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The Origins and Creation of Goaltender

"Bull markets are born on pessimism, grow on skepticism, mature on optimism and die on euphoria."
- Sir John Templeton

This month, I am excited to tell you about a project that has been in the works for a very long time: Our quantitative model for managing equity market risks we call Goaltender.

You should have received a slide deck yesterday filled with all of the technical details of this portfolio. If you haven't looked at it yet, I'd like to suggest that you give it a quick review now before continuing. (If you have not received it, please respond to this email "missing deck" and we will resend it to you).

The idea behind this tactical model has been to develop a portfolio that can achieve near market-level returns, but with substantially lower risk, reduced volatility, and smaller drawdowns.

Today, I want to explain some of the thinking and philosophy behind this project, its underlying factors, and how it developed over the past few years. It reflects our experiences over the course of 20 years as traders, strategists, and money managers. Much of what drove this model's creation are the lessons that we've learned from the markets over that time.

However, when it comes to other people's money – *your money* – we demand a lot more than mere observations and history. Hence, we have spent lots of time not only thinking about the factors that drive this portfolio, but also thoroughly back-testing every aspect of it. Michael Batnick, our head of research, is probably seeing Excel spreadsheets whenever he closes his eyes.

The model came about via the integration of three factors: secular cycles, market trend, and behavioral finance. All of these ideas were then run through an empirical, weight of evidence form of quantitative analysis. If you have been reading me for any length of time, you probably recognize each of these as favorite subjects to which I return time and again.

The short version of our model looks something like this:

Secular Cycles → Market Trend → Behavioral Finance → Quantitative Analysis

Let's break that down to see how it works in practice.

Secular Cycles are the long periods of time that come to define each market era. We often see this described as long-term Bull or Bear markets, but that over-simplification fails to recognize the societal elements that underlie markets. These cycles are driven by a set of specific and dominant economic ideas that always seem to find their way to the stock and bond markets.

Market Trends are the dominant market action that occurs within these longer secular cycles. They are extremely powerful and, once established, are very difficult to break. They usually last about 10 to 15 years.

However, once a longstanding trend is decisively broken, it means the prior dominant economic theme is over – and the beginning of a new and different secular cycle is beginning.

Behavioral Finance: Crowd psychology is always bubbling beneath the surface of the markets. Most of the time, this sentiment is merely the short-term noise of the market's emotional participants and isn't especially useful. However, at certain points, the crowd can suddenly turn into an unruly mob. Such moments of extreme behaviors can be identified as they affect prices. Understanding the clues as to how and when this type of reaction occurs creates opportunity: either for gains or for the protection of capital.

Quantitative Analysis is the way to measure all of the above. When a long-standing trend is broken, we can identify it mathematically. When human behavior becomes highly emotional, we see it reflected in a variety of specific and quantifiable metrics. Each of the key factors in our model can be quantified as an objective data series, allowing us to make decisions based upon objective, rules-based factors. There is no relying on gut instinct or subjective hunches in this model. It eliminates the potential for bias - political or otherwise - and it is 100% data-dependent. This will become extremely important during times when emotions run rampant.

All four factors are interrelated. They have overlapping time lines. You may notice a degree of fractal repetition – each image comes into focus when you zoom in on a smaller version of the original – that is not a mere coincidence. Each step in the analysis considers successively shorter time scales within the larger frame of reference.

The Long View

Over the course of my career, I have developed a philosophy as to how markets operate. Each market period reflects a bigger picture, driven by the key issues of that period. These can include geo-politics, economics, resource consumption, technology, or any one of a number of other elements.

Over time, each of these factors comes to define the dominant economic theme of a generation. Consider the post- War World II era, or the roaring 1980s and 1990s, or even the inflationary malaise of the 1970s. Each of these periods of time can be defined as a *secular cycle*.

The underlying factors that drive each cycle come to dominate it. Sometimes it's war, or inflation, or technology, or some combination of these. But they are extremely powerful, and they can drive global economies for decades at a time.

Understanding the length and strength of these secular cycles is the first step in setting up a model that designed to capture much of the upside. It affects the overall stock and bond bias, the average holding period, and turnover. In constructing this portfolio, the precise start or finish of any given cycle matters less than the fact that powerful trends tend to last a very long time. That initial recognition colors everything else that is built around Goaltender.

Therefore, the model - while tactical – remains in sync with the longer time frames that truly matter.

Let's consider a few examples. In 1946, a new secular cycle began – the post-World War II era. It was dominated by the following elements: the rise of the middle class and the resurgence in civilian economic activity. As millions of soldiers returned home, they took advantage of the GI Bill to get college educations; they bought homes and America became suburbanized. Suburbanization aided the rise of car culture, which drove the economy higher. In addition, following the five years of pent-up demand during the war years, many of these newly formed families filled their new households with a range of the latest consumer gadgets, which benefited retail sales. There was also the expansion of civil aviation – more travel, more vacations – and a budding electronics industry. On top of that, the rise of consumer credit was just getting underway, and would have transformative effects on economy for decades to come.

Given these factors, is it any surprise that the stock market had a good run from 1946-66?

Our model is specifically geared to capture this type of growth, staying on the right side of long-term trends, such as this one. During bull markets, *when everyone has suddenly become a genius*, this is easy. Where it begins to get tricky is when markets are transitioning from one phase to the next. There are many false starts, reversals, and bouts of weakness that turn back into strength, and other traps for the unwary. Our goal was to avoid as many of these "head fakes" as we could. While it is impossible to avoid all false positives, we believe we have dramatically reduced the number of bad signals.

The secular cycle is also present during negative periods of time. Think about the 1966 -1982 bear market: It was an era of socio-political upheaval and a general economic malaise, defined by spikes in inflation, the Watergate scandal, the oil embargo, and the Vietnam War. The market experienced multiple rallies and sell-offs, but stocks failed to make much forward progress overall. The Dow kissed 1,000 in 1966, but did not manage to get over it on a permanent basis until 1982 – some 16 frustrating years later.

The period from 2000 to 2013 was quite similar. Defined by the bursting of the dot-com bubble, 9/11, massive corporate accounting frauds and the wars in both Iraq and Afghanistan, it too featured an inflationary spike and high oil prices. But the financial crisis killed inflation, making deflation the greater threat. Big rallies and sell offs also were a key part of this era. The S&P 500 hit 1500 in 2000, but despite those rallies, did not get over that level until some 14 years later in 2013.

If you name an era, I can describe for you the dominant economic and societal trends. Ultimately, all of these trends eventually find their way to equities and bonds. Our tactical model, Goaltender, has been designed to recognize these trends, identifying when they are ending or when they may be about to reassert themselves in a new beginning.

To capture the shift from bull to bear, we rely on a specific set of trend-following rules. They are biased to keep us in markets longer than we might be were we to rely on the host of worthless indicators, old wives' tales, and borderline astrology with which many investors seem to be preoccupied. Rather than guess when the long-term trend has ended, as so many seem to do, we simply obey the data from the quantitative-trend metrics that have a proven efficacy over long stretches of time.

One of the ways to accomplish this shift was to vary the sensitivity of the holdings in our model based on the transition from bull to bear markets. Goaltender owns three distinct categories of equities, each with very different market characteristics. By design, these three holdings may fall off separately, and slowly, over time, as a market shifts from bull to bear, accumulation to distribution. The goal is to slowly leg out of our fully invested posture as the market undergoes this change.

I like the fall foliage analogy of how bull markets reach a climax and form a top. The summer turns to fall, the weather cools, and some of the leaves begin changing their colors. The gorgeous foliage transformation occurs with different species of trees at slightly different speeds. This past weekend, there were still plenty of green leaves to be seen among the vibrant oranges, bright yellows, and stunning reds.

There are already plenty of leaves that have already fallen off the trees as we speak. Indeed, by the time we are at the peak of the fall foliage season, some 20 percent or more of the leaves will have already dropped from their branches.

This is a good metaphor for markets: an aging bull market can still power the major indices higher, but these remaining leaders tend to be the biggest market capitalization stocks. The small caps have already begun their bear market earlier this year, with more than one fifth of the individual names in the Russell 2000 small cap index 20% below their 52-week highs. The mid caps are typically the next to roll over. By the time the S&P 500 is at its peak high for the cycle, the majority of stocks have already begun a bear market.

That's why we developed this model around three different primary holdings that vary in size and capitalization. As the market begins to enter its last phase, the model will slowly generate sell signals for each of the three equity holdings separately.

This is important for two reasons: First, we want to capture as much of the upside as possible, and this allows us to do so even as the market internals start to weaken. Second, in the event the internal weakness is only temporary – something that history tells us occurs occasionally – we do not want to be fully out of the market as it recovers. A new signal will redeploy and previously sold market exposure will be added back to the model portfolio. Because of this methodology, our tactical shifts are gradual enough to allow for the possibility of market indecision resolving itself to the upside.

This is not an “all in, all out” sort of portfolio. In fact, based on our extensive back tests, we estimate a “resting state” of being fully invested approximately 70% of the time. This squares with the long-term data showing stocks are higher one year after 75% of all days over the last fifty years.

Re-entry is determined by factors we have evaluated to best reflect the crowd's behavior, especially once it has already reached an extreme. Over the better part of the past 15 years, I have been researching and writing about behavioral finance. The time I've spent studying this area has convinced me that it is one of the most reliable elements in all of investing. Technology ceaselessly changes, new products get released each year, hedge funds wink into and out of existence – but human nature is immutable.

Human nature is why the quantitative data surrounding price is so important. Regardless of anyone's personal feelings, the data is objective and neutral. It informs us about what is occurring below the surface, which is frequently invisible to the analysts, pundits and traders who provide so much of the market commentary. Hence, our reliance on quantitative metrics to help us see more clearly when secular cycles have shifted, trends have been broken, or when market participants' behavior is at an extreme.

You can see why these four steps: *Secular Cycles → Market Trend → Behavioral Finance → Quantitative Analysis* are so important.

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For all these reasons, after substantial research and testing, we now have a multi-factor, quantitatively derived tactical model that is strictly rules driven. As discussed, it is dominated by three factors: secular cycles, market trend and behavioral finance, with each metric having been quantitatively analyzed through a host of different environments.

A few final thoughts on *what this is not*: Goaltender is not a secret to beating the market. Rather, it is a more intelligent approach to managing risk by logically applying historical data. It is also not the embodiment of anyone person's "feelings." Instead, it is empirical, rules driven, and will run with extremely limited subjectivity.

The goal of this model is to capture as much of the potential upside as any market offers, while reducing the risk of major drawdowns, as well as the turnover, taxes and costs inherent in many other tactical strategies. Our challenge was to make this "*as simple as it could possibly be, but not simpler*."

We are confident that our Goaltender model will helps us achieve those aims in the years to come.

-Barry Ritholtz
Chief Investment Officer, Chairman
Ritholtz Wealth Management

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