



FIGHTING AGAINST MATHS: THE NUCLEAR WINTER OF THE 60/40 PORTFOLIO

Bottom Line:

- 1 – The FAANMG stocks account for 24% of the S&P 500 index and trade for 38.5 times earnings, versus 15 times in 2012
- 2 – It would take decades of high growth and no price gain for the FAANMG stocks to “grow into” a normal valuation
- 3 – 10-year bonds would rally by just 6% if the Fed anchored 10-yields at 0% and reinvestment opportunities would be dire
- 4 – A 60/40 portfolio, which has generated annual returns of 10% since 1976, will underperform inflation in the next 10 years
- 5 – Financial repression will eventually destroy of long-term Treasuries’ ability to hedge equity market risk

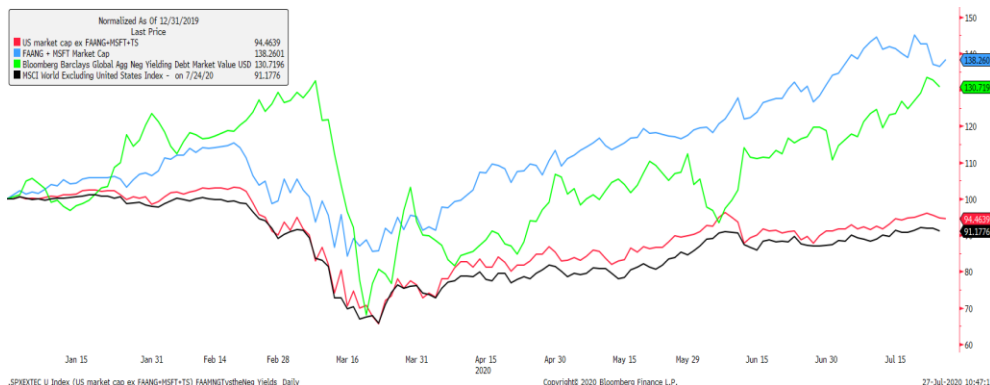
Let’s start with a little exercise in counterfactual history: imagine that you had been told in late 2019 that the [world economy](#) would shrink by 4.9%, led by an astounding 8% decline for advanced economies and 10.4% plunge for Latin American economies, that the U.S. dollar index would fall by about 3%, that gold would soar past 2011 all-time high of \$1,900/oz, that the Vix index would break its 2008 record with a spike to 85.5, that oil futures would briefly trade for *minus* \$40 a barrel, that S&P 500 earnings per share would plummet by 66%, and that 75% of Americans would say that the country is “on the wrong track”.

Surely no one would have expected a traditional 60/40 portfolio would rise by more than 7%. And yet it happened, due to two extraordinary and interrelated developments: a 37% surge for six tech-oriented stocks to an incredible capitalization of \$6 trillion and the collapse of 10-year yields to 60 basis points.

The first part will argue that these tech megacaps have become so large that they can no longer “grow into their valuations”, despite the high margins and strong cash-flow generation of these quasi-monopolies. For example, Microsoft’s revenues would need to grow at their current pace of 8.9% for 18 years for the stock’s price-to-sales ratio to converge towards the S&P 500 index’s multiple of 2.3 - which already exceeds the record valuation set during the internet bubble.

The second part will show that bonds cannot generate the returns required to offset the eventual compression in equities’ multiples. **Even if the Federal reserve were to adopt an explicit yield curve control policy of anchoring 10-year yields to zero, 10-year Treasuries would only rally by 6%.** By contrast, long-term bonds rallied by 30 to 40 percentage points during prior easing cycles, allowing asset allocators to deploy a lot more capital into much cheaper risk assets.

The Fall of Yields and the Rise of the FAANMG Stocks in 2020



The conclusion will state the logical but painful reality: the 60/40 portfolio, which has historically delivered a steady return of 8 to 10%, will underperform inflation over the next ten years. **The age of the bullet-proof 60/40 portfolio has ended in the late 2010s. Welcome to the secular bear market of the 2020s.**

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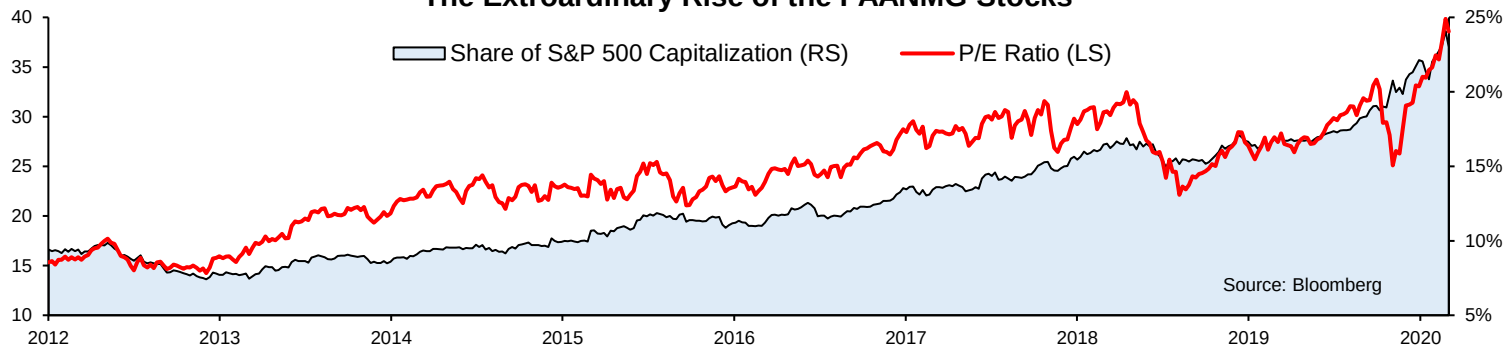
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Big Tech Stocks Can No Longer Grow into their Valuations

When Morgan Stanley botched Facebook's IPO in May 2012, the combined capitalizations of Facebook, Apple, Amazon, Netflix, Google, and Microsoft was 9.4% of that of the S&P 500 index and the group traded for 15 times earnings. As of last week, these six stocks accounted for 24% of the index's capitalization and traded for 38.5 times earnings.

The Extraordinary Rise of the FAANMG Stocks

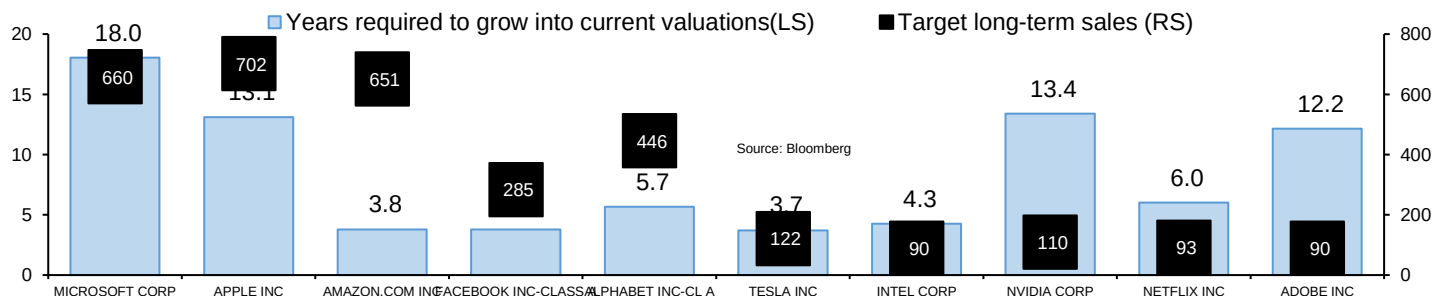


These quality growth companies have been able to “grow into their valuations”: Microsoft's \$613 billion market cap in late 1999 seemed absurd in relation to revenues of \$19 billion, and yet the company is now worth \$1.6 trillion and had revenues of \$143 billion this past year. Could this happen again? Let's run the numbers.

Microsoft's revenues have grown by 8.9% annually in the past six years – let's assume that this extraordinary growth continues until the firm reaches steady state. At this point, the stock should trade for the “normal” multiple for S&P 500 index stocks of 2.3. It would take 18 years of 8.9% annual growth in revenue with zero price appreciation for Microsoft to “grow into its valuation”. By then, sales would be over \$659 billion. For reference, the largest U.S. company by turnover, Walmart, had revenues \$514 billion last year.

How Long Big Tech Needs to Grow into a Normal Valuation*

*Normal valuation = 2.3 times forward sales



Furthermore, the current price-to-sales ratio of the S&P 500 index of 2.3 is 50% above the long-term average of 1.5 and higher than the prior record set during the internet bubble. It would take 23 years of 8.9% sales growth and no price appreciation for Microsoft to grow into a 1.5 times sales multiples. OUCH!



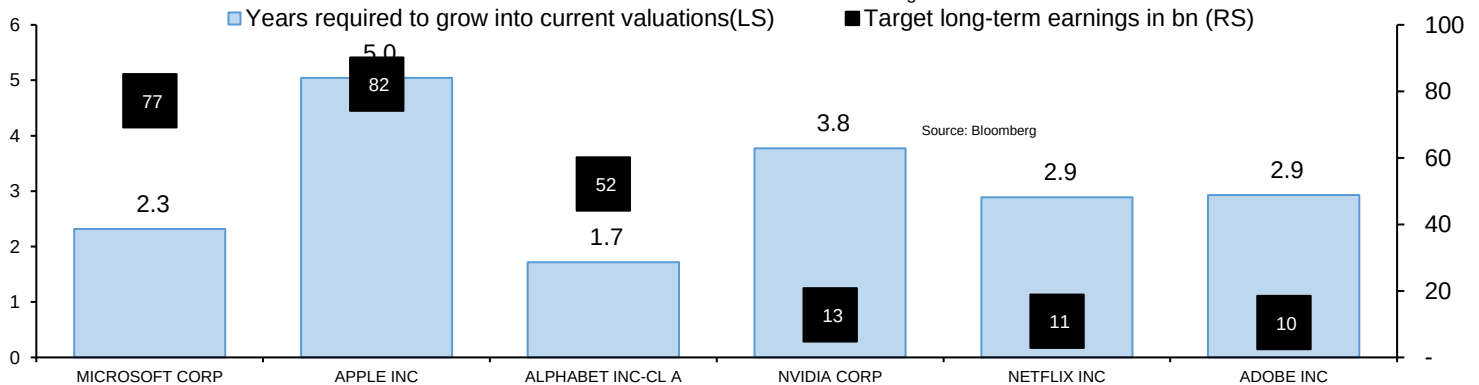
Of course, one could argue that price-to-sales are not a valid metric for large tech companies. Software has almost no marginal cost, resulting in structurally higher economies of scale. Also, monopolies face little competition, which means that they can maintain higher margins than the rest of common mortals.

Let's assume that big tech companies' valuations should converge versus 20 times forward earnings, which has been the ceiling for the P/E ratio of the S&P 500 index during the dotcom years and the current bubble.

Microsoft does look better as it would take just 2.3 years of steady growth and no return to "grow into its valuation". But Apple would need 5 years and Amazon would need 31 years! Assuming these companies maintain their current margins, generating these earnings would require revenues of \$380 billion and \$3.1 trillion, respectively. For comparison, the IRS expects to collect \$1.9 trillion in personal income taxes in 2021.

How Long Big Tech Needs to Grow into a Normal Valuation*

*Normal valuation = 20 times forward earnings



I could create more hypothetical scenarios, but the conclusion should already be obvious: companies' revenues and profits are ultimately constrained by the size of the economy. There is a point at which companies become "too big to grow", despite their high margins and strong cash-flow generation. The extraordinary rise in the valuations of the FAANG stocks implies a growth path which is now physically impossible. This was perhaps best explained by Sun Microsystems founder Scott Mc Nealy in a 1982 [Bloomberg interview](#) about the company's valuation at ten times sales:

"At 10 times revenues, to give you a 10-year payback, I have to pay you 100% of revenues for 10 straight years in dividends. That assumes I can get that by my shareholders. That assumes I have zero cost of goods sold, which is very hard for a computer company. That assumes zero expenses, which is really hard with 39,000 employees. That assumes I pay no taxes, which is very hard. And that assumes you pay no taxes on your dividends, which is kind of illegal. And that assumes with zero R&D for the next 10 years, I can maintain the current revenue run rate. Now, having done that, would any of you like to buy my stock at \$64? Do you realize how ridiculous those basic assumptions are? You don't need any transparency. You don't need any footnotes. What were you thinking?"

For reference, Microsoft, Facebook, Tesla, Nvidia, Netflix, Adobe, and Paypal trade for 11, 9, 11, 21, 9, 17 and 11 times sales, respectively. *Caveat emptor.*



There Is No Good Scenario for Bonds

If the FAANMG-driven stock index delivers negative or mediocre returns in the next decade, bonds would better be able to pick up the slack. Long-term treasuries have been a superb counter-cyclical investment in all recent bear markets: the ICE U.S. Treasury 20+ year index rallied by 27% from January to April 20 this year and by 41% between June 2008 and December 2008.

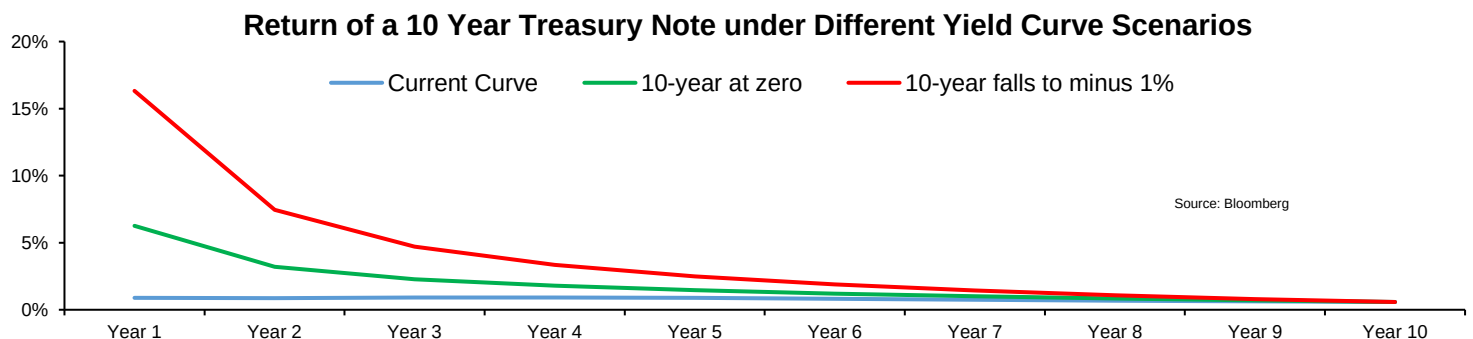
However, bonds' upside is capped by how low yields can drop. Assuming that the yield curve does not change, the best trade an investor in a 10-year note can do would be to buy the note at today's yield of 0.6% and sell it in four years at an implied of 0.35%, which would net an annualized return of 0.9%.

What if rates drop to zero? Let's assume that the Federal Reserve engineers a linear drop of the yield curve so that the 10-year yield is anchored at zero. **A zero coupon 10-year note would appreciate by about 6%** (approximately 60 basis points times 10 years of duration).

What if rates go negative (which is not my expectation)? Let's assume that the Federal Reserve engineers a linear drop of the yield curve so that the 10-year yield is anchored at *minus* 1 percent. A zero coupon 10-year note would appreciate by about 16%.

This may sound good if our prescient trader bought the note at the current yield and sold it right away, which would net a nice capital gain. But most bond market investors are liability-driven: the duration of their assets needs to match that of their liabilities. So realistically, this prescient trader would have to buy a new 10-year treasury, which would now yield of *minus* 1%. This would ensure that his total return over ten years is about 6%, or about the 16 percentage capital gain minus 10 years compounding at 1% annually.

Bond market investors will surely have noticed that I am illustrating a tautology: the capital gain achieved by selling a bond after rates drop is perfectly offset by the lost reinvestment income if the investor must buy another bond at the lower yield right away. A fully-invested investor cannot earn more or less than the yield to maturity offered by the bond at the time he bought it.



In other words, the implementation of negative yields would surely create a short-term spike in bond prices, but it would not change the fundamental problem for long-term investors: **buy-and-hold investors cannot squeeze return from fixed income assets which yield nothing.**



By definition, rate cuts do not create wealth or change assets' cash flows. Monetary policy "works" by changing assets' relative prices and incentivizing owners of safe short-term bonds to switch into riskier and longer duration assets (the *portfolio substitution effect*). By lowering discount rates, monetary policy increases all assets' prices, giving investors more collateral which they can leverage to buy other assets (the *wealth effect*).

Various schools of thoughts may debate whether these are indeed socially-desirable outcomes, but there is no question that the efficiency of these policies depends on three factors: the starting level of short-term rates (which determines how much yields can drop), the slope of the yield curve (which determines how much term premium can be squeezed by monetary policy and forward guidance), and the yield that investors can earn on other assets (which determines the return that investors can achieve after selling Treasuries).

As a result, **low rates and compressed risk premia reduce the efficiency of monetary policy.** For example, Greenspan's aggressive rate cuts during the dotcom burst led to a 41.9% rally in 10-year Treasuries from January 2000 to June 2003. A prescient trader who would have sold Treasuries at their June 2003 top and bought the S&P 500 index with the proceeds would have collected a 5.7% earnings yield.

During the 2008 financial crisis, 10-year Treasuries rallied by 36.7% from the bottom to the top, and the S&P 500 index yielded 8% when Treasuries peaked on December 30.

Treasuries rallied by 25.7% during the 2011 mini bear market, and the S&P 500 index yielded 7.7%.

10-year Treasuries rallied by just 6.9% during the brief 2018 bear market, and stocks' earnings' yield was just 7%.

If the yield on 10-year treasuries were to fall to zero overnight, the maximum capital gain would just be 6%, and investors who would re-invest into equities would earn a yield of 3.9%.

In other words, **anchoring 10-year yields at zero percent would produce relatively small capital gains while the earnings yield on stocks would be about half of what it has historically been at the end of an easing cycle.**

	Capital Gain on "Perfect" 10-Year Treasury Trade (1)	Earnings yield on S&P 500 index (2)
2001 bear market	41.9%	5.7%
2008 bear market	36.7%	8.0%
2011 bear market	25.7%	7.7%
2018 bear market	6.9%	7.0%
2020 bear market (3)	6.3%	3.9%

(1) capital gain from buying a 10-year Treasury at the top in yield and selling it at the bottom

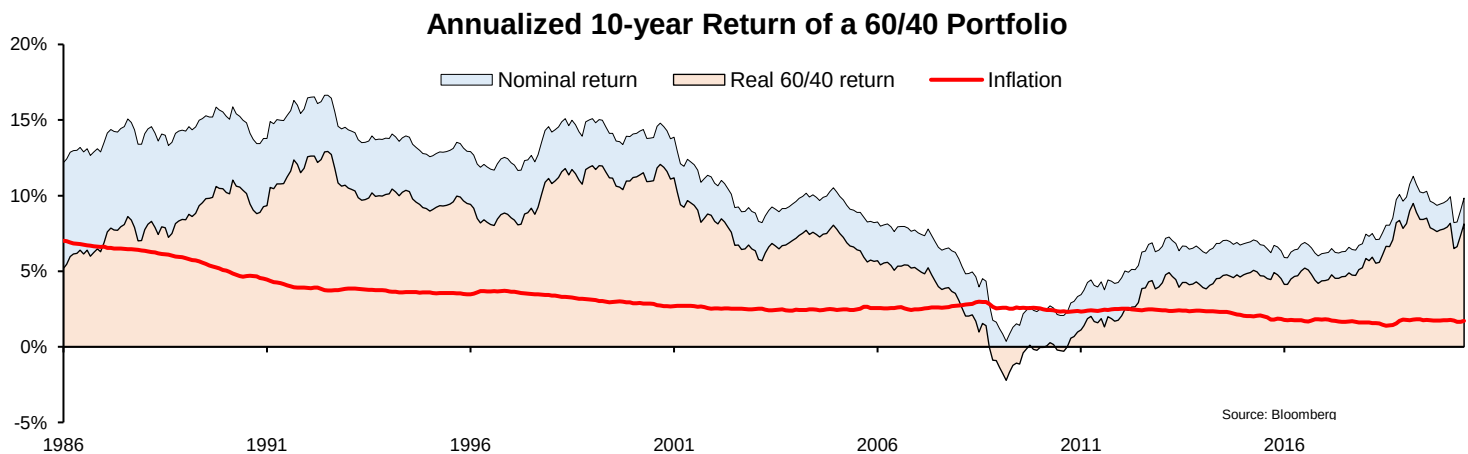
(2) expected earnings yield on the S&P 500 index when the 10-year Treasury yield bottomed

(3) assumes that the 10-year yield falls to zero and that the S&P 500 earnings yield remains the same

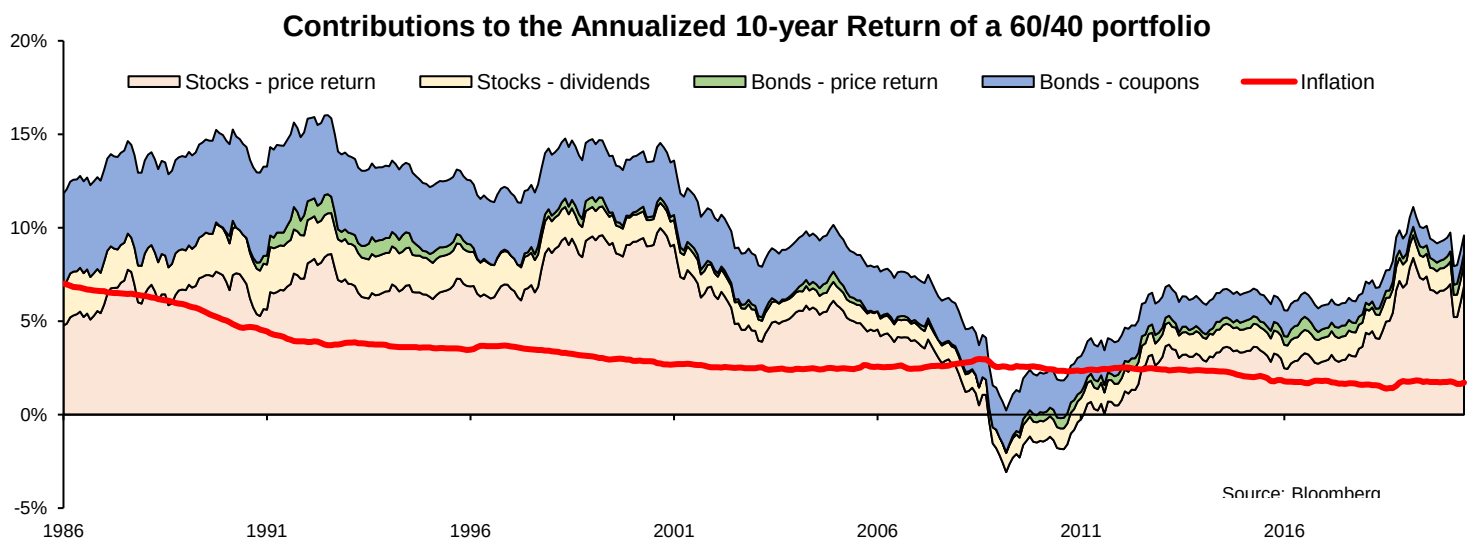


The Nuclear Winter of the 60/40 Portfolio

The 60/40 portfolio has been one of the simplest and most beautiful ideas in modern finance. A portfolio with a 60% allocation to the S&P 500 index and a 40% allocation to the Bloomberg Barclays U.S. Aggregate Total Return Index would have earned a **nominal annualized return of 9.9% since 1976 or 6.1% in real terms**. The past ten years have been consistent with historical tendencies, with a nominal annual return of 9.8% and a real return of 8.1%.



We can break down the real return of the 60/40 portfolio into five sources: the coupons paid by bonds, the capital gains resulting from the appreciation of bond prices, the dividends paid by stocks, and the capital gains resulting from the appreciation of stock prices. Over the past ten years, **more than 70% of the return of a 60/40 portfolio came from gains in stock prices, which have been primarily driven by the expansion of multiples in a handful of mega caps**.





Going forward, it is impossible to imagine a realistic scenario in which the 60/40 portfolio continues to deliver high-single digit returns:

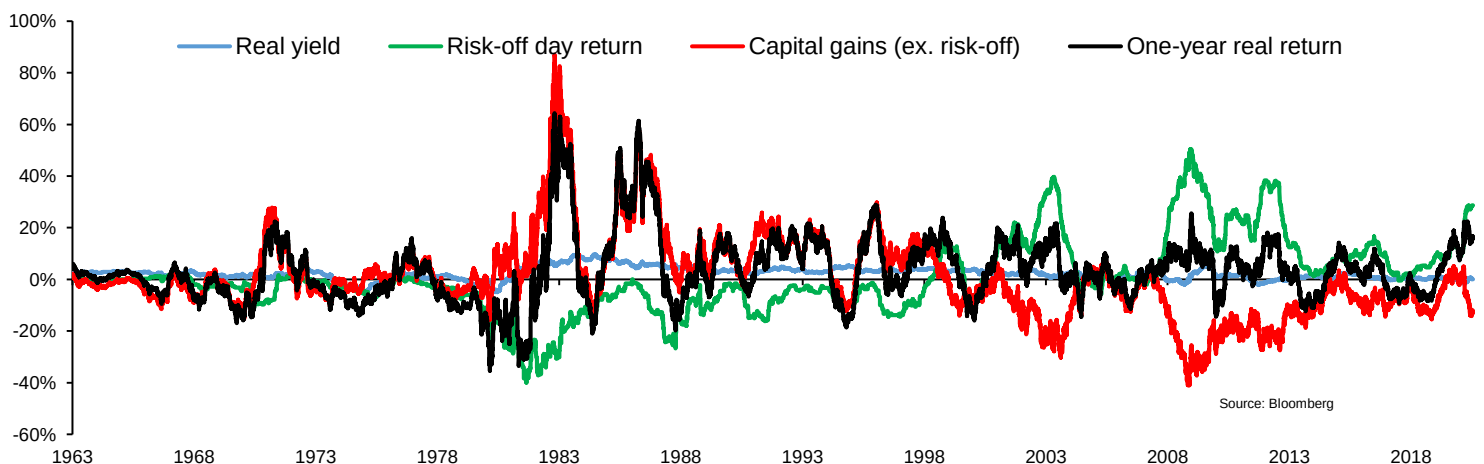
- The “coupon return” of bonds is capped by the miniscule level of yields: the Bloomberg Barclays U.S. Aggregate Total Return Index yields a record low 1.1%, versus an average of 6.5% since 1975.
- As discussed earlier, bonds’ capital gain potential is limited by the zero-lower boundary: at the current 10-year yield of 0.6%, the maximum upside for a 10-year duration bond is about 6% if yields fall to zero.
- At 1.8%, the estimated dividend yield of the S&P 500 index is almost at a record low.
- The current concentration of U.S. equity indices means that future capital gains are extremely dependent of the expansion of multiples on a handful of large growth stocks. The first part has shown that this is extremely unlikely.

The conclusion is brutal and simple: over the next ten years, **the real returns on a 60/40 portfolio will be a fraction of what they have been historically**. If we assume that bond yields and multiples remain at their current levels, a 60/40 portfolio should return 1.7% over the next ten years. A 10-year USD inflation swap currently costs 1.75%: based on current market prices (which in my view do not accurately reflect [rising inflationary risks](#)), **a 60/40 portfolio should lose purchasing power over the next ten years.**

It gets worse. Over the past ten years, bonds’ real value has not come from coupons but from their *negative correlation with stock prices*. Low yields did not matter too much because bonds’ negative correlation with risk assets allowed sophisticated investors to leverage their bond allocation to increase their portfolios’ expected return – the fundamental insight of risk-parity strategies.

The chart below breaks down the return of a 10-year Treasury between real yield, capital gains on risk-off days (defined as days when the S&P 500 index lost more 1%) and capital gains on non-risk-off day. **Treasuries’ tendency to rise during risk-off days contributed more about 180% of the asset class’ gain this past year.**

Source of 10 Treasuries Total Return



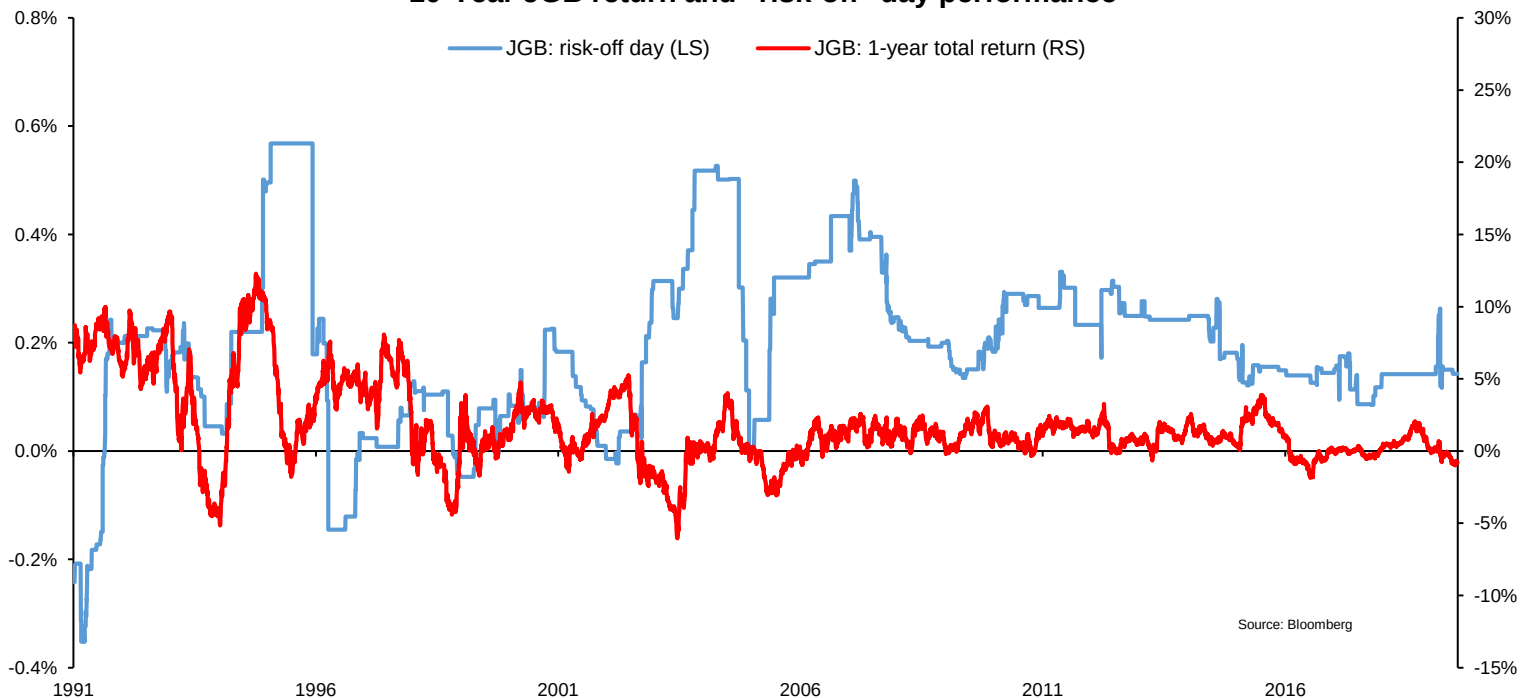


Thus, the case for long-term Treasuries relies on their ability to hedge equity market risk. I am concerned that **financial repression will progressively reduce long-term treasuries' value as an equity hedge by turning them into a boring alternative to cash.**

Consider the case of 10-year Japanese Government Bonds, whose yield has been anchored by the Bank of Japan at around 0% since September 2016. JGBs' ability to hedge an equity portfolio has diminished as financial repression has kept bond prices in a very tight range: 10-year JGBs have returned an average of 0.15% in the last 12 days during which Japanese stocks' prices fell by more than 3%.

In other words, financial repression will eventually transform bonds into a costly and rather ineffective option, rather than an asset with positive carry and strong risk-off potential. If yields turn negative, **bond investors will be required to pay in order to buy an increasingly weaker insurance against stock market declines.**

10-Year JGB return and "risk-off" day performance



The age of the bullet-proof 60/40 portfolio has ended in the late 2010s. Long-term asset allocators will need to find a replacement strategy if they are to meet their target returns – a goal that many liability-driven investors will fail to achieve.

Welcome to the secular bear market of the 2020s.