abs(R) Research

ABSR Dynamic Roll Methodology

January 2017 **Dynamic Roll Guide**

Summary

- Maximize Positive Roll Yield - Backwardation
- Minimize Negative Roll Yield – Contango
- Roll Forward or Backward along the curve
- Increased Yield Evaluation Frequency
- Minimum Open Interest Threshold

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Overview

The ABSR dynamic roll methodology is a rules based process of selecting a specific component futures contract month at each described roll period. The selection of this contract month is determined by a process of "full carry" evaluation in order to mitigate the cost of contango or maximize the roll yield during normal backwardation. What makes the ABSR dynamic roll method unique is that we not only evaluate forward "future" contracts but we also evaluate near spot contracts for inclusion. Because we evaluate carry at each designated roll period, we have the ability to roll either forward or nearer to spot to maximize positive roll yield and minimize negative roll yield.

Roll Period

Each component futures contract has an available contract month calendar as determined by the corresponding exchange. As an example, the CBOT Corn contract has available contract months of March (H), May (K), July (N), September (U) and December (Z). Contracts terminate trading for each contract either the month prior to or during the contract month. The May Corn contract for example terminates trading on the business day prior to the 15th calendar day of the contract month. In the case of Corn, there are 5 roll periods in a calendar year (H,K,N,U,Z).

Roll Test Date

ABSR will evaluate and determine if a new roll is appropriate on the first business day of the calendar month in which the front contract will terminate trading ("Roll Test Date") regardless if the current contract held is the deliverable contract or a forward contract. Business days are non weekend days in which the contract is available for trading (floor or electronic) as determined by the appropriate exchange.

Available Contract Months

On the roll test date the contracts available must meet the following criteria:
The contract month must be a month listed in the Index Guide of eligible months for each component.

- The contract cannot be the front or deliverable contract month.
- The contract must have open interest equal to or greater than 1% of the total open interest for all months of that component future. Open interest based on the previous calculation day as reported by the exchange.
- The contract expiration month must be no more than 12 calendar months beyond the front or deliverable contract month.

Full Carry Evaluation

On each roll test date, the available contracts will be evaluated on a "full carry" basis to gauge their respective positive or negative roll yield. A calculated full carry forward price is determined for each available month and is then compared to the closing price of that month on the roll test date. This is the "Full Carry Yield". For the purposes of our calculation, only the financing (interest) portion of carry is used for real asset components, convenience yield and storage cost are ignored. If the closing price is above the forward value, the market is said to be above full carry and if the closing price is below the forward value, the market is said to be below full carry. The new contract will be the contract month with the largest full carry yield, even if that contract has less time to expiration than the current contract. If the greatest calculated full carry yield occurs in more than one contract, the contract with the least days to expiration will be selected. Note that in the event the current contract has the greatest full carry yield, no roll to a new contract will occur.

The full carry yield is calculated as such:

$$C_m = \left(\frac{F_m}{P_m}\right)^{\left(\frac{1}{\left(t_{f,m/365}\right)}\right)} - 1$$

$$F_m = P_f * \left(1 + Y_{t-1} * \left(\frac{d_{f,m}}{365}\right)\right)$$

Where:

C_m = Full carry yield for contract month m
F_m = Implied full carry forward value for contract month m
P_f = Closing price of front or deliverable contract
P_m = Closing price for contract month m
$d_{f,m}$ = Calendar days between front contract and contract month m expiration dates
Y_{t-1} = Discount yield on the 3M T-Bill[1] on preceding calculation day t-1

Example: Sub Index High Grade Copper (HG)
On the first calendar business day of the month April 1, 2014, the front month futures contract (HGK4) is in its deliverable month. The currently held sub index contract is HGZ4. Given the rules listed above, there are three eligible contracts to test and determine if a roll will occur.

The Data for April 1, 2014 is as follows:

Contract	*HGK4*	*HGN4**	*HGU4**	*HGZ4**	*HGH5*	*HGK5*
Closing Px.	303.45	303.10	303.45	304.05	304.65	305.25
Days to FM		62	121	215	303	364
Open Int. %		22.95%	6.58%	3.03%	0.59%	0.12%
F_m		303.4758	303.5003	303.5394		
C_m		.7321%	.0500%	-.2849%		

Table 1

Note: Open interest percentage as of previous calculation date.

The five contracts following the front month fall within our expiration range, however the HGH5 and HGK5 are not eligible as their open interest is below 1%. Calculating $F_m$and C_m for the remaining eligible contracts shows the new contract will be the HGN4 future as it has the greatest carry yield C_m. Note in this case, the dynamic nature of the methodology requires a "roll backward" from the current HGZ4 future in order to maximize the potential roll yield.

[1] 3M Bill as published on Federal Reserve Daily H.15 release.

Sub Index Roll Calculation

Following the roll test date and confirmation that a new contract is to be selected, the roll will occur over the following four business day period. During each of these consecutive days, a fixed percentage of the current contract (cc) will be "rolled" into the new contract (nc). Each roll day a new notional value (N) will be calculated for both the current and new contracts.

The calculations for the notional values are different for the two contracts as described below:

Roll Day 1:

$$N_{t,cc} = N_{t-1,cc} * \frac{3}{4}$$

$$N_{t,nc} = \frac{P_{t,cc} * N_{t-1,cc}}{P_{t,nc} * 4}$$

Roll Day 2:

$$N_{t,cc} = N_{t-1,cc} * \frac{2}{3}$$

$$N_{t,nc} = N_{t-1,nc} + \left(\frac{P_{t,cc} * N_{t-1,cc}}{P_{t,nc} * 3}\right)$$

Roll Day 3:

$$N_{t,cc} = N_{t-1,cc} * \frac{1}{2}$$

$$N_{t,nc} = N_{t-1,nc} + \left(\frac{P_{t,cc} * N_{t-1,cc}}{P_{t,nc} * 2}\right)$$

Roll Day 4:

$$N_{t,nc} = N_{t-1,nc} + \left(\frac{P_{t,cc} * N_{t-1,cc}}{P_{t,nc}}\right)$$

Where:

$N_{t,cc}$ = Notional value of the current contract on roll day t
$N_{t-1,cc}$ = Notional value of the current contract on the preceding roll calculation day t-1
$N_{t,nc}$ = Notional value of the new contract on roll day t
$N_{t-1,nc}$ = Notional value of the new contract on the preceding roll calculation day t-1
$P_{t,cc}$ = Closing price of the current contract on roll day t
$P_{t,nc}$ = Closing price of the new contract on roll day t

On non roll period days or when the new contract is the same as the current contract as determined on the roll test date, the notional value of the current contract remains constant.

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