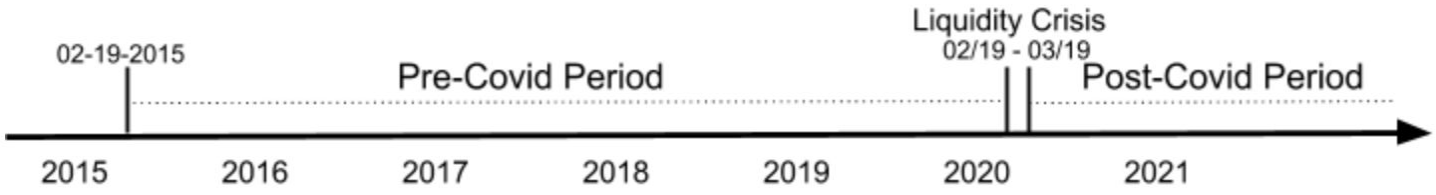
Intermarket Relationships Changed in 2020 by the COVID-19 Liquidity Event

Abstract:
Correlations between many currencies and assets have changed markedly over 2020. An analysis of intermarket correlations in price changes was performed using Python for the time periods before and after March 2020. The results show that since the onset of the COVID pandemic, risk-assets now show an inverse relationship with the US Dollar, while Treasury Yields no longer have a strong relationship with USD nor gold. From a historical perspective, these relationships are uncommon, and are usually followed by dollar weakness and a selloff in US Treasuries.

Introduction:
The onset of the COVID pandemic in early 2020 gave rise to a brief period of high volatility, falling asset prices, and deep swings in currencies. Since then, asset prices have benefited from an accommodative Fed and fiscal stimulus. As a result, the relationships between asset classes seen in the latter half of 2020 have appeared to differ from the period before COVID. My goal in this study is to examine intermarket relationships that have changed since March. Because I am only looking at correlations, my purpose is not to explain why these relationships have changed, but rather to explore when similar correlations have been observed, and how portfolio managers may adapt investment strategies with this historical information in mind.

Key Dates:
Pre-COVID Period: February 19, 2015 to February 19, 2020
Liquidity Crisis: February 19, 2020 to March 19, 2020
Post-COVID Period: March 19, 2020 to present (12-28-2020)



Variables Examined:
Daily closing prices (and yields for US treasuries) were collected for the following:

- Currencies: G10 & BRIC exchange rates, as well as the Dollar Index
- Equities: S&P500, NASDAQ, and Dow Jones Industrial Average
- Rates: The US 2y, 10y, 30y nominal yields, and the 10y and 30y TIPS yields
- Alternatives: Gold and Bitcoin

Methodology:

Python was used to scrape data from the St. Louis Fed website by converting publicly available Treasury Data into Pandas dataframes. Additionally, the yFinance module was used to scrape equity, commodity, and currency data from Yahoo Finance, converting its publicly available data into dataframes.

Python was then used to programmatically run statistical analyses on the scraped data. An ordinary least squares regression for daily percentage changes was executed for every possible 2-variable relationship between the assets and currencies previously mentioned for both the Pre-COVID and Post-COVID periods, totalling 1682 regressions. Any relationship found to be significant ($P<0.05$) in either time period was further examined by viewing its rolling 20-day correlation; this time frame was chosen to approximate a one-month window.

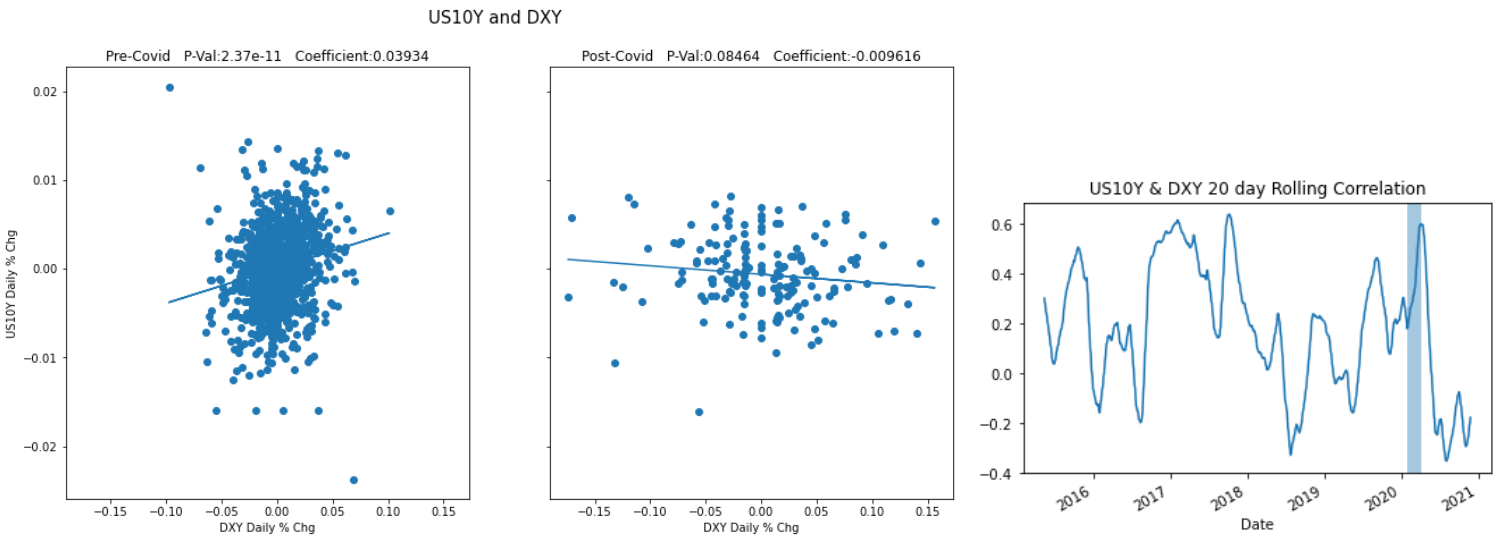
The Python code used for this study is available on Github through this link.

Intermarket relationships that have changed or arisen since March 2020 are outlined in the following pages:

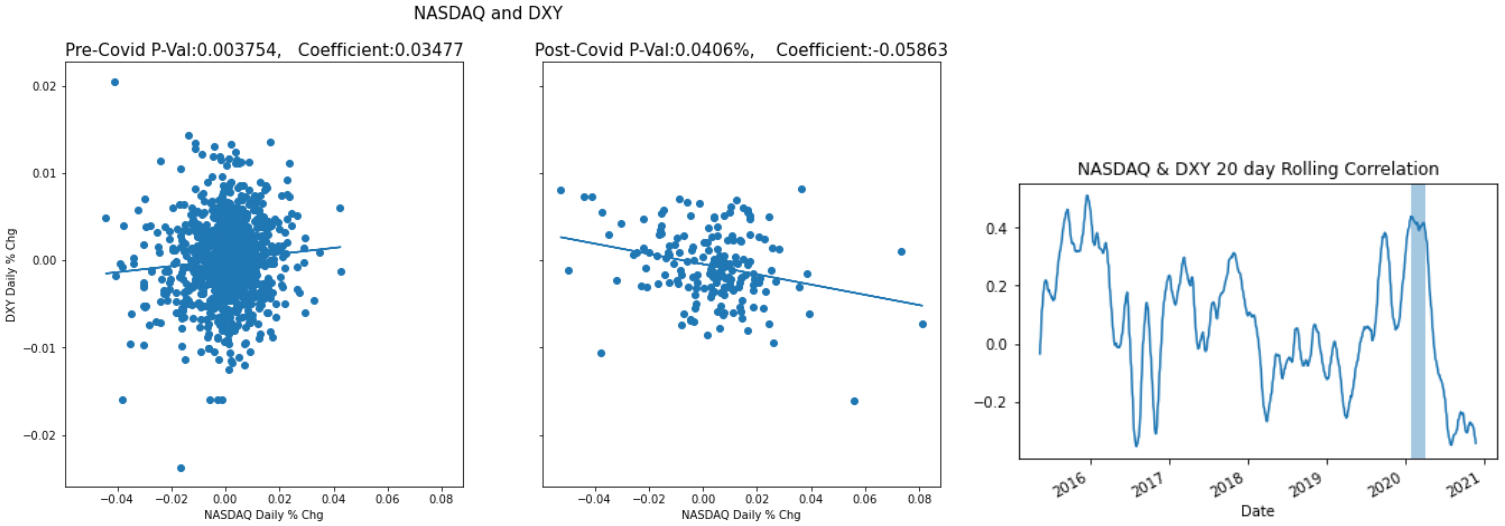
'Dollar-Centric' Relationships

The following four trends seen concurrently create what I will call a *Dollar-centric* environment—daily price changes in the Dollar Index now show a negative correlation with practically all risk assets, while DXY's historically consistent positive correlation with US10Y yields has broken down.

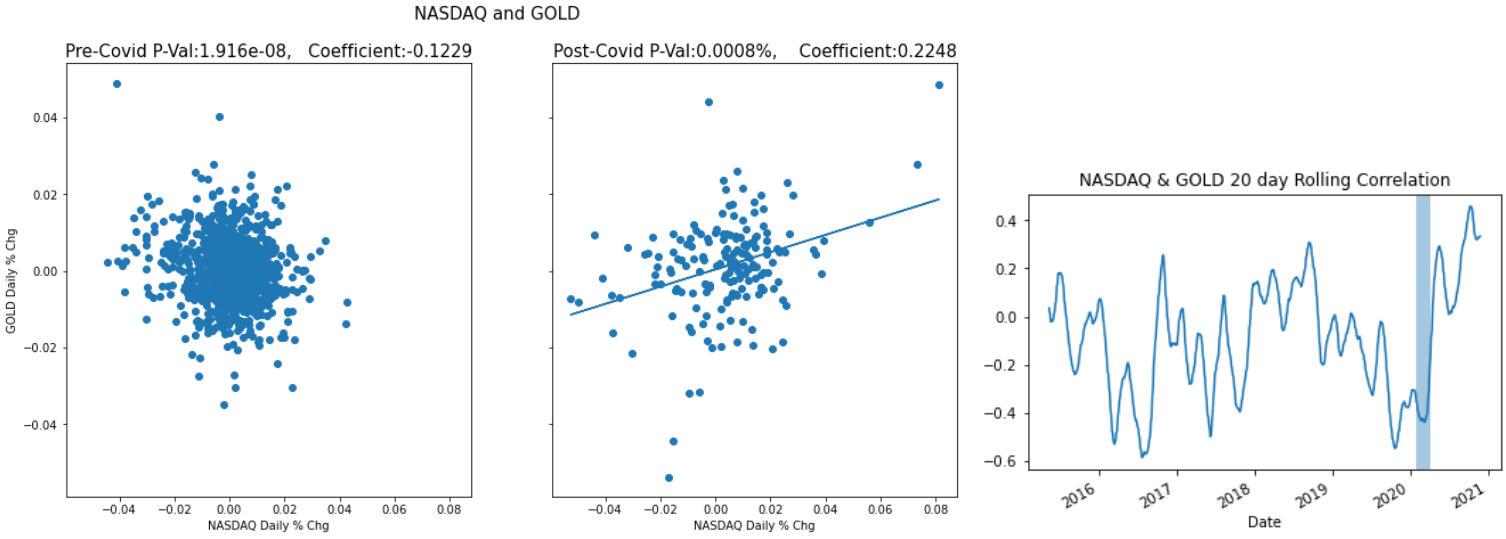
1. A broken-down relationship between the USD and nominal yields.



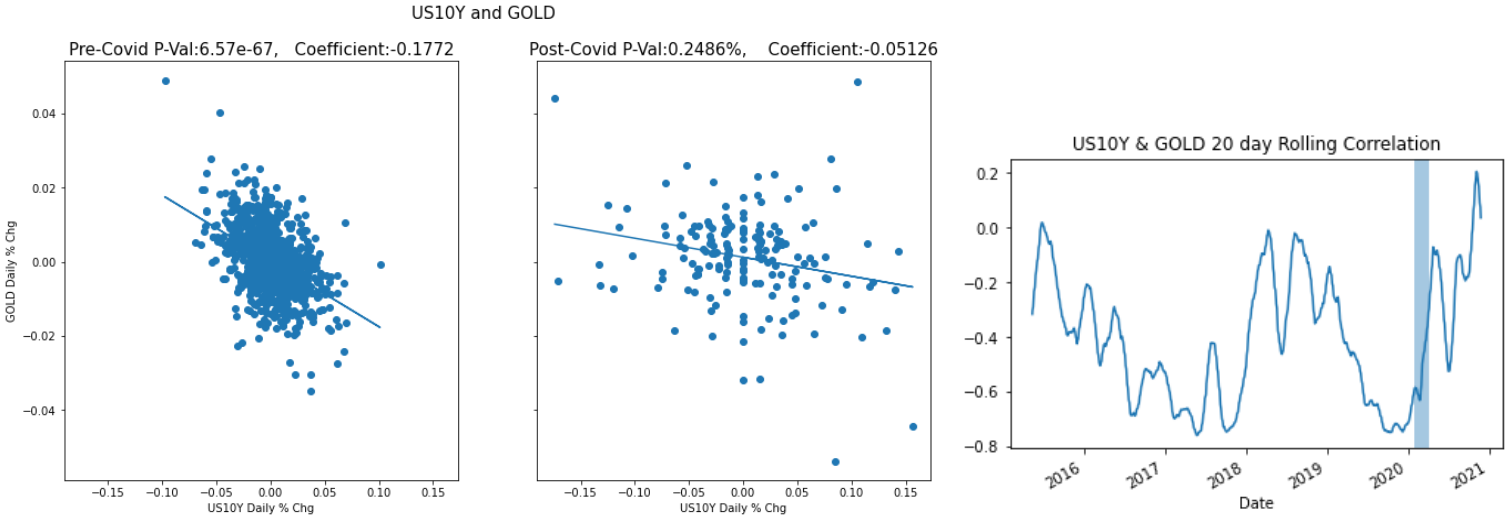
2. A negative relationship between the USD and equities.



3. A positive relationship between risk assets (equities) and alternative safe-havens (gold).



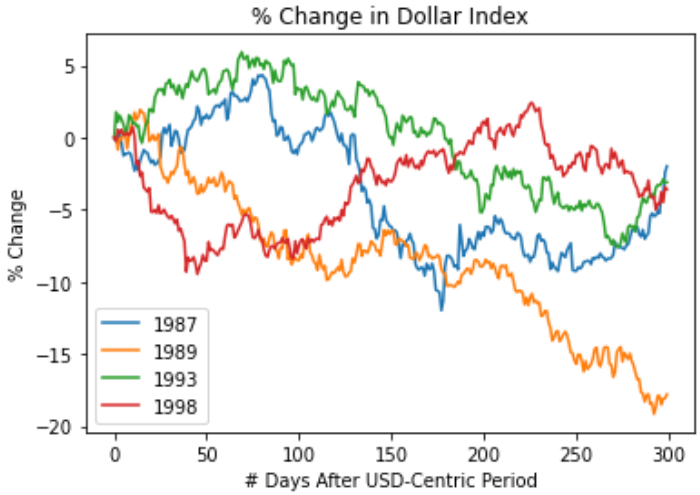
4. A breakdown of the negative relationship between yields and alternative safe-havens (gold).*

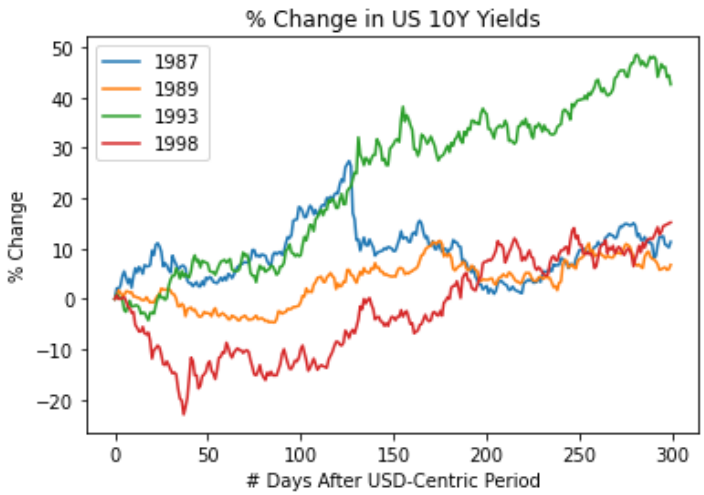


*US10Y nominal yields were used in place of real yields in this case, as daily percentage changes in negative real yields disrupt the OLS inputs.

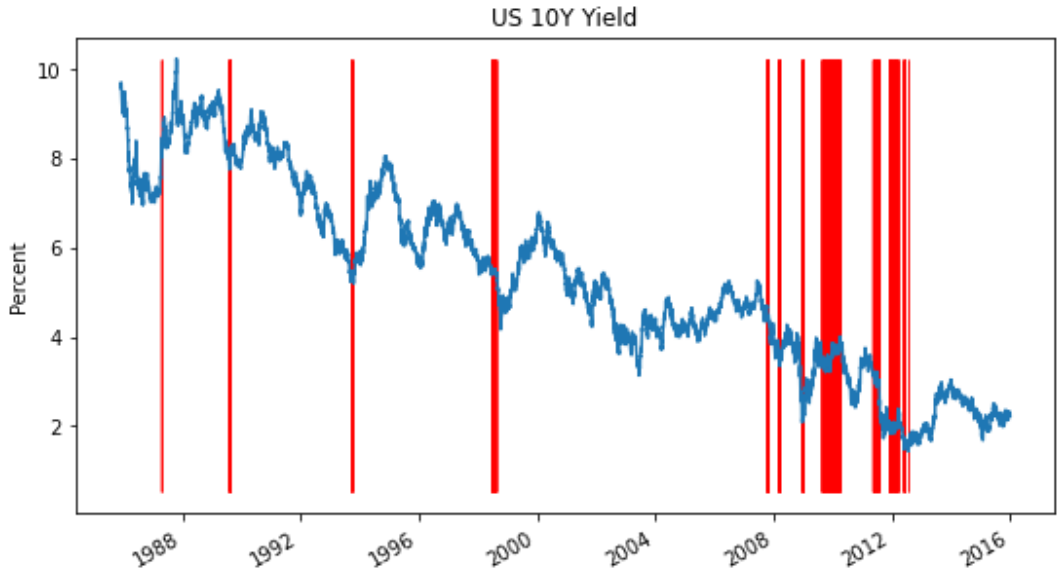
Historical Analysis

Historically speaking, a Dollar-centric environment as defined in this paper has only been seen on several occasions since the breakdown of the Bretton Woods agreement in 1971. Prior to 2000, there were four brief periods where this occurred: in '87, '89, '93, and '98. These periods never lasted for more than 10 weeks, and were followed by year-long spells of dollar weakness and a selloff in US treasuries:

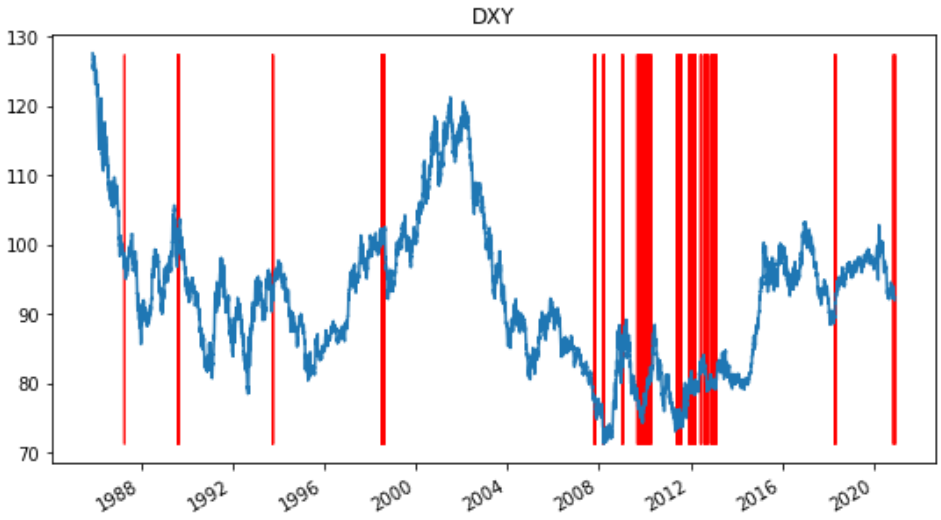




These four aforementioned brief selloff periods in US bonds occurred in the middle of a 40-year bond bull-market, making such bouts of abnormal market relationships a leading indicator of counter-trend behavior. In the chart below, USD-Centric periods are highlighted in red.



The time period between November of 2007 and February of 2013 saw intermittent bouts of this USD-Centric environment. Unlike prior instances, the 2007-13 period was prolonged over several years and was followed by dollar strength. This is likely due to the multiple rounds of QE, Zero Interest Rate Policy, and Operation Twist carried out by the Fed during this time period, in addition to deep budget deficits. Further, the Great Financial Crisis damaged emerging markets and European economies to a greater extent than the United States, providing a potential explanation for the relative dollar strength after 2013.



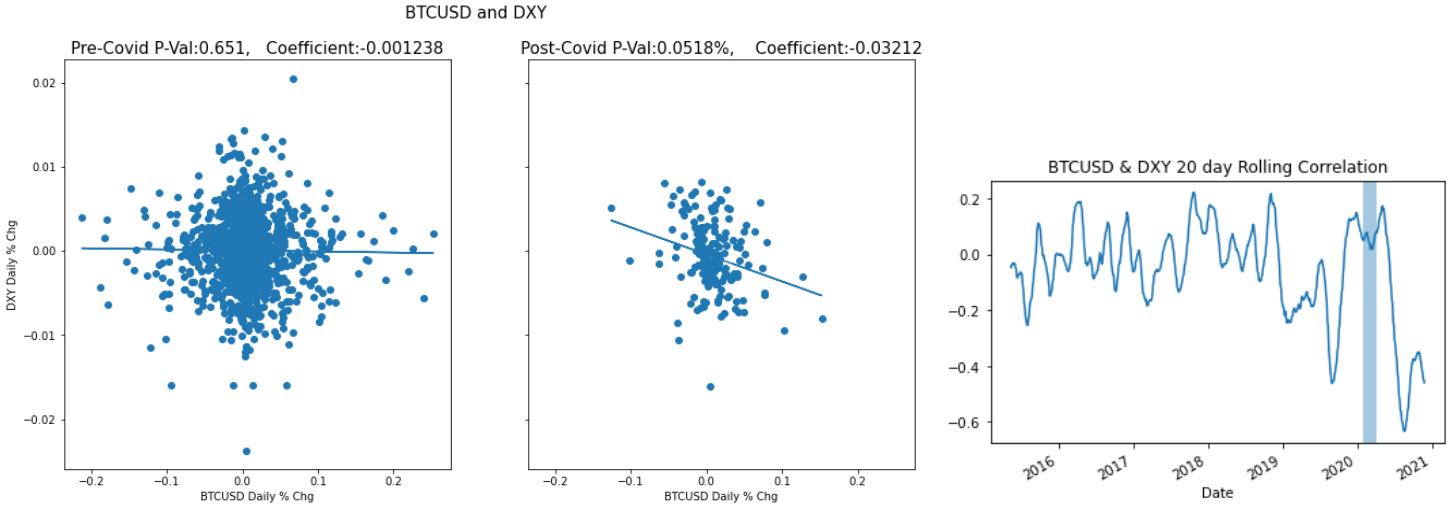
Implications:

Will the era we live in today appear more like the brief Dollar-Centric periods of the 80s and 90s, meaning we should expect rising 10y yields and dollar weakness as soon as the current intermarket relationships break down? In all likelihood, the current Dollar-Centric period will be more similar to 2007-13. For one, the existing Dollar-Centric relationships seen since the Covid liquidity crisis in March 2020 have already outlasted any similar periods in the 80s and 90s. This environment is likely to continue as the Federal Reserve is committed to pinning short-term rates to the zero-bound until at least 2022, paired with $120 billion in monthly bond purchases until inflation levels return to 'normal'.

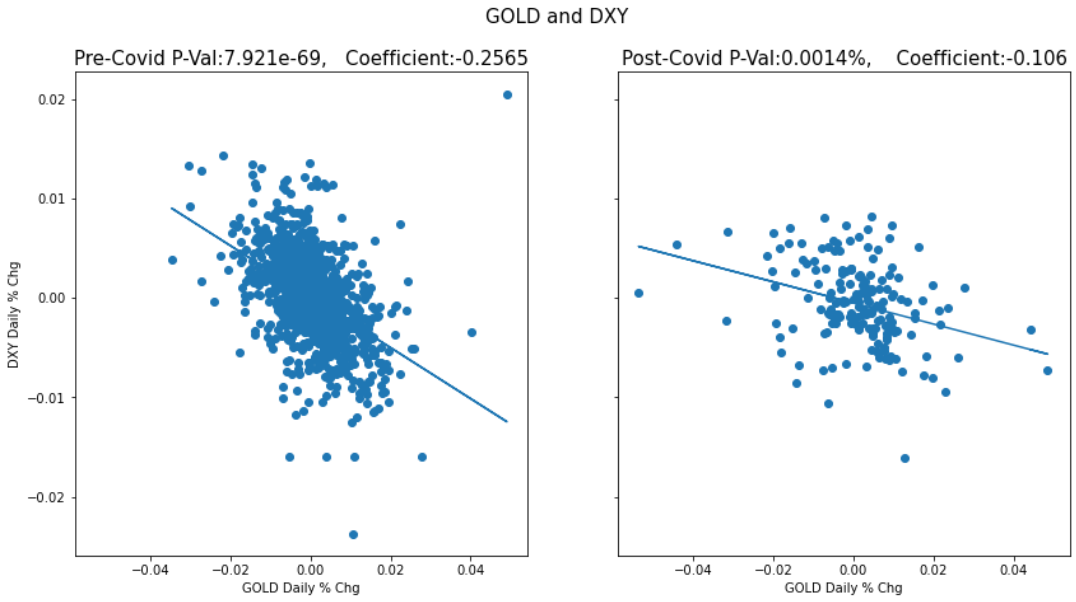
The main point to take away from this study is that the four abnormal intermarket relationships are likely to remain present until at earliest 2022. While these Dollar-Centric trends make no implications about future strength of the dollar nor the US bond market, they may help inform us about how portfolio managers will respond as these relationships persist. US Treasuries and certain alternative assets no longer provide as much of a diversification benefit in traditional '60/40' portfolios, as they are now positively correlated with US equities. As a result, portfolio managers will increasingly seek investment opportunities in other asset classes that provide uncorrelated forms of diversification. These include global and emerging market equities, and alternative assets such as real estate, private equity, and cryptocurrencies. If the economy in 2021 runs hot, this rush for diversification may lead to more speculative investments in asset classes on the fringe, such as fine art, farmland, and wine.

Additional Emerging Trends

2020 has also given rise to new ways to effectively hedge against dollar weakness. Since the onset of COVID, Bitcoin has emerged as an asset class uncorrelated with risk assets, while its inverse relationship with the US dollar has strengthened.



By contract, traditional hedges such as gold now behave more like risk assets. Consequently, their role as a dollar-hedge has weakened.



It remains unknown how long these current trends will last, or if they could further strengthen in 2021. A deeper analysis would be necessary to evaluate the merits of further diversification of traditional portfolios and the value of emerging asset classes such as Bitcoin. Nevertheless, it is likely that the existing trends will continue as long as the policy of the Federal Reserve remains accommodative.

-Sam Baker, Boston College class of 2021