



VERDAD

Countercyclical Investing

FOUNDATIONS OF A CYCLE-DRIVEN APPROACH TO ASSET ALLOCATION

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INTRODUCTION

We have spent a good share of our energy and resources in the past two years trying to understand how to invest during major market crises. As we argued in [Crisis Investing](#), when pessimism is highest, when others are scared, investors should overweight illiquid small-cap value stocks and high-yield bonds. But what to do when we're not in a crisis, when sentiment is bullish and there's no bad news on the horizon?

We have tried to build an asset allocation model that captures the opportunities in crisis while avoiding major losses from negative shocks to growth or positive shocks to inflation during normal market environments. This approach has three defining features.

First, we build on our Crisis Investing research, relying on business cycle indicators, the high-yield spread, and the slope of the yield curve to estimate the stage of the business cycle and isolate three consequent economic states: growth, inflation, and slowdown.

Second, we complement our business cycle indicators with a trend-following approach, relying on recent price trends to help hedge against short-term negative shocks to growth and positive shocks to inflation.

Third, we attempt to maximize returns in each economic state through asset allocation, which is informed by our analysis of the sensitivity of different asset classes to changes in the rate of growth and inflation.

Our countercyclical investing approach is designed to achieve three objectives:



1

Achieve drawdowns comparable to a 60/40 portfolio



2

Exhibit consistency of returns across macro-economic conditions, with no lost decades



3

Outperform a 100% equity approach in terms of total return

We show the results of a back-test of this strategy below:

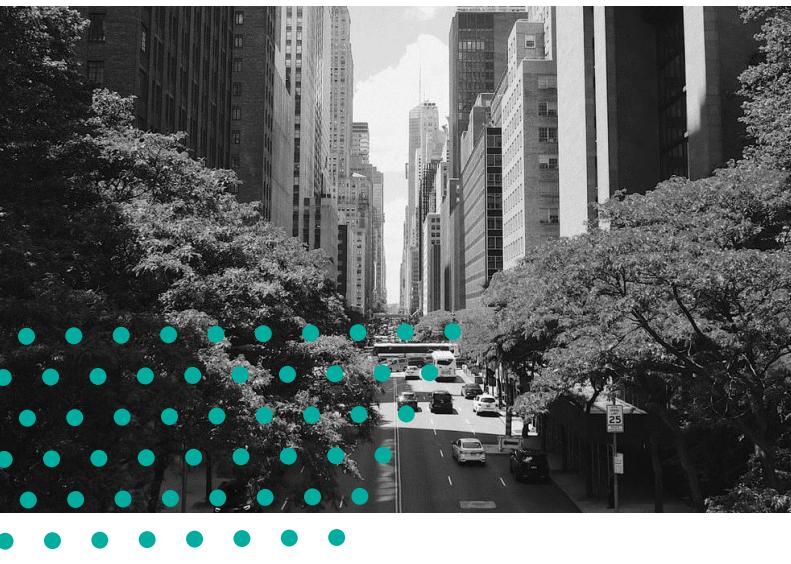
	Countercyclical Investing	60/40 Portfolio	S&P 500
Total Period Return	15.8%	10.0%	10.7%
Sharpe Ratio	0.82	0.41	0.36
Max. Drawdown	-15%	-27%	-46%
\$100 invested in 1970	\$176,000	\$13,000	\$18,000

Source: Bloomberg, Capital IQ, Global Financial Data, Verdad.

Note: Countercyclical Investing portfolio rebalanced quarterly, transaction costs not included, dollars rounded to nearest thousand.

Figure 1:

Comparative
Performance Over Full
Period (1970–2020)



This paper is a framework for thinking about how to use macro-economic analysis to make asset allocation decisions. The paper's scope does not include implementation or alpha generation within asset classes.

We believe this strategy offers a model for how allocators might profitably incorporate economic conditions and market timing considerations into their investment process, and it provides a guide for investors seeking a countercyclical approach to the challenge of asset allocation.

••••• CHAPTER 1

**Death to the Lost Decade:
In Search of a More Balanced Strategy**

An anonymous internet satirist created a mock table of contents for a new journal called *The Journal of Rearview Mirror Portfolio Management*. The first proposed paper is entitled “Endowment Performance: What You Should Have Done 10 Years Ago.”

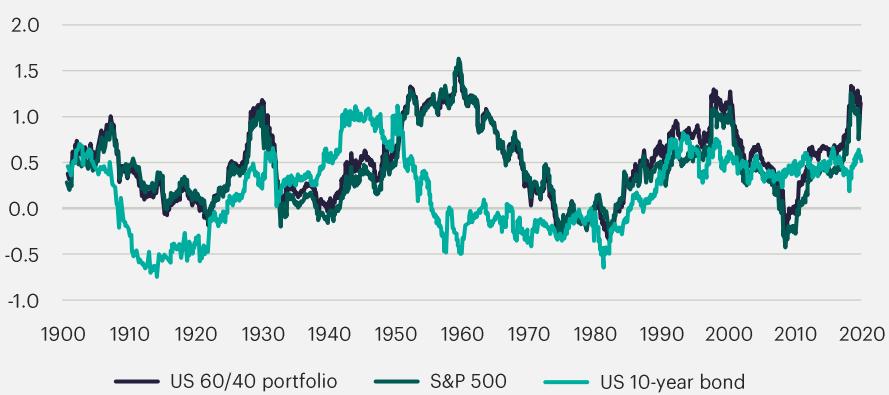
The title is clever because it’s true. Many investment committees spend a disproportionate amount of time focused on the last decade, which, in addition to being the easiest time period to remember, is also the time period in which those on the committee were making decisions together. So the lessons of the last 10 years become conventional wisdom, only to be unlearned as—surprise!—macro economic conditions shift to reward an entirely different set of asset classes and asset allocation decisions.

We believe the foundations of good long-term investing must be built on a long-term study that incorporates many different market environments and seeks to make decisions that would have stood the test of time. Our focus on small-cap value equities is informed by this view: across many markets across long periods of time, equities have been the best performing asset class, and small-cap value stocks have outperformed broader equity indices.

But small-cap value stocks are a niche asset class, representing about 5% of equity market capitalization. So we have spent a significant amount of time thinking more broadly about diversification and timing. What is the right mix of asset classes, and how should that mix vary with economic conditions?

The last decade of experience would suggest that this project is largely a waste of time, that a simple 100% US equity portfolio or a classic domestically oriented 60/40 portfolio represent the peak performance and peak Sharpe ratio available, that there’s no better way to improve long-term returns than increasing your equity allocation, and that bonds provide sufficient diversification for those investors more focused on Sharpe ratios. But the last decade of experience was also the decade that delivered the best Sharpe ratio for investors holding a traditional 60/40 portfolio in 60 years.





Source: Goldman Sachs Balance Bear Repair, July 21, 2020.

Figure 2:

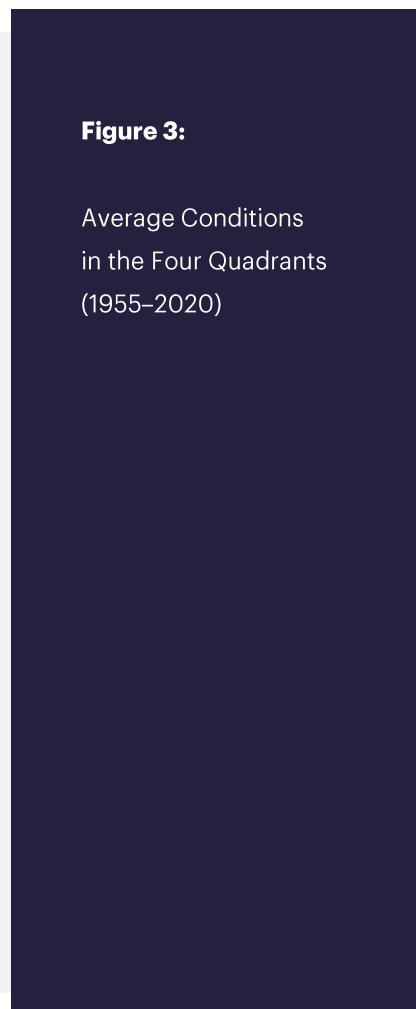
10-Year Rolling Sharpe
Ratio for the 60/40
Portfolio Since 1900



Stable growth and tame inflation rewarded both equities and bonds and rendered less valuable any diversifying assets that sought to profit from more volatile or negative growth or higher inflation. Macroeconomic analysis—and even more simple concepts like international diversification or value investing—failed to benefit investors.

But growth has not always been so stable nor inflation so tame. And when those key economic drivers have behaved differently, the results for investors in different asset classes have been markedly different. Bridgewater founder Ray Dalio said that investors should worry primarily about two big economic variables: the rate of economic growth and the rate of inflation. “I knew which shifts in the economic environment caused asset classes to move around, and I knew that those relationships had remained essentially the same for hundreds of years. There were only two big forces to worry about: growth and inflation,” he said.

According to Dalio's framework, there are four macro-economic conditions investors should be prepared to deal with: rising growth and falling inflation, rising growth and rising inflation, falling growth and rising inflation, and falling growth and falling inflation. This framework divides US market history into four quadrants based on whether the rate of inflation is increasing or decreasing and whether the rate of GDP growth is increasing or decreasing, as shown in the chart below. A number of firms have done work on this framework, and we have relied particularly on the thinking of Bridgewater and Hedgeye.



Source: Bridgewater, J.P. Morgan, Hedgeye Research, Verdad.

We can look back over time and see how these different economic conditions have predominated at different times in recent US history. These periods are defined in hindsight, according to the most recent revisions, and are thus useful for understanding the past but would not have been useful as trading signals at the time. The economy was in each quadrant roughly 25% of the time over the full period. In the chart below, we show how economic conditions varied relative to that level in each decade.

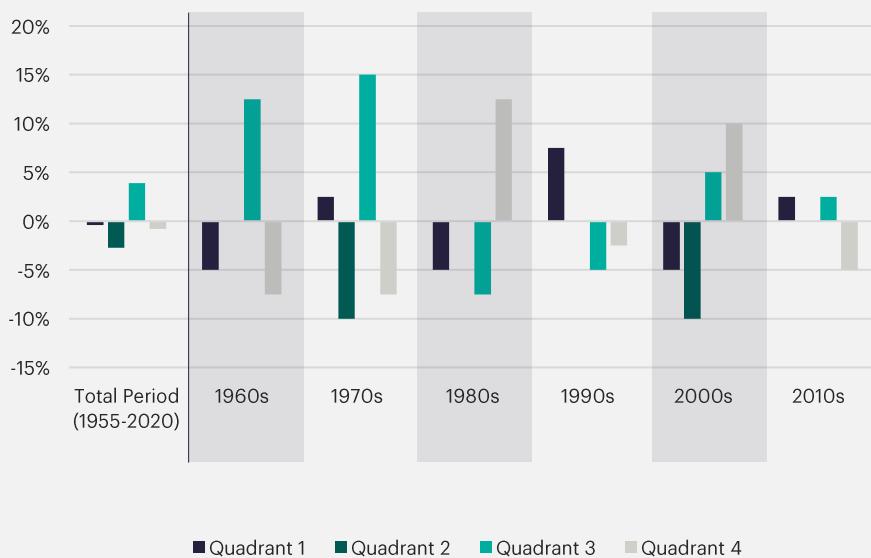


Figure 4:

Quadrant Distribution
Deviation From 25% by
Decade

Source: Verdad.

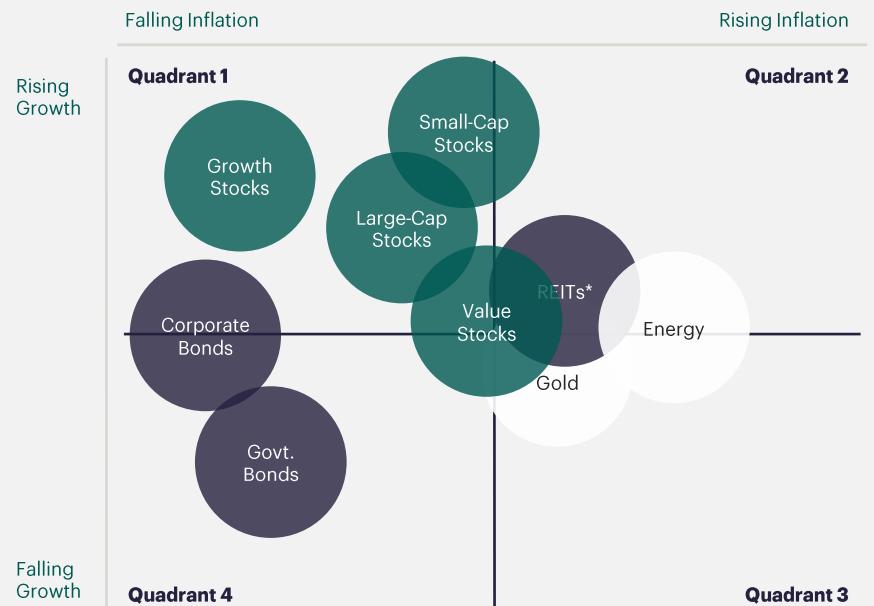
During the 1960s and 1970s, the US economy saw choppy real GDP growth and significant inflation, with quadrant 3 (falling growth, rising inflation) being the most prevalent condition. The 1980s and the 2000s both experienced two significant recessions, so quadrant 4 (falling growth, falling inflation) was disproportionately prevalent. The 1990s and 2010s had relatively balanced distributions of quadrants, with strong growth and limited inflation.

These different economic conditions rewarded different styles of investing, with significant differences in which asset classes performed well or poorly. The chart below provides a visualization of which asset classes performed best in each of the macro-economic conditions. Assets that cross quadrant lines performed well across the conditions.



Figure 5:

Asset Performance
by Quadrant



* Shown for quadrants in which REIT performance is in top 50% of all asset classes (not top performer)

Source: Bloomberg, FRED, Ken French Data Library, GFD, Verdad.

*Dow Jones REIT Total Return Index since 1990 used as proxy for REITs.



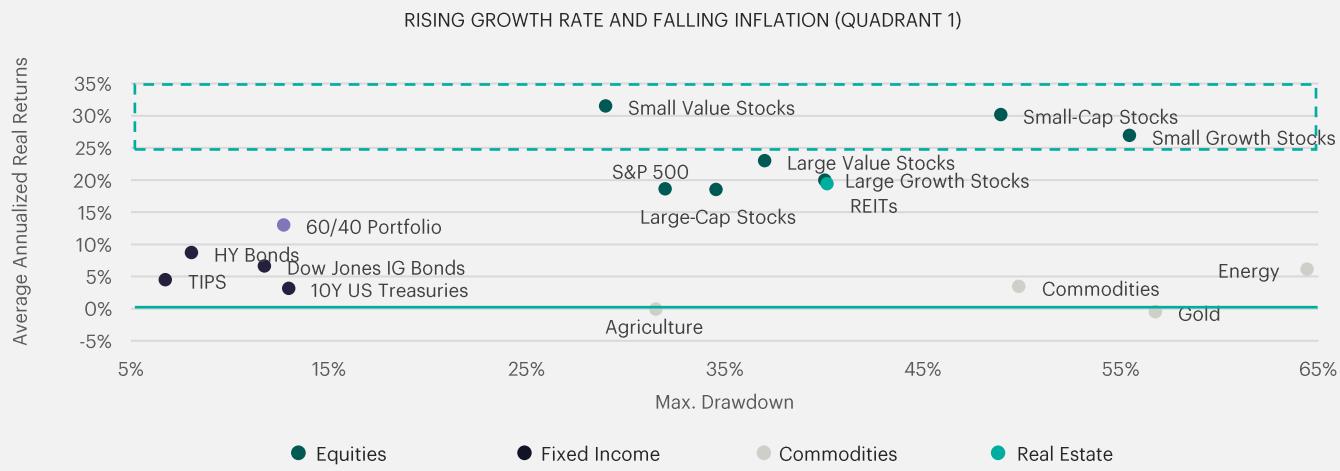
Recent history has us most familiar with what works in quadrant 1 (rising growth, falling inflation), with strong returns from both equities and corporate fixed income. But investors might be less familiar with what works in other economic environments. In periods of falling growth and falling inflation (quadrant 4), which we can think of as recessionary environments, US treasuries have historically provided the best defense against the combination of falling growth and deflation. And in periods of rising inflation, gold and oil are top performers. In Exhibit 1 on the following page, we show returns of each asset class in each of these economic environments.

Classic 60/40 portfolios, and more equity-biased asset allocation models like the Endowment Model, tend to be significantly under-allocated both to US treasuries and to commodities. And investment strategies, like risk parity, that incorporate this four-quadrant framework therefore tend to place a larger emphasis on treasuries and commodities and their strategic use in reducing risk from unexpected inflation or economic recessions.

EXHIBIT 1: AVERAGE ANNUALIZED REAL RETURNS AND DRAWDOWNS BY ASSET (1955–2019)

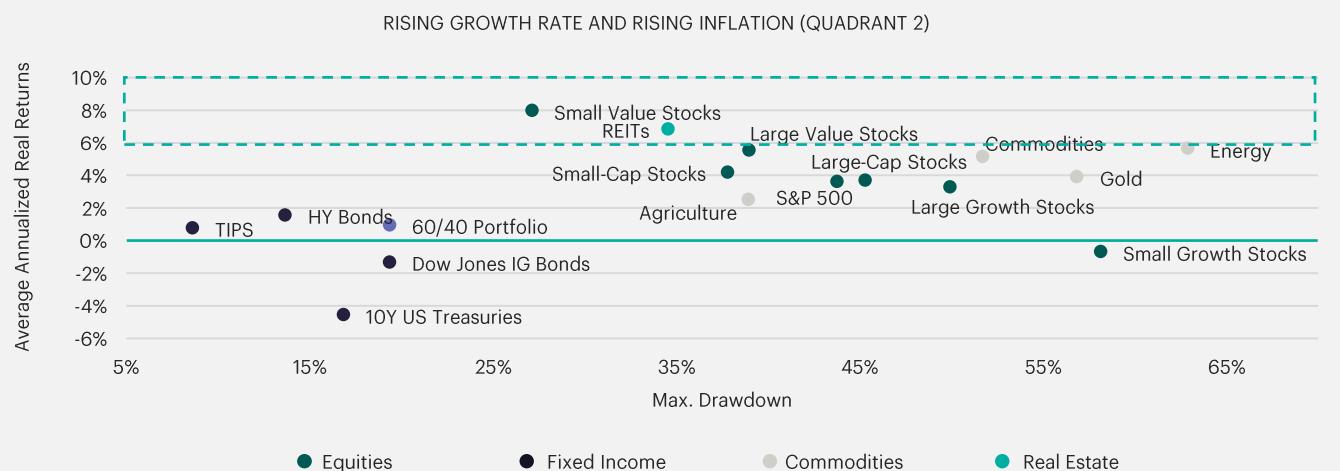
Quadrant 1, Rising Growth and Falling Inflation

Equities and corporate fixed-income securities are top performers when growth is unhindered by inflation.



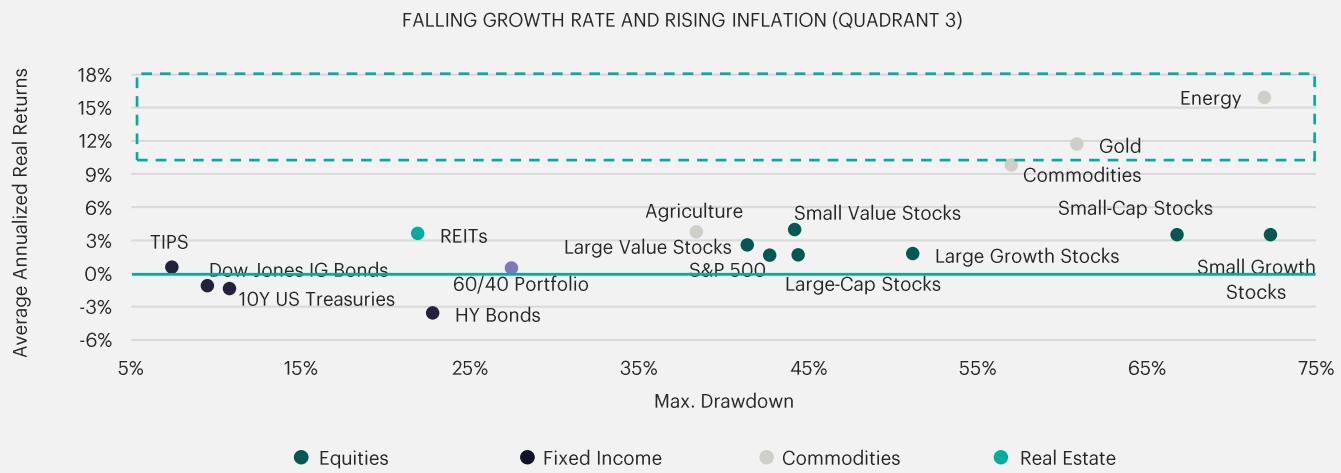
Quadrant 2, Rising Growth and Rising Inflation

Driven by inflation, commodities join equities as top performers, while fixed income is negatively affected.



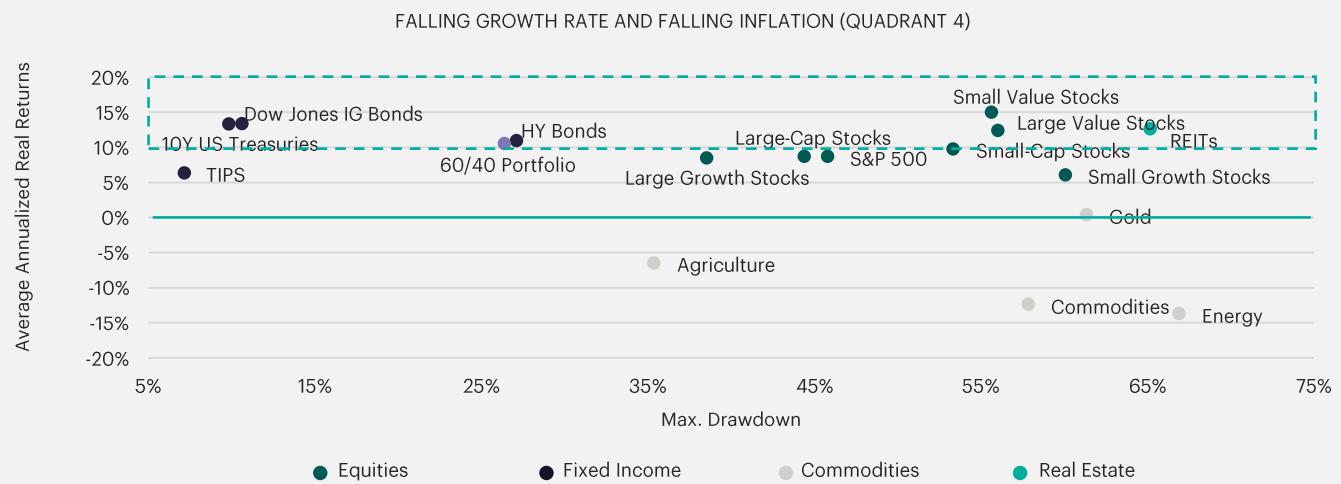
Quadrant 3, Falling Growth and Rising Inflation

Commodities and gold perform best in stagflationary environments.



Quadrant 4, Falling Growth and Falling Inflation

Value stocks, though volatile, and fixed-income securities, both corporate and government issued, are top performers.



Source: Bloomberg, FRED, Ken French Data Library, GFD, Verdad.

Note: Dow Jones REIT Total Return Index starting in 1990 used as proxy for REITs; Barclays TIPS Total Return Index starting in 1997 used as proxy for TIPS.



CHAPTER 2

Methodology

The four quadrants highlight two simple yet important facts: Our economy is dynamic, with no two decades remotely the same, and asset performance is driven by growth and inflation. We have seen that investors should overweight equities in growth environments and commodities in inflationary environments. In times when both growth and inflation are falling, high-quality fixed income has tended to provide the most reliable returns.

Generating alpha based on these insights requires two considerations. On the one hand, anticipating the direction of growth and inflation to allocate the portfolio to top-performing assets in each environment. On the other hand, avoiding major drawdowns to ensure capital is available to take advantage of the economic dislocations that provide the greatest profit opportunities.

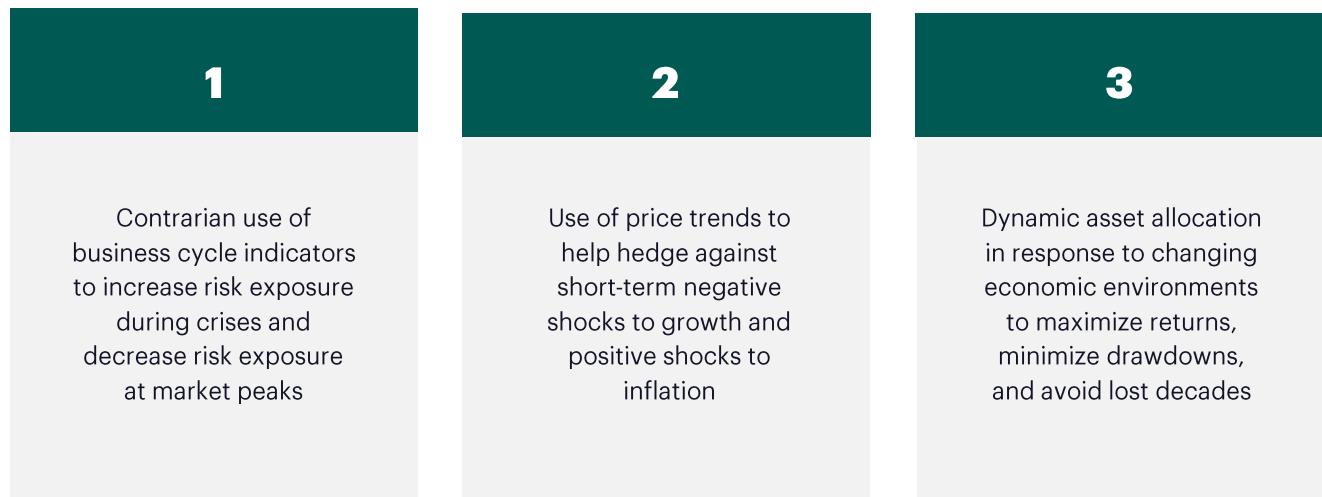


Harvard's Andrei Shleifer, along with some of the top researchers in behavioral finance, has developed [a new model of investor psychology](#) called diagnostic expectations. Their theory, grounded in substantial empirical work in markets, shows that investors extrapolate from the recent past in forming their return forecasts for the future and that they act on these backward-looking forecasts. This leads to short-term trends, with good news leading to expectations of more good news, leading to rising prices, or bad news leading to expectations of more bad news, leading to falling prices.

But this mental model is not only irrational, it is negatively correlated with rational models (a rational model, for example, would predict higher returns when prices are low and lower returns when prices are high). The big revelation of Shleifer's paper is that these correlations represent a systematic and recurring error: "In particular, they are consistent with the presence of excessive optimism in good times and excessive pessimism in bad times: future realized earnings growth systematically falls short of expectations when past earnings are high and exceeds expectations when past earnings are low." This explains why markets trend in the short term, yet they tend to mean revert in the long term.

We believe this theory provides an informative model for making decisions about asset allocation. During market panics—as we showed in [Crisis Investing](#)—investment returns are predictably higher. During crises, investors and lenders panic, selling assets at fire-sale prices due to an irrational extrapolation of recent bad economic news. We argue that investors should act countercyclically, loading up on riskier assets, especially small value stocks and higher-yielding bonds, during these windows. Conversely, when economic times are good, investors tend to neglect future risks and respond to reduced market risk premia by "reaching for yield" or piling into asset bubbles. During these times, we believe investors should take proactive steps to guard their portfolios from reversals in economic growth and from sudden spikes in inflation, incorporating recent price trends to make fast updates to their portfolios as new risks emerge. In short, we believe investors should follow Warren Buffett's admonition, "Be fearful when others are greedy and greedy when others are fearful."

In this section, we marry this behavioral finance model with the four-quadrant framework to propose a novel approach to asset allocation. This approach has three defining features:



Countercyclical Investing Through Business Cycle Indicators

In a famous 1992 paper entitled "[Common Risk Factors in the Returns on Stocks and Bonds](#)," Eugene Fama and Ken French expand their factor analysis of the US equity market to the bond market. They find that two factors - the slope of the yield curve and the spread between the yield on corporate bonds and government bonds - explain returns in both the bond and the stock markets. We rely on these two well-established business cycle indicators to drive our asset allocation decisions.

High-Yield Spread

We use high-yield credit spreads as our primary business cycle indicator, a metric on which we based our [Crisis Investing](#) research and which we have written substantially about in prior years. The [spread](#) measures the difference between the borrowing rate for below-investment-grade bonds and the corresponding US treasury spot rate. It is a contemporaneous indicator of investor sentiment about economic growth. We use this as our primary indicator because, as we have seen in Chapter 1, asset performance in growth environments in quadrant 1 (rising growth, falling inflation) and quadrant 2 (rising growth, rising inflation) tends to be less sensitive to inflation.

When the high-yield spread is wide, likely in a recession, it reflects the perceived risk of investing in below-investment-grade issuers, typically small and cyclical businesses, in bad times, hence the heightened risk premia. Paradoxically, this is an ideal time to load up on risky assets, specifically small value stocks, and to generally overweight equities, as these periods are often followed by recoveries and therefore high growth.

Below we show three-month forward change in real GDP growth and the three-month forward returns for small value stocks and the S&P 500 when high-yield spreads are above versus below the trailing 10-year median, which we use as a proxy for a business cycle length. Wider spreads are conducive to significant excess returns for small value stocks, while to a lesser extent benefitting the broader equities market. This is in line with our findings in quadrant 1 (rising growth, falling inflation) and quadrant 2 (rising growth, rising inflation).



High-Yield Spread	Growth Rate Change	Small Value	S&P 500
Wide (Above 10Y Trailing Median)	0.16%	6.3%	3.2%
Tight (Below 10Y Trailing Median)	-0.09%	1.9%	2.5%

Source: Verdad.

Slope of the Yield Curve

When the high-yield spread is tight, suggesting slowing or negative growth, we incorporate an additional business cycle indicator: the slope of the yield curve. We use the yield curve to estimate the direction of inflation and differentiate between two falling growth environments: when inflation is rising in quadrant 3 (falling growth, rising inflation) and investing in real assets has delivered the best historical returns, and when inflation is falling in quadrant 4 (falling growth, falling inflation) and fixed income has worked better. The slope of the yield curve measures the spread between long-term and short-term government bonds (e.g., 10-year versus one-year) and has historically been a powerful [indicator of business cycle stages](#): steep at business cycle troughs and flat at business cycle peaks.

Figure 7 on the following page shows the three-month forward average change in inflation and the three-month forward average returns for gold and Dow Jones investment-grade bonds in periods when high-yield spreads are tight. We have divided this economic condition into two subsets: when the slope of the yield curve is above versus below the trailing 10-year median, which we use as a proxy for a business cycle length.



When the high-yield spread is tight, flat slopes seem to be anticipating rising inflation and are conducive to excess returns in commodities and gold, while steep slopes seem to predict falling inflation and are conducive to excess returns in fixed income. This is in line with our findings in quadrant 3 (falling growth, rising inflation) and quadrant 4 (falling growth, falling inflation).

Slope of the Yield Curve	Inflation Rate Change	Gold	Investment-Grade Bonds
Flat (Below 10Y Trailing Median)	0.14%	2.4%	1.2%
Steep (Above 10Y Trailing Median)	-0.01%	0.7%	2.3%

Source: Verdad.

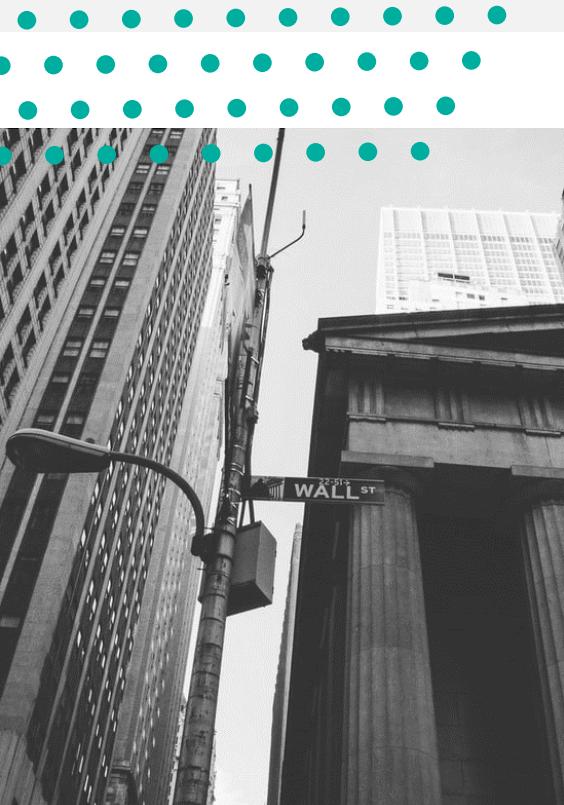


Figure 7:

3-Month Forward Inflation Change and Asset Returns by Slope of Yield Curve (1970–2020)

Risk Reduction Through Trend Signals

As Shleifer noted, markets tend to trend in the short term as investors extrapolate from recent news. This leads to investor overreaction to both good and bad news and contributes to the excess volatility of markets. We believe investors should incorporate these short-term price trends into their asset allocation decisions to mitigate downside risk and enhance returns.

Volatility tends to cluster and using simple trend-following rules can help investors reduce their portfolio volatility, giving them more capital to make countercyclical investments. Trend following can help hedge against both sudden negative shocks to growth and sudden positive shocks to inflation. This strategy, also known as time series momentum, works across many different asset classes and geographies and is [one of the most robust](#) factors in the academic finance literature.

In this paper we use a simple definition of trend: whether current market prices are above or below the 200-day moving average. Specifically, when the price level of the risky asset (e.g., S&P 500 or gold) falls below its 200-day simple moving average for five consecutive days, we reallocate the risky share of the portfolio to 10Y US treasuries.

Moving average rules are the most basic form of trend following, and we are aware of research suggesting ways to improve on simple moving average rules. However, we use them here precisely for their simplicity, to avoid data mining.

Trend-Following Equities

The recent price movements in the S&P 500 have historically predicted short-term returns in the S&P 500 as well as the short-term trajectory of real GDP growth. Below, we show the average three-month forward S&P 500 returns and US real GDP growth rate from the moment the S&P 500 is above versus below its 200-day moving average.

Figure 8:
 3-Month Forward
 Returns and Real GDP
 Growth by S&P 500
 Value vs. 200-Day
 Moving Average
 (1970–2020)

Index Level vs. 200-Day Moving Average	S&P 500	Real GDP Growth	10Y Treasuries
Above	3.1%	0.8%	1.6%
Below	2.0%	0.3%	2.4%

Source: Verdad.

This simple 200-day moving average rule can help investors shift between owning equities, the best performing asset class in growth environments, and owning government bonds, the best performing “no growth” asset. This rule is effective because the stock market’s price movements have real informational content about the trajectory of future growth, as academic research has shown.

These results are still robust when we vary the time period of the moving average. We found similar results using a 60-, 120-, 200-, and 250-day moving average. Although the 120-day moving average rule had the best performance, we relied on the 200-day moving average because it is the most commonly used in the literature and by practitioners.

Strategy	Total Period Return	Max. Drawdown
Not Trend-Followed	10.7%	-55%
60-Day Moving Average	12.0%	-20%
120-Day Moving Average	12.5%	-33%
200-Day Moving Average	12.2%	-33%
250-Day Moving Average	12.1%	-33%

Source: Verdad.

Figure 9:

S&P 500 Performance by Strategy (1970-2020)

Below we show the annualized returns and maximum drawdowns for the S&P 500 total return index with and without trend following. We break down the results by decade.

Period	Total Period Return			Max. Drawdown		
	Actual	Trend-Followed	Difference	Actual	Trend-Followed	Difference
Lifetime	10.7%	12.2%	1.5%	-55%	-33%	22%
1970s	5.8%	8.5%	2.7%	-45%	-20%	25%
1980s	17.5%	19.5%	2.0%	-33%	-33%	0%
1990s	18.2%	14.8%	-3.4%	-19%	-19%	0%
2000s	-0.9%	9.6%	10.5%	-55%	-18%	37%
2010s	13.9%	9.4%	-4.5%	-34%	-22%	12%

Source: Verdad.

Note: Drawdowns computed on a daily basis; 2020 performance included in the “2010s” category.

Figure 10:

S&P 500 Performance by Strategy and Decade (1970–2020)

We found that trend following is most effective at significantly reducing drawdowns. To quote Wes Gray of Alpha Architect, trend following is [effective](#) in protecting portfolios from “the most extreme loss situations.” Trend following has helped equity investors avoid drawdowns in all major recessions in recent history, as shown below.

Figure 11:

Maximum Drawdowns
by Strategy for S&P
500 Total Return Index

Crisis	Actual	Trend-Followed	Difference
COVID-19	-34%	-22%	12%
2008 Financial Crisis	-55%	-18%	37%
Dot-Com Bubble	-47%	-17%	31%
1990s Recession	-19%	-13%	6%
Black Monday	-33%	-33%	0%
1970s Recession	-45%	-20%	25%

Source: Verdad.

Note: Drawdowns computed on a daily basis.

Trend-Following Gold

Similarly, the recent changes in the price of gold can be a powerful predictor of the short-term performance both of gold itself and of [US inflation](#). Below we show the average three-month forward gold returns and inflation rate from the moment the gold price is above versus below its 200-day moving average.

Figure 12:

3-Month Forward
Returns and Inflation
Rate by Gold Price
Level vs. 200-Day
Moving Average
(1970–2020)

Price Level vs. 200-Day Moving Average	Gold	Inflation	10Y Treasuries
Above	4.2%	1.1%	1.2%
Below	0.0%	0.8%	2.6%

Source: Verdad.

The current price of gold relative to the 200-day moving average can help investors shift between owning gold, a reliable performer in inflationary environments in quadrant 2 (rising growth, rising inflation) and quadrant 3 (falling growth, rising inflation), and owning 10-year US treasuries, a reliable performer in deflationary environments in quadrant 1 (rising growth, falling inflation) and quadrant 4 (falling growth, falling inflation). As with the S&P 500, these results are robust to different moving average time windows.

Below we show the annualized returns and maximum drawdowns for gold prices with and without trend following. We break down the results by decade. Trend following reduces max drawdowns by about half.

Period	Total Period Return			Max. Drawdown		
	Actual	Trend-Followed	Difference	Actual	Trend-Followed	Difference
Lifetime	8.1%	12.7%	4.6%	-70%	-43%	27%
1970s	30.7%	35.9%	5.2%	-47%	-26%	21%
1980s	-2.5%	10.7%	13.2%	-67%	-43%	23%
1990s	-3.1%	1.0%	4.2%	-70%	-27%	43%
2000s	14.1%	12.5%	-1.6%	-70%	-25%	45%
2010s	5.1%	6.9%	1.8%	-45%	-26%	19%

Source: Verdad.

Note: Drawdowns computed on a daily basis; 2020 performance included in the "2010s" category.

Figure 13:

Gold Performance by Strategy and Decade (1970–2020)

By significantly reducing drawdowns, trend following can enhance long-term portfolio-level returns in a cost effective way.

Our results confirm one of the most robust and well-studied phenomena of global financial markets: the power of trends. Along with Shleifer, other leading researchers such as Jeremy Siegel ([Stocks for the Long Run](#)) and Tobias Moskowitz, Yao Hua Ooi, and Lasse Pedersen ([Time Series Momentum](#), 2012), point out investor overreaction to selloffs and underreaction in uptrends as likely reasons for short-term trend persistence. Moreover, Moskowitz et al. confirmed this persistence goes beyond global equities markets: it holds across commodities, bonds, and currencies too. AQR's Brian Hurst, working with Ooi and Pedersen, [looked at a century of evidence](#) across multiple asset classes and found similarly favorable results. "Trends are pervasive features of financial markets," they wrote.

Investors can use these trend signals to proactively harness the power of assets that respond positively and negatively to growth and inflation, avoiding major losses and reducing overall portfolio volatility. Incorporating these short-term insights over the long term helps significantly moderate drawdowns, preserving capital to make countercyclical investments in times of crisis.



Portfolio Allocation in Response to Changing Economic Environments

The four-quadrant framework is useful in understanding historic economic shifts and the drivers of asset performance, but it can be unnecessarily complex to implement in practice. Specifically, equities, the top-performing assets in growth quadrant 1 (rising growth, falling inflation) and quadrant 2 (rising growth, rising inflation), bear little sensitivity to inflation, as shown in Exhibit 1. So we simplified the framework to have only one growth portfolio for both rising growth environments, quadrants 1 and 2. We then constructed an inflation portfolio that is well positioned to profit from inflationary pressures and a slowdown portfolio designed to preserve capital when the economy is slowing.



Figure 14:

Asset Allocation by Economic Environment

	Falling Inflation	Rising Inflation	
Rising Growth	Quadrant 1 Rising Growth and Falling Inflation	Quadrant 2 Rising Growth and Rising Inflation	Growth Environment
Falling Growth	Quadrant 4 Falling Growth and Falling Inflation	Quadrant 3 Falling Growth and Rising Inflation	
	Slowdown Environment	Inflation Environment	

Source: Verdad, Bridgewater, Hedgeye.

Our proposed portfolios are aimed at generating attractive returns in their namesake economic environments, as predicted by business cycle indicators.

Growth Portfolio

S&P 500 (Trend Followed) – 50%; Small Value Stocks – 40%; Gold (Trend Followed) – 10%

Building on our Crisis Investing work, when high-yield spreads are above their 10-year trailing median and thus a crisis environment prevails, we overweight equities and especially small-cap value equities. The growth portfolio is designed to take advantage of times when markets are pricing in pessimism.

Inflation Portfolio

S&P 500 (Trend Followed) – 50%; Gold (Trend Followed) – 40%; Small Value Stocks – 10%

When the high-yield spreads are narrow and thus the economy is stable, we rely on the slope of the yield curve as an inflationary indicator. We deploy the inflation portfolio when the slope of the yield curve is below its 10-year trailing median to profit from inflationary pressures.

Slowdown Portfolio

Dow Jones IG Bonds – 50%; 10Y US Treasuries – 40%; Small Value Stocks – 10%

We deploy the slowdown portfolio when the high-yield spreads are narrow and the slope of the yield curve is above its 10-year trailing median (i.e., both growth and inflation are expected to fall) to preserve capital during economic slowdowns.

This countercyclical asset allocation strategy combines the ability to estimate future economic environments through business cycle indicators, dynamic portfolio allocation in response to changing economic environments, and trend signals that provide a downside protection mechanism during economic shocks.

Figure 15:

US Countercyclical Investing Framework



Source: Verdad.

*Reallocated to 10-year US treasuries in periods when price falls below 200-day moving average for 5 consecutive days.

We employ trend-following rules to the S&P 500 and to gold in the growth and inflation portfolios. Specifically, when the price level of the S&P 500 falls below its 200-day simple moving average for five consecutive days, we sell the S&P 500 and buy 10-year US treasuries. Conversely, we sell the 10-year US treasuries and buy the S&P 500 when the price level of the S&P 500 rises above its 200-day simple moving average for five consecutive days. Trend-following is applied to gold in the same way. When the price level of gold falls below its 200-day simple moving average for five consecutive days, we sell gold and buy 10-year US treasuries, and vice versa.



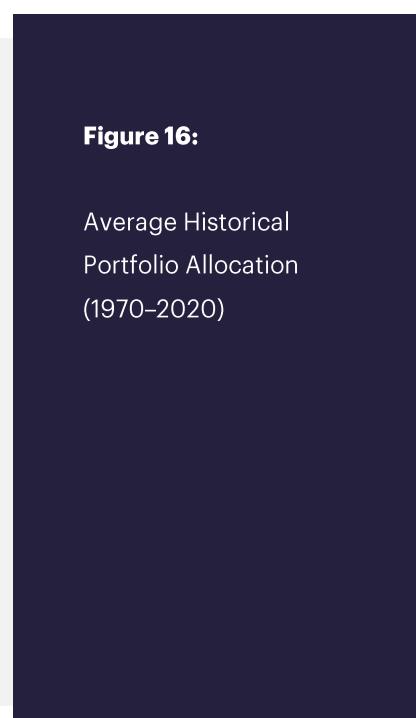
As a result of applying trend-following rules to the S&P 500 and gold, we held on average, a portfolio that looked like the below in Figure 16.



Asset	Avg. Portfolio Allocation with Trend-Following*
S&P 500	30%
Small Value	25%
Dow Jones IG Bonds	10%
Gold	10%
10Y Treasuries	25%

Source: Verdad.

*Weights impacted by the 200-day simple moving average trend-following rule applied to the S&P 500 and gold; adjusted weights are based on historical reallocation and may differ in the future.





CHAPTER 3

Results

Reading this paper, investors might ask, per the telling title of Richard Thaler and Peter Williamson's [influential piece](#), "Why Not 100% Equities?" In lock-step with Warren Buffett and David Swensen, they argue that the best way to increase returns is to expand allocation to equities, with an all-equity portfolio at the extreme. While it is true that a simple buy-and-hold equity strategy could have potentially provided attractive returns to a patient investor over the past half century, that performance came with two significant drawbacks: painful drawdowns and significant stretches of time when the all-equity strategy produced low single-digit or zero returns.

We sought to design a strategy that would overcome these drawbacks. We believe a more strategic asset allocation model could pass three key tests:


1

Achieve drawdowns comparable to a 60/40 portfolio

2

Exhibit consistency of returns across macro-economic conditions, with no lost decades

3

Outperform a 100% equity approach in terms of total return



Below we show the results of back-testing our strategy over a 50-year span since 1970. We also tested our asset allocation strategy against these stated goals. Following these test results, in the section entitled "Total Performance Contribution," we give a detailed explanation of which aspects of the strategy we attribute to its performance in these tests. First, the results:

Test 1: Reducing Drawdowns

The first test is to produce a portfolio with drawdowns comparable to a 60/40 portfolio and significantly lower than an all-equity portfolio such as the S&P 500.

We believe this strategy would have been successful in avoiding the major drawdowns of the all-equity approach and producing drawdowns that are better or comparable to a 60/40 portfolio. The max drawdown on the portfolio over the full period was 15%, during the '70s recession.

	Countercyclical Investing	Countercyclical Investing			
		S&P 500	60/40	vs. S&P 500	vs. 60/40
Max. Drawdown	-15%	-46%	-27%	31%	13%
2008 Financial Crisis	-13%	-46%	-26%	33%	14%
Dot-Com Bubble	-3%	-44%	-19%	41%	17%
70s Recession	-15%	-43%	-27%	28%	13%
Black Monday (10/1987)	0%	-23%	-11%	23%	11%
COVID-19	-6%	-20%	-10%	14%	4%

Source: Verdad.

Note: Drawdowns computed on a quarterly basis and do not account for fluctuations within the quarter.

Figure 17:

Historical Drawdown Comparison
(1970–2020)

Test 2: Avoiding Lost Decades and Improving Consistency

The S&P 500 and 60/40 portfolios both resulted in long stretches of zero returns historically, a tough pill to swallow for investors. How did our strategy perform during the long bad stretches for stocks and bonds? Below we show returns by decade for our strategy, the all-equity portfolio, and the 60/40 portfolio. These returns are nominal, so we also show the inflation rate over the same period (as measured by the consumer price index, or CPI). Green boxes highlight periods when the S&P 500 and the 60/40 portfolio experienced “lost decades.”

Figure 18:

Comparative Total
Period Returns
(1970–2020)

	Countercyclical Investing	60/40	S&P 500	Inflation (CPI)
1970-2020 (Lifetime)	15.8%	10.0%	10.7%	3.9%
1970s	16.4%	6.5%	5.8%	7.4%
1980s	24.7%	16.2%	17.5%	5.1%
1990s	12.6%	14.3%	18.2%	2.9%
2000s	12.5%	2.7%	-0.9%	2.6%
2010s	13.3%	10.8%	13.9%	1.7%

Source: Verdad.

Note: 2020 performance is accounted for in the “2010s” category.

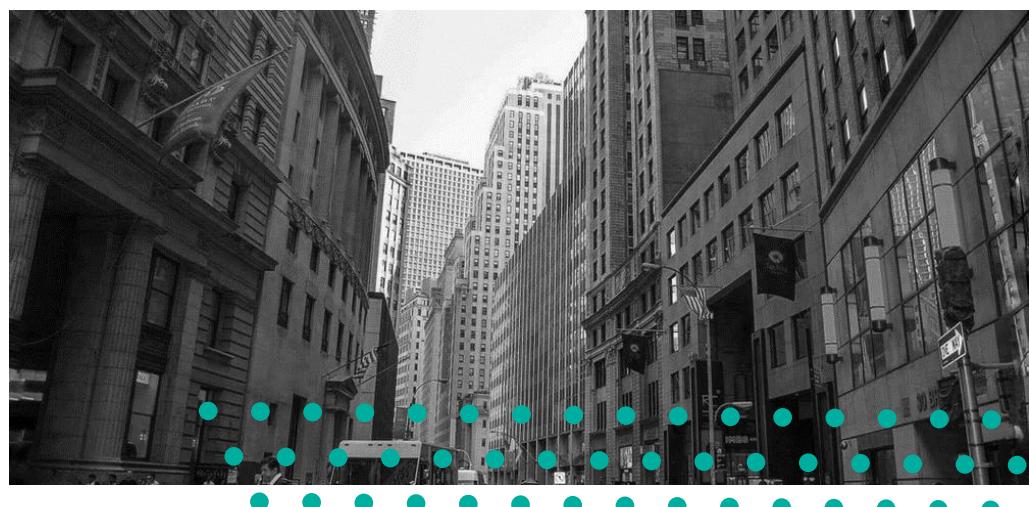
In the two lost decades, the 1970s, when stagflation reared its ugly head, and the 2000s, when the market experienced two major recessions (in ‘01 and ‘08), this strategy produced double-digit nominal returns. This strategy produced consistent returns, decade by decade, based on our analysis.

The only time this strategy produced returns below the S&P 500 was during the great growth market of the 1990s, while performing at par with the S&P 500 in the 2010s. And even when it underperformed in the 1990s, our back-test showed that the returns were nearly 13%—not bad for an approach that is purposefully designed for consistency and drawdown reduction.

Test 3: Beating an All-Equity Portfolio

To counter Buffett’s argument that the best way to increase returns is to expand allocation to equities, with an all-equity portfolio at the extreme, we sought to produce a strategy that beats that benchmark.

Figure 19 on the next page shows the comparative performance over the entire testing period for our strategy, an all-equity portfolio, and a 60/40 portfolio.



	Countercyclical Investing	60/40 Portfolio	S&P 500
Total Period Return	15.8%	10.0%	10.7%
Sharpe Ratio	0.82	0.41	0.36
Max. Drawdown	-15%	-27%	-46%
\$100 invested in 1970	\$176,000	\$13,000	\$18,000

Source: Verdad.

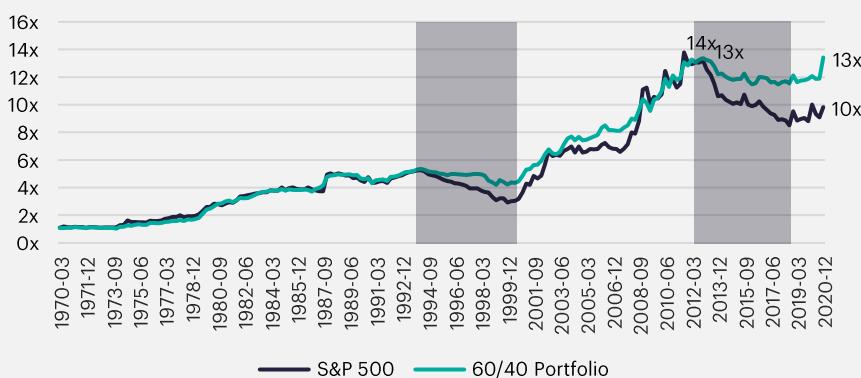
Note: Countercyclical Investing portfolio rebalanced quarterly, transaction costs not included, dollars rounded to nearest thousand.

Figure 19:

Comparative Performance (1970–2020)

We believe implementing our strategy since 1970 would have outperformed equities by about 500bps per year, all with a superior risk profile: a maximum drawdown of 15% and a Sharpe ratio of 0.8. We observed that the strategy's risk metrics, in fact, were better than those of the 60/40 portfolio, despite this strong outperformance of the equity market.

From our perspective, our strategy would have significantly outperformed an all-equity or 60/40 portfolio in three of the past five decades, the bull markets in the 1990s and 2010s being the exceptions. In fact, in the past growth decade, our back-test shows that our strategy would have performed in line with a 60/40 strategy. We can see the strategy's performance relative to benchmarks over time by charting the value of our countercyclical investing strategy divided by the value of its benchmarks, an all-equity and a 60/40 approach.



Source: Verdad.

Figure 20:

Countercyclical Investing Portfolio Value Divided by Benchmark Portfolio Value (1970–2020)

We believe the value over time of an investment in our proposed strategy could have been significantly higher than the value of an investment in the S&P 500 or a 60/40 portfolio. That said, there were two stretches of time when the S&P 500 and 60/40 portfolio delivered more value: the years ahead of the Dot-Com bubble and the years following the 2008 Financial Crisis. Both of these periods were defined by very high returns for the S&P 500. This helps illustrate one aspect of this asset allocation model: during periods when the S&P 500 is returning more than 15% per year, we noticed that the strategy tends to underperform a 100% equity portfolio. Conversely, when the S&P 500 is returning less than 15% per year, the strategy tends to outperform. This is to say that the benefits of this approach are truly realized not in good times, when the market rewards all investor behavior, but rather in bad times, when those who are unprepared stand to suffer greatly and those who are prepared stand to reap large rewards. In the chart below we show annualized five-year rolling real returns for the S&P 500 on the x-axis and our strategy's annualized five-year rolling excess returns versus the S&P 500 on the y-axis.

Figure 21:

5-Year Rolling Strategy
Excess Returns over
S&P 500 vs. S&P 500
Real Returns



Source: Verdad.

This makes sense for a strategy that has about an 88% upside capture ratio versus the S&P 500 but has only a 21% downside capture, as shown in the graph below. The upside and downside capture ratios indicate the degree to which our strategy outperforms a broad market benchmark during periods of market strength and weakness. We calculate the upside capture ratio by taking the strategy's returns during quarters when the benchmark had a positive return and dividing those returns by the benchmark returns during those periods. Conversely, we calculate the downside ratio by taking the strategy's returns during quarters when the benchmark had a negative return and dividing the strategy's returns by the benchmark returns during those periods.

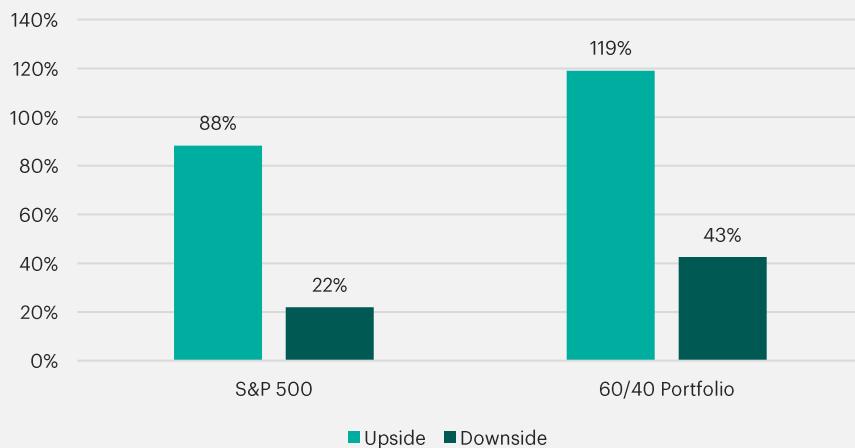


Figure 22:

Countercyclical
Investing Strategy
Capture of Benchmark
Upside and Downside
(1970–2020)

This very limited downside capture is a key distinguishing attribute of our strategy. Over longer periods, we believe the countercyclical investing strategy wins by not losing and retaining gains despite market turbulence. The chart below shows that the strategy outperformed over 85% of 10-year periods, 72% of five-year periods, 67% of three-year periods, and 55% of one-year periods, based on our analysis. Conversely, the strategy is most likely to underperform during prolonged bull markets with low volatility. When the strategy underperformed, it was almost all during periods of >15% returns on the S&P 500.

Rolling	Outperforming the S&P 500				Underperforming the S&P 500			
	% of Time	Counter-cyclical Investing	S&P500	Difference	% of Time	Counter-cyclical Investing	S&P500	Difference
1-year	55%	18.2%	4.8%	13.4%	45%	13.9%	21.0%	-7.1%
3-year	65%	18.3%	8.2%	10.0%	35%	12.2%	18.0%	-5.8%
5-year	72%	18.3%	9.8%	8.5%	28%	12.2%	17.2%	-5.0%
10-year	85%	18.2%	11.2%	7.0%	15%	13.3%	16.3%	-3.1%

Source: Verdad.

Figure 23:

Comparative Analysis
of Average Annualized
Rolling-Period Returns
(1970–2020)

Total Performance Contribution

Of the countercyclical investing strategy's three key tactics (i.e., countercyclical investing using business cycle indicators, dynamic asset allocation in response to changing economic environments, and trend-following to protect against short-term economic shocks), we wanted to understand better which tactic contributes most to the strategy's success, so we looked at the data from three different angles.

First, we checked if our defined portfolios perform as expected in their namesake economic states as predicted by the cycle indicators. Below we show portfolio and asset-level performance by economic environment.



Figure 24:

Portfolio and Asset Performance by Economic Environment (1970–2020)

Signal	Metric	Portfolio			Asset				
		Inflation	Growth	Slowdown	S&P 500 TF	Small Value	Gold TF	DJIG Bonds	10Y Treasuries
Inflation	Average Return	15.3%	13.6%	5.7%	16.4%	9.7%	15.3%	4.7%	5.9%
	Std. Deviation	10.7%	13.6%	7.0%	11.6%	20.5%	17.5%	6.7%	8.5%
	Sharpe Ratio	0.89	0.58	-0.02	0.91	0.19	0.55	-0.17	0.01
	Max. Drawdown	-11%	-23%	-17%	-14%	-47%	-24%	-19%	-16%
Growth	Average return	16.6%	19.5%	11.4%	15.1%	26.0%	16.2%	11.7%	7.6%
	Std. Deviation	11.8%	15.0%	8.4%	14.0%	26.5%	21.1%	8.2%	9.7%
	Sharpe Ratio	0.86	0.87	0.59	0.62	0.74	0.46	0.64	0.11
	Max. Drawdown	-11%	-17%	-10%	-18%	-56%	-22%	-13%	-17%
Slowdown	Average return	4.9%	4.0%	9.0%	2.5%	5.0%	8.0%	9.5%	9.3%
	Std. Deviation	8.5%	12.4%	6.5%	12.2%	17.3%	10.2%	6.4%	8.6%
	Sharpe Ratio	-0.17	-0.19	0.40	-0.32	-0.08	0.16	0.49	0.35
	Max. Drawdown	-11%	-21%	-6%	-21%	-28%	-22%	-6%	-10%

Source: Verdad.

We confirmed that our defined portfolios could have been top performers during their namesake economic states as predicted by the cycle variables. Note that we apply trend-following to the S&P 500 and gold in inflation and growth portfolios to enhance returns and reduce drawdowns, as shown in Chapter 2, Figures 10 and 13.

Second, we looked at how portfolio switches versus a buy-and-hold approach in an all-equity or a 60/40 portfolio would have performed. Specifically, we looked at three-, six-, and 12-month forward returns from the moment a portfolio switch is triggered by a shift in the high-yield spread and/or the slope of the yield curve.

Returns	Countercyclical Investing	S&P 500	60/40 Portfolio
3-Month Forward	3.6%	2.0%	2.3%
6-Month Forward	7.5%	6.7%	5.8%
12-Month Forward	17.0%	14.9%	13.2%

Source: Verdad.

Figure 25:

Forward Returns When
a Portfolio Switch is
Triggered

We found that our ability to predict changing economic environments contributed to our excess returns over the all-equity and 60/40 portfolio strategies consistently over three-, six-, and 12-month periods. We looked to see if these signals degraded in predictive power over time as measured by changes in relative forward returns over time, but we found no general trend suggesting that the predictive power might be diminishing.

Finally, we completed a performance attribution analysis to isolate each elements' magnitude of contribution to the overall performance of the strategy compared to a 60/40 portfolio.

	Total Period Return		Sharpe Ratio		Max. Drawdown	
	Total	Contribution	Total	Contribution	Total	Contribution
60/40 Portfolio	10.0%		0.41		-27%	
Countercyclical Investing – Portfolio	11.9%	1.9%	0.62	0.22	-11%	16%
Countercyclical Investing – Cycle Variables	13.9%	2.0%	0.58	-0.04	-41%	-29%
Countercyclical Investing – Trend-following	15.8%	1.9%	0.82	0.23	-15%	26%
Countercyclical Investing vs. 60/40 Portfolio	5.7%		0.41		13%	

Source: Verdad.

Figure 26:

Performance
Contribution
Breakdown vs. 60/40
Portfolio

Overall, we found that the combined strategy could have contributed 570bps in excess of the 60/40 portfolio returns (and 500bps in excess of the all-equity portfolio returns, as shown in Figure 19). We found that each of our three pillars could have potentially contributed to the excess returns in a balanced way.

Implementation Considerations

Implementation considerations are outside of the scope of this paper. However, we wanted to flag several of the biggest challenges to the successful implementation of this strategy.

Turnover

Inflation and growth conditions can change frequently as the business cycle progresses. We think that rebalancing our portfolio quarterly to respond to these triggers could have resulted in 50% annual turnover. Additionally, we believe daily trend following could have increased annual turnover to 70%. Therefore, implementing this strategy without detracting from returns requires sophisticated trading and a deep understanding of costs and benefits for a wide variety of instruments.

Capacity

During certain times, this strategy deploys 40% of the portfolio into small value stocks. Given that small value is a capacity-constrained strategy, where perfect execution and optimal allocation often starts to degrade at as low as \$200M, we also wanted to consider substituting mid-cap and large-cap value for small-cap value stocks to solve for these capacity issues. Over the full period from 1970 to 2020, small-cap value returned 14.5% relative to 14.0% for mid-cap value and 12.2% for large-cap value, as our research shows, but in the context of our timing strategy, the performance drag associated with size was much smaller. We found that mid-cap value was an effective substitute that resulted in minimal reductions in total period return and significantly expanded capacity.



	Value Allocation		
	Small Value	Mid Value	Large Value
Total Period Return	15.8%	15.7%	14.3%
Sharpe Ratio	0.82	0.81	0.76
Max. Drawdown	-15%	-13%	-16%
\$100 invested in 1970	\$176,000	\$167,000	\$91,000

Source: Verdad.

Figure 27:

Small Value vs. Large
Value Allocation
Performance
(1970–2020)

Europe Replication

We tested the effectiveness of this strategy by replicating it in Europe. This replication test suffers from a significant drawback: a very high degree of correlation between the US and EU macro-economic signals and the asset class performance in the US and EU. Below we show just how correlated the variables have been.

	Indicator	EU	US	Correlation
Signals	High-Yield Spread	BAML EU High-Yield Spread	BAML US High-Yield Spread	0.86
	Slope: Long-Term Yields	7-10Y EU Govt. Bonds	10Y US Treasuries	0.97
	Slope: Short-Term Yields	1Y EU Govt. Bonds	1Y US Treasuries	0.75
Asset Classes (Total Return)	Benchmark equity index	MSCI Europe	S&P 500	0.94
	Small Value stocks	MSCI Small Value	FF Small Value	0.98
	Corporate IG bonds	Barclays Corporate bonds	Dow Jones IG Bonds	0.99
	Government bonds	Barclays 7-10Y Govt. Bonds	10Y US Treasuries	0.97
	Gold	London Spot	London Spot	1.00

Source: Verdad.

Figure 28:

Correlation between EU and US Indicators

That said, this exercise nevertheless provides another way of testing the strategy and building conviction that it might work in the future. Below we show the results of our strategy replicated in the European market and compare it to benchmarks. We were able to back-test data starting only in 1998 given European data scarcity.

Figure 29:

Comparative
Performance over Full
Period (1998–2020)

	EU Countercyclical Investing	60/40 Portfolio	MSCI Europe
Total Period Return			
From '98-'20: (lifetime)	8.5%	4.4%	3.5%
From '00-'10 (10 year)	9.4%	2.0%	-1.3%
From '10-'20 (10 year)	5.5%	5.3%	5.7%
Sharpe			
From '98-'20: (lifetime)	0.51	0.15	0.10
From '00-'10 (10 year)	0.53	-0.11	-0.16
From '10-'20 (10 year)	0.38	0.39	0.32
Max Drawdown			
From '98-'20: (lifetime)	-17%	-34%	-53%
From '00-'10 (10 year)	-17%	-34%	-53%
From '10-'20 (10 year)	-17%	-15%	-35%

Source: Verdad, Capital IQ, Bloomberg, ASAI DataStream, FRED.

Note: EUR returns, not FX-adjusted; 10-year US treasury yield assumed as risk-free rate when computing Sharpe ratio.

This replication in Europe has delivered on our strategy's three proposed criteria: it would have had lower drawdowns compared to a 60/40 portfolio, it would have delivered positive returns even in the 2000s when its benchmarks were flat, and it would have outperformed an all-equity strategy.



CHAPTER 4

Countercyclical Investing during COVID-19, a Case Study

Over the past two years, we have focused on crisis investing: how to make good decisions when other investors are panicking. But making good investments during a crisis requires having capital to deploy. The challenge is to design a strategy with lower drawdowns while achieving high returns through aggressive and savvy investments during times of crisis.

Strategies such as tail-risk hedging or trend following avoid drawdowns by perpetually avoiding risk while being pro-cyclical. That means their performance gets hammered during reversal rallies, and they are typically out of the market during some of the best buying opportunities. Our strategy is to avoid drawdowns and preserve capital specifically for such high-risk opportunities, thus avoiding the whipsaw problems facing other strategies.



Successful investors need to be countercyclical, pivoting to aggressive strategies during dislocations, rather than sticking with pessimism after the pessimism has been vindicated by events and throwing caution to the wind during long bull markets. Investor psychology rarely pivots the full 180 degrees necessary to win with dynamic allocation strategies, but we believe our proposed rules-based framework provides guideposts for how to correct for natural investor biases.

COVID-19 provides a perfect test case for this approach. The crisis happened fast, and while pessimism was the winning strategy in the first quarter of 2020, optimism prevailed in the latter three quarters. Would our proposed asset allocation strategy have helped investors avoid the pain of the market drawdowns at the beginning of 2020 and preserve capital for the subsequent upside? And would the strategy's followers have been able to predict the upside?

To answer these questions, we looked at the timeline and the signals our model would have responded to during this crisis. We built a simple working version of this strategy using popular ETFs. We relied on \$SPY for the S&P 500, \$VIOV for small value stocks, \$GLD for gold, \$LQD for investment-grade corporate bonds, and \$IEF as a proxy for 10-year US treasuries. We applied our trend-following rule to \$SPY and \$GLD, shifting allocation to \$IEF whenever ETF prices dipped below their 200-day moving average for five days in a row, and vice versa.

Below we show the evolution of \$100 invested across all the asset classes in our portfolios and the portfolio changes suggested by the model.

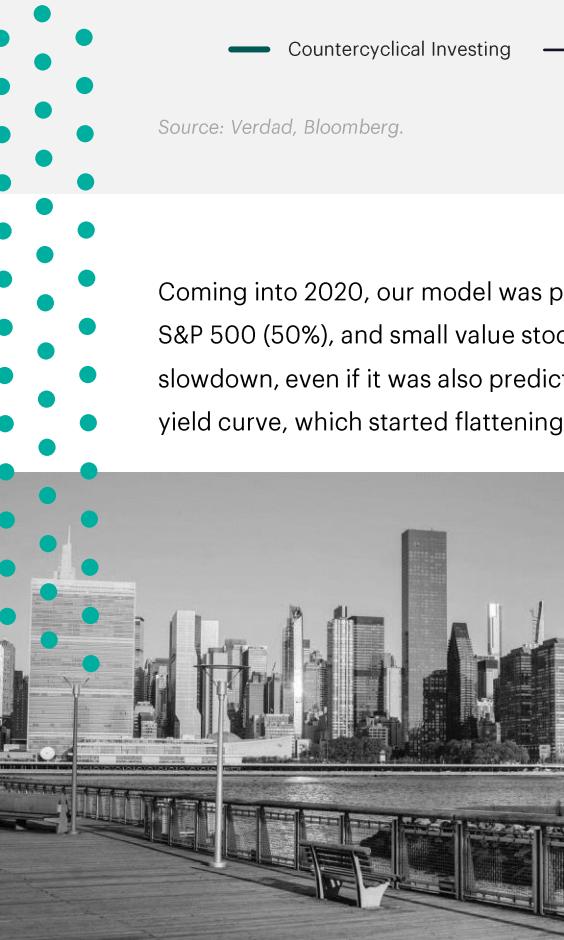


Figure 30:

\$100 Invested by Strategy
(12/31/2019 – 12/31/2020)

Coming into 2020, our model was predicting an inflationary environment, positioned in gold (40%), trend-followed S&P 500 (50%), and small value stocks (10%). It is worth noting that the model pointed to future inflation, not slowdown, even if it was also predicting slowing growth. This was due to the signal coming from the slope of the yield curve, which started flattening since Q2 2016, pointing to future inflationary pressures.

The sudden impact of coronavirus on the markets meant the equity part of the portfolio was poorly positioned, though gold was up almost 4% in the first quarter. But trend-following rules mitigated the damage in the equity book. The S&P 500 began its fall on February 21. By March 12, the S&P 500 was below its 200-day moving average for five consecutive days, triggering our portfolio to switch 50% from the S&P 500 to 10-year US treasuries (as highlighted in the shaded area above). By March 23, the peak drawdown day, the S&P 500 was down 34% from its peak, which, in conjunction with the drawdown in small value, would have taken our strategy down by 35%. Instead, our trend-following rule would have cut the losses in half, containing the drawdown to a mere 18%, in our view.



As the market drew down, the high-yield spread rose to 8.7% by the end of March, double the trailing 10-year median of 4.7% and nearly triple the spread at the end of the previous quarter. This triggered the reallocation to our growth portfolio at the end of March. The growth portfolio is 90% equity, blending the trend-followed S&P 500 (50%) and small value (40%), with the balance allocated to gold (10%). Our strategy remained in growth mode until the end of 2020, as the high-yield spread remained high.

Despite the fact that our portfolio was 50% allocated to 10-year US treasuries up to June 2, 2020, because of our S&P 500 trend-following rule, we believe our 40% allocation to small-cap value allowed us to capture the bull ride in equities. Small value stocks returned 62% from March 31, 2020, to December 31, 2020, compared to 45% for the S&P 500 and 28% for the 60/40 portfolio. Gold returned 20% over the period. By June 2, 2020, the strategy was again 90% long equity as the S&P 500 surpassed its 200-day moving average for five consecutive days.

Figure 31: Strategy Performance in COVID-19 (12/31/2019 – 12/31/2020)		Countercyclical Investing	S&P 500	60/40 Portfolio
	Total Period Return	26.2%	16.2%	14.7%
	Max. Drawdown	-18%	-34%	-23%

Source: Verdad.

During COVID-19, the strategy achieved higher returns than the S&P 500 with lower drawdowns than a 60/40 portfolio. The trend-following rules worked to mitigate the worst pain in March, and our business cycle indicators forced a massive overweight to small-cap value that resulted in an extremely strong recovery.



CHAPTER 5

Conclusions

We propose an asset allocation strategy based on three defining features:

1

Contrarian use of business cycle indicators to increase risk during crises and decrease risk at market peaks

2

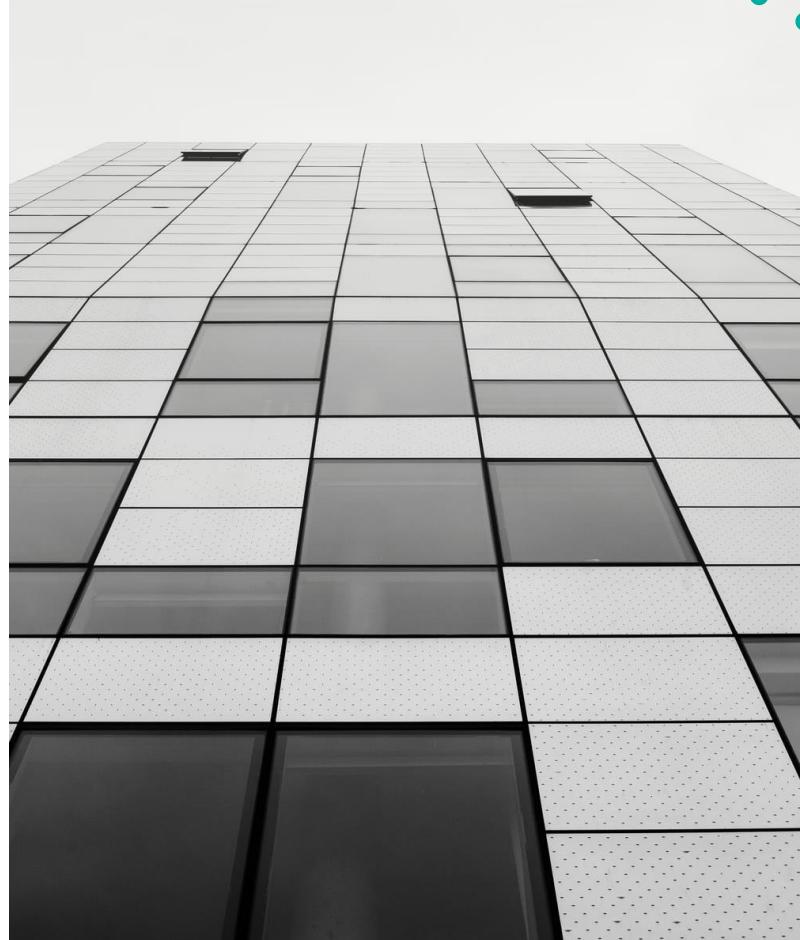
Use of price trends to hedge against short-term negative shocks to growth and positive shocks to inflation

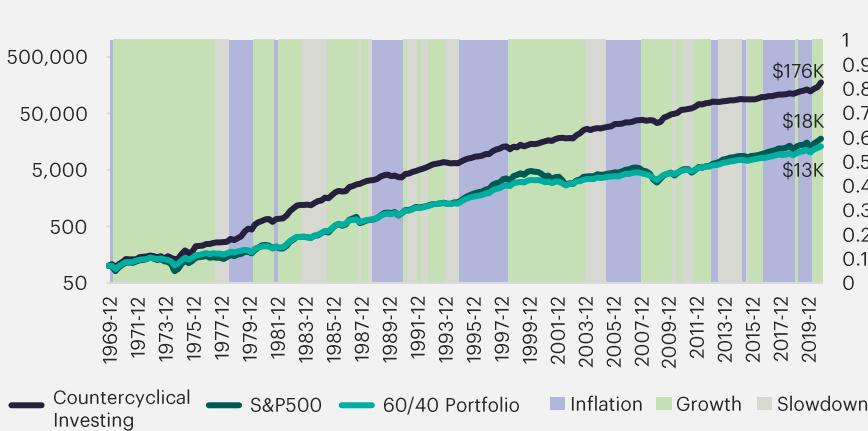
3

Dynamic asset allocation in response to changing economic environments to maximize returns

This framework incorporates current macro-economic conditions to create a countercyclical model that increases risk when credit markets are frozen and reduces risk when credit is loose and money is easy. The strategy relies on two business cycle indicators, the high-yield spread and the slope of the yield curve, to estimate business cycle stages and isolate three distinct economic states: growth, inflation, and slowdown. We defined portfolios aimed at maximizing returns in each of these three economic states, informed by our analysis of the sensitivity of asset performance to growth and inflation. Finally, we applied a 200-day simple moving average trend-following rule to protect our portfolios against short-term economic shocks.

The chart below showcases our countercyclical approach historically. We believe our model would have increased risk (i.e., would have allocated to the growth portfolio) ahead of the dot-com bubble and the 2008 financial crisis. We also show the value of our strategy compared to buying and holding the S&P 500 or a 60/40 portfolio since 1970 on a log scale.





Source: Verdad.

Note: Counter-cyclical Investing portfolio rebalanced quarterly, transaction costs not included, dollars rounded to nearest thousand.

Figure 32:

Historical Portfolio Allocation and Value by Strategy (1970–2020)

Our analysis reveals that implementing this strategy could have generated 15.8% total yearly returns with no lost decades over the past 50 years and could have outperformed a 60/40 portfolio and a S&P 500 buy-and-hold strategy. It could have done so with comparable or better Sharpe ratio and comparable or lower drawdowns, as we see it.

Our strategy seems to have done well when more traditional asset classes were losing investors' money. With no lost decades, we believe counter-cyclical investing is a potential alternative to more traditional portfolios.

Finally, the strategy also worked in Europe, demonstrating historical outperformance of both an all-equity strategy and a 60/40 portfolio, with notably higher Sharpe ratio and lower drawdowns.

History may not repeat itself. The historical analysis we have done on markets in this piece may prove irrelevant in an ever-changing world. But we believe our strategy has a chance to prove durable because it is anchored in the persistence of investors' psychological bias toward extrapolating from the recent past and panicking in times of market stress. We look forward to building on this foundation of research and sharing more of our findings in the months and years to come.



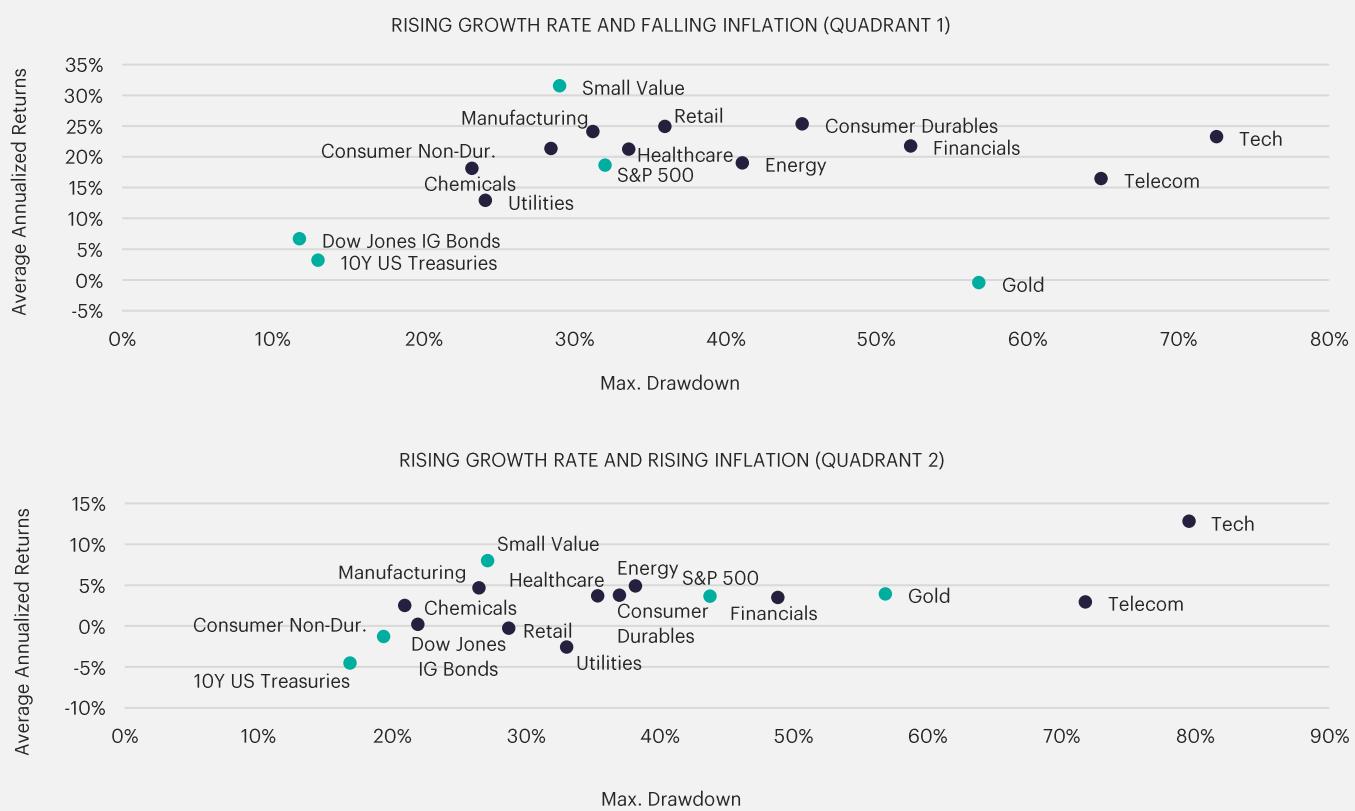
APPENDIX

Appendix A: Equity Sector Performance by Economic Environment

We tested the performance of different equity sectors, as defined in Ken French's [library](#), by quadrants. Below we show the annualized returns and maximum drawdowns for these equity sectors (color-coded in blue) as well as for the asset classes included in our portfolios (color-coded in green).

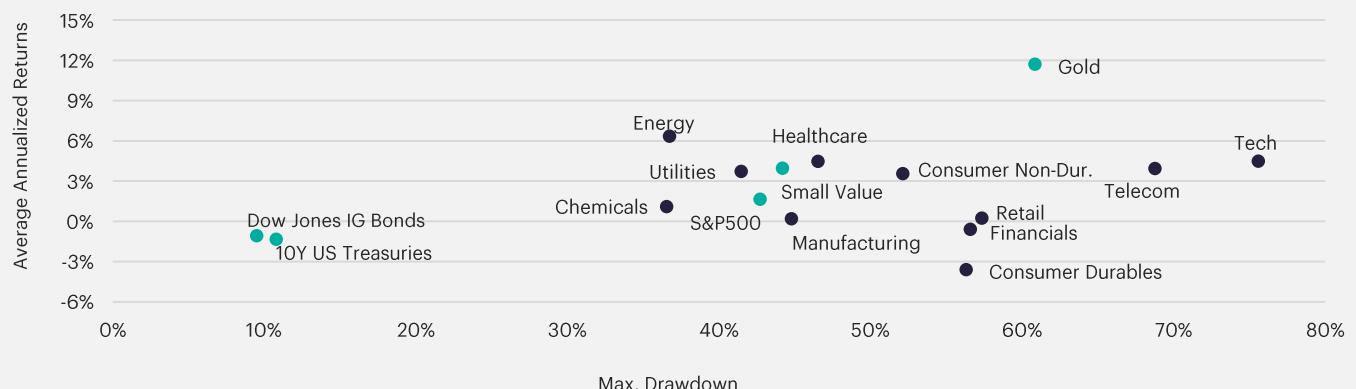
Manufacturing, retail, and consumer durables have historically been the most attractive in quadrant 1 (rising growth, falling inflation), according to our research. Energy, manufacturing, and chemicals have been most attractive in quadrant 2 (rising growth, rising inflation). Energy has been the most attractive in quadrant 3 (falling growth, rising inflation). Healthcare and consumer non-durables have been most attractive in quadrant 4 (falling growth, falling inflation).

FIGURE 1: AVERAGE ANNUALIZED REAL RETURNS AND DRAWDOWNS BY ASSET AND QUADRANT (1955–2019)

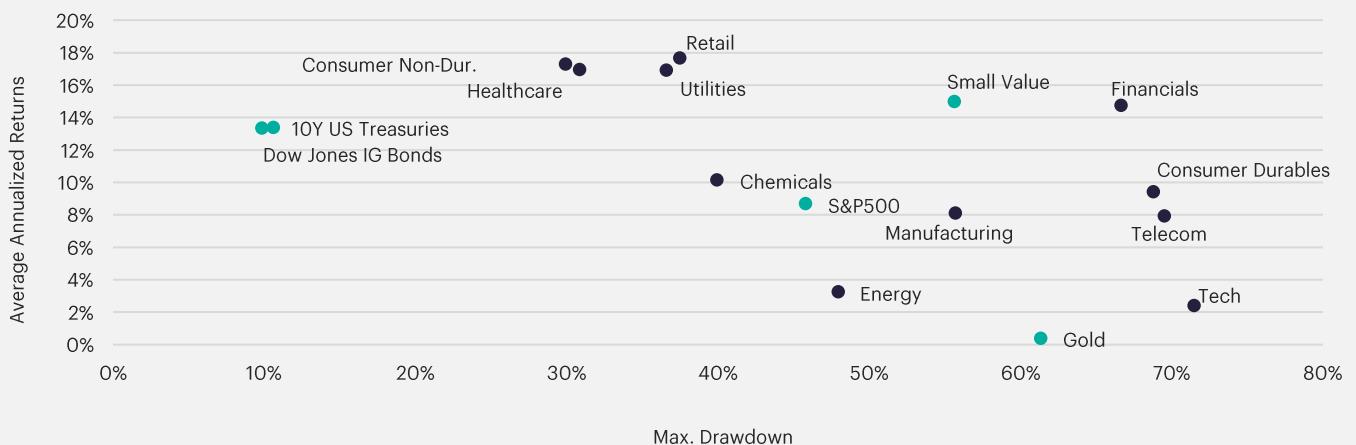


Source: Verdad, Ken French Library.

FALLING GROWTH RATE AND RISING INFLATION (QUADRANT 3)



FALLING GROWTH RATE AND FALLING INFLATION (QUADRANT 4)



Source: Verdad, Ken French Library.



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