



Licensed by the California Department of Corporations as an Investment Advisor

Investment Newsletter – June 2023

Executive Summary

The Federal Reserve Bank expects to stop raising rates soon and that inflation will slowly recede. We seem to be in the middle of an investment bubble for artificial intelligence related stocks. Given the appeal of timing investments to take advantage of such run-ups, we begin a discussion of whether there are timing systems that can help us make better asset allocation decisions. Part II of this discussion will follow at a later date.

Current Market Environment

The 10-year Treasury bond yield is still below the inflation rate but the Fed is predicting inflation will fall fast enough that they can stop raising short term rates soon. They expect to raise short term interest rates another .5% this year and that inflation will move back to their 2% target by the end of 2025. Inflation could hit their target 2½ years from now but it is not a sure thing.

The stock market is being driven by a very small number of stocks – mostly related to artificial intelligence (AI). As of 5/31/2023 the S&P 500 was up by 8.9% but if you took away just 7 stocks the index would have been down for the year. Those 7 stocks are: NVidia, Apple, Microsoft, Alphabet, Amazon, Tesla, and Meta. NVidia was up an astounding 159% at 5/31/23. They produce the top semiconductor chips for AI which are now in severe shortage. It is clear they will make a lot of money until supply catches up with demand, but whether it's enough to justify the current price seems doubtful.

This looks like the same phenomenon we saw in the dot-com bubble in 2000, the SPAC/tech bubble in 2021, and the Crypto currency bubble. If this is another bubble, the speculative money has been made and its time for the suckers to join in and lose their money. The March 2021 newsletter article on the dynamics of financial bubbles reviews the research paper of Hyman Minsky. His work led to the term Minsky Moment which refers to the

Berkeley Investment Advisors
Investment Newsletter – June 2023

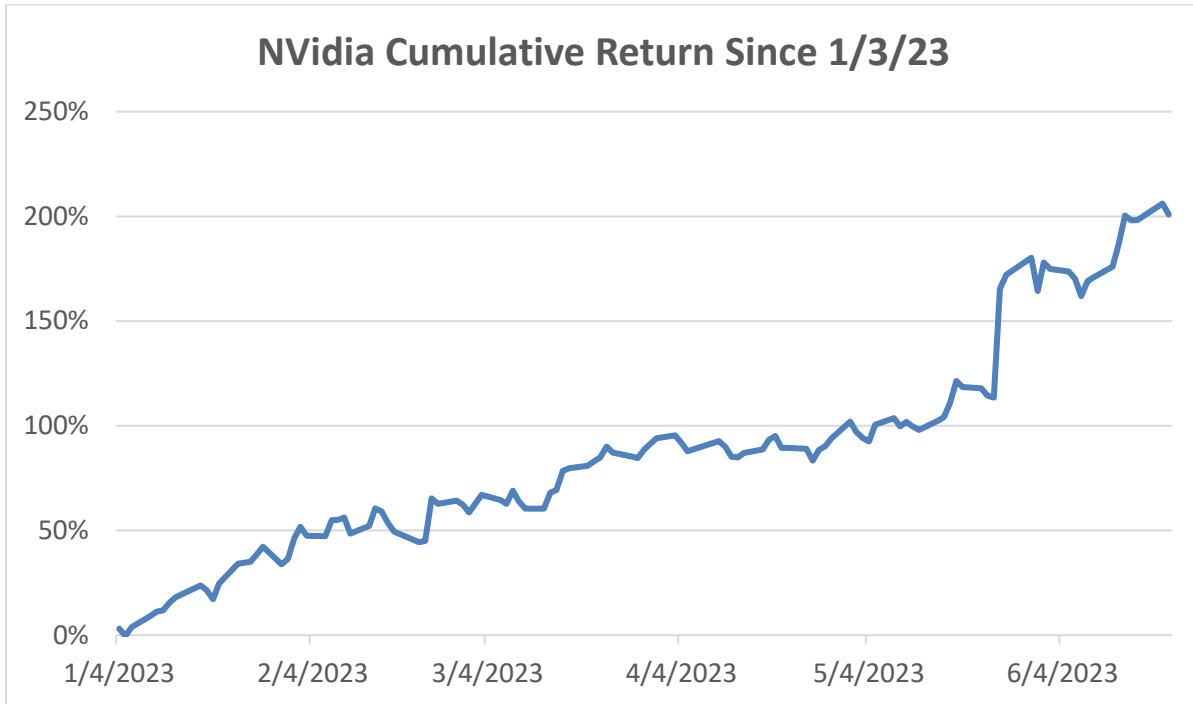
peak of a bubble when the number of sellers exceeds the new recruits to the bubble and the bubble starts to deflate. This is a recurring pattern in financial markets. Below are a couple of recent examples.



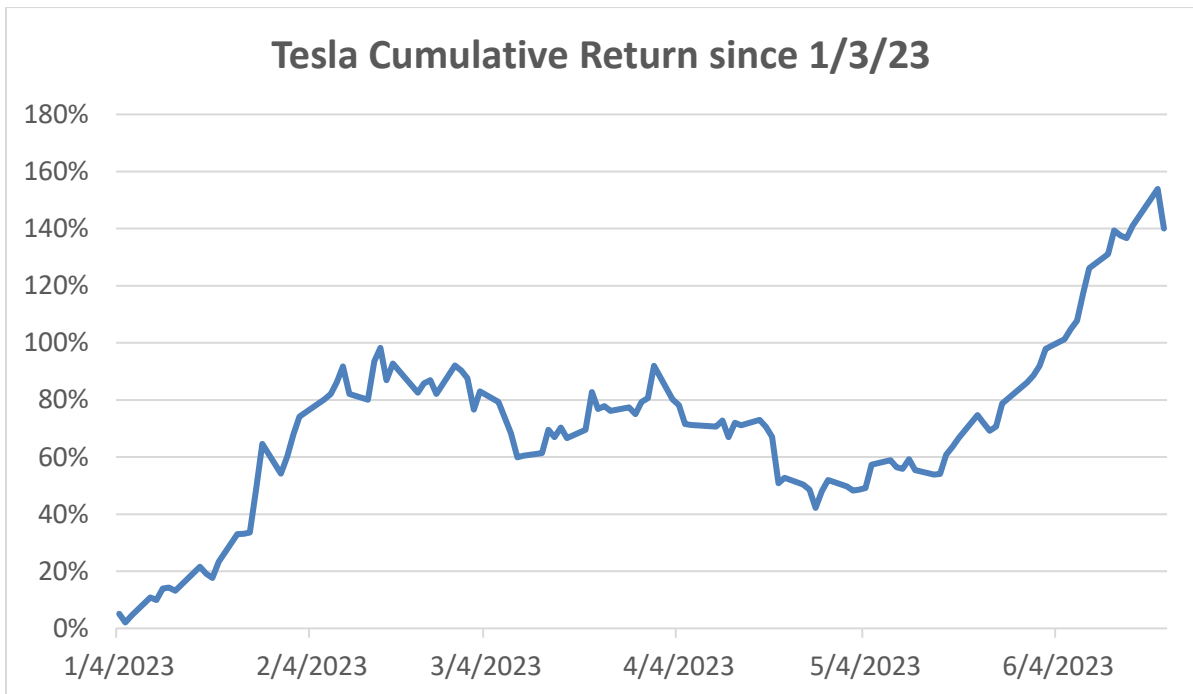
The 2021 spike in NVidia was driven by the idea that crypto currency mining, which uses the NVidia chips, would drive huge ongoing demand.

Berkeley Investment Advisors
Investment Newsletter – June 2023

Now the idea is AI will drive huge demand. Perhaps it will, but this looks scary if you pay attention to these bubble cycles:



Tesla is also running up. Apparently the idea is they'll make huge money from their AI car autopilot software (rather than just cars). Here's the graph.



If you were lucky enough to happen to buy at the bottom and sell at the top of these bubbles, you have bragging rights to last a lifetime. On the other hand, if you joined into the Tesla bubble at the top in 2021 and gave up at the bottom, you would have lost 74%. Likewise, those that bought the top of the last NVidia bubble saw a drawdown of 66% before it started its new ascent. These stocks are in cyclical industries, so even without stories driving prices to unreasonable heights you will have large fluctuations.

Artificial Intelligence will change the world. But it is unlikely to eliminate the competitive dynamics that serve to reduce long term profit potential below the short term spikes we see when something new comes along. The reality is that the government eventually breaks up monopolies and any one company cannot own the world. Thus there are limits to what you can pay for stocks if you want positive returns in the long run. Of course you can always try to time your buys and sells to take advantage of market gyrations.

Quantitative Methods for Asset Allocation (Part I): Can we time the market to improve investment results?

It is common for clients to ask whether they should wait for a better time to invest. In some cases clients have strong feelings about increasing risk (buying into equities) or decreasing risk (selling everything to keep it in cash). We all would like to avoid risks while still earning high returns when market values rise. Therefore, the idea that we can move in and out of risky assets so as to achieve those goals is appealing. There are various flavors of this type of activity. For my purposes I will refer to these strategies as “market timing” and/or “quantitative asset allocation”. The goal of this article is to answer these key questions:

- Can we do this – is it possible?
- If so, how do we do it?
- Should we try?

The three main approaches to deciding when to increase or decrease market risk exposure are:

1. Gut feeling – do what your emotions (or judgement) tells you to do.
2. Use a technical rule based on changes in market prices to make decisions.
3. Use a fundamental valuation methodology to develop a rule to make decisions.

There are many academic studies showing that investors who attempt to time the market, but don't use quantitative rules, badly underperform a buy and hold strategy (on average). We'll save an analysis of the gut feeling method (#1 above) for a later newsletter. Also, in the interest of keeping the length of this newsletter manageable, I'll present just one particular

Berkeley Investment Advisors
Investment Newsletter – June 2023

example for the method that uses a technical rule based on prices (#2 above). I defer my analysis of the fundamental valuation methods (#3 above) to Part II of this article in a future newsletter. There is also the possibility of blending such methods.

Dual Momentum Investing

Our example for a technical signal investing strategy comes from the book “Dual Momentum Investing” by Gary Antonacci. We can trace the roots of this strategy to an academic study by Jegadeesh and Titman in 1993. Momentum refers to the tendency of positive or negative returns to continue for some length of time. In the Dual Momentum Investing strategy we use a lookback period of one year and we compare the return of the S&P 500 index to Treasury Bills. This is referred to as absolute momentum – because it simply says did stocks make positive returns over what we’d get in a riskless asset. If not, the system dictates that we hold bonds for the next month. If the S&P 500 return exceeded Treasury Bills, we test the relative momentum of the S&P 500 and the MSCI All Country ex-U.S. index to see which had the higher return over the last year. The MSCI All Country ex-U.S. index is a market weighted index of world stock markets excluding the U.S. Whichever had the higher past return, that is what we hold for the next month. So we run two comparisons and trade or hold according to the result.

In order to evaluate this strategy we need to compare it to an alternative benchmark. Mr. Antonacci analyzed the percentage of time this timing strategy invested in each of the three assets: S&P 500, international stocks, and bonds. He constructed a weighted benchmark with these percentage weights. Thus, his benchmark is composed of 45% S&P 500, 27% Barclays Capital US Aggregate Bond, and 28% MSCI All Country ex-U.S. index. This is referred to as the Global Asset Allocation (GAA). He then calculated hypothetical performance assuming one could buy and sell each index without transaction costs and earn the returns on the indices. Dual Momentum and the GAA Benchmark portfolio each trade (if necessary) at the end of each month. From the beginning of 1950 to the end of 2022, the Dual Momentum strategy earned annualized returns of 15.0%; the GAA benchmark portfolio earned 10.0% annualized.

In order to measure risk, we look at maximum drawdown from the highest value achieved using month-end values. This shows that the worst drawdown for the Dual Momentum strategy was 19.6%, which was reached in March 2020. The maximum drawdown for the GAA benchmark that same month was 14.8%. So it lost less in that particular market downturn. However, the GAA benchmark’s worst drawdown was 41.5% which happened in February 2009 during the financial crisis. During that market

Berkeley Investment Advisors
Investment Newsletter – June 2023

downturn, Dual Momentum's maximum drawdown was just 17.9% in October 2008.

Using exchange traded funds in place of the indices, I've replicated the signals and returns that we would have seen since June 2008. I found that the system changed its allocation 21 times over 15 years so trading is infrequent and therefore trading costs should not be significant.

Given that most investors cannot tolerate much more than a 20% drawdown without abandoning their strategy, this is a very interesting strategy – at least statistically.

My Modified Version of Dual Momentum

For my implementation of Dual Momentum Investing I use the same signals as described above using the index ETFs, namely ticker SPY for the S&P 500, ticker VEU for the international stock index, and ticker BIL for the Treasury Bill return. For investing, however, I make the following substitutions:

Dual Momentum via ETFs:	Berkeley Investment Advisors Strategy:
SPY - S&P 500	Defensive Equity
VEU – International Stocks	International Stocks – 23 country ETFs
AGG – Investment Grade Bonds	Treasury Bills via BIL ETF

All three substitutions are meant to reduce risk, without giving up returns.

The main difference for international stocks is my exclusion of the following components of the MSCI All Country ex-U.S. index: China, Hong Kong, Russia, Saudi Arabia, and Mexico. My Defensive Equity strategy includes consumer staples, health care, and utilities. It is therefore much less risky than the S&P 500 and includes no cyclical stocks (i.e. technology, consumer discretionary, etc.). By using Treasury Bills as the safe asset in a downturn rather than AGG (bonds) we eliminate correlation with stocks due to interest rate sensitivity.

Since our Defensive Equity portfolio was started 11/30/18, this is the starting point for my back test of this modified version of Dual Momentum investing. My test runs 4½ years to 5/31/23. In the results below I use DM to abbreviate the Dual Momentum ETF strategy and I use BIA to designate my modified version. Returns below are cumulative over the period (not annualized). Drawdowns are from the highest value. Here are the results:

DM return	BIA return	DM minus BIA	DM Drawdown	BIA Drawdown
18.7%	23.7%	-5.0%	-19.4%	-16.4%

These are hypothetical returns (before fees). They don't seem so large, but keep in mind this includes 2 very significant market declines – 2020 and 2022. We'll discuss potential drawbacks for all timing strategies next.

Why Market Timing Doesn't Work (for everyone)

Paul Merriman a pre-eminent market timer wrote an article titled "Why market timing doesn't work". He sums it up: "Nearly half a century of working with investors has taught me this: Many people who try buy and hold succeed, while most of those who try timing (particularly those who do it themselves) fail". Why should we pay attention to Paul Merriman? When he wrote the article in 2013, he had been using market timing and teaching his methods for 30 years. In 1985 he wrote a book on the topic of market timing. He says his hedge fund (using leverage and market timing) generated returns 2.3 times those of the S&P 500 index while taking the same level of risk. Let's take a look at his reasons for discouraging others from a strategy that he's been very successful at using.

According to Mr. Merriman's analysis, here are the pitfalls to following a mechanical rule that tells you when to buy and sell:

1. You will lose money about half the time.
2. You'll frequently do multiple losing trades in a row.
3. You'll end up selling something and then buying it back at a higher price.
4. A trend following system will miss out on the gains in the early stages of an up market.
5. A trend following system requires that you lose money in a down market while you wait for the system to reach a sell signal.

The above list of issues creates psychological difficulties for most people. Investors want to invest in a way that makes sense to them but most trading signals in a trend following system will not make sense to most people. If the system keeps making "mistakes", most people will override the system by going against the buy or sell signal. At that point you no longer have a system and you are using the judgement, or gut method, of timing. There will then be no obvious time to buy back in, or to sell to reduce risk. Thus, Mr. Merriman says, only about 1 in 100 investors can successfully follow a timing strategy.

For those who still want to try, here are his suggestions:

- Don't expect to beat the market (especially over the medium term); the goal should be reducing drawdowns during large market declines.
- Don't try to do it yourself. Instead, hire a professional to make trades using a strictly mechanical trend-following system.
- Make sure you have a proper set of assets to allocate among and maintain diversification.

Berkeley Investment Advisors
Investment Newsletter – June 2023

- Don't just rely on market timing to manage risk. Your portfolio should also include bond funds.
- Consider managing half your portfolio with timing and half without it. This reduces the anxiety that comes with the timing system.

An Analysis of Timing Pain – Looking at Recent History

In order to get an idea of the potential pitfalls enumerated above, we can look at specific time periods in the recent past to see what you would have experienced, had you implemented the Dual Momentum strategy. To do this I use exchange traded funds (ETFs) tracking the indices of the strategy rather than the actual indices. This gives us results that could have actually been achieved rather than hypothetical results. The relevant ETFs are:

Index to track	ETF ticker	Use
S&P 500	SPY	Identify signal and invest if S&P 500 is indicated
MSCI All Country ex-U.S.	VEU	Identify signal and invest if MSCI All Country ex-U.S is indicated
U.S. Aggregate Investment Grade Bonds	AGG	Invest in this if Treasury Bill returns beat the S&P 500
Treasury Bills	BIL	To test SPY absolute momentum- is return on SPY > BIL

Data for BIL starts in May 2007. Therefore since the system looks back 1 year, our first signal is May 2008 for investment in June 2008. The benchmark portfolio is buy and hold 45% in SPY, 28% in VEU, and 27% in AGG. I'll abbreviate Dual Momentum as DM and the buy and hold benchmark is abbreviated as BM. The following shows results for some selected periods.

Investment Period	DM % return	BM % return	DM minus BM returns	DM Drawdown	BM Drawdown
5/31/08 – 5/31/23	188.7	139.3	48.4	-19.4	-38.3
2/28/09 – 5/31/23	178.6	288.2	-109.6	-19.4	-22.0
5/31/20 – 5/31/23	125.0	131.2	-6.2	-19.2	-22.0

The table shows that Dual Momentum out-performed the benchmark over the 15 years ended 5/31/23. But, if we look at the period starting 2/28/09, which was the low point for the benchmark, then Dual Momentum under-

Berkeley Investment Advisors
Investment Newsletter – June 2023

performed by 109.3% cumulatively since that date. This shows that if you start using the system at the low point in the market cycle (which you cannot know at the time), you will most likely start out with a significant disadvantage that will take a very long time to earn back. Looking at the period starting 5/31/20 we also find under-performance for the same reason: this was just shortly after the market started its recovery from the March 2020 low.

Thus Paul Merriman's advice is reflected here – we can use Dual Momentum to reduce our drawdown risk but we may not out-perform a buy and hold strategy unless we either start using the system closer to the top of a market cycle or we stick to the strategy for long enough for it to pay off. This can apparently take 15 years, or more, depending on the starting point.

Conclusion

Quantitative methods for asset allocation have the potential to reduce drawdown risks while capturing most, but not all, of the returns from a buy and hold allocation that includes equities. Statistical studies of such systems show that they work *if* followed faithfully for many years. The Dual Momentum strategy is a good example of a timing strategy that can reduce equity market drawdown risks while capturing a significant portion of equity returns over sufficiently long time horizons. In part II of this series, we'll look at a fundamental valuation timing strategy and explore that in combination with trend following timing strategies.

Contact Information: RayMeadows@BerkeleyInvestment.com 510-367-3280