



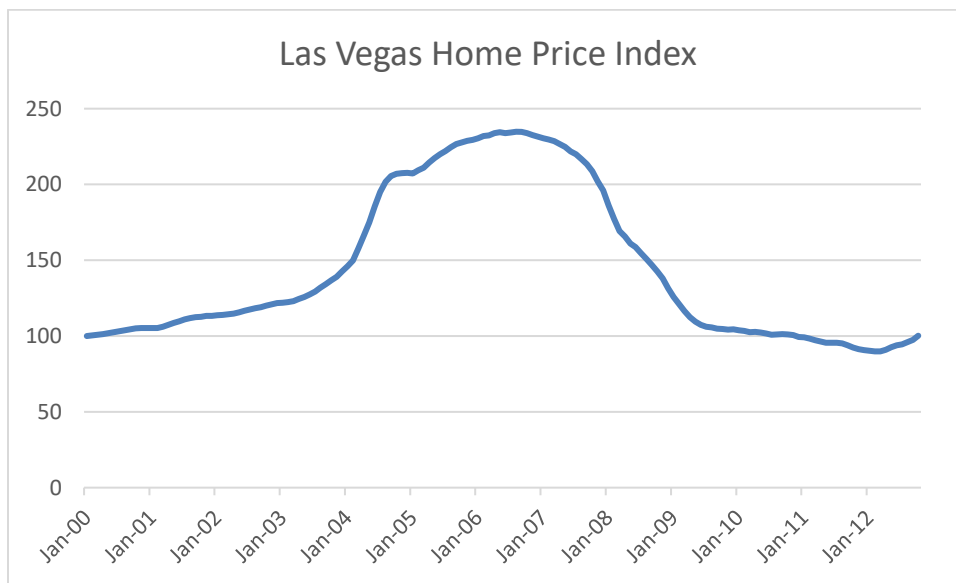
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Investment Newsletter – March 2021

This past year has been highly unusual. Yet if we look to history we see that extreme rises and falls in asset values happen over and over. In this newsletter we will explore the phenomenon of financial instability and its connection to human psychology that drives investing markets. A short review of Short Term Income strategy performance concludes the newsletter.

Illusions of Easy Money: The Dynamics of Financial Bubbles

Dramatic increase in asset values over the last year seem somewhat disconnected from fundamental values, and yet, when we see speculators getting rich, our instinct is to join the party. As investors it is useful to put the situation in historical perspective. Since a picture is worth a 1,000 words, let's make it "fun" with a quick look at some price charts to give us a context for discussing investment market dynamics. We can start with a look at the Case Shiller house price index for Las Vegas during the housing bubble. This should look familiar.



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House prices move slowly so that bubble took a long time. Now let's look at some stocks. The following charts show the price paths of 3 different stocks at 3 different starting point in time. Would you say these are "price bubbles"?





Clearly these are very volatile stocks but if you could buy before the run up and sell at a 500% gain or more, that would really be fun. You probably know all 3 companies. Care to guess? Let's start with #3. In case you don't recognize the twitter quotes, I'll give you a hint: it got more news coverage than the vaccination rollout. It is Gamestop. On 7/31/20 it closed at \$4.01 per share (which may be a fair value based on its actual business). At the start of this chart on 12/15/20 it had already tripled to 13.85. Because the company's business model of selling games at physical stores is roughly equivalent to BlockBuster Video's business when Netflix came on the scene, it was a very heavily shorted stock. (I.e hedge funds had bet against the stock by borrowing it and selling in the hope of buying it back cheaper later). The 2020 cohort of traders who congregate on Reddit's WallStreetBets forum coordinated a buying spree to squeeze the short traders.¹ By driving up the price, their goal was to force the hedge funds to buy back shares to stop further losses and in so doing reinforce the upward price momentum. The frenzy was reinforced by celebrity tweets as shown in the chart. The first tweet (at 10:32 a.m. E.S.T. on 1/26/21) which touted a purchase of call options came from venture capitalist Chamath Palihapitiya who has 1.3 million twitter followers. Gamestop jumped 9.6% in the next minute. Later that day, Elon Musk's "Gamestonk" tweet at 4:08 p.m. pushed the stock up 31% in 10 minutes of after-hours trading and the stock continued spiking upward the next day. It gained 450% in two days. The Wall Street Journal has nicknamed such celebrities "the messiahs of momentum". One of the largest short sellers, Melvin Capital, lost several billion dollars. There is a lot more to this story, and it's not over yet, but I think it is clear that the stock price has lost its connection to the underlying business (for the time being).

¹ Apparently it is not illegal to manipulate stock as long as you are not a professional investor.

Stock #2 above is Hertz which declared bankruptcy last May (where the chart begins). If you bought the day they filed bankruptcy and sold 9 days later, you made about 9 times your money. On 3/2/21 they announced their plan to wipe out the shareholders by this summer. The chart shows the stock dropped just 60% before heading back up. This is a stock that has a 99.9% chance of going to 0 this year – yet there are buyers.

Stock #1 is Amazon starting from 6/3/1998. It participated in the dot-com bubble and then fell 94%! By comparison the NASDAQ index fell 83% from the peak of that bubble. Back then Amazon was an online book store losing money just like the rest of the dot-com companies and no one knew they would eventually turn to cloud computing to produce profits. Investors who bought Amazon at its peak in the 1990's had to wait ten years for it to recover after Amazon started the cloud computing business.

Such financial market bubbles have a very long history. The most famous bubbles of the last few centuries are probably Holland's tulip bulb bubble in the 1630's and England's South Seas Company stock bubble of 1720. According to Investopedia the best tulip bulbs sold for as high as \$750,000 in today's dollars (which makes bitcoin look like a bargain).

What is a Financial Bubble?

We often hear the term "bubble" applied to asset prices, but how do we define a bubble? There are many competing definitions but the one that I find most useful is this:

An asset price is in a bubble when it reaches the point where current buyers cannot earn positive returns from the asset's expected future cash flows (or value of its services – as in rental value).

Rather, current buyers require that future buyers pay an ever higher price unrelated to future cash flows. In other words, investors extrapolate past increases in price into the future even though such returns are inconsistent with the rate of return at which discounted future cash flows equal the current price. Some would disagree with this simplified definition as it would include European government bonds and most buyers of these bonds understand they are planning to lose money. I disregard this example because I consider the negative interest rates in Europe as a form of taxation on savers rather than the result of a free market.

The Three Phases of a Financial Bubble

The process that leads to economy wide bubbles, as in the housing crisis, was explained by economist Hyman Minsky in his Financial Instability Hypothesis (published in 1992!). This hypothesis is the source of the term "Minsky Moment", often used to describe the point where the bubble has begun its collapse.

Minsky described three phases that inevitably result from human psychology in market economies. Minsky focused on debt markets but the same dynamics affect equity markets. His first phase (which he labeled as hedge) is where lenders only make loans (i.e. investments) whereby the borrower has sufficient income to pay back both interest and principal (as was the case with mortgage underwriting prior to 2000). In the second phase, called the speculative phase, lenders make loans to

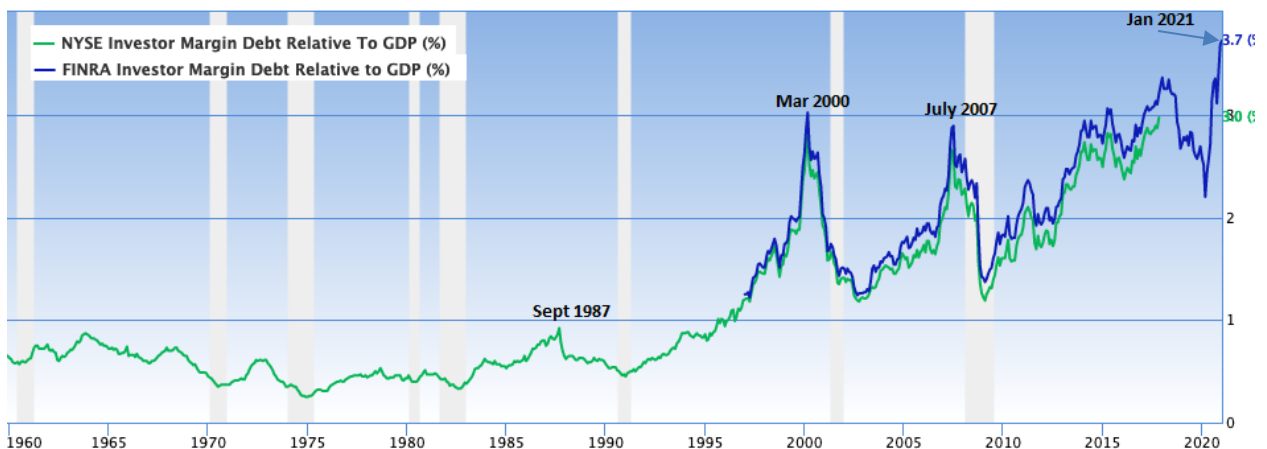
borrowers who can afford to pay the interest but must re-finance to pay back principal. Minsky named the third phase, the Ponzi phase (after a famous pyramid scheme fraud). In this phase the borrowers can afford to pay neither principal nor interest on the debt. They and their lenders rely on capital gains from selling out to future borrowers in order to pay back the loans with interest. As you can recognize, this description fits the housing crisis perfectly. It also corresponds to the phases of asset bubbles throughout history in the sense that prices reach a point where there is no chance of getting your money back from the investment unless a “greater fool” comes along to buy it from you at a higher price. Minsky’s research shows that this cycle is a natural recurring feature of capitalist economies. As such there are common features we can identify.

Bubble Catalysts – the Key Ingredients

Asset bubbles start with two key ingredients: easy access to credit and innovation stories. Innovations in either finance and/or technology can ignite a surge in the economy or investing. In either case, the other will follow. A surging economy drives up profits and so stock prices. A surge in stock prices increases consumer wealth and causes them to spend more, which leads to faster economic growth. Once asset prices start rising significantly this dynamic leads to a self-reinforcing feedback loop.

The Internet Bubble Example

For example, in the late 1990’s the internet was new and the average company that added “.com” to its name experienced a 74% increase in share price at the time of the change.² Investors thought these companies had unlimited profit potential because of the new technology. At the same time, the internet enabled easy access to financial information and online trading. As the market rose, investors extrapolated those gains into the future. With everything rising, everyone became an investing genius (or so they thought). With this mindset, the natural inclination is to borrow to invest more - so as to make more. Stock brokers were happy to oblige by greatly expanding loans against stock holdings – known as margin lending. The graph below shows what happened.



² According to an academic study authored by Cooper, Dimitrov, and Rau in 2001.

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The graph on the previous page measures margin borrowing relative to the size of the economy. In the late 1990's such borrowing moved permanently higher as innovations in online investing led to a larger group of individual investors participating in the market. Notice the series of peaks and valleys that coincide with the behavioral dynamics described by Minsky.

If we apply this framework to recent history we see that the catalysts for a Minsky moment are in place. Brokerages have now cut stock trading commissions to 0 and new brokerages like RobinHood have built trading apps that "gamify" stock trading. These innovations brought a huge wave of new traders into the market.

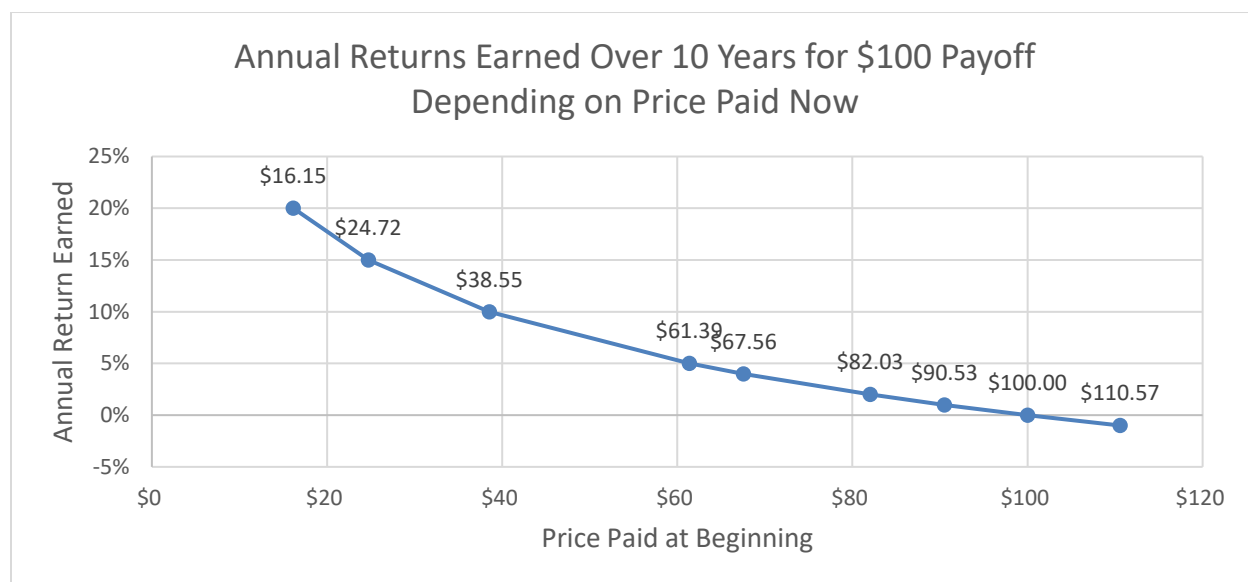
The Federal Reserve Bank pushed short term rates to 0 while the federal government handed out trillions of dollars for consumers to spend. Much of this money found its way into stocks and real estate.

As for innovative technologies, clearly investors have fallen in love with companies connected to electric vehicles and "green" energy. Such companies will change the world and thus the price paid for them is irrelevant - just as it was for the innovators of 1999. Perhaps things are different this time.

We can see from history that there is a fabulous amount of money to be made by jumping in early and getting out before the Minsky moment arrives. Why not go along and make a nice gain? As humans we all want to make easy profits and we fear missing out. If strangers are getting rich, the desire to join in is strong.

Behavioral finance researchers have studied this phenomenon to understand how asset bubbles happen. Much of academic literature depends on assuming investors make rational decisions. But eventually, forward thinking academics decided to test this assumption.

Trading experiments were designed such that participants knew with certainty the ending payoff of a security but the simulation had multiple time steps for trading before the terminal payout. If we know the exact cash flow, then we can compute exactly the buy and hold rate of return. For example, if the payoff from a bond in 10 years is \$100, the annual rate of return I will earn by holding to maturity depends on the price I pay today, as shown in the graph below.



The higher the price I pay, the lower the return. Any price over \$100 produces a negative return and meets the definition of a bubble price given above.

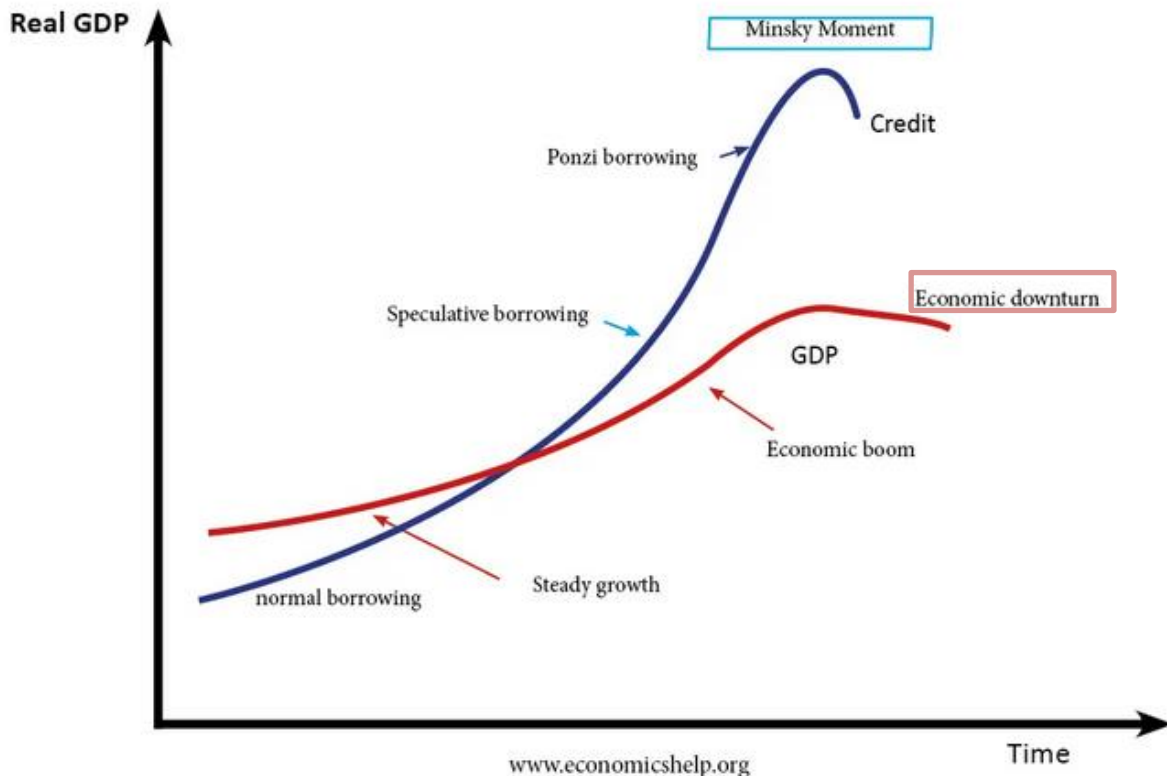
Trading experiments with real people showed that even in this world of certainty, bubble prices can easily emerge under certain conditions. As mentioned earlier, capital inflows into the market tend to increase the likelihood of bubble formation.

Although these experiments would seem to indicate irrationality on the part of the participants, academics have developed various theories of rational bubbles. In simple form: even if you know the true value of an asset is less than the price, your expected return over the next period may be high enough to take the risk of buying. In other words, you may estimate that the chance of the bubble continuing (and that someone else will pay a higher price in the future), is such that it is worth paying a bubble price today and taking the risk of holding during the asset's price collapse.

This is an interesting theory of rational trading and perhaps this is how some portion of the population decides to buy. My opinion is that most bubble participants are not making this calculation; they are simply buying to get in on the action without considering the possibility of the coming collapse.

So where does that leave us? Should we jump in? We need a deeper understanding of how these situations arise and resolve themselves. The following diagram from economicshelp.org illustrates the progression to the Minsky Moment.

Minsky Moment



Minsky's Phases during the Housing Market Bubble

Starting at the beginning of Minsky's phases, prices should be roughly in line with intrinsic value. By intrinsic value I mean the discounted value of the stream of cash flows or services where the discount (interest) rate is positive and includes compensation for investment risks. Consider the housing market example.

In a normal borrowing market house prices will change in line with household income growth and inversely to mortgage lending rates. The intrinsic value of a house derives from its rental services and the relevant discount rate to apply is the mortgage rate as banks are willing to trade present cash for future cash with the home buyers at that rate. Let's look at what happened when the housing market disconnected from this intrinsic value.

For my September 2017 newsletter I analyzed Bay Area house prices in relation to inflation adjusted household income growth and the change in buying power due to interest rate changes. For this analysis I'll use those numbers as measured in 2016 dollars. Household income in 2000 was \$82,775. Mortgage rates were 8.31%. At that rate, a monthly payment of \$1,000 would support a mortgage of \$132,426. Assuming the standard 28% debt to income underwriting ratio, the average household could afford to borrow \$255,770 in 2016 dollars.³ For a standard 20% down payment, the buying power would be \$319,712. I'll use this buying power for the year 2000 as my baseline. If the market had remained in this normal borrowing phase, we can calculate how house prices should have changed from 2000 to 2007.

Again, measuring everything in 2016 dollars. Incomes rose to \$87,225 in 2007. Meanwhile, mortgage rates fell to 6.33% which raised the mortgage qualification amount per \$1,000 in payment to \$161,117. Thus mortgage availability rose to \$327,913⁴ and buying power, with a 20% down payment, increased to \$409,891. So if lending standards had remained constant, the average household's purchasing power would have risen by 28% more than inflation and we would expect house prices to rise a bit less than that as households would have to save longer to get the down payment. Let's compare that to the actual rise in house prices based on the Case Shiller house price index for the Bay Area adjusted for inflation. It rose 75.5% - almost triple what it would have been with normal lending standards.

The government took several actions which incentivized a surge of capital into the housing sector. The Federal Reserve lowered interest rates and increased the money supply to counteract the effect of the dot-com bubble collapse. At the same time the government housing agencies (FNMA and FHLMC) significantly loosened lending standards so as to encourage loans to people who could not repay them from income. As this pushed up housing prices, the housing market entered a self-reinforcing growth cycle. As prices went up, home owners were wealthier and spent more of their income. This fed into economic growth and pushed up incomes further. New buyers saw a rapid rise of house prices and assumed this would continue. Combining the price trend with easy mortgage credit was thought to be a sure way to get rich so they rushed to buy in. Speculators borrowed as much as possible to buy as much real estate as possible to reap the expected gains.

³ $82,775/12 * 28% * 132,426/1000 = \$255,770$

⁴ $87,225/12 * 28% * 161,117/1000 = \$327,913$

This situation is referred to as Ponzi borrowing because it can only be sustained as long as there is an ever increasing amount of new capital coming into the market to push up prices.⁵ Shortly after prices stopped rising, borrowers who could not afford to pay interest on their loans, had to sell. The result was declining prices. The amplification effects of over-leveraging accelerated the decline.

After the peak, asset bubbles deflate back towards intrinsic value. In 2015 household income declined to \$81,294 (measured in 2016 purchasing power as above). The mortgage rate continued its decline to 3.89%. Combined, these factors produce home purchasing power of \$503,311. The implied “normal” gain since the 2000 base year was 57% above the inflation rate. The actual inflation adjusted house price increase was lower at 46%. Thus the popping of the bubble in house prices caused an over-correction to below the intrinsic value level. After 2015, house prices appreciated at faster than normal rate to catch back up with intrinsic value as calculated based on the 2000 baseline.

The housing bubble example illustrates the role of interest rates, capital inflows and investor psychology in creating an unstable momentum-driven run-up in asset prices. The same principles apply to stock markets, digital currencies, and individual innovation-story stocks.

Social Media Innovation

In the last year, a further amplification has come from the new day trader social media sites such as WallStreetBets. On these sites crowds coalesce around particular stock narratives so as to collectively pump up stock prices as more are encouraged to join the group. In the Gamestop example, (as documented by the Wall Street Journal) many of the buyers knew and/or did not care that the price they paid was unreasonably high. They bought for the cause – to belong to the group. The same dynamic can be seen in play for Hertz and various other troubled companies where intrinsic value has collapsed.

In theory it should be possible to profit from a financial bubble, but this involves substantial risks. Ideally you’d like to understand the likely timing of the collapse so as to manage the risk. You must keep firmly in mind the game you are playing. Here’s a classic quote from an *Elliott Wave Theorist*:

“The case for rational bubbles rests on the idea that investors are consciously making risk assessments and deciding that the gamble of buying high -- to sell even higher -- is worth it. But a bubble is fueled by more buying, which is propelled by new buyers and by increased conviction among those already invested, so few bubble investors actually do sell higher. Instead of buying high and selling higher, most of them do only the first half.”

What Behavioral Finance Experiments Tell Us

Vernon Smith won the 2002 Nobel Prize in economics for his laboratory experiments exploring bubble mechanisms. He co-wrote a book with another bubble researcher, Steven Gjerstad. Based on 25 years of experimental research

⁵ Ponzi was an infamous fraudster in the 1920’s who created a pyramid scheme whereby new investor money went to pay high returns to earlier investors.

on asset market bubbles, here's how they summarize characteristics of asset markets and the economy:

1. Bubbles commonly turn up in asset trading experiments
2. Liquidity exacerbates price bubbles
3. Trading volumes decline before asset bubbles burst.

This last observation provides a hint to understanding how bubbles end.

As I watched the Gamestop bubble unfold, I thought about what must be going through the players' minds. I think most knew that the price did not make sense, but they also had to consider how many other traders might join in and buy after them. At some point, there is a sense that everyone who wanted in has already bought in. At that point thoughts turn to – what next? If future gains are going to be small or 0, the question becomes: how long should you hold once the upside looks limited and the downside is just waiting to happen? Strategic players who are thinking ahead become the first to sell. Once the price starts declining, traders who are trying to make money (as opposed to social reasons) will conclude they need to sell. This process flips the self-reinforcing momentum to downward and the asset price bubble deflates. Eventually it may undershoot intrinsic value and the market resumes stable trading (until the next bubble catalyst comes along). Or some new innovation story catalyst may appear and drive the price into a new bubble.

The Federal Reserve also may play a role in the popping of asset bubbles. If the bubble has been set up by lower interest rates and easy credit, a rise in interest rates and tighter credit will likely hasten the reversion back to normal.

Conclusions

Asset bubbles present opportunities and risks to investors. In order to successfully navigate an asset price bubble and come out with a gain you would need to maintain your focus on the game you are playing and have your end game planned in advance. If you can successfully identify the phase you are in and the signposts pointing to what comes next, abnormal profits are possible. Such a strategy demands very close attention and discipline. The average investor is unlikely to win consistently unless they can eliminate their emotional instincts to follow the crowd. This is a fascinating phenomenon which naturally attracts our attention – like moths to a flame.

Short Term Income Portfolio Strategy and Performance

This is an abbreviated review due to the length of the preceding article. For more details on this portfolio, please see the track record page on our website.

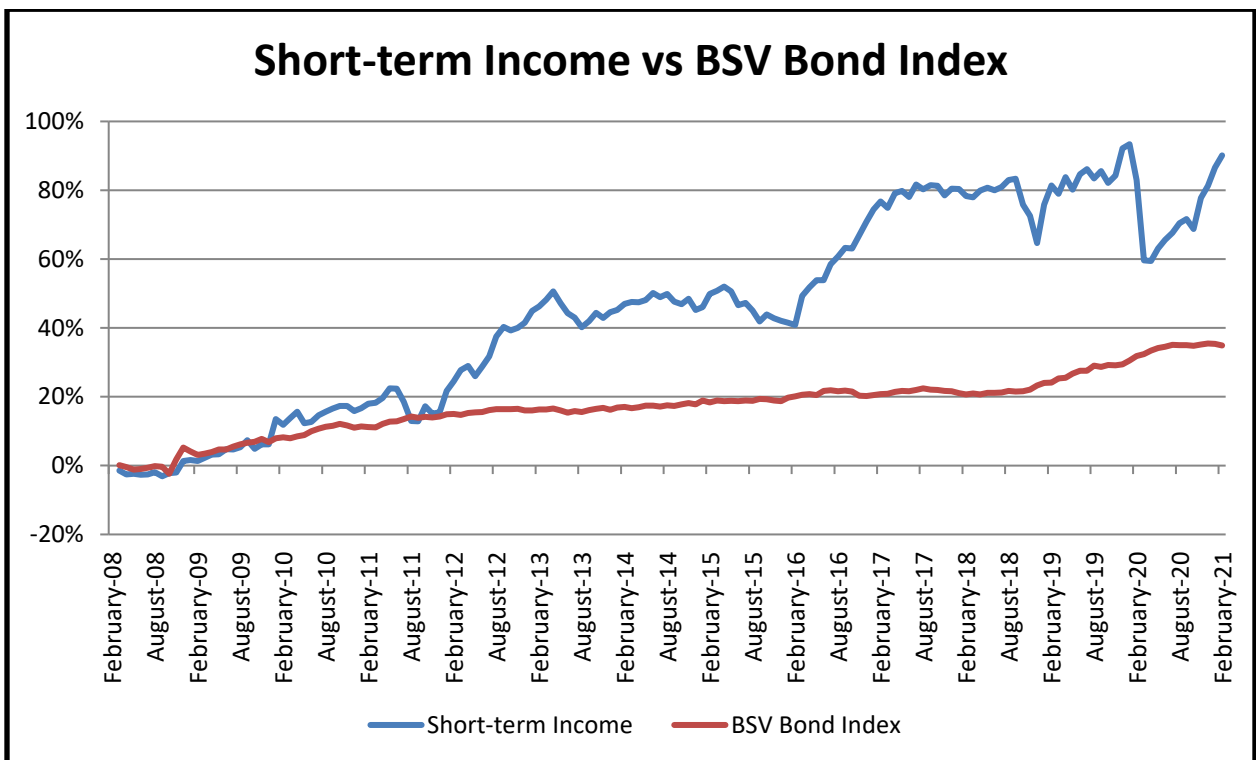
The Short Term Income portfolio is a fixed income portfolio that focuses on short to intermediate term rate maturity loans and bonds. These are held via closed-end funds (CEFs) and exchange traded funds (ETFs). This short rate maturity category of fixed income includes securities with floating interest rates that can reset periodically depending on market conditions. For example the rate paid could be set based on the 3-month London Interbank Offer Rate (3-month LIBOR). This rate, in turn, changes as the Federal Reserve Bank raises (or lowers) it's "Fed Funds Rate". These securities are less sensitive to changes in interest

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rates than bonds with longer fixed rate periods. Most of the portfolio is below investment grade and we are compensated by higher credit spreads above the risk free government bond interest rate. As such the portfolio value tends to move in the direction of the equity market – though its moves are much smaller than stocks.

The portfolio is diversified across virtually all sectors of the fixed income market. The best comparison index is the “Barclays U.S. 1-5 year Government /Credit Float Adjusted Bond Index” as represented by the Vanguard Short-Term Bond exchange traded fund (ticker BSV). This is meant to represent the total short maturity U.S. bond market. It is not a perfect comparison to our strategy but there is nothing closer that has been in existence for the life of our portfolio.

At least some clients have had money invested in this portfolio since it was created in February 2008. The graph below and the table on the next page show total returns including price and interest payments in comparison to the bond index mentioned above as implemented in the exchange traded fund (ticker BSV). Our portfolio returns calculated here are based on a particular client’s account and have been reduced by annual fees of 1.25% which would apply to new accounts above \$500,000 but below \$1 million.



The cumulative return for the strategy from 2/29/2008 to 2/28/2021 is 90.1%. **Thus the annualized compounded rate of return since inception (13 years ago) has been 5.07%.**

The graph above shows moderate volatility for the strategy’s returns. Note the large drawdown in early 2020 due to the coronavirus. The entire bond market experienced a breakdown in liquidity during March 2020. The Federal Reserve then began strongly supporting liquidity with various measures including the

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unprecedented step of buying risky bonds in the market. Consequently prices recovered and rose more quickly after the election when more rounds of fiscal stimulus came into view. While risk free interest rates are much lower now than in February 2020, credit spreads and CEF discounts are roughly comparable. These are the main variables that determine near term returns for this portfolio.

Returns by Year			
Year Ended	Short term Income	BSV Bond Index	Difference
2/28/2009	1.4%	3.1%	-1.7%
2/28/2010	10.3%	5.0%	5.4%
2/28/2011	5.5%	2.7%	2.8%
2/29/2012	5.5%	3.4%	2.1%
2/28/2013	17.5%	1.1%	16.3%
2/28/2014	0.5%	0.6%	-0.2%
2/28/2015	2.0%	1.2%	0.8%
2/29/2016	-6.0%	1.5%	-7.4%
2/28/2017	25.5%	0.6%	24.9%
2/28/2018	0.9%	-0.1%	1.0%
2/28/2019	1.7%	2.9%	-1.1%
2/29/2020	0.9%	6.2%	-5.3%
2/28/2021	3.9%	2.3%	1.6%
Compounded Total	90.1%	34.9%	55.3%

High economic growth expected in 2021 may lead to returns above the long term trend but we will need the Federal Reserve to raise interest rates for the long term expected returns to move higher.

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