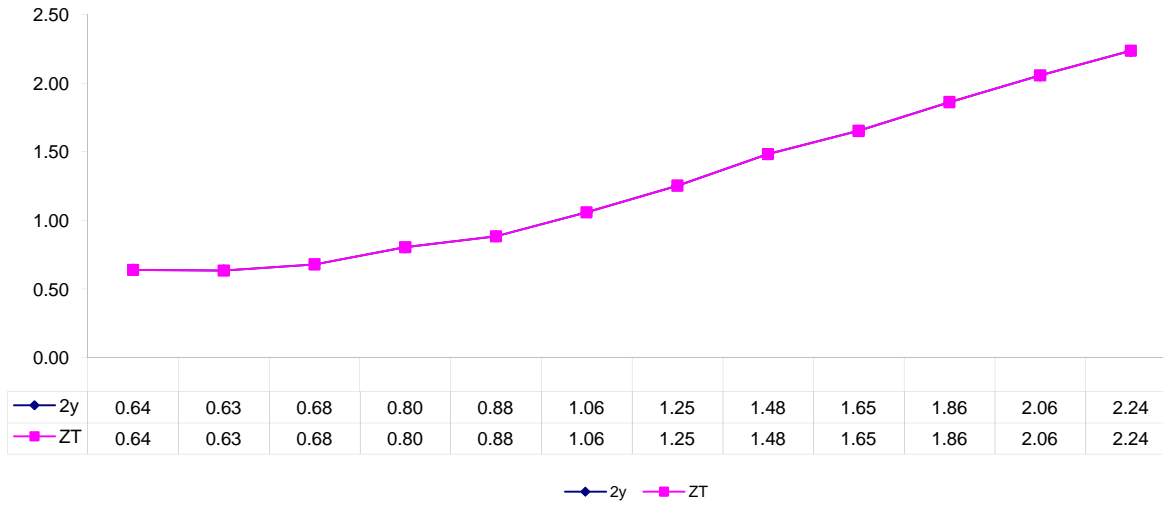
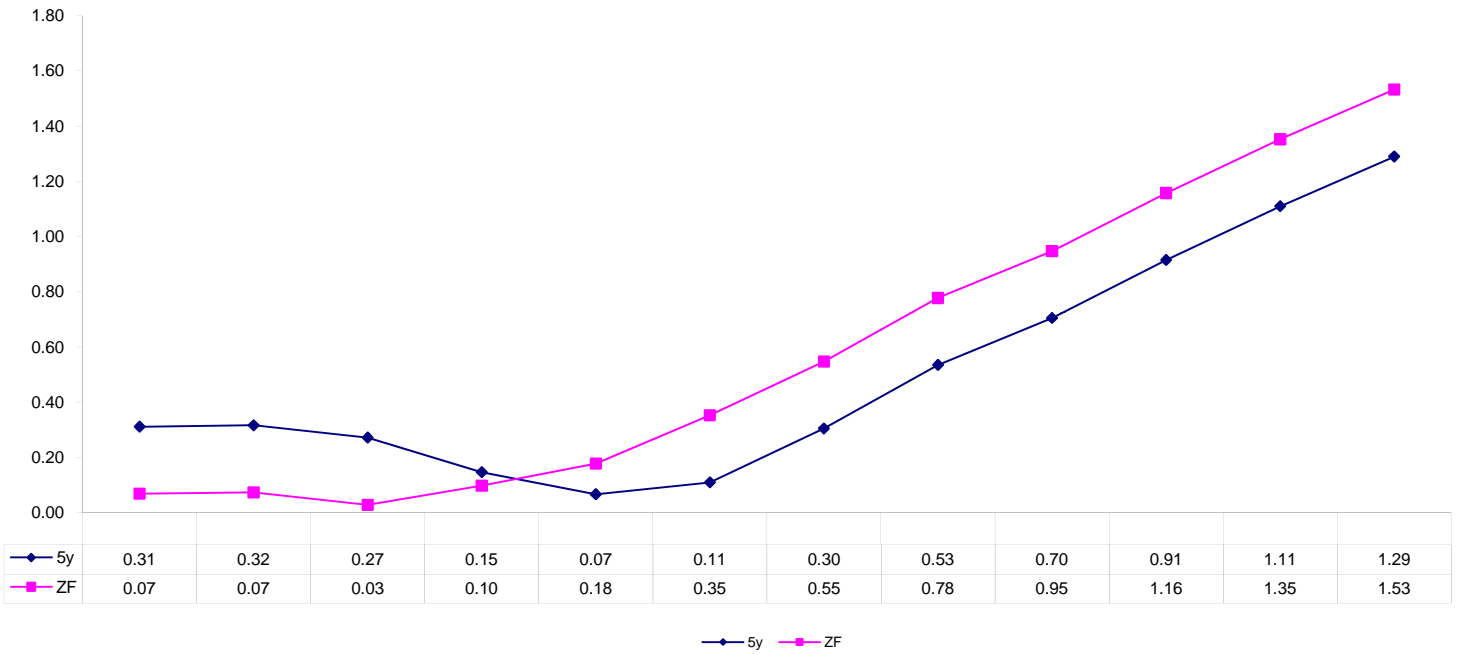


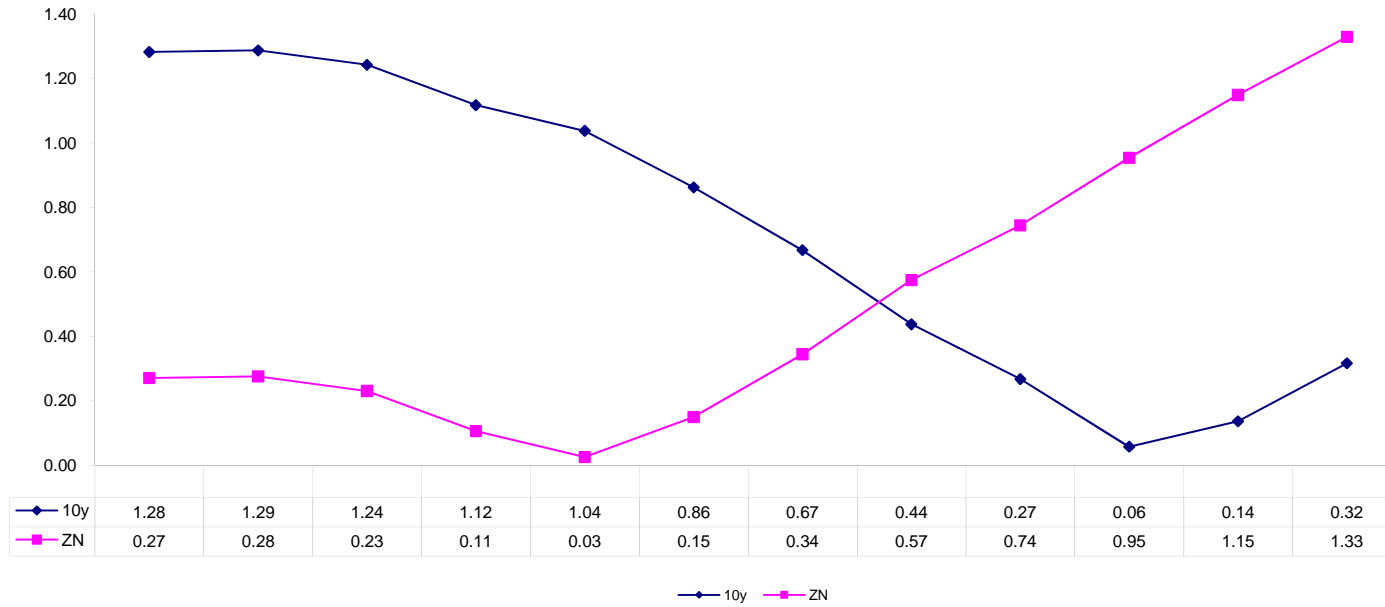
Chart values show the differences between ED contract and Treasury Cash contract. Those values can be seen in the table at the bottom of the chart. Each cash treasury is then plotted on the chart to compare differences in the durations and basis point values.



2y Basis TED Curve







|            | Last Yield | Net Last Yield | Last Price |
|------------|------------|----------------|------------|
| White Pack | 1.414      | -4.500         | 9861.000   |
| Red Pack   | 1.906      | -3.875         | 9812.875   |
| Green Pack | 2.710      | -2.250         | 9734.500   |
| Blue Pack  | 3.250      | -1.750         | 9682.000   |
| Gold Pack  |            | -0.625         | 9651.125   |

