Different Commodities, Different Currencies

One of my pet peeves over the years is how we lump all manner of physical commodities together by virtue of 1) they are tangible and 2) they are exchange-traded. We also lump a number of different currencies together in the ICE dollar index, which is 57.6% the euro and does not include the currencies of two of our largest trading partners, Mexico and China, and call it “the dollar.”

We also seem to be quite willing to link this measure of the dollar to physical commodities grouped together in indices such as the Bloomberg or S&P/Goldman Sachs and make generalizations about “the dollar” and its influence on “commodities.”

Individual Relationships

How have 19 individual commodity markets as measured by the daily returns on their cash market prices and six individual currencies as measured by their daily spot price returns quoted in “USD per” terms behaved over two different periods? The two periods selected correspond well to changes in the ten-member, changing-weight Bloomberg correlation-weighted dollar index. The first period extends from the launch of QE1 to the start of Operation Twist witnessed a 23.8% decline in this dollar index. The second period, from August 2011 onwards, has seen this dollar index advance almost 25%.

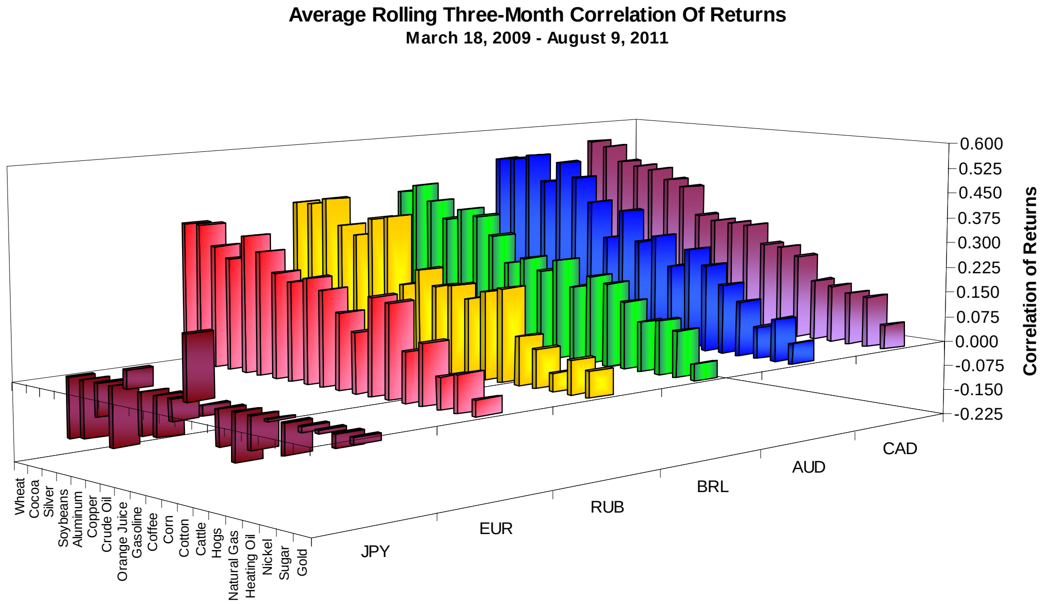
The six individual currencies include four generally regarded as commodity-linked, the Russian ruble (RUB), Brazilian real (BRL), Canadian dollar (CAD) and Australian dollar (AUD). The euro (EUR) and Japanese yen (JPY) are included in this mix even though both currencies are linked far more to commodity consumption than to commodity production. They also account for 71.2% of the widely cited ICE dollar index.

Eighteen of the 19 individual commodity returns switched from positive to negative across regimes; only Live Cattle returns remained positive. All six of the currency returns switched from positive to negative as well. Interestingly, the probability of the EUR’s mean being statistically different in the second period was the only one less than 96% amongst the currencies.

	Mar. 2009 - Aug. 2011		Aug. 2011 - Jan. 2015		
	Avg.	Std. Dev.	Avg.	Std. Dev.	Prob. Diff.
Gold	0.10%	1.00%	-0.02%	1.16%	98.5%
Silver	0.17%	2.16%	-0.09%	1.93%	98.2%
Copper	0.13%	1.85%	-0.06%	1.37%	96.7%
Cotton	0.14%	2.01%	-0.06%	1.46%	96.1%
Heating Oil	0.12%	1.99%	-0.07%	1.30%	95.8%
Gasoline	0.10%	2.19%	-0.09%	1.85%	89.4%
Aluminum	0.09%	1.69%	-0.04%	1.24%	86.9%
Corn	0.10%	2.29%	-0.07%	1.97%	86.7%
Sugar	0.12%	2.82%	-0.08%	1.61%	86.0%
Orange Juice	0.14%	2.09%	-0.04%	2.02%	85.5%
Nickel	0.12%	2.39%	-0.05%	1.72%	84.9%
Crude Oil	0.08%	2.12%	-0.08%	1.64%	82.5%
Soybeans	0.06%	1.60%	-0.04%	1.46%	72.4%
Coffee	0.06%	1.52%	-0.01%	1.20%	68.6%
Hogs	0.06%	2.05%	-0.04%	1.83%	59.8%
Wheat	0.05%	2.67%	-0.03%	1.81%	47.5%
Cattle	0.05%	0.95%	0.03%	0.89%	39.5%
Cocoa	0.03%	1.66%	-0.01%	1.39%	35.2%
Natural Gas	0.01%	4.44%	-0.04%	3.74%	17.3%
JPY	0.04%	0.68%	-0.05%	0.57%	99.1%
RUB	0.02%	0.63%	-0.09%	1.12%	98.8%
BRL	0.06%	0.90%	-0.05%	0.87%	98.4%
AUD	0.07%	0.92%	-0.03%	0.65%	98.1%
CAD	0.04%	0.73%	-0.03%	0.46%	96.1%
EUR	0.02%	0.72%	-0.03%	0.51%	78.7%

If we now display the average three-month correlations of returns across commodity/currency pairs and sort them in order of average correlation, we see the JPY was the least commodity-linked during the first period, while the BRL, AUD and CAD were most commodity-linked.

If we sort in order of commodity correlations against the CAD, we see wheat and cocoa were the most linked while gold was the least linked.



If we repeat the exercise for the second regime, we see the RUB moves into the role of most commodity-linked currency, followed by the CAD and AUD. The BRL slid into the fifth slot. The commodities with the strongest correlations of returns against the RUB were copper and crude oil; wheat, natural gas and the two livestock markets had the lowest correlations of returns.

The large switches in correlation patterns underscore the need to treat each commodity and each currency uniquely. The EUR may dominate currency trading and crude oil is the largest physically traded commodity, but with average correlations of returns of 0.242 and 0.296 in the two periods, respectively, it would be hard to establish a deterministic linkage between them.

Average Rolling Three-Month Correlation Of Returns
August 10, 2011 - January 27, 2015