Two Markets, No Spread

You would not be surprised at all to hear someone talk about the spread between the U.S. stock market and one of the major European markets such as the U.K.'s FTSE or Germany's DAX. Quite the opposite; experience has told us a bad session in Europe will affect the way the U.S. market opens, and the way the U.S. closes affects the way the most Asian markets open. We have both the earth's rotation and a still-Eurocentric culture in the U.S. to thank for this one.

The relationship between the U.S. and Chinese markets appears to be something quite different, however, in the sense it does not fit into any of our typical typologies for spread trades. First, let's remember all investments are spread trades. At their most basic, every asset purchase, be it a stock, a bond or a commodity such as gold implicitly involves the sale of what we used to call interest-bearing cash deposits at some point; to digress, we know now cash need not earn any interest. Restated, you are not long gold; you are long gold and short cash and must measure the incremental return on gold to that for cash. Moreover, whenever you are long one market you are facing the opportunity costs of not being long another; if you are long bonds you are paying the direct cost of not earning the short-term interest rate and you have incurred the opportunity cost of not being long stocks, real estate or some other asset.

The world of futures is filled with specialized types of spreads, all with distinct risk profiles and distributions of returns. These include process spreads such as the petroleum crack spreads, joint product spreads such as soymeal versus beanoil and substitution spreads such as one type of crude oil against another. Currency trades are dual yield curve spreads. Fixed-income traders are more than familiar with yield curve spreads and credit spreads.

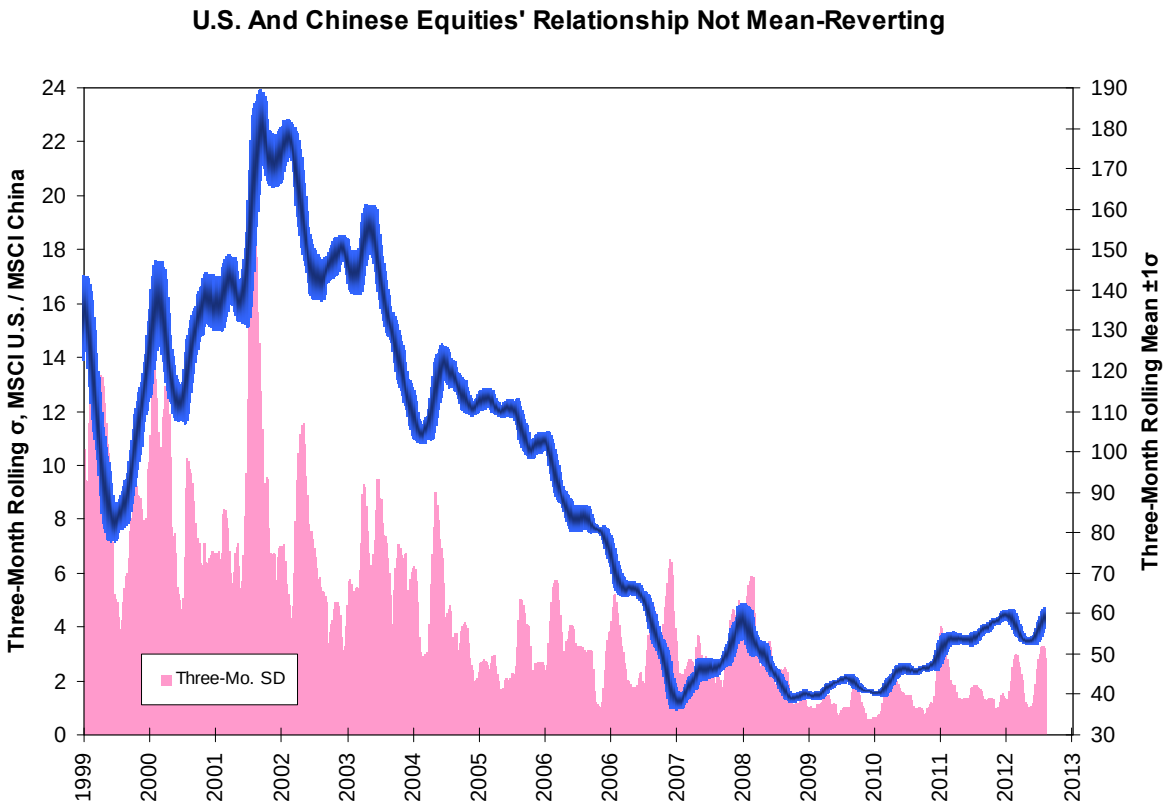
Equity Index Spreads

Valid equity index spreads such as the S&P 500 / DAX spread alluded to above fall into the category of "related" spreads. Both markets have common factors and can be viewed as investment alternatives to each other. As their spread has no substitution bounds, it can trend for protracted period. In addition, the spread has no natural limit demanding reversion to either a stable or a trending mean. The spread's distribution of returns is flatter than normal ("platykurtic," if you must) and is skewed toward whichever the more volatile leg is at any given time.

Now let's introduce the concept of covariance of returns, or degree to which the markets move together, between the two legs. If the covariance of returns between the two legs is low and unstable, the net profitability of the spread trade devolves into an open speculative position on the more volatile leg: The less volatile leg of the spread becomes unimportant and often fails to increase the mean-variance characteristics of the spread trade.

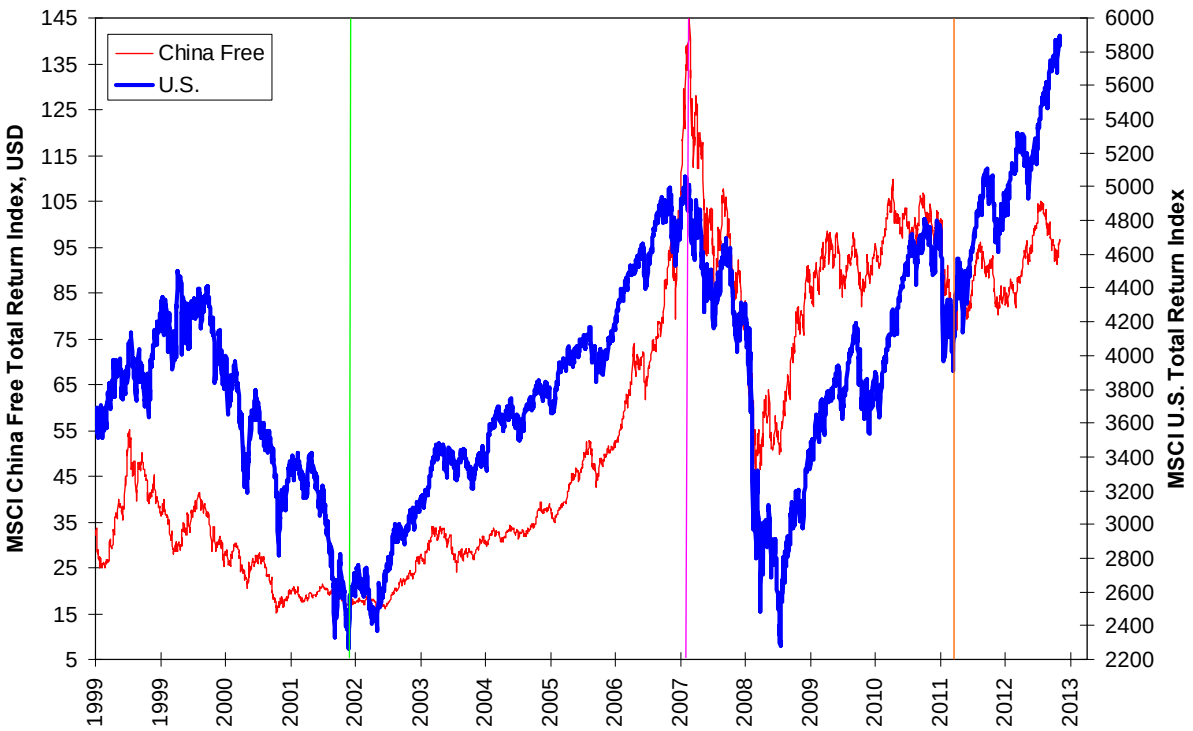
The U.S. And China

If we express the spread between the U.S. and China as the ratio of the MSCI-Barra total return indices for the U.S. and the China Free market, expressed in USD terms, we can see clearly it is a related spread. Its rolling three-month variance is unstable over time, and the trend in the rolling three-month mean of the ratio $\pm 1\sigma$ is non mean-reverting.



We now must ask whether the spread's variance is stable over time. We can break the history of the spread into four different regimes, marked with green, magenta and orange vertical lines in the chart below. The first extends from the beginning of the data sample in January 1999 to the Federal Reserve's first declaration of war on deflation in May 2003. This move to keep short-term interest rates very low for what in retrospect appears to have been too long had the effect of stimulating the American consumer and by extension the Chinese exporters who met American consumer demand.

The second regime extends from this takeoff point to the global equity high of October 2007. Both markets rose and rose rapidly – one hesitates to say "healthily" knowing what we know now – into October 2007, with the Chinese market advancing much more quickly in 2006-2007. Indeed, while the U.S. and other markets started to wobble in the spring of 2007 and sold off during the first inklings of the credit crisis in August 2007, China continued to rise in a parabolic manner.



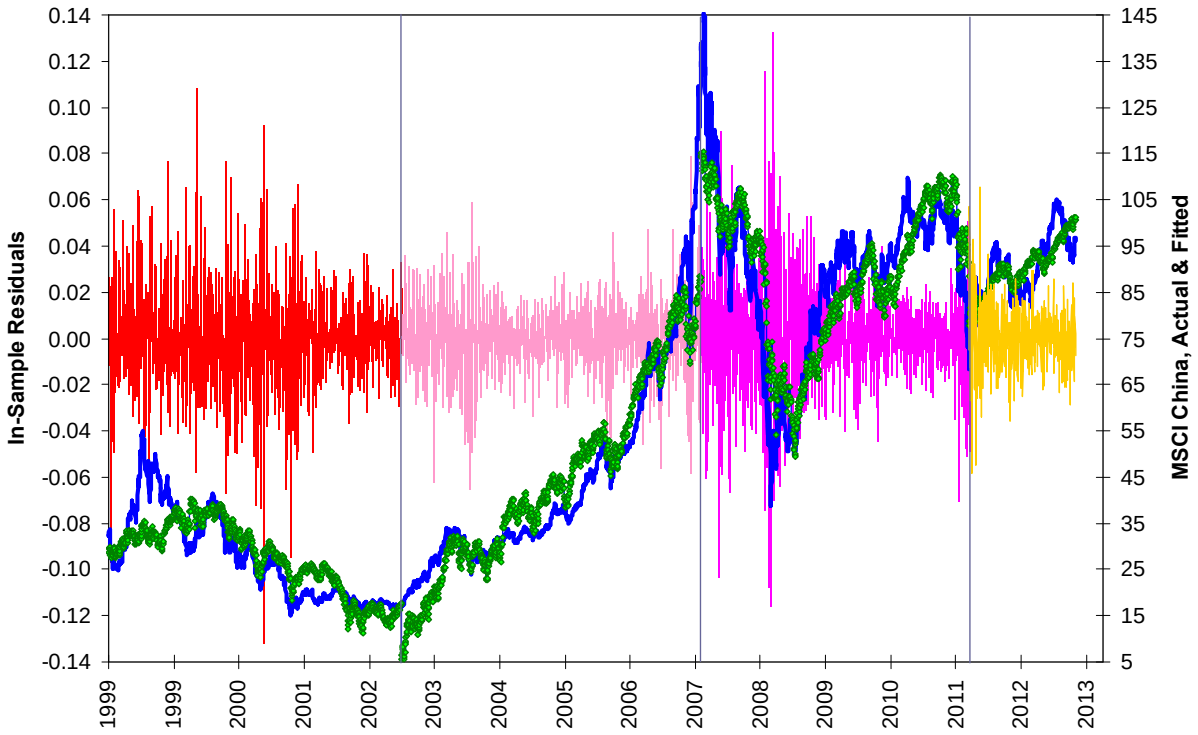
The third regime extended from October 2007 into a low in the Chinese market in October 2011. Here the two markets linked to each other more closely than they had previously, but with a lead-time. The Chinese market bottomed two months before the U.S. market did in early 2009 and then encountered resistance three months before the U.S. market did in early 2010.

The fourth regime has involved what seems to be a role reversal; the U.S. market has outpaced China since October 2011. Chinese export-led growth slowed along with the never-ending Eurozone crisis and was not offset by a rise in real, as opposed to government-created, domestic demand.

Now let's convert both markets' total returns into timeseries of daily returns, or percentage changes. Now we can see in the table below just how much more volatile China is compared to the U.S. The Regime 4 daily variance of Chinese returns, 0.0241%, is 69% greater than the daily variance of American returns, 0.0142%. And while the daily covariance of returns in Regime 4 of 0.003% is below Regime 3's 0.0105%, it is still far greater than the covariance levels of Regimes 1 and 2. The daily variance of a spread between the two indices is the sum of the two variances minus twice their covariance, or 0.314%. Incredibly, an index spread between the U.S. and China thus is more volatile than either outright position. If one purpose for emplacing a spread trade is risk reduction, this spread trade fails the test badly.

	Variance		**Covariance**	Spread /
	China	U.S.		Var(China)
Regime 1	0.0467%	0.0190%	0.0019%	1.327
Regime 2	0.0220%	0.0053%	0.0011%	1.141
Regime 3	0.0560%	0.0311%	0.0105%	1.179
Regime 4	0.0241%	0.0142%	0.0035%	1.304

Now let's add one more quantitative look at the spread between the U.S. and China. If we regress the four sets of returns against on another and map their residuals, or unexplained portions, using red, pink, magenta and orange columns, respectively, we can see how the variance of the relationship changes drastically from regime to regime. More important statistically, they are different at near-100% confidence levels.



Given the American stock market's lackluster performance from the late 1990s until the rally induced by Japan's aggressive money-printing campaign starting in November 2012, anyone could be forgiven for thinking China had outperformed the U.S. for a very long period of time. In reality, the relative performance of the Chinese market in USD terms was no greater at the start of May 2013 than it was in June 2007, a time when equity investors thought, most incorrectly, the credit crisis then building would have no effect on them.

In a second and unrelated point, the yuan regimes have had no effect on relative stock market performance; this, too, is very different from the relationships between, say, U.S. and European equities and the dollar-euro exchange rate. The controlled stop-and-start shifts in the yuan – a revaluation from July 2005 to July 2008, a re-pegging, and then another revaluation beginning in June 2010 – have had little effect on relative equity prices. Not only have the currency movements been small on an absolute basis, they have had little effect on Chinese corporate profitability or on Americans' capacity to buy Chinese exports.

We are left, then, with a very strange beast, a spread that is not a spread in any classic equity index sense and one whose risk is greater than the two individual markets'. The one conclusion we can reach is the U.S. and China should be traded separately, as separately as you might trade copper and cocoa. The spread is greater than the sum of the parts.