Homework: Futures Spread Dynamics

Wednesday 7th January, 2026

1 Introduction

Here we will practice obtaining data for spreads for two different pairs in futures markets, and characterizing their individual dynamics, as well as a little bit about the dynamics of the two spreads in relation to each other.

This is a data science assignment, designed to help you grow comfortable with the tools and data at our disposal in preparation for dealing with more quantitative finance related topics as the quarter progresses.

2 Data

Obtain futures prices for two pairs W, X; Y, Z (where W, X and Y and Z depend on your student ID number) for 12 Dec 2025 though the third Friday of Dec 2025. The front month is the contract with the closes upcoming expiration, and the second month is the contract with the next available expiration.

Form the second-month to front-month price spreads $s_t^{(1)}, s_t^{(2)}$ between these numbers as the difference $s_t^{(1)} = X_t - W_t$ and $s_t^{(2)} = Z_t - Y_t$.

3 Analysis

Characterize the relative dynamics of $s_t^{(i)}$ in reasonable ways, using charts and statistics.

For example, you could compute the median and standard deviation of the difference $d_t^{(N)}$ between $s_t^{(i)}$ and an N-day rolling average of s_t for some

values of N. Examine more quantiles than just the median. Look at tails. Consider some dynamics, for example do the spreads correlate? How about their difference (d) values? Do spreads exhibit patterns over time?

3.1 Data

Futures pairs W, X; Y, Z (in order) are as given by the last two distinct digits[1] of your student number as follows:

0. 6E versus 6J

1. 6E versus 6A

2. MBT versus BTC

3. UB versus ZT

4. NQ versus ES

5. ZT versus ZF

6. YM versus RTY

7. CL versus HO

8. CL versus NG

9. GC versus SIL

10. SR3 versus SR1

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[1]So, if your student ID ends in 6222 then use 6 and 2.