

Base Metal Correlation And Divergence

It is a question seldom asked: Just because you can trade something, should you? One of the enduring aspects of the trading and investing landscape of the past three decades has been a mad scramble for new and exciting investment products, for “alternative” assets and for the holy grail of low or negative correlation between these instruments and conventional asset classes such as stocks and bonds. These searches have not been motivated by silliness so much as the crushing need for pension funds and other institutional asset managers to meet large and growing liabilities with low-yield and often overpriced instruments.

Consider this story from a fellow speaker at a decade-ago conference on commodity investments, a Dutch pension fund manager who was quite aggressive in the area. His fund needed to match health care inflation in the Netherlands. Roll that concept around in your mouth and savor the bouquet: Matching health care costs for a public union in a socialist system when Dutch sovereign bonds were yielding on the order of 3 percent at the time and about 38 basis points at the May 2016 time of this writing. He cut the risk-management segments of commodity investment proposals short; old-fashioned cowboy gun-slinging, not some homogenized trading product, was in order. You can imagine how things fared after that.

The Weight of Money

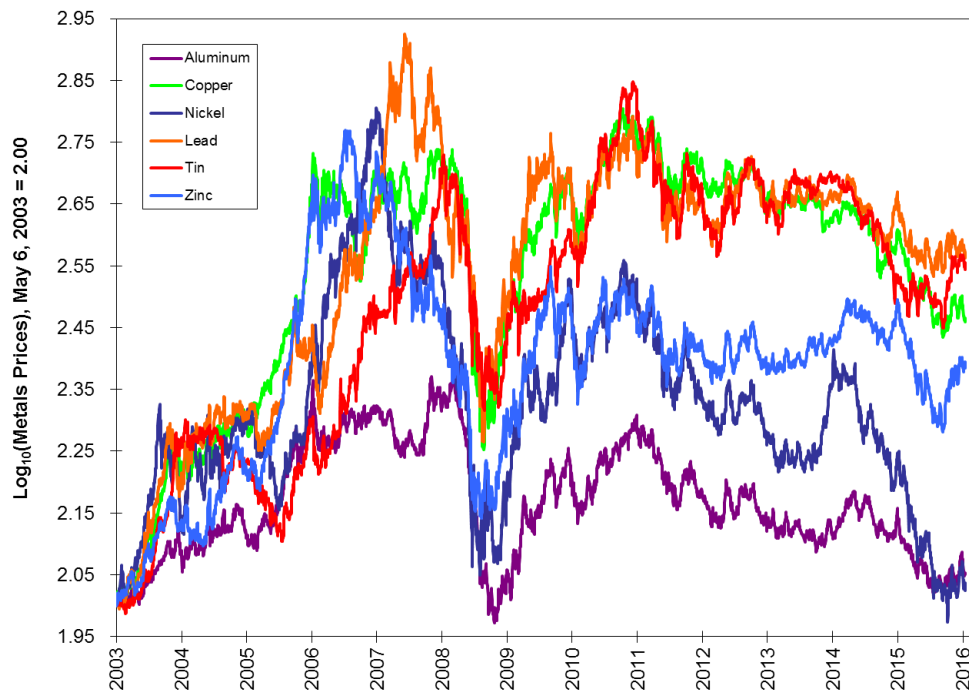
Commodity-oriented hedge funds and commodity trading advisors (CTAs) were only too happy to sell what institutional investors wanted to buy, or at least thought they wanted to buy: Diversification with commodities and a story they were linked both to economic growth and to inflation-protection. Two macroeconomic factors coming into play in the early 2000s, China’s breakneck construction and manufacturing demand and the Federal Reserve’s attempt to solve every problem with more money intersected with the low rate of mine expansion and development during the 1980s and 1990s to produce strong bull markets in all of the base metals traded on the London Metals Exchange (LME). The six metals discussed below are copper (CA), aluminum (AH), lead (PB), tin (SN), zinc (ZS) and tin (SN).

What is so surprising to many is just how small many of these markets are in dollar terms. Let’s take nickel, an essential component of stainless steel alloys, as an example. Total primary production in 2014, the last datum available from the International Nickel Study Group in May 2016, was 1.983 million metric tons; at an average spot price of \$16,892 per MT, this works out to \$33.498 billion, or about the annual revenue for American Express, which ranks 76th on this measure amongst the members of the S&P 500.

The simple weight of money flowing into these markets forced a commonality of behavior and high levels of correlation not justified by their economic relationships. A history of these metals’ prices since the May 6, 2003 date when the Federal Reserve declared its first war on deflation presented on a common logarithmic scale shows numerous and prolonged instances of parallel price movement both higher and lower.

Would it be snide to note this war on deflation was so successful the Federal Reserve has had to relaunch it several times and has been joined by a number of other major central banks in its efforts? Yes, it would be. Is it true? Yes, it is.

Different Metals, Numerous Parallel Paths



Source: Bloomberg

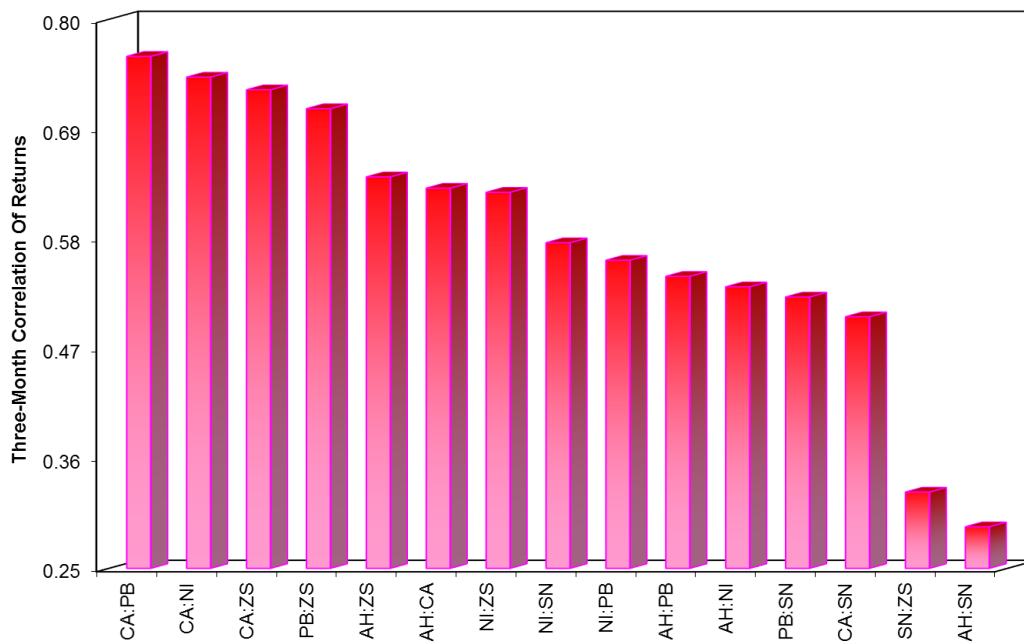
You can argue some instances of substitution, such as copper and aluminum for electrical purposes, or some example of joint products, such as lead and zinc mined from the same ore beds, but it is far easier to note substitution in the breach. You would not, for example, substitute either lead or tin for copper in electrical applications, but the price paths of these three metals have been eerily parallel for the past eight years.

A New Era of Divergence

The mediocre-at-best performance of many commodity-oriented hedge funds and CTAs since the end of the financial crisis has combined with the inevitable slowing of Chinese demand, higher mine production and a new regulatory landscape to change the game of treating base metals as an investment instead of the prosaic process inputs they really are. The Volcker Rule restricting commercial banks' proprietary trading activities led to a widespread divestment of these trading operations. Can we see the effects of reduced trading activity and money flow in lower correlation of returns within the base metals group?

The six metals can be arranged into fifteen pairs; $(6^2-6)/2 = 15$. Let's take a snapshot of three-month correlations of returns amongst these fifteen pairs as of May 2016.

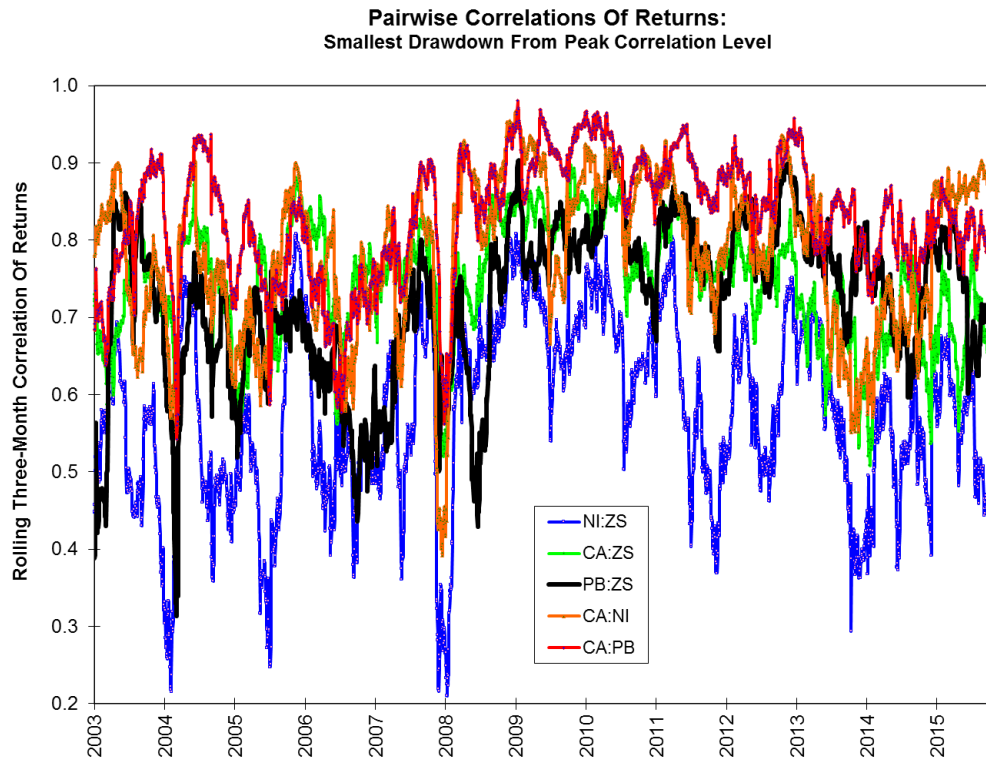
May 2016 Three-Month Correlation Of Returns



Source: Bloomberg

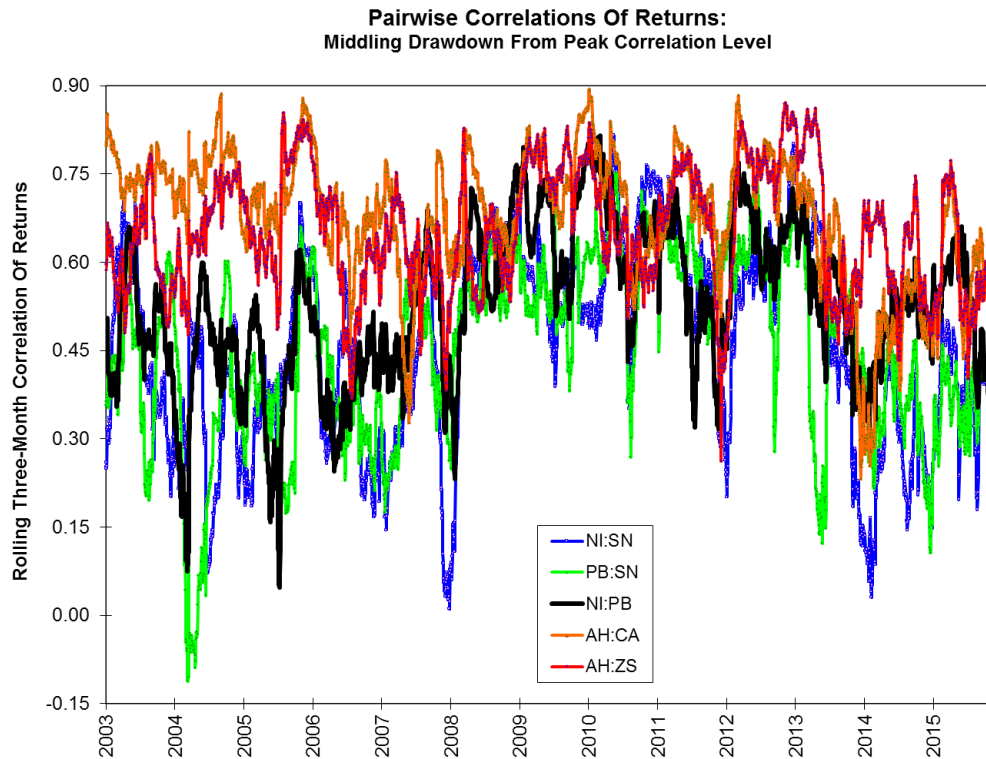
Where do these static levels stand in relation to their observed history since 2003? Let's break the fifteen pairs into three sets of five arranged by how much each May 2016 correlation has declined since its post-2003 maximum. Those with the smallest drawdowns are the least affected by the exit of financial firms from proprietary trading activities.

As of May 2016, three of these five groups involved zinc-based pairs and another three involved copper-based pairs. As zinc's volatility has been at the low end of observations for the group, this pattern is not surprising.



Source: Bloomberg

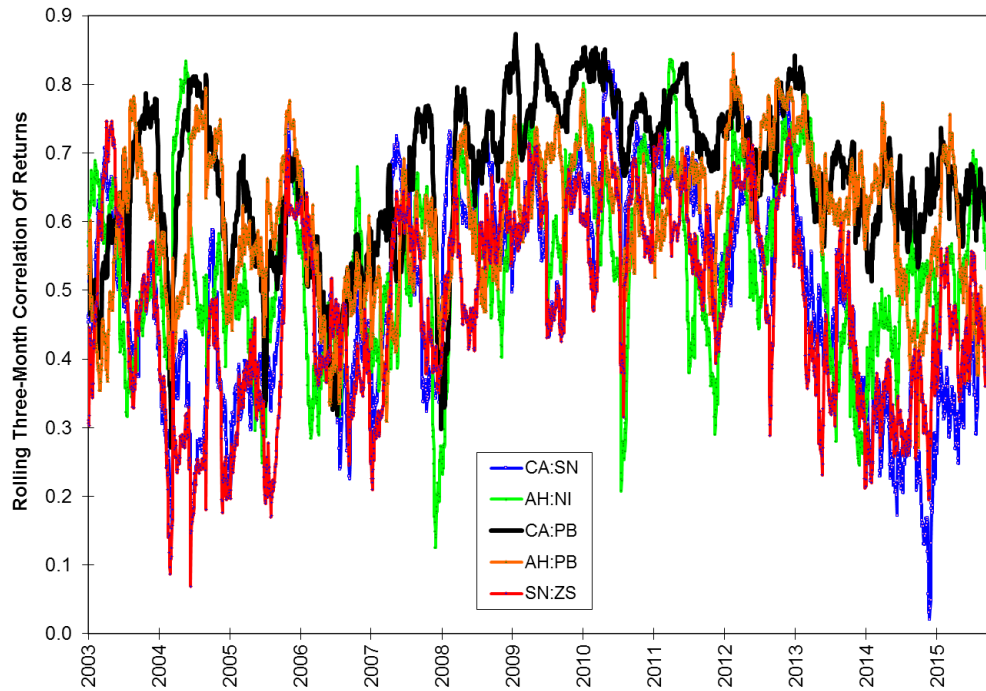
If we repeat the process for the middle quintet, we see nickel, copper, lead and aluminum all are involved in two pairs. Nickel prices have been buffeted about by Russian production disruptions and the prices for both copper and nickel have been affected by China's metal stockpiling and its use of the metal as collateral for loans. Aluminum prices have been managed by a de facto global cartel for years going back to the collapse of the Soviet Union in the early 1990s and its desperate sale of surplus military aluminum for hard currency. As aluminum smelters worldwide tend to be built on top of continuously running hydroelectric dams, production often can overwhelm demand and lead to price collapses unless that production is, um, managed.



Source: Bloomberg

Now let's turn to the last quintet, those whose May 2016 correlations of returns have declined the most since their post-2003 maxima. Lead, tin, copper and aluminum all are involved in two pairs. Tin's supply tends to be managed by major producers in South Asia and Bolivia. If this metal's supply and demand ever was linked to those for the other base metals – and barring a return to the Bronze Age, why would this be the case? – it was linked by financial flows alone. Viewed in this light, declining correlation levels simply are rising rationality levels with a new name.

**Pairwise Correlations Of Returns:
Largest Drawdown From Peak Correlation Level**



Source: Bloomberg

Commodity indexation always carried the seeds of its own demise. The markets' small capacities meant financial flows would push prices higher via excess inventory-building demand. These higher prices then would have the dual effect of inducing new supplies and reduced demand through conservation and substitution. Once indexation's artificial distortions are removed from the market, correlations should decline and individual markets should go back to trading on their individual supply/demand balances. It may be boring, true, but it certainly will reward the better-prepared traders amongst us.