

Countercyclical Indexing

"Balanced" index funds have a simple problem—they aren't very balanced primarily because they are overweight equities which contribute 85%+ of the risk to this portfolio. This is exacerbated by the procyclical nature of the equity market and the way the market capitalization growth exaggerates this risk at the worst possible times in the business cycle. A true balanced index requires a more countercyclical methodology that reduces the procyclicality of the equity slice in the portfolio.

What is Countercyclical Indexing?

The financial markets are comprised of asset classes that are inherently dynamic. This means that the relative risks of asset classes are constantly changing over the course of the business cycle's changes as their underlying market capitalizations ebb and flow. This can result in a misalignment between our asset holdings and the risks they contribute to our portfolios as risks in certain asset classes become exaggerated at the worst times.

Traditional portfolio theory says that we should rebalance a portfolio back to its "efficient" weighting over the course of the business cycle. For instance, a 60/40 stock/bond portfolio is adjusted at times to rebalance back to a 60/40 weighting as stocks tend to become overweighted relative to bonds due to outperformance. But this fixed portfolio allocation will expose investors to higher levels of risk at the riskiest points in the business cycle because a 60/40 stock/bond portfolio derives most of its risk from the 60% slice.

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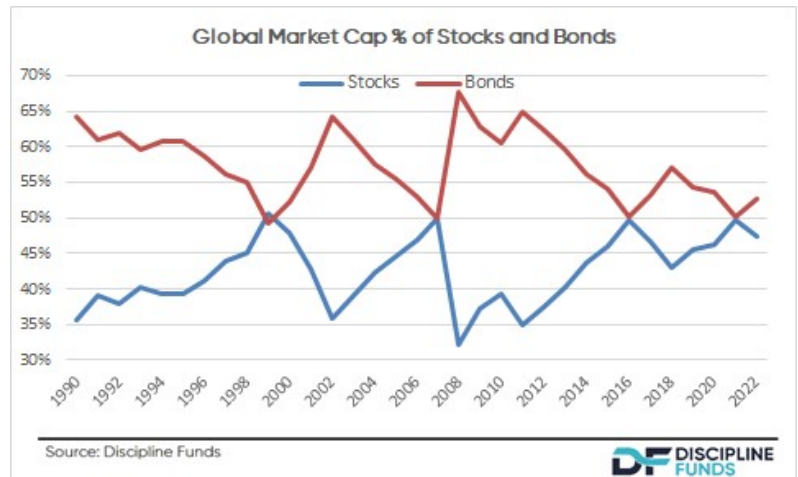
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"The Investor's Chief Problem, and even his own worst enemy, is likely to be himself."

—Ben Graham

If we assume markets are efficient then the one true “passive” portfolio is the current outstanding market cap of stocks and bonds. The relative market caps of stocks and bonds changes quite dynamically over time as the stock market booms and busts over the market cycle (see figure at right). The main risk in this portfolio is that the equity slice contributes 85% or more of the volatility to the portfolio thereby exposing the investor to very high levels of risk when the equity markets are riskiest (when equity market caps boom). Likewise, the investor who tracks this portfolio is underweight equities when they become less risky (when they bust).



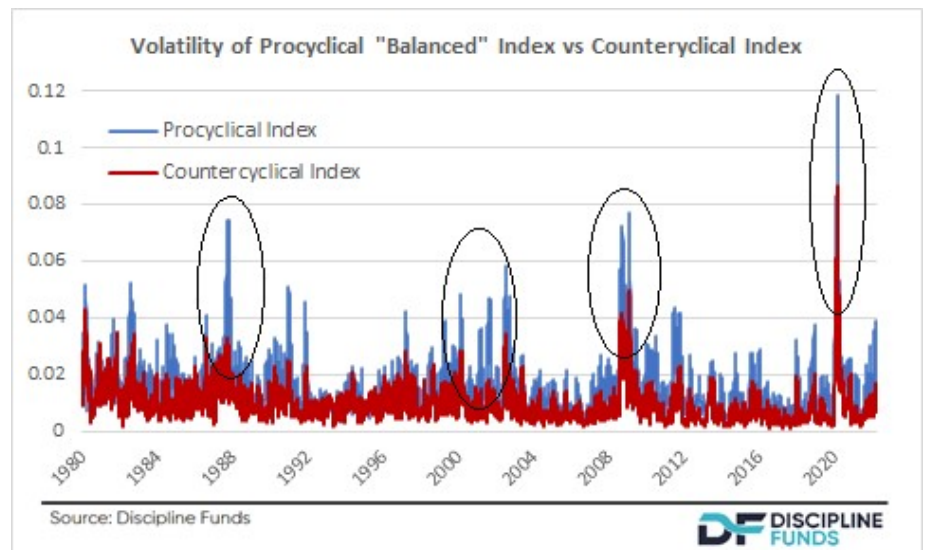
Tracking this benchmark “efficient” market capitalization portfolio isn’t just intuitively wrong. It’s factually wrong. Interestingly, the investor who tracked this allocation underperformed the investor who did the *exact* inverse. The investor who followed the actual market cap weighting generated an average annual return of 6.71% with a standard deviation of 8.5 since 1990. If, on the other hand, you had weighted bonds and stocks at their *inverse* weightings you would have generated an average annual return of 8.1% with a standard deviation of 10.33. Your risk adjusted returns *and* nominal returns were better in the inverted portfolio.

The Unbalanced Risks of a “Balanced” Index

A common deviation from this market cap weighted problem is to rebalance a portfolio in a countercyclical manner such as 60/40 stocks/bonds. A 60/40 portfolio is *relatively* countercyclical in that it rebalances away from stocks when they boom and rebalances more into stocks when they bust. While this portfolio might be fine for many investors it’s important to note that the risks in this portfolio are not “balanced” in large part because they are not countercyclical *enough*. They are skewed dramatically by the procyclical equity slice because the benchmark is fixed at a large starting equity weight.

The risk in this portfolio is due to the fact that ~85% of the volatility in a 60/40 index comes from the stocks alone. This becomes behaviorally skewed at times when stocks boom and expose investors to more risk than they do on average. This is because the balanced index is always rebalancing back to 60% stocks even though that 60% stock allocation becomes much riskier at certain times in a market cycle. In short, a 60/40 portfolio isn't countercyclical enough during stock market booms because its fixed benchmark is overweight the riskier asset in the portfolio thereby leaving it with too much procyclical equity exposure.

Our research shows that a more "balanced" approach to indexing would involve a more dynamic countercyclical rebalancing methodology that reduces the variance in the 60% weighting when the equity market cap booms. The chart at right shows that a more balanced countercyclical rebalancing methodology would have reduced the stand-



ard deviation in returns by 35%. This reduces drawdowns, especially when we're most behaviorally biased during large bear markets and produces a more stable return thereby helping the investor stay the course and remain fully invested by exposing them to less behavioral risk over the course of the market cycle.

In short, the core problem with a balanced index fund like a 60/40 is that it is inherently more procyclical than it should be to achieve real balance. Instead, to establish better balance an asset allocator would need to start with a less procyclical balance (such as 50/50 stocks/bonds) and then countercyclically control the riskiness of the 50% equity component because it will expose the investor to more risk at certain times in the market cycle when its underlying market cap booms.



Countercyclical Indexing—A Strategy Built on a Solid Foundation

Passive Based: We know that the average less active investor should outperform the more active investor after taxes and fees. A Countercyclical Indexing strategy can be extremely “passive”. In fact, we would argue that a balanced countercyclical strategy will tend to be even more passive than something like a 60/40 index because it maintains average allocations that will be closer to global market cap weightings, the one true “passive” portfolio.

Behaviorally Robust: Most importantly, we would argue that a balanced countercyclical strategy will better help an investor improve behavioral alpha across time because the strategy will better dampen the equity market risk. This results in a more “balanced” return over time and helps the investor remain more disciplined because their portfolio returns are not being dominated by the equity slice.

Risk Parity and The Rebalancing Bonus: This approach is grounded in global macro understandings, but is also derived from two time tested approaches – Ray Dalio’s Risk Parity approach and William Bernstein’s Rebalancing Bonus. Risk parity seeks to create parity between the risks of various asset classes over the course of the portfolio’s lifetime while Bernstein’s Rebalancing Bonus explains the way that rebalancing contributes to better risk adjusted returns.

A balanced Countercyclical Indexing approach should start with a more balanced benchmark and rebalance that portfolio to mitigate the procyclical risk in the equity market. We argue that this not only makes more intuitive sense than an asset allocation that is more procyclical, but is more consistent with behavioral finance literature and the ability to reduce behavioral biases across time.

Although the investor’s risk profile is generally static over the course of the business cycle, the investor’s portfolio will actually change over the course of the business cycle and expose them to varying degrees of risk. A balanced Countercyclical Indexing approach establishes a portfolio management approach that is more consistent with the way investors actually perceive risk over the course of the business cycle and increases the probability of improving risk adjusted returns as well as helping to meet the investor’s financial goals.



Summary Conclusion

When we founded the Countercyclical Indexing approach we asked ourselves three simple questions:

1. Is a "balanced" 60/40 index actually balanced?
2. Since we know "passive" market caps are dynamic, does it make sense to rebalance back to a fixed index weight?
3. Can we implement a similarly passive and tax/fee efficient indexing strategy that better aligns an investor's risk profile with the underlying market cap dynamics?

Countercyclical Indexing solves these problems. It helps create better balance in an indexing strategy. It establishes a dynamic index that is more consistent with the actual changes in the underlying market cap weightings. And it better aligns an investor's risk profile with the actual market cap changes across market cycles without requiring high taxes and fees.

In summary, the financial industry and Modern Portfolio Theory tend to recommend re-balancing back to a fixed weighting in most indexing strategies. This is a fine strategy and has many good characteristics, however, while this strategy appears "passive" and "balanced" it is a relatively active and unbalanced strategy when compared to the actual underlying market cap weights. The result is greater imbalance between the risks of stocks and bonds and a resulting higher probability of behavioral biases. We believe that a simple, low cost, tax efficient Countercyclical Indexing strategy resolves many of these problems and establishes a more behaviorally robust asset allocation strategy.

References

Arnott, Robert and Robert M. Lovell, Jr. "*Monitoring and Rebalancing the Portfolio*," in Maggin, J.D. and Donald L. Tuttle, 1990, *Managing Investment Portfolios, a Dynamic Process*, Second Edition, The Association for Investment Management and Research, Charlottesville, Va.

Black, Fischer and Robert Litterman, 1991, "*Asset Allocation: Combining Investors Views with Market Equilibrium*," *Journal of Fixed Income*, Vol. 1, No. 2: 7-18.

Dalio, Raymond, 2010, "*Engineering Target Returns & Risks*", Bridgewater Associates

Sharpe, William F. 2007 "*Expected Utility Asset Allocation*," *Financial Analysts Journal*, Vol. 63, Number 5. September-October, pp. 18-30.

Bernstein, William 1996 "*The Rebalancing Bonus*," *Efficient Frontier*.

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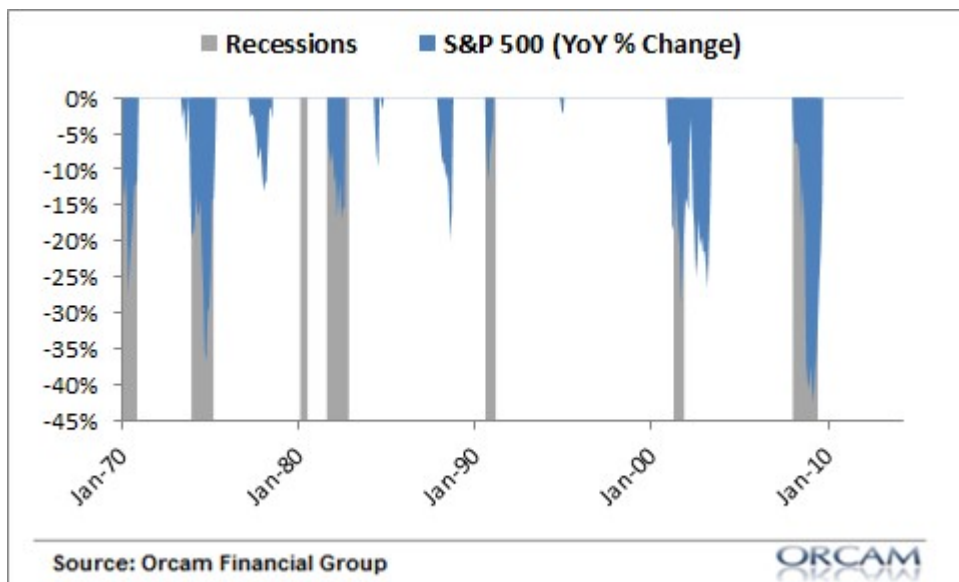
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The real damage is done on a more micro scale and is a much more “in your face” type of loss in net worth. This is the real-time loss we see in equity accounts such as 401Ks, brokerage accounts and corporate net worth declines. In the last 50 years there have been just 4 technical bear market declines of 20%+ year over year (on a monthly basis). **All 4 occurred inside of a recession.** This explains Wall Street’s recession obsession. A 20% decline in the equity markets requires a 26% appreciation in price just to get back to break-even. Since equities account for a substantial amount of household net worth this decline can be devastating and has far reaching ramifications.

If we look more closely at these tail risk events we can see that some of the losses have been tremendously devastating. For instance, the 2008 market decline resulted in a near 50% loss in the S&P 500. In order to break



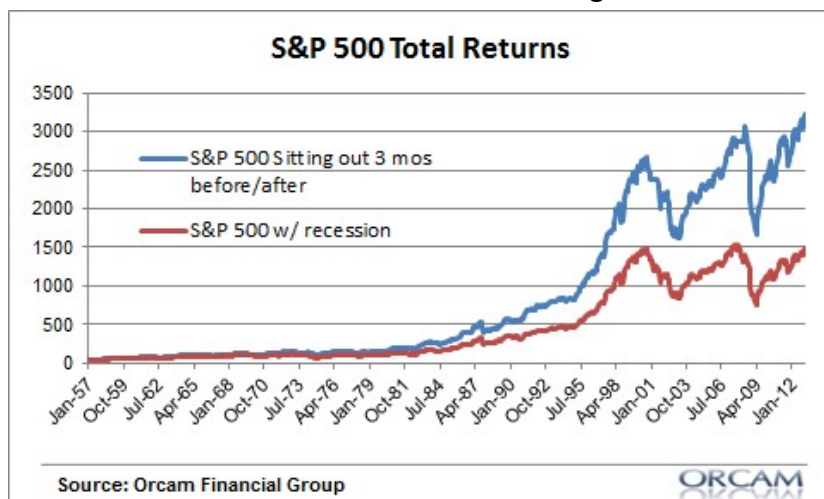
(Year over year % decline in S&P 500 – monthly basis)

even from that loss an investor needs to generate a 100% return. If the S&P 500 compounds at a real, real return of 6.75% on average then it will take you almost 10 years just to get back to break-even. When you consider that most of our investing time horizons are just 30 years or so it goes to show why the risk of permanent loss is so widely feared.

Another perspective of this can be seen on the chart on the following page showing the difference in the total return of the S&P 500 if one were to sidestep the three months before and after a recession relative to the actual total return.

In other words, if you were able to forecast a window around which a recession would occur, subsequently moving to cash and then reinvesting on the back side, you would have generated a total return equal to DOUBLE of the actual S&P 500. Taking care of the downside has a tremendous impact on the potential upside and recessions are devastating in terms of their downside impact on the equity markets.

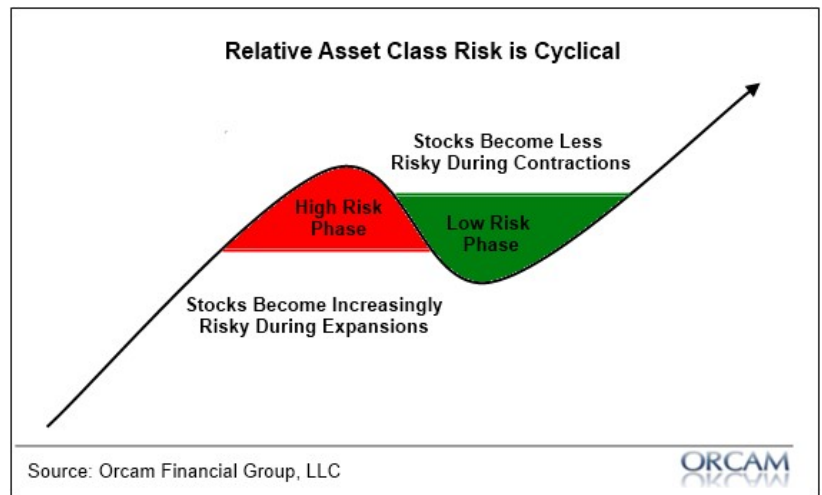
Of course, the business cycle is rarely in contraction so trying to time precisely when the business cycle shifts is likely a fool's errand, right? Yes and no.



If we study the last 10 business cycles in the USA we know that the first half of expansion tends to coincide with the largest stock market gains. Likewise, the second half of expansions tends to coincide with weaker gains. Over the last 75 years the S&P 500 has averaged a 4.7% return in the second half of expansions including the recession phase. But during the first half of the expansion phase the S&P 500 generated an average return of 13.62%. What's interesting about these figures is not just the nominal return, but that the risk adjusted returns change dramatically as well. The standard deviation in both halves of the cycle is about 13.5%. This means that that 4.7% return was achieved while taking substantially higher risk. In other words, the risk of permanent loss was substantially higher in this period. In other words, the relative risk changes as the business cycle unfolds.

All of this makes perfect sense because it means that stocks become riskier as they rise in price. Although it is often counterintuitive, stocks become less risky when they fall and more risky when they rise. Likewise, the business cycle and the markets become more risky as we get deeper into the expansion. But our risk profiles often don't account for this. In fact, most investors get more aggressive *after* they've seen stock markets rise. This complacency results in investors positioning themselves precisely wrong at the precisely wrong points in the cycle.


This is true not only of stocks, however. As Vanguard noted in *"Investment Case for Commodities? Myths and reality"* there is strong evidence that commodities tend to be strong performers late in expansions and poor performers early in recessions due to inventory de/restocking. Likewise, bonds tend to perform best late in a recession when fear levels are highest.



This discrepancy in relative asset class risks creates a problem for asset allocators—since we know that the markets are dynamic and cyclical with changing risks at points in the cycle then how confident can we be in our allocations if they too are not adaptive? For instance, a pure indexing strategy without rebalancing will tend to be weighted towards the best performing instruments at points in the cycle when they carry the highest risks. This portfolio will have a natural tilt towards the highest risk assets at the very worst times in the cycle and will be underweight the most attractive assets at the worst point in the cycle. This results in a misalignment between your risk profile and the risks in the underlying asset classes.

Likewise, a passively rebalanced portfolio fails to account for the changing relative risk dynamics in the underlying assets. A passive 60/40 stock/bond portfolio, for instance, is essentially an equity heavy portfolio with the majority of variance coming from the stock portion, but the attractiveness of stocks relative to bonds is dynamic in this underlying portfolio. This means that the portfolio is constantly being rebalanced back towards an inherent overweight towards risk even though the risks tend to increase as the business cycle unfolds.

For instance, in the period from 1980–2013 a total bond portfolio generated a compound annual growth rate of 8%, standard deviation of 6.9 with a max drawdown of just -2.65% while an all stock portfolio compounded at 11.3% with an annual standard deviation of 18.5 and a max drawdown of -40.5%. This shouldn't happen in a world where stocks are supposed to generate higher returns given their relative risk. But investors who were overweight stocks in this period were simply generating a slightly higher nominal return in exchange for a substantially higher level of risk. The investor who didn't account for the relative risks of asset classes was unnecessarily exposed to large stock market declines thereby resulting in a reduction in their risk adjusted return.



This means that the investor's perception of risk is not always aligned with this simple portfolio allocation which is a static allocation in a dynamic environment. How confident can we be that these asset allocations will help us achieve our financial goals if our portfolios aren't also adaptive and tilting various factors to account for this dynamic risk landscape? Said differently, the concept of a truly "passive" investing approach misunderstands the dynamism of the financial system as it attempts to apply linear modeling to a non-linear system.

Of course, no one can predict when expansions and contractions will occur precisely and sidestep the market's every downturn, but we believe it is prudent to implement a portfolio management style that accounts for the probabilistic increase in recession and tail risk as well as the reality that the business cycle is in expansion far more often than it is in contraction. This approach allows investors to keep their risk perceptions better aligned with the actual underlying risks in asset classes. We can't predict the future precisely, but we can account for changing relative risks to ensure that our portfolios remain in-line with the way we perceive risk during the business cycle. This allows us to tilt our portfolios to account for the fact that our risk profiles are dynamic during the business cycle because the risks in certain asset classes are dynamic during the cycle.

All investors rebalance in order to help maintain their risk profile. But not all investors rebalance based on relative risk assessment. The Countercyclical Indexing approach implements a cyclical adjustment in portfolios that accounts for the way that risks in underlying assets evolve over the course of the business cycle. This helps us to increase the probability that the investor's perception of risk will remain aligned with the relative risks of various asset classes as the business cycle unfolds and evolves.

Of course, taxes and fees are important frictions in any strategic asset allocation plan. Countercyclical Indexing need not be any more "active" than a standard indexing and rebalancing approach which gives it similar tax and fee efficiencies. Countercyclical Indexing is, for all practical purposes, a more thoughtful and quantitative form of rebalancing a portfolio as it changes.

This low fee, tax efficient and risk focused form of adaptive asset allocation maintains a portfolio of assets that is in-line with the risk profile of the investor thereby helping to achieve better risk adjusted returns and better serve the financial goals of the investor.