HSBC

AM/FX

Tactical Global Macro

Brent Donnelly
1 (212) 525-8469
brent.x.donnelly@us.hsbc.com

I miss you, Canada!

Current Views

Bullish US 5-year and 10-year bonds
(too much priced for reopen and for Fed)

MTM 0.93% US 5-year yield
Stop loss 1.11%
Target 0.67%

Friday, April 09, 2021

Forexplainer #24

What causes cross-market correlation?

Welcome to Forexplainer Number 24. As I explained on March 12, 2019 (AM/FX: Forexplainer 1): Once a month I publish a longer-form piece called “Forexplainer”. Sometimes it is something educational I have read elsewhere, and sometimes it is something I write myself.

1,150 words (5-minute read)

On Wednesday I wrote a piece suggesting that bitcoin and AUDJPY have been correlated throughout 2021 and are likely to remain correlated going forward. A few people asked me why or how that correlation would manifest. Inspired by that question, today’s piece is about the concrete mechanics of correlation. I will briefly discuss seven ways the abstract concept of cross-market correlation plays out in the real world.

1. **Arbitrage and substitution.** This is an easy one in its simplest form. If bitcoin is selling at 57,500 on one platform and there is a bid at 57,600 on another platform, that’s pure arbitrage[1]. There is also a more nuanced version of this that looks a lot like arbitrage, but is not. This is usually called basis or RV trading.

   Closest to arbitrage is the basis between two fungible or nearly-fungible products like futures and spot. You can sell GC futures and buy physical gold and at some point in the future the prices are very likely to converge. This is not arbitrage though! There is a significant basis and mark to market risk. Still, this basis-related near-arbitrage is the reason nearly-fungible products like futures and spot, or ADRs and their underlying stock price, exhibit very high correlation.

   Moving along the spectrum from arbitrage to basis to RV… If you build a curve of all the crude oil futures prices and there is a kink in the curve that puts the DEC 2023 high relative to other contracts, you can sell DEC and buy a contract on or below the curve and have an excellent (but not risk-free) chance of making money.

   Substitution is further out on the same spectrum. This is the dynamic where a rise in the price of one asset will lead consumers to buy a cheaper substitute. If corn doubles in price, those who can switch to soy will do so, pushing the price of soy futures higher. If Doordash rips higher and now looks overvalued, investors looking for food delivery apps to invest in might buy GrubHub instead.

2. **Third variable.** Often when two asset prices move up and down together, they are responding to a third variable that relates to them both. This is the most common driver of the correlations I talk about and it is the reason trading lead/lag is logical. Most of the assets moving around on your screen are responding to the same set of macro stimuli.

   For example, if there is growing optimism about Canadian growth, CAD will trade stronger and Canadian interest rates will rise. The third variable (Canadian growth expectations) is the key driver of both USDCAD and Canadian rates. This will show up as high correlation between the two markets and the snazzy overlays that frequently decorate AM/FX.

[1] F1 F8 F1 F8 F1 F8 :]

Opportunities arise when one market moves more slowly than the other and the signal from one gives clues to the direction of the other. This could be because of non-price-sensitive flows against the grain in one market but not the other. For example, if the outlook for China growth is improving and copper is ripping higher but a huge M&A is going through selling AUD, you might see a divergence form. The moment the M&A transaction is complete, AUDUSD will snap higher to where it "should have been" given the rally in copper and the rosy outlook for China.

This Third Variable explanation explains why AUDJPY and bitcoin are correlated. Both are driven by marginal global liquidity. As global liquidity increases, optimism (and speculative fervor) increases and new money flows into risky assets. Some of that money flows into crypto and the optimism encourages AUDJPY buying. It is not that AUDJPY traders are watching bitcoin, necessarily, it's just that they are both driven by the same principal factor.

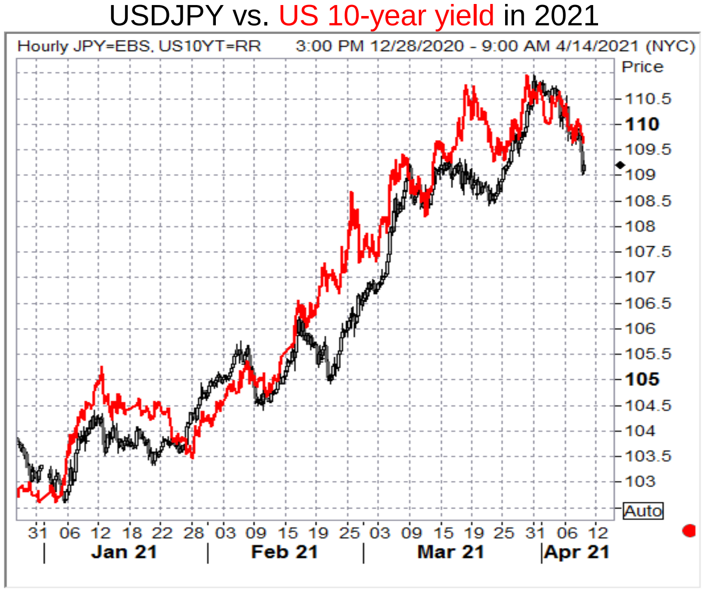
3. **Cash flows.** When one asset moves, it can generate cash flows in another asset. For example: When a Canadian crude oil producer sells their crude, they receive USD. They need CAD to pay their employees and shareholders so after they sell their crude, they need to sell USDCAD to convert the proceeds. If the price of crude doubles, the crude producer will have twice as many USD to sell and this will weigh on USDCAD.

   This is one mechanism that drives the USDCAD vs. crude oil correlation. If you have ever worked at a bank with a strong Canadian presence, you know those flows are an important piece of the USDCAD puzzle. Another example is an Aussie mining company might increase its dividend if iron ore prices are persistently high. These dividends will lead to AUD buying as many of the firm's shareholders are based in UK or USA. These direct cash flows are large and important.

   While cash flows are a significant driver of the correlation between commodity currencies and commodities, cash flows can also be important in other pairs. If US yields move higher, Japanese investors will find those higher yields appealing and will buy US fixed income securities. These purchases will drive the USD higher and generate a correlation between US yields and USDJPY.

Higher yields tend to, but do not always, lead to higher USDJPY

USDJPY vs. US 10-year yield in 2021



4. **Cross ownership / liquidation / forced selling.** Speculators tend to take positions relating to broad macroeconomic themes. For example, at the moment the theme is inflation so the macro positions are: short bonds, long USDJPY, long copper and so on. When there is significant movement in one of those assets (even if views on the global growth outlook have not changed),

it will trigger acitviity in the other markets as owners of the basket react to the changes in their P&L.

For example, as bonds have rallied this month, views on the reflation trade have not really changed. Still, specs are getting hurt… So they move to cut other positions (like long USDJPY)… The more bonds rally, the more USDJPY they need to sell to staunch the bleeding.

5. **Correlation traders and algos (self-fulfilling prophecy)**. Since people know that certain products are correlated, they won't wait for the cash flows or cross-ownership flows to kick in. If oil rips $2 higher, algos and humans all over the world will sell USDCAD.

6. **Volatility and systemic risk.** As systemic risk rises and risky assets fall, correlations rise. Every asset has an idiosyncratic risk component and a systemic or macro risk component. Idiosyncratic risk (say, supply and demand for copper) loses importance when systemic risk is high. Intense risk aversion pushes all correlation towards one as the only thing that matters is the rise or fall of the systemic risk. This is also explained by…

7. **Math.** Corr = (a^2+b^2-c^2)/2ab. If vols go up, correlation goes up.

I hope you found this useful. Have a poutine-flavored weekend.

Good Luck ↕ Be Nimble

In case you missed it, the most Canadian thing ever happened on March 25, 2021.

https://toronto.ctvnews.ca/beaver-wandering-inside-toronto-subway-station-prompts-rush-hour-closure-1.5361676

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