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Fourth Quarter 2020 Investor Letter

Portfolio Comments

The fourth quarter was dominated by political events and the promise of additional US fiscal stimulus, which finally passed near the end of December. US stock markets recovered from their September lows during October but slumped going into the November elections. After the elections occurred, when Democrats won the Presidency and the House (virtually guaranteeing more fiscal stimulus) and there was no violence or a constitutional crisis, markets rejoiced. With political angst lessening and the announcement of successful vaccine trials days after the election, US markets raced to new highs, led by cyclical, value-oriented and small-cap stocks, those that had not participated nearly as much earlier in 2020. Safe havens were sold, including Treasury bonds, utilities and precious metals as "risk on" was reignited. This is despite the Covid pandemic spreading rapidly throughout the US and the world, and also despite slowing GDP growth and stagnant employment gains. December led to higher prices for virtually all stocks as fiscal stimulus negotiations fueled further gains, culminating in a late December stimulus deal. Bonds had a horrible quarter despite continued Fed buying. Foreign stock markets were higher, especially in East Asia, where Korean, Japanese and Chinese market showed the pickup in exports as the world restocked from earlier lockdowns.

Kanos portfolios built on year-to-date gains during the fourth quarter, rising in October and December (but retreating in November when euphoria over election certainty/new vaccines pulled money into momentum and cyclical stocks). Our precious metals holdings rose from their November lows as fiscal stimulus talks and the continued drop in the dollar's value attracted investors. Our technology positions continued to add to gains as technology was again a leader in growth. Our healthcare stocks, particularly gene editing/CRISPR stocks, had outstanding quarters. Our US multinational holdings, including energy and industrial/defense sectors, contributed gains to portfolios, too. Our bitcoin ETF, the Grayscale Bitcoin Trust, had an outstanding quarter and was our biggest gainer.

Looking forward, our portfolios continue to be positioned for the myriad of possible outcomes from the economy, Biden Administration changes, Covid/vaccines and geopolitical macro developments.

Market Analysis - Looking Forward

The markets continue to look optimistically at the future, comforted that the new Biden Administration will champion more spending/stimulus and act more predictably, but looking to the Fed to continue its ultra-dovish low interest rate policy with its continued accompanying monetary stimulus. These conditions form a perfect crucible for continued financial speculation with forecasted growth in money supply and increasing reserves in the banking system by which more lending can support higher spending, higher debt levels and, of course, higher stock price levels. The fly in the ointment will be the

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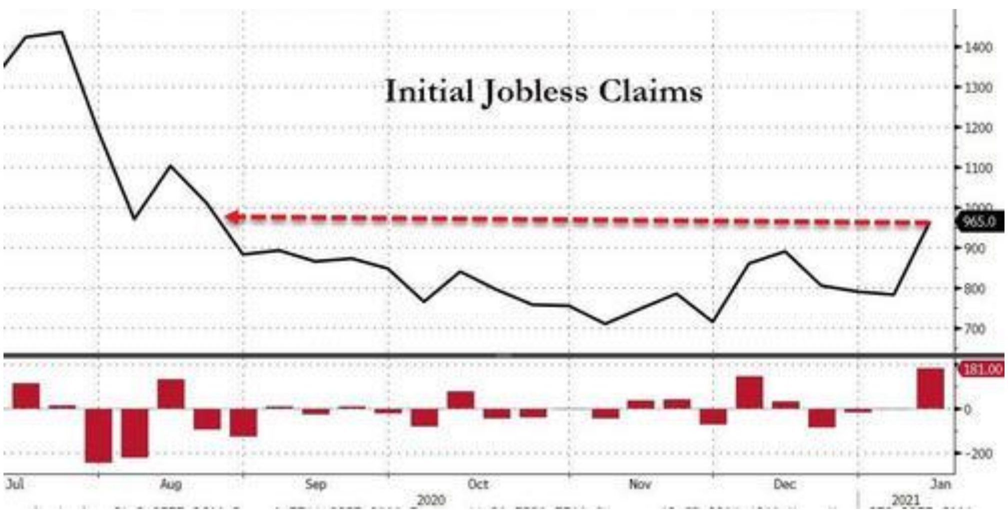
return of high measured inflation, but so far, that is not considered a threat to a recovery in the economy, higher earnings or resultant higher stock prices.

Economy

After the historically catastrophic GDP loss in the second quarter of 2020 (-31.4%), the US economy has shown its amazing resilience by rising in the third quarter by an amazing 33.4% and an estimated 4%+ in the fourth quarter, helping to recover a large amount of spending lost to the lockdowns and economic shutdowns at the onset of the Covid pandemic of spring/summer 2020.

However, these initial lockdowns led to more than 33 million people losing their jobs (net of new jobs) at the economic lows in March and April. Since then, many millions of people have either rejoined their employers or found other work, but <u>more than 18 million people</u> are still receiving some kind of monetary governmental assistance due to job losses/layoffs/reduced time. 965,000 people filed new unemployment claims just last week (mid-January 2021), the 44th week in a row where initial jobless claims were above the pre-Covid weekly record of 695,000. It is also the largest week of claims since last August (see chart below).



While at least some of the recent increases in unemployment are due to newer lockdowns imposed this past winter in many East and West Coast states, Wall Street has been projecting better employment numbers despite these lockdowns; thus, it is a surprise that recent jobless claims have risen and stayed at stubbornly high levels. At least the recent resumption of unemployment benefits through the passage of the latest fiscal stimulus bill helps preserve ex-employees lives while they wait to find new work while the economic recovery hopefully builds.

Also concerning is the slowdown in retail sales, the lifeblood of US GDP (around 70%). In December, retail sales fell 0.7% month-on-month, when it was expected to be flat. And this marks the third straight month of falling retail sales, which is not supposed to happen in a strengthening recovery. Even more concerning, sales at non-store retailers, i.e., internet merchants such as Amazon, etc., fell 5.8% in December, a worrisome drop around Christmas time in a category that had been incredibly strong all year. Food Services & Drinking Places sales in December fell 4.5%, reflecting reimposed lockdowns on both coasts and involving many large cities; while not surprising, this is probably a deathblow to a number of restaurants that need a strong Christmas/New Years season to get them through the tougher January-February winter months when sales are at their lowest.

Obviously, the advent of Covid vaccines is transformative for a recovering economy as more vaccinations lead to fewer cases and lower hospitalizations, which should allow economic reopenings and the ability to hold more events like concerts, spectator sports, expanded travel, etc. Confidence in the efficacy of vaccines and people's belief in herd immunity should factor into people's willingness to do things and attend events in the future without feeling still at high risk of exposure to Covid. We hope people will fall back into prior routines and feel safe at crowded events and venues, but we have our doubts about how quickly this will happen, probably prolonging the time needed to reach full recovery.

We see economic recovery accelerating in the summer of 2021 and hope it will be strong and rapid. However, with unemployment staying at high levels and retail sales falling during the final three months of the Christmas season, the "meat" of economic indicators may be pointing toward more weakness while the markets and consumer confidence surveys see the recovery sooner in the US economy. We shall see relatively soon whether recently announced reopenings in many states matter toward market movements. In addition, new policy announcements by the Biden Administration seem to be trending toward politically returning to Obama-era stances, but with economic angles that do not immediately support economic growth, like raising the minimum wage (which historically has led to job losses) and inserting progressive issues in the next Covid stimulus bill (causing more debate and postponing its possible passage into March 2021 at the earliest).

Equities

We wrote in our last letter: "Equities in the US appear to be waiting for the results of the election." Boy, were we right. Augmented by the Pfizer announcement of successful results of its vaccine development on November 9, 2020 (and subsequent announcements by Moderna and Astra Zeneca, as well as news about Chinese and Russian compounds), the market rose throughout November and December as political and viral uncertainties were replaced by soon-to-be-distributed vaccines and a stimulus-friendly Biden Administration. Continuing zero interest rate policy from the Fed (as well as $120 billion/month of monetary stimulus) is set to continue for the next three years, which leads us to continue to invest in equities, although our individual investments may start to move to more economically sensitive securities (materials, base metals, even energy) at appropriate times. Janet Yellen, the former Fed chair and incoming Secretary of the Treasury under Biden, said during her confirmation hearings that the US Government needs to continue to "go big" on fiscal stimulus to pull the nation out of its Covid-induced slowdown, which causes us to want to continue to invest in commodity and infrastructure companies as an infrastructure bill and building inflation pressures from multiple rounds of fiscal stimulus favor such investments.

First, "risk on" has not abated at all, despite many investors rotating into lower-valued sectors like energy and industrials. Instead, waves of investments come into the technology-biotech-finance/("fintwit")-crypto arenas as narratives and story stocks are hit with buying waves, sometimes including large amounts of above-market strike options, forcing dealers who have sold the options to buy stock to hedge some of their exposures. However, for all the "moonshot" stocks that have gone way up in the last few weeks, there are also many stocks that have lost large amounts of value, even halved, when expected earnings results aren't reached or trials prove products ineffective, such as in biotech and drug development companies. This "sword of Damocles" over stocks that do not meet expectations limit the amount of capital we have allocated to speculative ideas, although we have invested steadily in gene editing stocks, ETFs of biotech stocks and select highly-valued technology stocks.

While we continue to be nearly fully invested, we continue to favor less highly-valued US stocks and also some international (mostly Asian) stocks. We are still concerned about the wide (and possibly further widening) gulf between stock market performances and the anemic performance of the US economy, still grappling with widespread lockdowns. Many cities/states implemented lockdowns during holiday months (Democratic-controlled states and cities, Andrew Cuomo, Governor of New York and Lori Lightfoot, Mayor of Chicago come to mind) but have just changed to advocating opening their businesses/schools just as President Biden starts his term. But even with some alleviation of lockdowns and the slow rollout of vaccines, the now ingrained caution of the US (and world) populace remains, resulting in the US economy continuing to act sluggishly.

We are worried about unemployment, small business viability and debt-laden businesses and municipalities. We talked about the unemployment situation above. It is one of our main concerns, even with multiple effective vaccines rolling out at 1 million doses per day and many locked-down states calling for reopening, all of which should help the economic recovery accelerate this spring/summer.

Small business viability is still a concern of ours. Small businesses like restaurants, hair/nail salons, dry cleaners, gyms, and other personal services places of business have been closing / declaring bankruptcy during 2020, due primarily to the lockdowns and secondarily to the limits on serving patrons. The problem with personal services is that there is only limited "pent up demand." When the spring lockdowns ended, we remember many people, especially men, went to get a haircut weeks after they normally would; but they did not go get two or three haircuts like they would have had there been no lockdown. You don't "catch up" on missed haircuts, or getting your nails done, or eating meals. Thus, these businesses lost out on revenue that cannot ever be recovered – governmental help only goes so far; it can cover expenses but not recreate revenue missed in many businesses. Our worry here is that many of these service firms will go under, and the owners or even enterprising workers who might form new restaurants/salons/firms will have used up their savings so that they don't have the capital to start new businesses. This leaves the business environment even more open to larger firms, which generally have more established business concepts, but may not give as good customer service, serve niche consumers, or innovate to find new concepts that the public would like (things like food trucks come to mind). It may take more time than we all hope to start to get more independent restaurants to open in locked-down metropolitan areas (New York and Los Angeles being two good examples).

Finally, as we wrote in our last letter, "[w]e have avoided movie, travel, airlines, and entertainment stocks due to Covid concerns." We have not avoided them because we think they are bad businesses, or they are not worth investing in; we have avoided them because we are afraid of the debt almost all have taken on to survive Covid. In the past, we have invested in airlines at times we thought they were reasonably priced and had a "long runway" of demand, for example during recovery from a recession. However, airlines today are flying at low load factors and have taken on millions of dollars of additional debt

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during the pandemic in order to survive (while also getting some government grants – i.e., free money from the government). We think that with load factors climbing only slowly, international travel still difficult due to prohibitions from foreigners visiting overseas and the cost of servicing additional debts, airlines will probably face financial difficulty or possible bankruptcy in the next couple of years. That will devastate equity holders' stakes, most probably reducing them to near $0 value. Thus, for movie studios (still unable to release new offerings except through online video services or their own online services), hotels (tourists still very limited in their ability or want to travel, due to Covid concerns still), and entertainment (concerts, plays, Broadway, even most sports teams still have either no fans allowed or just a few [not enough to make sense financially], so they are all either still shuttered or are operating at a loss to maintain their brand and/or fan loyalties) are all still on the "no go" list till recovery takes hold. These things all matter to us because many entities have taken on debt to make it through the Covid recession – we think that all this increased debt without a clear path to large increases in profitability will cause much more financial hardship and business closures than many in the "let's just get back to normal" economic forecasters.

Still, there are many businesses that are not only viable but are thriving: large businesses that can be accessed online or socially distanced: technology firms, software, hardware and online services are ideally suited to this environment and their soaring stock prices show this. Large, low-cost retailers have thrived and will continue to serve consumers of many different types of demand: groceries and food, clothing, personal entertainment and sporting equipment, electronics, etc. Manufacturing and industrial firms that provide the building blocks or finished products for industrial businesses, for housing producers, for consumers, and for small businesses are also thriving. Producers of raw materials are benefitting from the restocking of the world's stores and further development of housing, especially in the developed world as cities become less popular and suburbs and smaller cities/towns thrive.

Do not forget – US stock valuations are near their highest in history, so many companies, while highly successful and appearing to continue their performances, are poor investments for the future due to their current prices reflecting all the good news (and probably much more). Thus, we must evaluate downsides as well as upsides to investments currently, as companies that miss expectations in results, financials, product launches, clinical trials, etc. are punished severely by the market that has such high expectations as expressed by extremely high valuations. We have seen a lull in the momentum of the US stock market during January as the rebalance of the Senate was digested and the markets adjust to the priorities and policies of the incoming Biden Administration. We do expect the market to be higher in coming months and plan to continue deploying or redeploying investment capital more fully this spring as attractive opportunities are found.

<u>Late note</u>: At press time, we have observed this past week a frenzy of activity in some smaller stocks that almost all have large "short interest," i.e., a large percentage of their shares were borrowed to sell short due to their perceived poor business prospects. Stocks like GameStop (GME), AMC Theaters (AMC), Koss (KOSS) and a handful of others have been bought by groups organized on message boards on the internet (Reddit's WallStreetBets is the most well-known), driving up prices viciously, helped in part by the shorts having to "buy in" the shares they sold previously. The tactic worked so well during this week that these groups and other profit-seekers are expanding their scope to other stocks considered vulnerable to "bull raids." A large amount of this activity occurred on Robinhood (the "people's"

brokerage firm featured in our letter last quarter), which has been unable to handle the capital flows and regulatory capital requirements, causing it (and other brokerages) to limit customers' ability to buy and hold shares in these volatile companies. This restriction on further buying (and even forced selling) has caused a large amount of outrage in small investors' circles, where advocates say that the "big guys" don't face these same obstacles but the "little guys" get restrictions put up when "they start to beat the big guys at their own game."

We feel for these individual investors and acknowledge that their buying power has indeed resulted in investment gains for a number of them. The bad thing, for all investors, is that these tactics, bull raids (and bear raids too) and herding, generally leave behind the least competent (or just late) investors, and prices of the affected companies usually revert much closer to their pre-raid levels, causing big losses to anyone who bought at the high prices. Thus, while individual investors want the ability to lever up and buy whatever companies they want, laws and regulations are usually in place to protect the less sophisticated from being convinced to buy "big winners" AFTER they have already gone up significantly. Inevitably, these late-to-the-party investors will be left holding shares as the buying moves to other targets and lose lots of money. This is typical end-of-bull-market behavior where years of stock market rises are projected to continue ad infinitum. We aren't calling for the end of the bull market due to this behavior, but we are much closer to the end than the beginning.

Bonds

Bonds have been losing value recently as the price tag of the latest fiscal stimulus package pointed to even larger government budget deficits and even larger supplies of US Treasury debt that would have to be auctioned to finance these deficits. After revisiting Covid-bottom lows in yields at 0.52% in August, 10-year Treasury yields have climbed due to these concerns about higher deficits and higher yields needed to attract investors to buy these bonds. 10-years hit interim highs at 0.98% after Biden's November election win, and they popped as high as 1.15% when the Democrats took the Senate on January 6 after their Georgia Senate victories, as investors saw both higher spending and a faster recovery as vaccines and a one-party government points toward higher government spending which would help kick start the post-Covid recovery faster, with more economic recovery demanding more capital and willing to pay higher interest rates to finance new business and projects, and, of course, the government having to issue even more debt for additional stimulus programs.

We are certainly convinced that deficits will be larger and that a one party-controlled government will be able to spend faster and more pointedly. However, we don't believe they are focusing the most on economic policies; the Biden Administration has already spoken on different occasions and in many different venues that policies will be based on social goals such as racial equality/equity, climate issues and diversity issues, which almost always prove to be less efficient and many times to be more expensive, thus robbing the budding recovery of some of its incentives to grow as quickly as possible to help as many people sooner rather than later. It seems inevitable that the Fed will resort to Yield Curve Control (YCC) in the near future, in which the Fed would cap long-term interest rates, buying more bonds if rates rise past Fed-determined caps. This will occur if long-term interest rates get too high and spook markets, forcing the Fed to come to the rescue. YCC will keep financing costs low but will eventually lead to more asset appreciation and probably inflation due to increased money printing.

Higher amounts of debt and higher interest rates means bonds will suffer in price due to increased supply and lower demand at current interest rates. Any rise in inflation will put further pressure on bond prices as higher inflation decreases the purchasing power of bond repayments.

We have lowered our exposure to longer-term bonds due to the reasons enumerated above. We still hold several bonds for income and stability, but the income does not overcome the price and inflation risk anymore, in our opinion.

Currencies

The singular event in the currency space in the last few months has been the ongoing weakness in the US dollar, although it has arrested its latest fall in the first week of January. The Chinese renminbi and euro have been the main beneficiaries of the weak dollar on a trade-weighted basis, but virtually all the world's currencies have rallied strongly against the dollar during the last few months, and we expect this trend to continue. As noted above, many members of the Biden Administration have now stated that more and larger fiscal stimulus bills are on their way, leading to higher budget deficits that almost certainly will be partially augmented by more Fed monetary stimulus, meaning more dollars created and more pressure on the value of dollars.

The effects of lower dollars are starting to be felt around the world, however. A multi-year high in the renminbi means Chinese exports are more expensive, especially to countries with currencies pegged to the dollar. It also means things typically denominated in dollars, such as many commodities including oil, gold, agriculturals, etc. are cheaper for most of the rest of the world, leading to higher consumption, generally resulting in higher prices as demand ramps up and supply increases lag.

We continue to think the dollar will weaken over time, with corrections periodically (like we have had for the past couple of weeks), but higher budget deficits and more stimuli will continue to take their toll on the value of the dollar.

We have been reticent to invest in other currencies because of the uncertainties around the Covid pandemic and the inherent weakness of European economies in general. Asian reliance on exports to America also concerns us, so we don't have any outright currency investments currently and don't plan any until the post-Covid landscape takes shape.

Energy

The oil markets have found their footing since the November elections/vaccine announcements, as positive vaccine news and more political certainty have led to higher demand forecasts for energy, especially for transportation. Throwing in a cheaper dollar and a late December announcement by OPEC to continue to limit supplies more than the world thought (with the Saudis cutting an additional million barrels per day of supplies, which was completely unexpected), West Texas Intermediate crude oil is in the mid $50s/bbl at a time of minimal seasonal usage (January-February).

While we think oil will continue to be especially volatile, the unexpected discipline of OPEC+ (including Russia) and the worldwide economic recoveries as winter recedes and vaccinations spread should lead to this level of prices for oil to hold, with possible surprises to the upside in price if people around the world shed their Covid fears and resultant travel inhibitions.

Both gasoline and crude oil storage supplies are higher than average but have not built to the extreme levels many were expecting from reduced demand, so both could have price spikes if demand does come back this spring. Natural gas has continued its volatile ways and prices look to stay low due to a long enough warm spell in December that collapsed prices after its late fall price spike due to early cold.

We continue to hold supermajor oil company stocks and some pipeline/midstream companies for income. We plan to expand our holdings if fundamentals continue to improve (as we expect), possibly also adding independent producers or refiners, depending on their future attractiveness vis-à-vis sustainable upticks in demand.

Commodities/Precious Metals

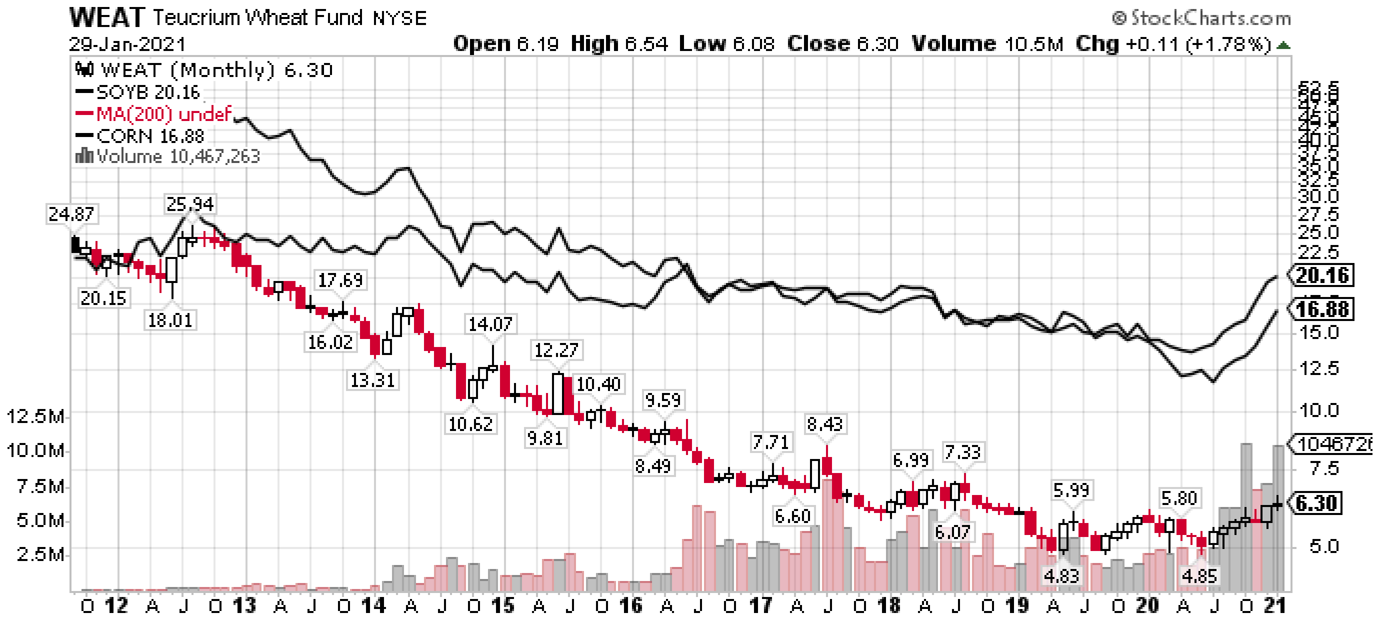
After Pfizer's successful vaccine development announcement on November 9th, the stock market built in a more rapid and robust recovery, featuring stocks that would benefit from reopening and rebuilding. Base metals, led by copper, and agricultural/"soft" food commodities have rallied now for months, and we expect them to continue due to China's continued buying and expected higher worldwide infrastructure needs.

Thus, base metals miners that produce copper, iron ore, aluminum, zinc, nickel, tin, etc. are in our portfolios. Chinese demand for copper is very strong as delayed capital expenditures worldwide create increased demand for Chinese intermediate production. In addition, expanded home building in the developed world underpins demand. The crush of demand has created delays in supply deliveries as transportation is at capacity in many areas, even causing supply shortages that lead to manufacturing/project delays. Copper prices are at seven-year highs, while other base metals are at pre-Covid prices. Industrial metals have been in bear markets since 2013 (except for one big boost in late 2016/early 2017 due to the "Trump Bump" economic boost), so there has been little new investment in mines. If the post-Covid recovery "has legs" (i.e., lasts more than a partial year), base metals prices could continue higher as supplies shortages become a reality.

Tough growing weather worldwide in the latter half of 2020 and disrupted world trade due to Covid also continues to affect agricultural commodities and their prices. Problems with other protein sources (2019/2020 pork virus that affected Asian pig supplies) as well as a big Argentine dock strike have led to much higher soybean prices worldwide. As illustrated by the stock market-traded ETF SOYB below, soybean prices are up almost 50% since May.

Corn prices have risen almost 50% also after setting multi-year lows earlier in the summer. Even wheat prices, which have been dropping for years, stopped dropping in May and have risen almost 30% since August, as shown by the Teucrium Wheat Fund (WEAT) ETF shown below:

The following chart shows all three agricultural commodities for the last few years in distinct bear markets, with almost no sustained upward corrections for years. However, looking at 2020, all three bottomed in the March/April period and have risen smartly, surpassing interim highs of the last two years. We think these trends point to higher prices in the future as disrupted trade leads more countries to import increased amounts of raw materials for immediate use (due to continued reduced harvests) and for stocking for future use.



"Ag" prices have been weak for many years due to good growing conditions and easy world trade conditions. But with poorer growing conditions in South America this past year (especially in Argentina, a large exporter to the rest of the world), coupled with disrupted world trade due to Covid and lockdown conditions/trade concerns, price rises seem to be here to stay, and even higher prices are not out of the question if countries store or hoard supplies. We have invested in the above ETFs and more diversified ETFs based on agricultural commodity indices, thinking the abovementioned problems are not going away anytime soon, especially if African food supplies continue to dwindle. Soft commodities such as sugar, cocoa, etc. have also been rising due to the same factors mentioned above.

Precious metals were buoyed in the fourth quarter by a lower US dollar, and precious metals mining companies benefitted from higher production, free from further Covid interruptions which affected second and third quarter results. However, the stock mania which continues to affect the US and world stock markets has sapped earlier interest in the gold and silver bull markets, hurting their recent performance. The rise in real interest rates (due to recent increases in long-term interest rates) has also led to some downward pressure on the precious metals, despite otherwise near perfect conditions for a continued bull market. Those near perfect conditions could turn even more favorable if the stock market takes a spill (and investors retreat to safe havens), interest rates drop due to less robust recoveries in countries still ravaged by Covid, or the advent of the Fed's discussed but not yet implemented Yield Curve Control policy, discussed above. There is a good chance that YCC is implemented due to the massive Covid-induced deficit spending in the US that is putting pressure on long rates – higher rates will just push up the deficit higher and lead to lower consumer spending as more income must be used to service debts as interest rates rise. At some point, the Fed will resist these forces, capping rates and trying to preserve consumer and government spending.

We continue to hold our precious metals and mining company investments, as prices consolidate from last summer's highs and mining companies continue to produce large amounts of free cash flow. While fall/winter price action was disappointing, but recent price appreciation is heartening as more investors realize the cash-producing potential of mining companies.

Summary

We have kept our allocations relatively static during fall/winter as vaccine effects and economic growth were slow to take hold in the US, and many equities rose to further overvaluation. Dragging economic factors, primarily caused by Covid lockdowns and a slow recovery have led us to be less aggressive in reallocating funds into high risk (and high reward) positions. Our reluctance to follow aggressive investors into very highly-valued equities has served us well in the 2002-2003 and 2008-2009 periods, and the lack of economic vigor as the recovery takes shape concerns us daily.

We continue to look for attractive investments in underperforming sectors while trying to pick the most attractive time to put more money to work in higher-risk, higher-reward sectors as evidence of continued economic progress is uncovered. Many sectors are far too highly-valued for larger current investments, but innovations and short-term disappointments can prove good entry points for some highly-valued stocks.

Kanos Quarterly Commentary

Something's Up: Is it Deflation or Inflation?

The specter of inflation in the US economy has hovered around for many years, but classic economics book inflation has not been seen since 2008, despite many inflationary forces that have surfaced and the Fed's continued efforts to underwrite at least 2% per year.

At the same time, deflationary forces have appeared at times over the years, which the Fed (and foreign central banks around the world) has been fighting with easier money policies – low (now zero) interest rates and continual quantitative easing as well as forward guidance of continued dovishness.

Now comes the era of fiscal stimulus, starting with the March 2020 CARES Act, followed by the December 2020 $900 billion package and eventually followed by Biden's proposed $1.9 trillion follow-on plan. All put cash directly into the hands of consumers, who may spend it, save it or use it to pay down debt. What will people do with it this time?

The Quantity Theory of Money, popularized by economist Milton Friedman in the 1970s, helps us understand some of the forces that will help us try to determine how inflation/deflation will occur in the future. The simplified Quantity Theory (from Wikipedia) incorporates "the **equation of exchange** is the relation:

$$PQ = VM$$

where, for a given period,

M is the total nominal amount of money supply in circulation on average in an economy.

V is the velocity of money, that is the average frequency with which a unit of money is spent.

P is the price level.

Q is an index of real expenditures (on newly produced goods and services).

Thus, *PQ* is the level of nominal expenditures. This equation is a rearrangement of the definition of velocity: *V = PQ / M*."

If P*Q (which is the aggregate price level of goods & services in the economy times the amount of expenditures) gives us essentially the output of the economy, increasing the amount of M (the money supply) or the V (the velocity of money through the economy) should increase the output of the economy, if the other variable stays constant. But that is the rub; the other variable usually does not stay constant, and often moves opposite, thus negating most or all of the push to increase the economy.

The reordered equation of the last sentence in the definition (V=P*Q/M) helps us understand the velocity. P (the price level), M (the money supply) and Q (expenditures) are all inputs into the equation. V (the velocity) is usually more of a result of the other three, although many have tried to measure variables that would approximate Velocity and help the equation to be more predictive. Currently most economists produce V from the equation: V= P * Q / M

This is relatively easy to understand from recent history: quantitative easing ("QE", which started in 2008) was supposed to get the post-Financial Crisis out of recession and "goose the economy" by increasing the money supply, M. However, the money was distributed through the big banks, who were only slowly recovering from the Financial Crisis and increased regulation and did not lend as much of the money as was hoped. Thus, M went up, but did not get into the economy, meaning P * Q didn't change. Thus, if P*Q did not change appreciably and M went up, V went down, which is what was observed; the money got stuck in the banks and didn't heat up the economy, money velocity just slowed down.

QE did raise the amount of money available in the financial system, so the main effect from QE has been higher financial asset prices, as the increased money supply stayed inside banks as reserves or collateral for banks to trade with or lend against financial collateral, allowing increased buying (through increased leverage) and driving up prices of stocks, bonds, real estate, and other luxury items that are available to people/institutions that can easily borrow through the financial system). But QE has proven not to get out into the economy either quickly or efficiently.

The renewed use of fiscal stimulus, however, seems to be working at getting money into the hands of a lot more people involved throughout the economy. The CARES Act's $1,200/person fiscal stimulus handout to individuals of low and moderate incomes caused a sudden renewal of consumption soon after the initial Covid lockdowns of March/April/May were lifted. Many items typically available were not available to purchase due to disruptions in manufacture, transportation or distribution during Covid, making demand outweigh supply and driving up prices in many consumer items in the short term. These actions led to a sharp summer recovery in GDP; using our equation from above PQ=MV, if GDP (which is measured by P * Q) rose, and M rose, V must have stopped going down. In addition, if P * Q was higher, and Q (quantity of goods and services delivered) went down during the second quarter, P must have risen, which means inflation was produced. And in fact, another measure reinforces this observation: precious metals rose in price throughout the summer, paralleling inflationary forces being unleashed.

Many are still saying we are in recessionary conditions, in which people's ability to spend is limited and supplies are plentiful, leading to a surplus of supply over demand, causing more deflationary forces to hit the economy. Also, many consumers have used their stimulus (and unemployment benefits) to pay down debt or just put it into the bank for an even rainier day. Both paying debt (which eliminates money supply by extinguishing debt) and saving (which puts money supply "in storage") are both disinflationary; they don't cause demand to go up even with increased money supply. So, the economy needs increased spending to expand. If money handouts aren't spent, then their effectiveness goes way down. Consumers in the past have increased economy-wide spending by higher borrowing (in the face of stagnant wages in the last few years).

Pre-Covid, the economy was expanding, and unemployment had recently hit multi-year lows, meaning at least some labor shortages were developing. After decades of having wages stagnant due to wage deflation from overseas manufacturers and service providers, wage growth was at least steady. Sustained measured inflation over 2% annually has not occurred in many years because there have been no large inflationary shocks in the last few years, and people have not been expecting any inflation or able to demand more pay, any of which could lead to wage inflation pressures, which most economists see as a prerequisite for economy-wide inflation. We now think that all elements listed above are emerging, which we believe will lead to actual measured inflation, possibly at sustained levels not seen in more than a decade.

The combination of exogenous forces of weather, disease and political upsets is where our story begins. The 2019 outbreak of African Swine Fever spread throughout China and many other East Asian and Middle Eastern countries, causing authorities to execute large-scale killing of hog herds throughout the world, cutting down on the supply of China's most popular form of protein. While the disease seems to have been brought under control since then, a large percentage of the world's hog population was culled (estimates put China's hog herd losses at >60%), and the ability to replace these hogs worldwide takes time. Thus, China and other Asian countries have been consistent buyers of other forms of protein since 2019. One major source is soybeans, which China bought from all sources around the world before buying from American sources finally under the 2018/19 US-China trade deal. Poor harvests, port strikes and limited soybean sales as an inflation hedge have limited soy supplies from Argentina, one of the largest exporters to the world. This has driven up prices worldwide as soy supplies went from balanced to tight. Finally, Covid-induced trade problems have caused some supply chains to bend or break, meaning getting food harvested, transported, then processed and distributed to grocery stores, etc. have been interrupted among and inside countries hit hard by Covid disruptions, leading people to bid up food prices and causing hoarding, which exacerbates the problem. Thus, we are experiencing food inflation now, and the just-released US CPI statistics bear this out: year-over-year Food prices are up +3.9%, with Meat up +4.6%, Cereals/Bakery and Fruits/Vegetables +3.2% (both showing the smallest gains) and Food away from home +3.9%.

The Fed and other monetary authorities will dismiss these food price rises as "transitory," expecting them to fall back to prior ranges when the pandemics (both animal and human) are over. But what the Fed is not expecting is the expectation for more inflation. Inflationary expectations have been squashed many times over the past few years as prices reverted to prior levels after temporary rises. However, with an event like the pandemic causing people to react differently (and start to see the world differently, possibly), increases in prices in many articles seem to be igniting people's expectation of increased and persistent higher prices. Inflation will not "take hold" without consistent expectation of higher prices in the near future. And further inflation is what is being reported currently in US Government statistics: shelter (rentals plus imputed costs for owned property) increased for the fifth month in a row (although only up 0.1% in December), apparel (a source of consistent deflationary forces of the last few decades) were up 1.4% in December, furniture (like apparel, usually deflationary) was up in December as was auto insurance. These are all things that many consumers pay on a monthly basis, so they are seeing costs rise in many of the categories that affect them directly.

Wage inflation is the "granddaddy" of inflation statistics. Many economists will not consider inflation to be a problem until they see sustained wage inflation. With the world in flux due to Covid interruptions, layoffs and people receiving government subsidies hardly seem a time when there would be wage inflation. But food inflation and across-the-board rises in prices, coupled with pandemic delivery interruptions and fear of shortages take a toll on consumers' mentality. We are hearing more and more calls for a $15/hour minimum wage, which would more than double the current minimum wage. We are hearing that a $600 handout and $400/week unemployment benefits "barely represent a living wage." Finally, the large disinflationary force of the past thirty years, wage arbitrage where foreign workers make products to be exported to the US to replace high-wage US industries, has been disrupted first by Trump trade renegotiations and then by Covid-restricted trade, which has limited world trade flow and led to shortages of some products in many countries, leading to higher cost sources to satisfy demand. And there is talk by US businesses that although many unemployed workers are available, finding workers to match their job openings are proving more expensive (i.e., they must pay higher wages) than planned. Meanwhile, the Biden Administration has raised the stakes on Trump's efforts to rebuild American manufacturing by adopting an "America First" program, increasing the amount of American manufacturing content/American labor in purchases by the government and US military, ensuring higher costs, especially wages, in those large purchases and further stimulating need for US workers and thus creating more wage pressure. So, there are many forces throughout the economy that could stoke continued wage inflation. We will know wages are headed higher consistently if we hear about more public-sector unions negotiating for higher wages (and getting them).

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Finally, some of the deflationary forces that hit the economy last year as Covid hit have reversed, and statistically, they will make a difference for reported inflation. The most egregious to be reported in the next 3-4 months will be energy. Motor fuel and Gasoline are both currently -15% lower than last December, helping moderate prices in general, according to US Government statistics. But when the comparisons in March and April use the very low prices seen in March/April 2020 for energy (remember $-37/bbl for crude?), energy inflation will show a very large increase. And it is not just crude oil and gasoline; Electricity prices and Natural gas supplied to consumers are +2.2% and +4.1% higher, respectively. When these prices are all compared to those in effect in Spring 2020, energy inflation will almost certainly be double digits! While the Fed will say these are "transitory" also (the Fed does not include food and energy prices in their "core" inflation measurements which is what they use for policy), the effects of these prices on the core products will almost certainly push CPI to high +2% or even +3% readings, which could end up being self-reinforcing. In fact, a mid-January survey by CNBC yielded 92% of investment managers surveyed expected inflation to exceed the Fed 2% target, showing how inflation expectations can spread rapidly.

Thus, we see forces that look to push inflation into the forefront of public thinking about the US economy. With food inflation high and impacting a large number of people both domestically and worldwide, inflationary expectations are taking hold. With shortages, trade disruptions and high food/staples prices affecting people's expectations, skilled labor shortages and moves for higher wages could lead to widespread wage inflation expectations. And the springtime reports of high energy inflation, and the possibility of slow Covid recoveries in economies worldwide, may help cement inflation expectations that will then allow the Fed to realize their hoped-for inflation to meet and exceed their 2% target consistently; something we as consumers need to be cognizant of and protect ourselves against as best we can.

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