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Evil Twins: Commodity Prices and the Strength of the US Dollar

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Commodity investors have historically recognized a link between the strength of the US dollar and the prices of commodities. Specifically, as the dollar strengthens against other major currencies, commodity prices generally tend to fall, and vice versa.

This paper examines why this may be the case, whether it's true at the individual commodity level as well as across all commodities, and what it ultimately means for investors.

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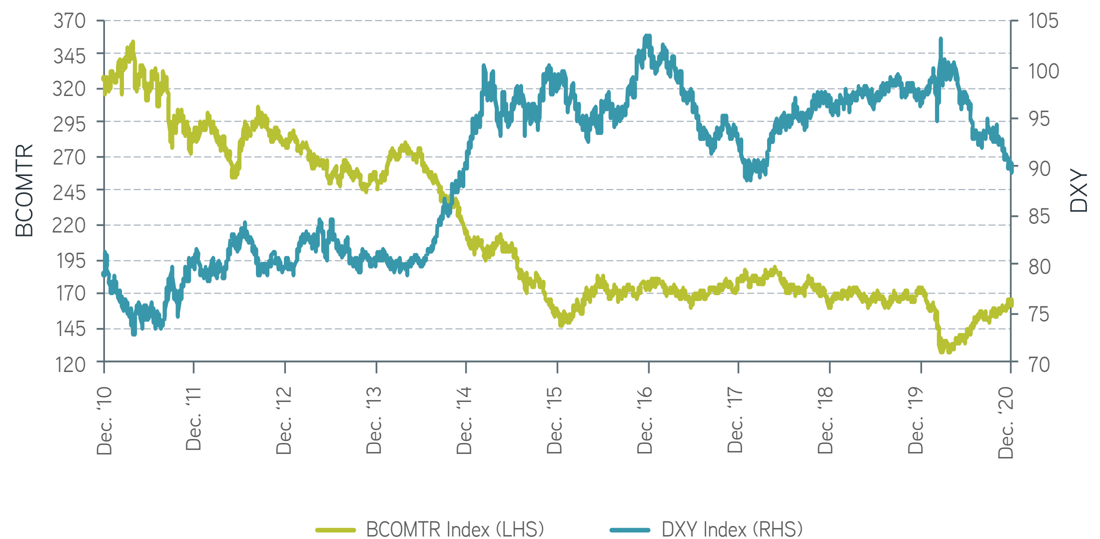
Historical evidence across all commodities

Figure 1 gives strong visual proof of the link between the value of the US dollar and commodity prices over the past 10 years, where the US Dollar Index (DXY) measures the value of the US dollar versus a basket of major developed-market currencies and the Bloomberg Commodity Index Total Return (BCOMTR) reflects the prices of a broad basket of commodity futures.

Figure 1: Bloomberg Commodity Index Total Return vs. US Dollar Index, 12/31/2010–12/31/2020



Sources: Bloomberg, Parametric, 12/31/2020. For illustrative purposes only. It is not possible to invest directly in an index. Indexes are unmanaged and do not reflect the deduction of fees and expenses. Past performance is not indicative of future results. Please refer to the disclosures for important information.

As we can see, the strength of the dollar and the price level of commodities are almost mirror images, with the pronounced strengthening of the dollar being accompanied by an equally dramatic sell-off in commodities.

The root cause of this inverse relationship is open to debate, but typically there are two arguments made to explain this dynamic. The first is that real assets have an intrinsic value, and as the US dollar fluctuates in its value, this intrinsic value is repriced in dollar terms. That is, as the dollar rises in value, it takes fewer of these stronger dollars to purchase a commodity, and as a consequence its price falls. The second argument looks at maintaining purchasing power. It states that the dollar-priced exports of American-produced commodities are less competitive on the world stage when the dollar rallies. Accordingly, dollar-based prices must fall to match the effective price of global competitors in other currencies.

Regardless of the cause, this inverse dynamic has been powerful in recent periods, with at least part of the downturn in commodity indexes over the past few years linked to the bull market in US dollars. Accordingly, investors should be aware that if the dollar were to weaken dramatically, it could cause an opposite, upward boost to commodity prices for the US-based investor.

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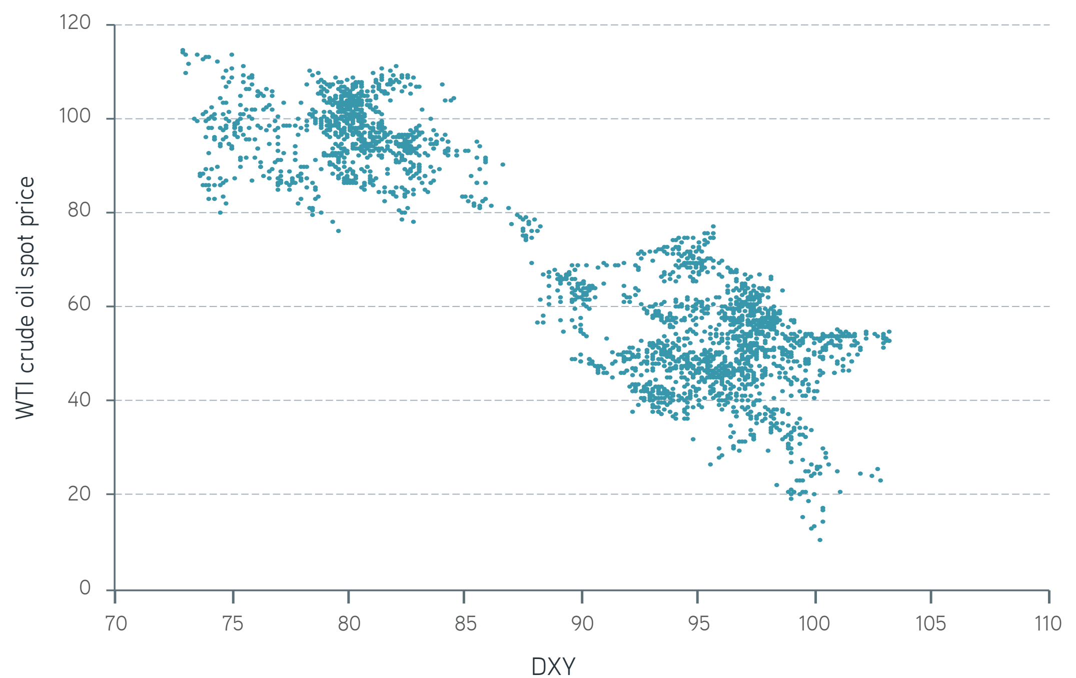
Historical evidence, commodity by commodity

While this inverse relationship with the strength of the US dollar holds for most physical commodities, the degree varies materially among individual commodities and typically weakens as other factors overwhelm the effect of currency movements. The weather's influence on crop prices, the lack of global portability of natural gas, the easy substitution of one type of grain for another—all are examples of drivers that can offset the impact of dollar strength. Just by looking at a scatter diagram of DXY versus individual commodity price levels, one can see the strength of this relationship quite clearly.

For example, the price of WTI crude oil—which is quoted globally in US dollars, is easily transported, has few substitutes, and enjoys relatively constant demand—should be expected to have the tightest link with movements in the dollar. Figure 2 gives dramatic evidence of this relationship.

Figure 2: WTI crude spot prices vs. DXY, 12/31/2010–12/31/2020



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On the other hand, a commodity such as corn—which is affected by seasonality and has a number of substitutes, and whose price is heavily affected by weather—displays a less stringent relationship with the level of the US dollar.

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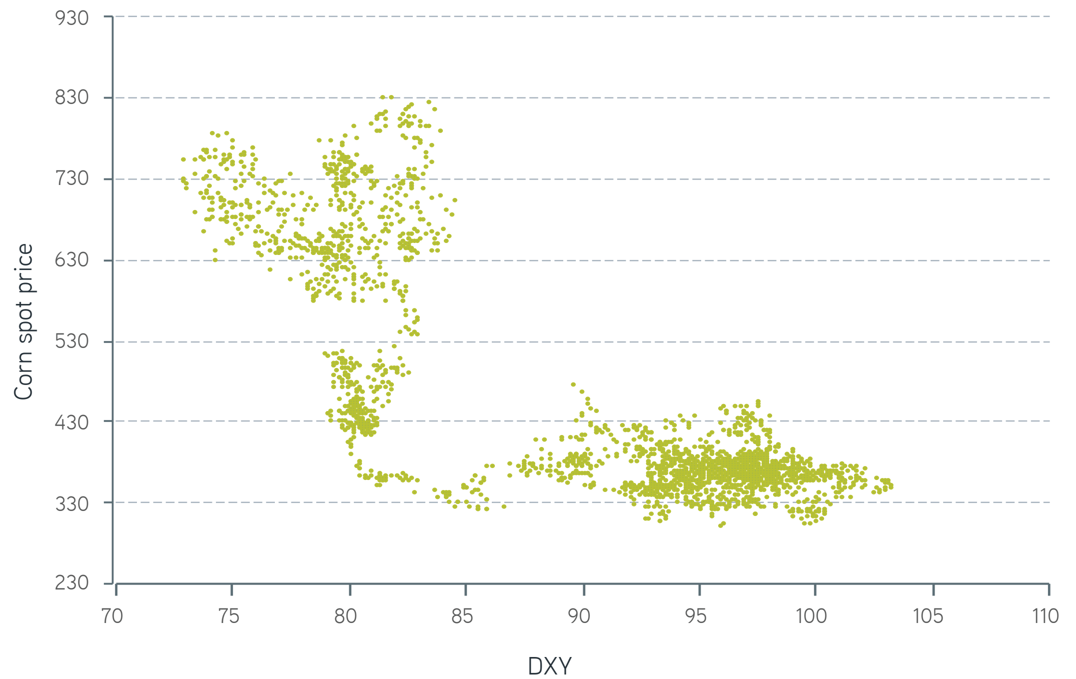
Figure 3: Corn spot prices vs. DXY, 12/31/2010–12/31/2020



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Figures 2 and 3 raise a question: Just how varied, then, is the relationship between the prices of individual commodities and the strength of the US dollar? Is it possible that the observed relationship between the Bloomberg Commodity Index and the US dollar has more to do with how the index is constructed and may not apply to all commodities?

To examine this, we looked at the pairwise correlation over the past 10 years between each commodity in the Bloomberg Commodity Index and DXY. As a reminder, correlation measures how two return streams move in relation to each other, with values falling between -1 and +1. A positive value measures the extent that the two streams tend to increase or decrease in tandem; a negative value measures the extent that one return stream tends to increase when the other decreases. These ten-year correlations are shown in figure 4.

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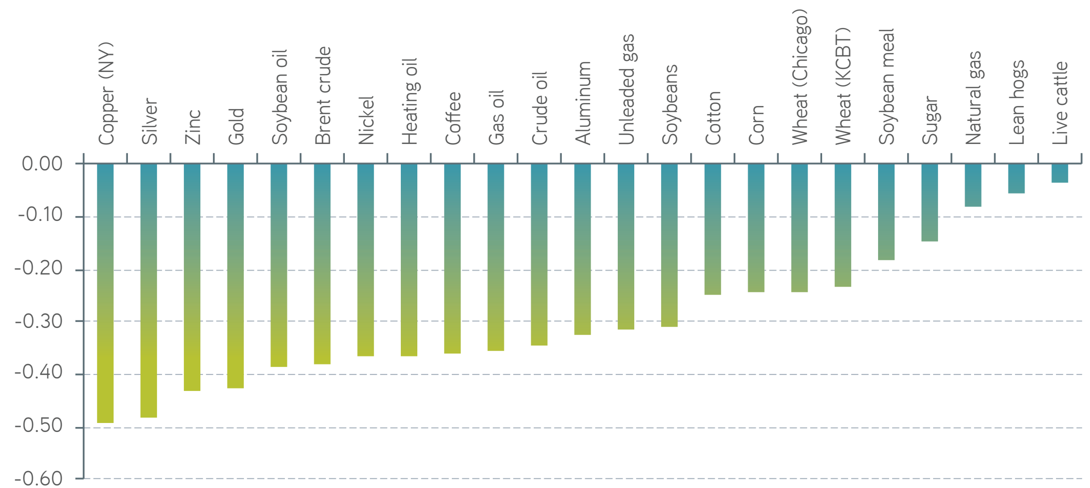
Figure 4: Ten-year correlations between DXY and individual commodities, 12/31/2010–12/31/2020



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As we can see, a negative correlation is observed for all commodities, reinforcing the notion of an inverse relationship between movements in commodity prices and dollar strength. However, the magnitude of this correlation varies dramatically, showing that the strength of this relationship differs by individual commodity. Many metal and energy commodities, which are used globally and whose prices are typically quoted in US dollars, display the strongest relationship. In contrast, commodities that are most affected by the weather (livestock, grains, and softs) or aren't exportable to the global markets (natural gas) have the weakest.

Conclusion

Historically, commodity prices have fallen in times of dollar strength and risen in times of dollar weakness. While the strength of this relationship has varied over time and by commodity, as a rule of thumb it's borne out by historical data. Unfortunately, it's not easy to break out the exact magnitude of this relationship when explaining commodity price changes. However, what's clear is that at least a portion of the steep downturn in commodity indexes over the past few years is due to the bull market in US dollars. If the dollar were to see a reversal, it could provide a powerful tailwind to commodity prices for the dollar-based investor.

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Returns are presented gross of advisory fees. The deduction of an advisory fee would reduce an investor's return. As an example, assuming (a) $1,000,000 investment, (b) portfolio return of 5% per year, and (c) 1.00% annual investment advisory fee, the cumulative fees paid would be $10,209.57 in the first year, $55,254.43 over five years, and $122,351.51 over 10 years. Actual fees charged vary by portfolio due to various conditions, including account size. Parametric's investment advisory fees are described further in Part 2A of Form ADV, which is available upon request.

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