What are continuous futures contracts?

Continuous futures contracts are artificial instruments constructed by chaining together individual short-term futures contracts in order to create a single long-term history.

Why should I use continuous contracts?

Individual futures contracts have fixed trading-start and trading-end dates, short lifespans, and variable liquidity. They are hence unsuitable for analyzing long-term trends in the data.

For example, the Z2013 Corn futures contract was officially "open" for trading in Dec 2009, but remained completely illiquid (untraded) for the first 2 years of its existence. Some sporadic trading occurred starting from Dec 2011, but the truly active trading in this contract only began in Dec 2012. And the contract expired (stopped trading) in Dec 2013. So all in all there was just a single year during which the Z2013 contract was truly liquid, and hence trustworthy as a reference price for Corn. That's not very useful for long-horizon analysis.

But by chaining together the Z2013 contract with other contracts before and after it (for example, U2013 and H2014) it is possible to create a far longer history, during which every single price reflects an active, liquid and reliable underlying contract. This "continuous contract history" is much more useful for long-term analysis, going back as it does over 50 years.

Therefore, if you are interested in analysis that goes back more than just a few months, you should use continuous contracts.

How are continuous contracts constructed?

The simplest form of continuous contract is built by chaining together successive individual contracts which are closest to their expiry date -- the so-called "front-month" contracts.

In futures trading, the front contract (on any date) refers to the contract which has the shortest time to expiry (on that date). This contract typically has the most liquidity of any contract in the futures term structure or "strip". (The strip is simply the list of all open futures contracts in a given commodity).

By chaining together a succession of front month contracts -- ie, starting with the current front contract, then when that expires, shifting to the next contract in the strip which will be the new front contract, and so on -- it is possible to build a continuous contract with the maximum possible underlying liquidity.

What does the number associated with a continuous contract signify? For example, C1, W2, CL5, ED14 and so on.

In some specialized cases, an analyst may choose to chain together successive "back-month" contracts. These are contracts which have the second-shortest time to expiry. A continuous contract history built this way would be called the #2 contract, while the history built using the front contracts would be called the #1 contract.

This nomenclature generalizes. So for example, a continuous contract built out of successive individual contracts, each of which has the 4th-shortest time to expiry as of the sampling date, would be called continuous contract #4.

An example will make this clear. Consider the Corn futures strip as of 1 Dec 2013. On that date, the front month contract is Z2013 (shortest time to expiry), the back month contract is H2014 (2nd shortest time to expiry), and

the 3rd contract is K2014 (3rd shortest time to expiry). Correspondingly, if we were to calculate values for the first 3 continuous contracts as of 1 Dec 2013, they would be C1=CZ2013, C2=CH2014 and C3=CJ2014.

Now consider the Corn futures strip one month later, on 1 Jan 2014. By now the Z2013 contract has expired, so the new front contract is H2014, the back contract is K2014, and the 3rd contract is N2014. Corresponding, as of 1 Jan 2014, the continuous contract histories take the values C1=CH2014, C2=CK2014 and C3=CN2014.

The contract number is also sometimes called the "depth".

What contract depth should I use? Should I always use the #1 contract?

You should almost always use the #1 contract. However, there are a few exceptions, which depend on the impact of "time to expiry" on the economics of the contract.

For equity, currency and metal futures, the time to expiry has little or no effect on the economics of delivery, and so you should always use the #1 contract.

For agriculture, energy and interest rate futures, the time to expiry can somtimes have a strong impact on the economics of delivery. For example, interest rate futures are critically dependent on expiry date since rates have a definite term structure. Agriculture and energy exhibit seasonal effects and so have a term structure too. Bond futures are susceptible to delivery switches and basket changes depending on when they expire, so they too should be chained with care.

That said, term-structure effects tend to even out over the long term. So if your analysis runs for more than say 5-10 years, you should always use the #1 contract. Working with #2 and later contracts is harder to do rigorously, more susceptible to outlier quotes arising from illiquid markets, and more prone to execution slippage again due to illiquidity.