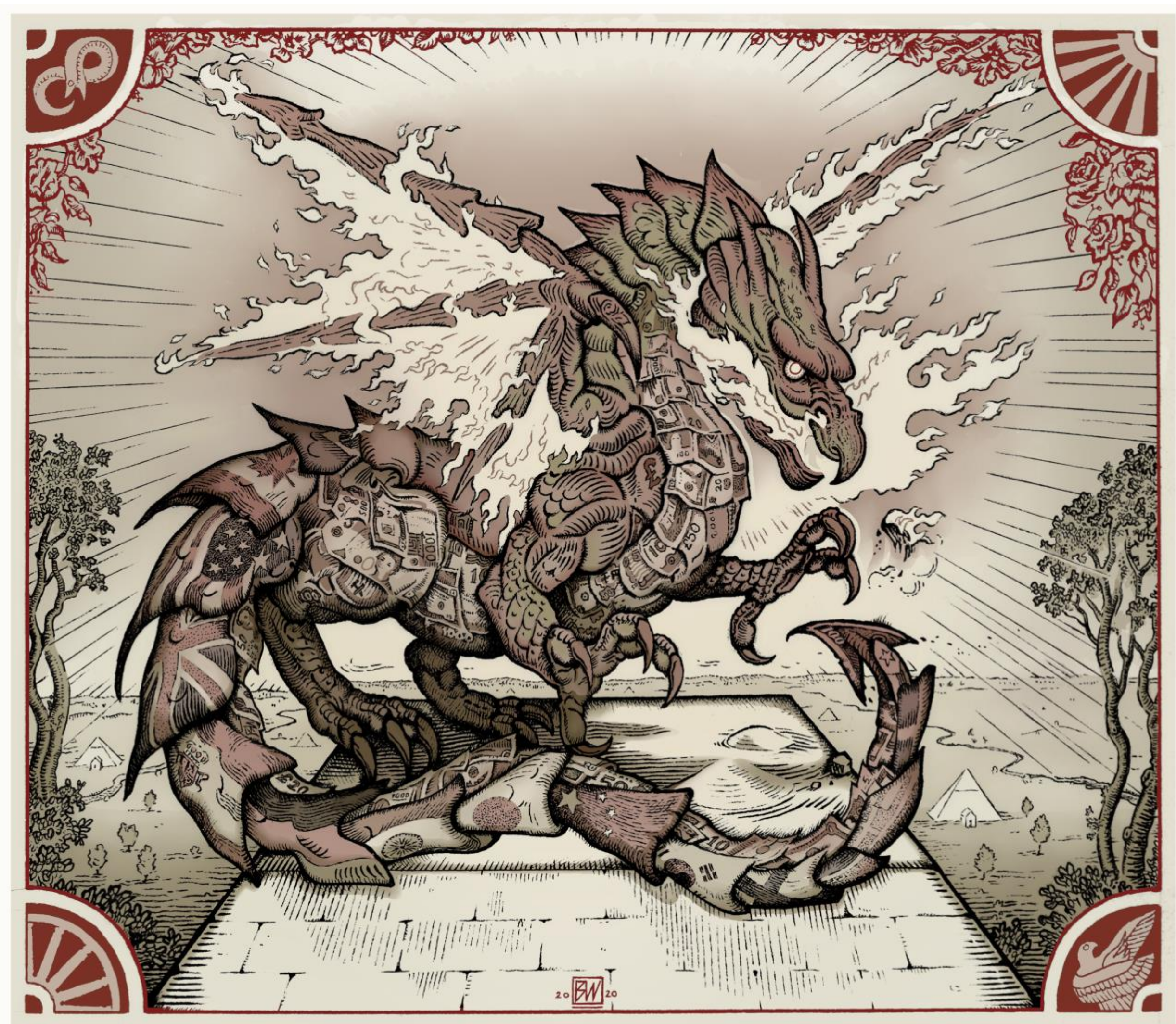
ARTEMIS
CAPITAL MANAGEMENT

RISE OF THE DRAGON

From Deflation to Reflation
2020 Case Study for the Artemis Dragon Portfolio



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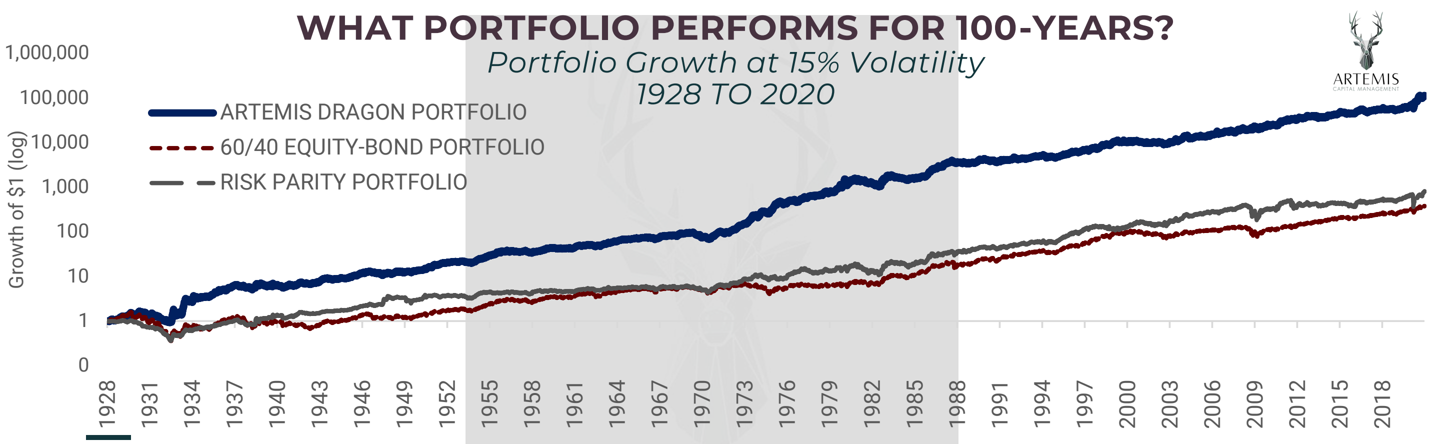
RISE OF THE DRAGON

From Deflation to Reflation: 2020 Case Study of the Artemis Dragon Portfolio

ARTEMIS CAPITAL MANAGEMENT first introduced the **DRAGON PORTFOLIO™** in our research paper "***The Allegory of the Hawk and Serpent: How to Grow and Protect Wealth for 100 Years***," published January 2020 (please also see ***Real Vision interview with Christopher Cole***). The goal was to discover a century-long investment portfolio that provided capital appreciation and protection through all market environments: inflation to deflation, growth to crash. To find the answer, Artemis rigorously re-created a wide range of investment strategies over 93 years. From that journey emerged the Dragon Portfolio, an innovative new vision on portfolio construction that challenges modern portfolio theory.



Sources: Artemis Capital Management LP, Global Financial Data, www.artemiscm.com
Results are hypothetical based on availability of the data and assumptions outlined in our "Allegory of Hawk and Serpent" research. Please see notes.

RISE OF THE DRAGON chronicles the Dragon Portfolio's consistent performance throughout turbulent 2020 as a "proof of concept" that bridges theory to practical implementation. Artemis explores why the hypothetical Dragon Portfolio performed in 2020 and what an investable product would look like using actual data and fees. We discuss challenges to implementing the Dragon Portfolio and why it is an important tool during the next phase of global markets.

THEORY OF THE DRAGON

What makes the Dragon Portfolio innovative is that it diversifies risk based on market regime classes (e.g., Growth, Deflation, Inflation) rather than asset classes. While the concept is easy to understand, it is a radical departure from conventional portfolios. Most investors hold traditional portfolios that diversify risk either by investment category (e.g., 60/40 Portfolio, Target Date Funds) or volatility and correlation between assets (e.g., Risk Parity Portfolio, Target Volatility).

The Dragon Portfolio's theory of risk corrects a fatal flaw in conventional portfolios: dangerous over-reliance on a stable relationship between Stocks and Bonds and their performance. Big and small, most investors fail to recognize a damning fact: the last 40 years has been one of the most exceptional periods of Stock and Bond price growth in recorded financial history. Recent history is the exception and not the norm, and Stocks and Bonds have experienced long periods of poor inflation-adjusted performance before 1982. For this reason, traditional portfolios fail to protect investors from wealth destruction in periods of high inflation (e.g., the 1970s) or deflation with rates near zero (e.g., the early-1930s).

In the research paper that introduced the Dragon Portfolio, we used the allegory of a **SERPENT** battling a **HAWK** to represent the clash between market regimes that create or destroy capital. The Serpent represents periods of growth fueled by virtuous cycles of value creation, rising asset prices, and debt. The Hawk signifies the forces of change that will challenge and ultimately destroy the Serpent through inflation or deflation. The successful 100-year portfolio must navigate the secular booms of the Serpent (1947-1963,1984-2007) while not losing capital on either wing of the revolutionary and regenerative eras of the Hawk (1929-1946, 1964-1983).

The Dragon Portfolio's name references a balance between assets that perform in Serpent growth cycles (Equity, Real Estate) with alternatives (Long Volatility, Trend) that excel during Hawk periods of inflation or deflation. The Dragon Portfolio has shown the ability to perform consistently through growth regimes or periods of decline where traditional portfolios suffer (see original research paper for detailed analysis). The investment industry is full of strategies that look good in the rearview mirror but fail to perform driving forward. The ultimate test of the Dragon Portfolio is in real-time, and 2020 afforded us that opportunity.

2020 PERFORMANCE OF THE DRAGON

In forward testing, the hypothetical Dragon Portfolio performed exceptionally well during the volatile year of 2020, making money every quarter. The Dragon Portfolio gained **+52%** gross in 2020 with a **-11%** maximum decline while traditional portfolios (60/40 Stock-Bond and Risk Parity) stumbled. The classic portfolios achieved less than one-third of the return with three times the drawdown. As we will explore herein, 2020 was the year the theory of the Dragon became a reality.

WHAT IS THE DRAGON PORTFOLIO?

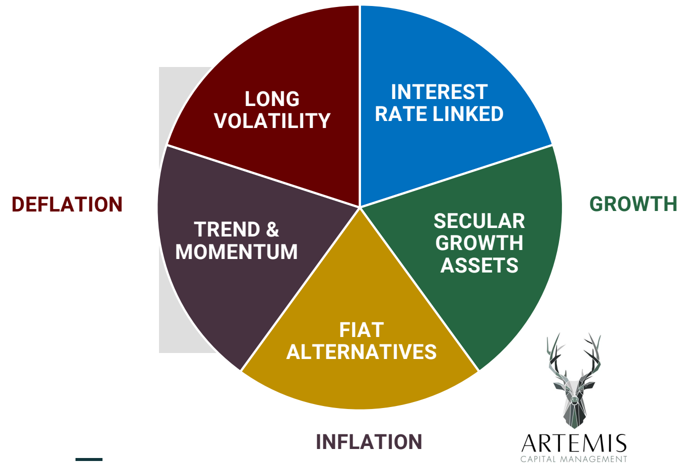
ARTEMIS DRAGON PORTFOLIO represents roughly equal exposure to five critical market regime classes that perform in different economic environments, including:

SECULAR GROWTH LINKED ASSETS, such as U.S. domestic and international equity, outperform during periods of robust economic growth (e.g., the 1950s, 1982 to 2007) and profit from asset price stability and low-interest rates.

INTEREST RATE LINKED ASSETS, such as longer duration U.S. Treasury Bonds, perform during periods of falling interest rates and deflation (e.g., the early 1930s) but suffer during periods of inflation (e.g., the 1970s).

FIAT ALTERNATIVES like Gold (or Crypto sized conservatively) protect the portfolio against excessive monetary or fiscal policies that destabilize world reserve currencies like the U.S. Dollar (e.g., the 1970s).

ARTEMIS DRAGON™ PORTFOLIO



Sources: Artemis Capital Management LP
www.artemiscm.com

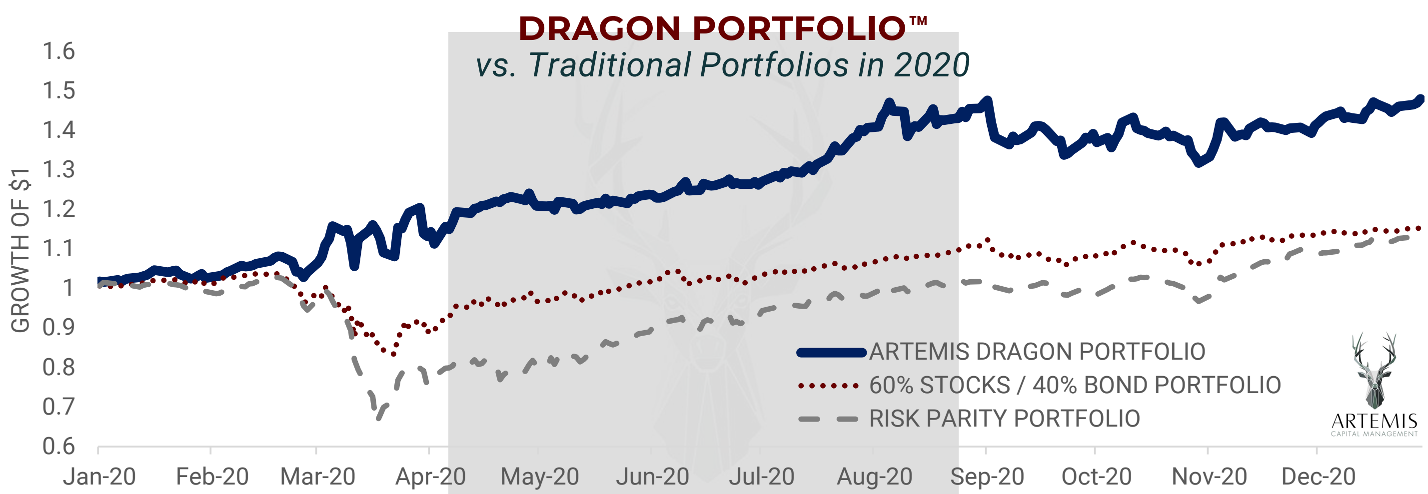
LONG VOLATILITY refers to actively managed strategies that perform when markets are unstable or have inferior liquidity (Artemis flagship strategies follow this mandate). Long Volatility is a defensive strategy that provides non-linear returns when capital is scarce, giving the portfolio cash to reinvest in beaten-down stocks or real estate at market lows. The key to these strategies is managing losses during rising markets. Volatility becomes very important in low-rate environments (e.g., the mid-1930s and today) when high-quality fixed income loses defensive properties.

TREND AND MOMENTUM are strategies that seek to monetize trends higher or lower in raw commodity prices, currencies, or financial assets and perform during periods of high inflation (e.g., the 1970s) or deflation (e.g., the 1930s, 2008)

Over 100 years of market cycles, performance from at least two of the five regime classes led to gains in the Dragon Portfolio regardless of the environment, eliminating the need to predict the business cycle or inflation.

2020 WAS THE YEAR OF THE DRAGON

When we published our research paper last January 2020, little did we know that we would have the opportunity to test the Dragon Portfolio through one of the most volatile years on record. For any portfolio, 2020 was the ultimate trial, representing an entire business cycle condensed into twelve months ranging from the deflation in the spring, fiat devaluation and asset price boom in the summer, and reflation by winter. In effect, we went from a 1930s deflation to a 1999 speculative mania in just a few months. The Dragon Portfolio thrived while classic portfolios stumbled.

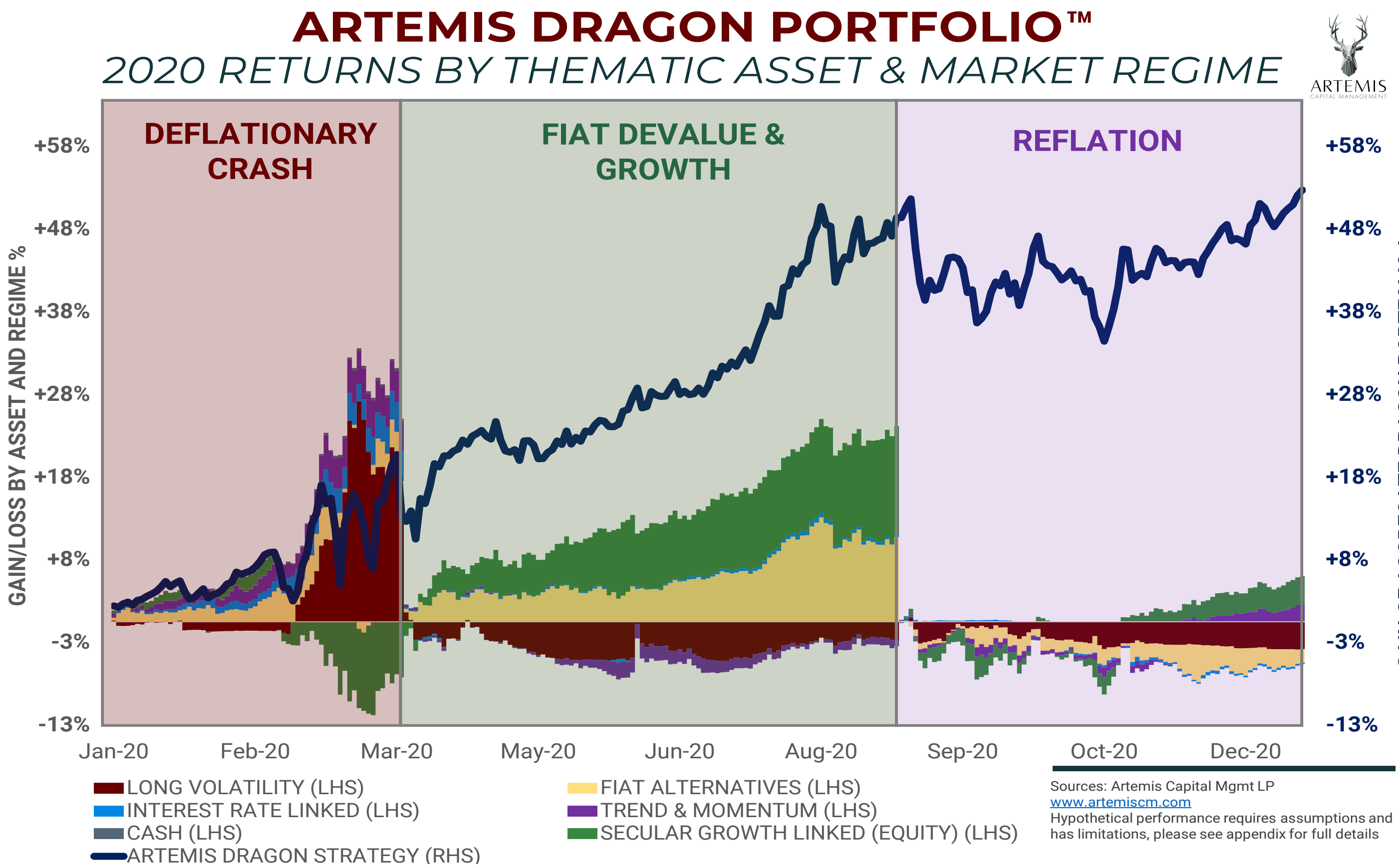


Sources: Artemis Capital Management LP, Bloomberg, S&P
Results are hypothetical, please see full notes for details.

To demonstrate the theory in action, Artemis constructed a hypothetical (but ultimately investable) Dragon Portfolio using daily performance data from real managers and strategies, net of estimated fees, and transaction costs. Sub-components include third-party verified performance from Artemis proprietary strategies as **Long Volatility**, returns from our industry-respected CTA partners for **Trend and Momentum**, U.S. Treasury Bonds for **Fixed Income**, Domestic and International Equity for **Growth**, and physical Gold (with custody fees applied) as **Fiat Alternative**. We assume centralized cash at one prime broker (including all applicable fees) with portfolio margin to achieve target volatility of 15% (see "How to Train Your Dragon" p. 4). The net result is a very realistic and defensible replication of how the Dragon Portfolio would have performed.

THE YEAR 2020 was a perfect example of how the Dragon Portfolio's unique theory of risk works to produce consistent gains regardless of the market environment. As discussed, the Dragon Portfolio aims to diversify risk based on market regimes (e.g., **Deflation**, **Inflation**, **Growth**) rather than by asset class or volatility. Diversification of risk by market regime enables the Dragon to thrive during shifts in the macro-economic environment without the need for prediction or timing.

The Dragon Portfolio earned **+52%** (gross) in 2020 and gained ten out of the twelve months in a steady upward trend. The portfolio made money every quarter, with significant gains from January to March at **+13%** when 60/40 Portfolio lost **-9%,** and Risk Parity Portfolios suffered a **-21%** loss. Dragon Portfolio market regime classes took turns leading the portfolio as all macro-regimes (**Deflation**, **Fiat Devaluation & Growth**, **Reflation**) were featured, as seen in the graphic below.



DEFLATIONARY CRASH | JANUARY TO MARCH 2020 | DRAGON PORTFOLIO +13% | 60/40 PORTFOLIO -9%

In the first quarter, the COVID-19 pandemic spread across the globe, and the resulting economic shutdowns caused a deflationary crash and global recession. By the end of March, the stock market suffered a **-34%** drawdown, and volatility exploded to multi-year highs of 82%. Credit spreads blew out, liquidity vanished, and asset classes faced debilitating outflows of capital. Classic 60/40 and Risk Parity Portfolios suffered max drawdowns of **-11%** and **-36%** as both Stocks and Bonds sold off simultaneously. For the Dragon Portfolio, Long Volatility produced significant returns during this period that drove a **+13%** gain from January to March. Most importantly, increases in Long Volatility provided liquidity and excess cash that was re-balanced to growth strategies setting the Dragon Portfolio up to capitalize on the rebound in markets.

FIAT DEBASEMENT AND GROWTH – APRIL TO AUGUST 2020 | DRAGON PORTFOLIO +32% | 60/40 PORTFOLIO +21%

By April, the pledged $10 trillion in the global fiscal, and monetary stimulus set a floor under markets resulting in a historic rebound in risk appetite at the expense of money devaluation. Equities and Gold exploded higher as the market started to resemble post-stimulus speculative booms like the late-1990s, with heavy retail participation and call buying. As Equity markets rose at historical speed, the reality of the largest U.S. fiscal deficits since WWII combined with unprecedented monetary stimulus drove explosive gains in Gold from April to July. The Dragon Portfolio gained **+32%** during this time.

REFLATION – SEPTEMBER TO DECEMBER 2020 | DRAGON PORTFOLIO +2% | 60/40 PORTFOLIO +5%

In the fall and winter, rates began to increase due to rising inflation expectations, cascading into trending moves in raw commodity prices. Gold suffered, presumably due to the expected higher real rates. The significant moves in commodity price trends led to gains in Trend Following and Momentum strategies alongside Equities. This period resembled a micro-version of the onset of stagflation in the late-1960s and early 1970s.

2020 was a case study for the power of the Dragon Portfolio. All the core Dragon themes had their moment to shine or suffer. The effect of the Dragon market regime classes working together created a smooth and consistent growth trend throughout the year, as traditional portfolios were one step behind.

HOW TO TRAIN YOUR DRAGON

TRAINING A DRAGON IS NOT EASY. Many people have asked how they can implement a "do it yourself" version of the Dragon Portfolio with passive exchange-traded products ("ETPs") or external funds. While possible, it will not lead to the best result. The Dragon Portfolio may seem simple, but complexities require professional management for optimal results. As the creators of the Dragon Portfolio, we highlight the four critical implementation challenges not discussed in our original paper:

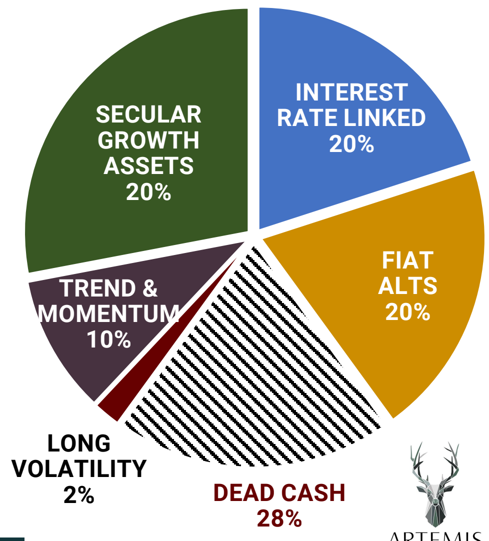
THE DEAD CASH PROBLEM

The single biggest challenge in replicating the Dragon Portfolio without professional help is cash efficiency. Many active managers in Long Volatility or Trend Following only require 1-20% of the capital invested in running their strategy. For example, one popular Volatility ETP uses only ~2% of its net asset value to execute the core strategy. $98 out of $100 invested in that ETP is "**DEAD CASH**." The investor could otherwise use that capital to increase exposure to all thematic assets buckets. Instead, it sits reinvested at near-zero rates that are lower than the ETP fees. Herein lies the problem of using external funds to execute. Cash management is very inefficient. Up to one-third of a DIY Dragon Portfolio could be dead cash if poorly executed (see graphic).

Fortunately, there is a solution to the Dead Cash Problem that does not include borrowing costs. The key is selecting a skilled manager with a deep understanding of how the portfolio works to merge the Dragon Portfolio components with centralized cash management. The qualified manager uses risk models, industry connections, and infrastructure to blend active strategies like Volatility and Trend in sub-accounts that share the cash with Stocks, Bonds, and Physical Gold at a high-quality custodian. The use of blended money, held in one core account, allows the portfolio manager to apply cross-margin and aim for higher target returns without borrowing capital.

SUB-OPTIMAL DRAGON PORTFOLIO W/ETPS

CASH % REQUIRED BY STRATEGY



Sources: Artemis Capital Management LP www.artemiscm.com | Cash amount may differ, theoretical

ACTIVE MANAGER SOURCING

Volatility and Trend Following Strategies are not easily accessible via ETPs, and those that are available are often inferior to private hedge fund counterparts. For example, while tempting to use an ETP vehicle like the S&P 500 VIX Short-Term Futures ETN (VXX) for Volatility exposure, its performance over the last decade (**-99.83%**) is abysmal compared to long volatility hedge funds tracked by the Eurekahedge CBOE Long Volatility Hedge Fund Index (**+4%**). While there are a few quality ETPs, they are few and far between with abysmal cash efficiency (see "Dead Cash" problem above), mainly because regulation and lower fees disincentivize the managers from offering their best products to the broad public on exchanges.

DIVERSIFICATION OF ACTIVE MANAGERS

You would never rely on just one stock in your portfolio. For the same reason, diversification of Long Volatility and Trend is essential. Many institutional investors (allocating $25-100mm each to several managers) create a mosaic of defensive strategies because there is no one-size-fits-all for market crises. Unfortunately, at a $250k average entry price for many hedge funds, it is tough to obtain proper diversification for many individuals, even those with substantial nest eggs. Even for big institutions, there is a significant learning curve to conducting due diligence on Long Volatility and Trend Following strategies that rely on options and futures for execution. The experienced manager solves this problem by pooling investor assets to gain diversification and has the expertise needed to conduct due diligence on sophisticated Long Vol and Trend funds.

RE-BALANCING AND LIQUIDITY RISK

Never forget, one of the most challenging aspects of the Dragon Portfolio is behavioral and not economic. Re-balancing is essential to the strategy, but this requires vigilance and expertise. Certain investments, such as physical Gold and hedge funds, may be challenging to re-balance due to liquidity constraints. Finally, re-balancing requires extreme discipline and continuous monitoring. At the lows in March 2020, investors may have been tempted to transfer all their monies into Long Volatility. Likewise, as Equity markets reached speculative fervor by the end of the year, it was tempting to over-allocate Equity or Crypto.

DRAGON IMPLEMENTATION

The truth is that the Dragon Portfolio is not simple to implement by yourself, and these are just a few of the core challenges. Artemis has spent the last year evaluating these issues and seeking solutions on behalf of our clients.

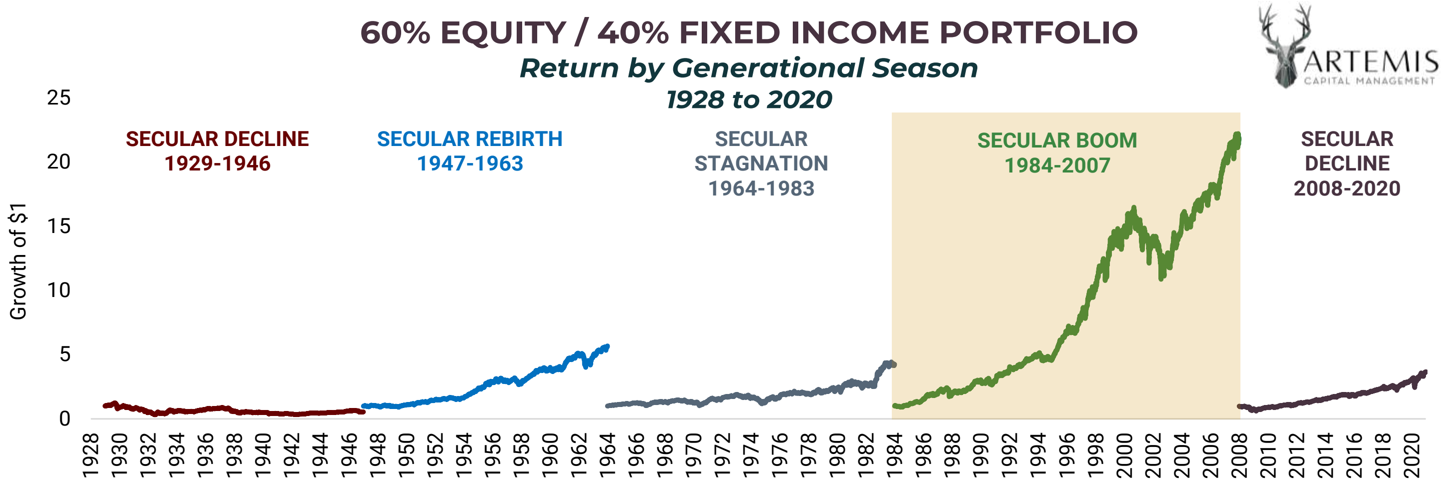
RECENCY BIAS IS A SYSTEMIC RISK

RECENCY BIAS is defined as overconfidence that the future will look like the recent past. It is also a significant risk to global financial stability. The last four decades were among the most considerable Equity and Bond price appreciation periods in 2,000 years of economic history (see below). 91% of the price appreciation for 60/40 portfolios over the past 93 years comes from 22 years between 1984 and 2007. This tremendous performance in stocks and bonds is from a self-reinforcing spiral (we call this a Serpent or Ouroboros) led by falling interest rates (17% to 0%), favorable demographics, falling taxes, globalization, unprecedented monetary policy, and historic debt issuance. **The trillion-dollar question: is this repeatable?**

The factors that drove a generational boom in Stocks and Bonds are now reversing. Debt is at all-time highs, taxes are rising, interest rates can't go much lower, and demographics are lacking across the developed world. The middle class has not seen real wage growth since the 1970s, and the pendulum of income accumulation is swinging to income redistribution.

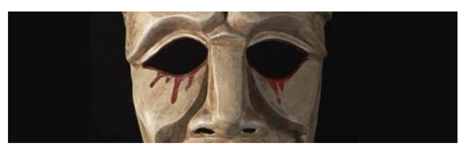
Unfortunately, with history as a guide, investors expecting the gains of the last 40 years with a traditional portfolio will be massively disappointed. The global economy is entering a period of change whereby deflation or manufactured inflation will destroy wealth to eliminate debt. The most significant systemic risk to investors is not de-dollarization or historic debt, but collective Recency Bias leaving most blind to the problem.

Many investors are like Oedipus, alerted by the Oracle at Delphi of his tragic fate but unable to stop it. He is blind, first metaphorically, then literally.



Sources: Artemis Capital Management LP, Global Financial Data, please see appendix for full assumptions

THE GREEK TRAGEDY OF MODERN ASSET MANAGEMENT



Modern portfolio management is a Greek Tragedy in live-action as if written by the hand of Sophocles himself. A common theme in Greek mythos is the tragic hero's ill-fatedness, warned by the prophets of their demise, but **UNWILLING** or **UNABLE** to do anything to prevent it.

THE UNWILLING is the multi-trillion dollar institutional pension system with the sophistication to pursue alternative portfolio construction. Still, they are unwilling to do so, burdened by the sheer size of their portfolios (sometimes totaling over $50bn) or strict limitations imposed by oversight committees sometimes comprised of members with no formal financial training. As a result, the vast majority of these institutions follow outdated 60/40 portfolios (more like 70/30 per recent surveys), herd into passive indices, or use illiquid and high fee Private Equity allocations as "diversifiers." These institutions are often prisoners of their heft and bureaucracy, where the will to do what is right meets immense pressure to follow tradition.

THE UNABLE is the average retiree who knows what to do but lacks the tools. These investors have no option other than to feed on the buffet of correlated and passive stock and bond offerings served by the most prominent corporate fund providers and their lobbyists. Regulators block smaller and supposedly "unsophisticated" investors from participating in proven alternatives to protect them against deflation or stagflation. Meanwhile, they allow 18-year-olds to buy double-leveraged ETPs and obscure crypto-tokens on their smartphones. It is madness.

Suppose history rhymes, and at some point in the next twenty years, we face a global crisis in servicing the historic levels of leverage. In that case, global deflation or stagflation will erase the unprecedented level of corporate and government debt and wreak havoc on traditional retirement portfolios. Wealth and savings will be destroyed, and many pension systems will become insolvent or require multi-trillion-dollar bail-outs by the government.

None of this will be free. YOU will pay for it, either through higher taxes or loss of purchasing power due to higher inflation. 2020 was not the climax but merely the first act of this epic Greek Tragedy. The Dragon Portfolio can be a tool.

DO NOT FEAR, DO NOT PREDICT, PREPARE… AND THRIVE FROM CHANGE

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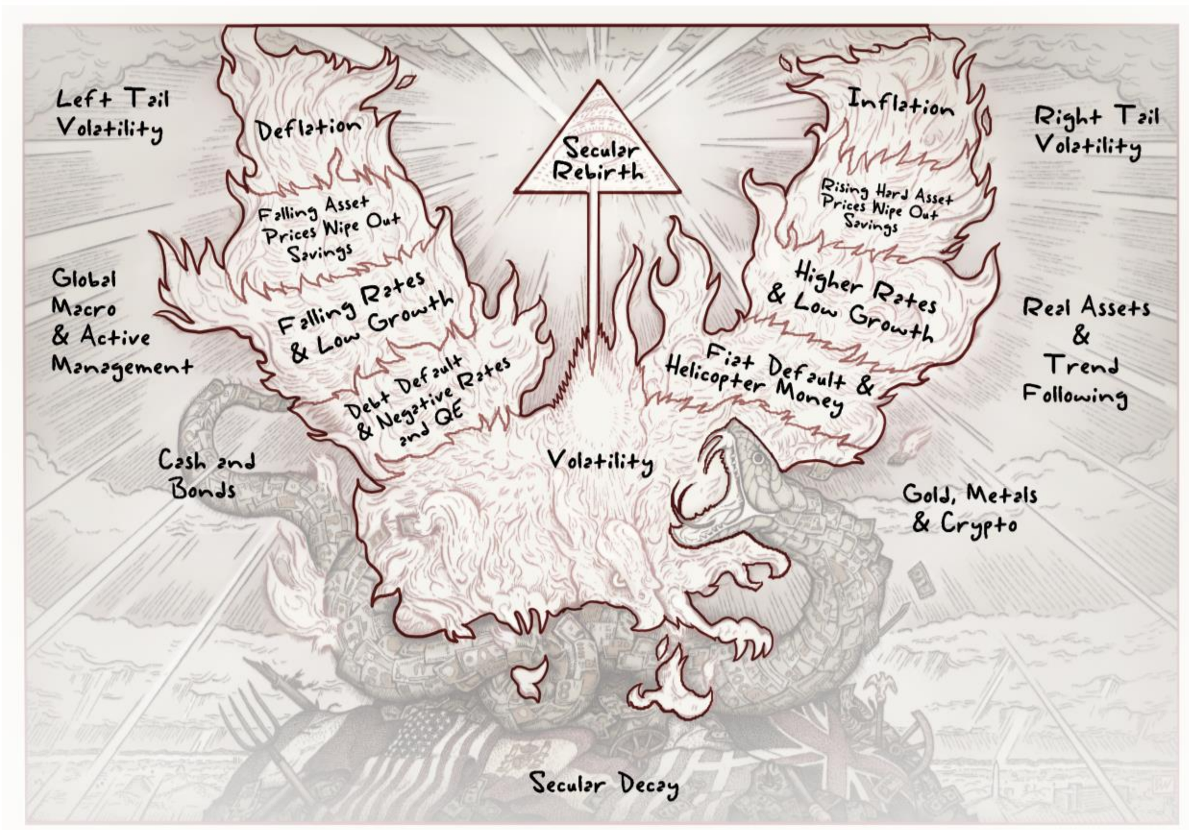

Artemis Capital Management, L.P. is an investment, research, and technology firm that aims to transform stock market volatility into an opportunity for our clients and protect them against the secular cycles that erode wealth.

The firm was founded in 2009 by Christopher Cole, CFA.

Artemis Capital Management is registered with the Securities and Exchange Commission ("SEC") as an Investment Advisor, with the Commodity Futures Trading Commission ("CFTC") as a commodity pool operator ("CPO"), and is a member of the National Futures Association ("NFA"). For more information, please contact info@artemiscm.

ADDITIONAL RESEARCH

ARTEMIS
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RESEARCH

The Allegory of the Hawk and Serpent: How to Grow and Protect Wealth for 100 Years – Q1 2020

Artemis introduces the concept of the Dragon Portfolio that challenges modern portfolio theory. Imagine you have the opportunity to grant your family great wealth and prosperity for 100 years. The opportunity is subject to one final choice. You must decide what assets to invest in and maintain that allocation for an entire century without ever changing it. The future of your children's children depends on your decision. What do you do? In our quest to find the best 100-year path to wealth creation and preservation, we recreated many modern financial engineering and institutional portfolio strategies and tested them through four generational seasons (~20 years) and one lifetime (~90 years) dating back to 1928. The ALLEGORY OF THE HAWK AND THE SERPENT is a philosophical map to understanding the generational cycle of wealth creation, destruction, and rebirth to help guide your investment decisions and protect your prosperity.

Volatility and the Alchemy of Risk: Reflexivity in the Shadows of Black Monday 1987 – Q3 2017

The Ouroboros, a Greek word meaning 'tail devourer', is the ancient symbol of a snake consuming its own body in perfect symmetry. In extreme heat, a snake is unable to differentiate its own tail from its prey and will attack itself, self-cannibalizing until it perishes. Volatility is now an input for risk-taking and the source of excess returns in the absence of value. Like a snake blind to the fact it is devouring its own body, the same factors that appear stabilizing can reverse into chaos. The danger is that the multi-trillion-dollar short volatility trade, in all its forms, will contribute to a violent feedback loop of higher volatility resulting in a hyper-crash.

Volatility and the Allegory of the Prisoner's Dilemma – Q3 2015

Dorothy Thompson once said, "peace is not the absence of conflict". Never forget there is a form of peace and stability reinforced by a foundation of underlying volatility. Game theorists call this the paradox of the Prisoner's Dilemma, and it describes a dangerously fragile equilibrium achieved only through brutal competition. The Prisoner's Dilemma is the most important paradigm for understanding shadow risk in modern financial markets.

Volatility at World's End: Deflation, Hyperinflation, and the Alchemy of Risk – Q1 2012

This thought piece launched Artemis in the institutional derivatives community and was credited for shifting the pricing of long-dated skew in S&P 500 index options. The premise argued that the left tail of the equity return distribution was dramatically overvalued, while the right tail remained inexpensive when compared to the potential of reflation, particularly far out on the volatility term structure.

Dennis Rodman and the Art of Portfolio Management – April 2016

Dennis Rodman's ability to rebound a basketball made him, statistically, one of the most valuable players in NBA history. Even though he couldn't score, his six sigma rebounding dramatically improved the offensive efficiency of the players around him, helping his teams win five championships. Long volatility exposure offers a similar benefit to the institutional portfolio.

REFERENCES AND FOOTNOTES

ANY AND ALL REFERENCES TO "DRAGON, " "ARTEMIS DRAGON, " OR THE "DRAGON PORTFOLIO'" ARE HYPOTHETICAL IN NATURE AND DO NOT REPRESENT ANY LIVE TRADING OR ACTUAL RETURNS ACHIEVED IN ANY ACCOUNT. HYPOTHETICAL PERFORMANCE RESULTS HAVE MANY INHERENT LIMITATIONS, SOME OF WHICH ARE DESCRIBED BELOW. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. IN FACT, THERE ARE FREQUENTLY SHARP DIFFERENCES BETWEEN HYPOTHETICAL PERFORMANCE RESULTS AND THE ACTUAL RESULTS SUBSEQUENTLY ACHIEVED BY ANY PARTICULAR TRADING PROGRAM. ONE OF THE LIMITATIONS OF HYPOTHETICAL PERFORMANCE RESULTS IS THAT THEY ARE GENERALLY PREPARED WITH THE BENEFIT OF HINDSIGHT. IN ADDITION, HYPOTHETICAL TRADING DOES NOT INVOLVE FINANCIAL RISK, AND NO HYPOTHETICAL TRADING RECORD CAN COMPLETELY ACCOUNT FOR THE IMPACT OF FINANCIAL RISK IN ACTUAL TRADING. FOR EXAMPLE, THE ABILITY TO WITHSTAND LOSSES OR ADHERE TO A PARTICULAR TRADING PROGRAM IN SPITE OF TRADING LOSSES ARE MATERIAL POINTS WHICH CAN ALSO ADVERSELY AFFECT ACTUAL TRADING RESULTS. THERE ARE NUMEROUS OTHER FACTORS RELATED TO THE MARKETS IN GENERAL OR TO THE IMPLEMENTATION OF ANY SPECIFIC TRADING PROGRAM WHICH CANNOT BE FULLY ACCOUNTED FOR IN THE PREPARATION OF HYPOTHETICAL PERFORMANCE RESULTS AND ALL OF WHICH CAN ADVERSELY AFFECT ACTUAL TRADING RESULTS.

Artemis Capital Management LP analyzed the risk-reward of a wide variety of institutional investment strategies through four generational seasons (~20 years) and one lifetime (~90 years). The goal is to apply financial engineering to the distant past to learn about potential futures. The results presented herein reflect our best efforts at replicating portfolio engineering strategies going back to the Great Depression using real data derived from historical records. It is essential to understand that these results are indicative and hypothetical only. We do not represent our composite portfolios as realized performance, but rather as our best effort at understanding how a given asset or portfolio strategy would have performed had it existed in the distant past. It is impossible to accurately model the interplay between buyers and sellers, regulatory changes, or the liquidity impact of any modern strategy re-imagined into history. At the same time, the exercise provides valuable insights into market regimes from beyond our lifetimes to avoid recency bias. To give a fair comparison between strategies, we risk-adjust all performance metrics to an annualized volatility of 15% (as shown in graphs and in-line references). For reference, we also provide cash-funded returns by strategy alongside the risk-adjusted in all return tables. In some cases, the investor may need to use financing or derivatives to leverage a portfolio to reach a target return or volatility. Please see tables referencing financing charges; however, in many cases, the institutional investor can achieve target volatility for less using derivatives or portfolio margin. Portfolios with fixed asset exposures re-balance daily unless otherwise noted. Key data inputs, such as implied volatility, may not exist over historical periods. Hence, reasonable estimates are applied based on available data sources to create replication indices. In these cases, such as Volatility Risk Premia, we tested the replication index against a market index to ensure reasonability. Full calculation methodologies are described herein and in the reference section. In some instances, component assets like Active Long Volatility and Commodity Trend are best accessible via hedge funds. In our analysis, we used simplified and systematic replications of various active strategies without fees; however, we also believe these replication indices to be less profitable than a skilled manager. Market data is compiled from sources we believe to be reliable: however, any resulting investment decisions taken due to the analysis is at the sole risk of the recipient.

Please see the Quantitative Notes section of "Allegory of the Hawk and Serpent: How to Protect and Grow Wealth for 100 Years" for detailed replication notes on the 93 year Dragon Portfolio, the data of which is updated for this paper.

Hypothetical Dragon Portfolio performance from 2020 comprised of the following data sources net of fees and transaction costs:
Long Volatility: Proprietary Artemis Vega Fund LP returns, net of fees (2% Management Fee and 20% Performance Fee)
Trend Following & Momentum: Proprietary returns from CTA Fund of Funds providers Abbey Capital and Efficient Capital from multiple hedge funds, net of fees
Fixed Income: U.S. Treasury Bond Futures rolling
Equity: S&P 500 Index futures rolling with fees, NASDAQ 100 futures, Russell 2000 futures, iShares MSCI EAFE ETF, and iShares MSCI Emerging Markets ETF
Cash Reinvestment: One year or less rolling U.S. Treasury Bills
Fiat Alternatives: Physical Gold prices with custody fees applied.

All return series are expressed in U.S. Dollars. Portfolios assume constant re-balancing according to weights unless otherwise indicated. No transaction fees or portfolio re-balancing costs assumed unless stated otherwise. No management or performance fees are applied to replicated hedge fund products. S&P 500 Index Dividend is included in relevant U.S. Equity exposures unless explicitly stated. Mean-Variance Optimization used in order to ascertain the "optimal" portfolio. Risk and realized Volatility are used interchangeably in the paper

DATA SOURCES

Global Financial Data utilized for historical time series data going back as far as 1200.
Security price data from Bloomberg
Options data from LIVE VOL with calculations executed by Artemis Capital Management L.P.

Artwork
"Cosmic Balance Dragon" artwork by Brendan Wiuff based on a concept created by Brendan Wiuff and Christopher Cole. All Rights Reserved.
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