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ILLUMINATING THE PATH FORWARD

BREAKING FREE FROM THE 60 / 40 PORTFOLIO

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EXECUTIVE SUMMARY

We make two simple, but critical points: first, the bad news: if investors continue to build portfolios as they have traditionally, many will fail to meet their investing goals. Second, the very good news: we believe it is possible for investors to increase the likelihood of meeting their objectives. However, doing so will require adopting a fundamentally new investing mindset. Small tweaks will not be sufficient.

The primary culprit for low expected returns is interest rates. With rates at or near historical lows across the US and major markets, a traditional investment portfolio (which we colloquially refer to as the “60 / 40,” meaning 60% equities, 40% bonds) has little chance of returning what it has historically; and, more importantly, little chance of returning what most investors believe they will need to meet their long-term objectives. Indeed, there have been a number of industry and academic studies, all pointing to lower returns going forward. Instead of 8-9% returns from the 60 / 40 portfolio, many investors believe that 3-4% gross returns over the next 10 years are more likely.¹

So what to do? Investors could “turn the dial” to be even more heavily weighted toward equities, but significantly reducing the bond allocation is likely to create unacceptable wealth destruction risk in a severe equity market contraction. Unfortunately, given the historically low yields on bonds, investors simply cannot invest in them if they want to have a fighting chance of growing their wealth. On the other hand, to protect their wealth, investors need sufficient diversification for their equity-heavy portfolios. So if investors can’t invest in bonds, but cannot *not* invest in bonds, what are they to do? **This is the central dilemma facing investors today.**

An investor can get dizzy trying to fine-tune the dial between equities and bonds, but they will quickly

discover that no setting will work. Instead, investors must break free of the traditional equity/bond investing orthodoxy and consider a much wider array of return streams that can provide *both* sufficient diversification to **protect their wealth** and sufficient return potential to **grow their wealth**.

Why haven’t investors already embraced these new sources of returns? There are two reasons. First, many new sources of returns haven’t been conveniently packaged in investable forms—they have been hidden from view, many held on financial institution balance sheets or bound up in more complex institutional trading strategies. But now, light is shining in, making the previously un-investable, investable, and giving investors access to new return streams that can materially improve their likelihood of success. Despite this, many investors are still reluctant to invest in them in meaningful size, which brings us to our second reason: fear of the unknown. Investors are generally uncomfortable with change, so parting ways with the familiar is difficult. The risk of regret is just too high—it can be paralyzing. So investors get caught in a pattern of incrementalism, making small tweaks, but keeping the core of their portfolios the same.

The pattern of incrementalism is no longer viable. The case for substantive change couldn’t be stronger, and the stakes couldn’t be higher, for both individual investors and their advisors alike. Declining interest rates over the last 35+ years benefitted everyone’s portfolio, so just staying in a traditional 60 / 40 portfolio was largely fine. It was like sailing with the trade winds firmly at your back, unwaveringly blowing you towards your destination. It didn’t matter how good your crew or your boat was; anyone could just throw up his sails and let the vigorous winds propel him along. Well now those trade winds have stopped blowing, leaving everyone

¹ Credit Suisse Global Investment Returns Yearbook 2016. BlackRock also has estimates in the same range for the 60 / 40.

bobbing in a choppy sea, with his sails sagging limply. This is the boat all investors find themselves in today: no matter how hard they try, simply raising the same sails won't get them back on course to their destination. Investors need a different type of boat.

There is no doubt that many investors will continue to bob in the water, waiting for those comforting trade winds to start blowing again. Many others, however, will recognize that this is a once-in-a-career opportunity to embrace the new reality, where the winds are no longer at their backs, but instead are blowing hard in their faces. They will refuse to rely on the same boat that has worked in the past *because it is not the past*. They will look resolutely ahead, overcome their fears of change, and jump ship to a new boat that is better outfitted for the task ahead. It will be these investors that get themselves and their clients on a new course, travelling steadfastly toward their destinations.

This means making bold moves. Think going to a speedboat rather than another type of sailboat. Translating that to an investment portfolio, it is the equivalent of making the core the satellite and the satellite the core. For example, in this "new portfolio," equities will shrink to 20-40%, with much of the exposure no longer coming from traditional market cap weighted indices or long-only active management. Traditional bonds will go to 0%, Yes 0%. The rest, a.k.a. the "new core", will be comprised of alternative sources of returns that can both diversify equity (i.e., "growth" risk), while not sacrificing returns.

We admit that this type of solution represents a very big change. That's not comfortable. But the path out of the dilemma is now being illuminated. The lighthouse is pointing the way. Investors now have a choice to make: **follow the light or stay in the dark.**

THE INVESTOR'S DILEMMA

Most individual investors' portfolios are dominated by two asset classes: public domestic equities and bonds, the "risky" and "safe" asset classes, respectively. This traditional portfolio (colloquially referred to as the "60 / 40" reflecting a typical allocation to equities and bonds) has performed well over the last 30 years and enabled millions of investors to meet their objectives to purchase a home, pay for college, and ultimately fund a more secure retirement. But this good performance has been driven by a number of favorable tailwinds (e.g., secular decline in interest rates, securitization, favorable demographics, waves of globalization, financial deregulation and "democratization of investing", etc.), many of which are unlikely to have the same impact going forward. This creates an acute challenge for today's investors who largely have the same goals as the prior generation, but will unlikely be able to rely on the traditional portfolio to deliver the required returns.

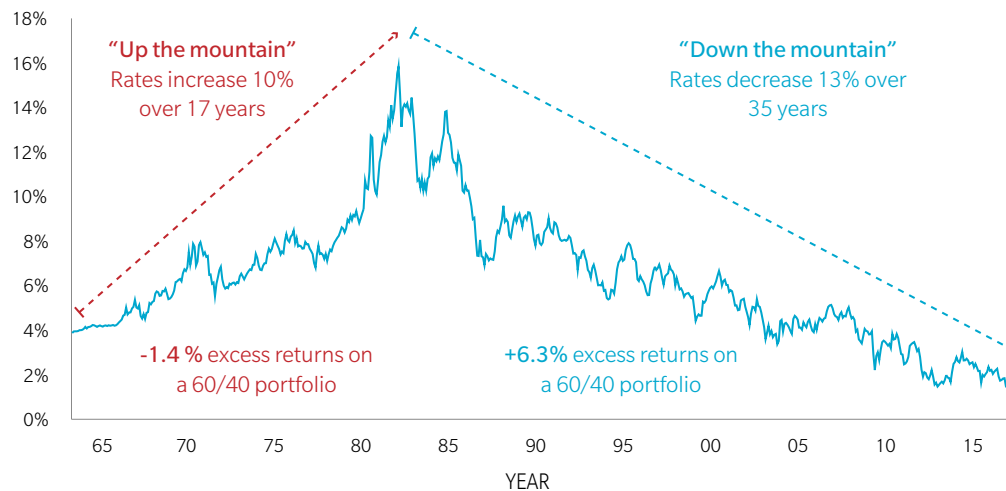
The primary culprit is interest rates. Short-term interest rates across the developed world now hover around zero, with longer-dated bond yields at or near all-time lows. The days of putting money in a bank account and getting 5% or getting 8% in longer duration bonds are gone, and unlikely to return any time soon.² This is the critical issue because all asset classes price relative to cash. For example, if a bank account is yielding 5% then equities might be priced to earn a return of 9% to induce investors to take the risk; but if bank accounts yield 0%, investors are willing to hold equities even if they expect to earn far less, e.g. 4% – because it still beats getting zero. In other words, low rates mean that all assets are now priced to earn lower returns.

While low interest rates themselves represent a drag on portfolio returns, they also create an asymmetric risk; i.e., there is limited room for rates to go lower to boost returns, but a whole lot of room for them to go up, weighing returns down. The last time the US experienced a long-term rise in interest rates from such lows began about 50 years ago; it was a time period that investors would soon rather forget. As Exhibit 1 shows, from 1964-1981 when rates were "climbing up the mountain," excess returns (i.e., the returns an investor could get above what he could get by putting his money in a bank account) of the 60 / 40 were -1.4% *before taking out taxes and fees*. In contrast, the trip "walking down the mountain" was a breeze, with excess returns averaging over +6.0%. Given where yields are today, a steep hike back up the mountain over the next 20 years certainly wouldn't be good for investors. Whether history actually repeats itself and excess returns end up being negative over the next 20 years, or whether returns end up being a bit higher, few would disagree that a steady rise in rates would produce a bad outcome for investors.

2. While short-term rates are forecast to rise as implied in the forward curve, they are not expected to rise significantly (i.e., <3% until 2022). If rates were to rise much more than is "priced-in" it will certainly hurt bonds, and likely equities as well, putting investors further in the hole.

Exhibit 1: Investors have benefited from a historic decline in interest rates

10-YEAR TREASURY YIELD



Note: The performance of the S&P 500 Total Return Index and the 10-Year Constant Maturity Treasury are used to estimate the nominal returns of the 60 / 40. Excess returns are over the 3-month Treasury yield.

Source: Bloomberg, FRED.

It is not just that the anemic yields on bonds are suppressing returns — the low rates are actually increasing the risk in fixed income allocations as well. With rates coming down so much, it has increased the duration of bonds (e.g., the duration of the Barclays Agg Index has gone from a low of nearly 3.5 years at the beginning of 2009 to 6.1 years in January of 2017),³ which means that any increase in rates is going to have an even more pronounced impact on returns. It's a double whammy.

There is more. With such low rates, investors have been forced to seek out returns in riskier assets like equities, which has stretched valuations and depressed future returns of riskier, higher returning asset classes as well.⁴ This is not controversial: while it is extremely difficult to predict how asset classes are going to perform over the next year or two, you can have a greater degree of confidence around how they are likely to perform over longer periods of time as more fundamental limitations around valuation, debt levels, share of corporate profits, economic growth, and productivity trends come into play. Indeed, there have been a number of industry and academic studies, all pointing to lower returns going forward. Instead of 8-9% returns from a 60 / 40 portfolio, perhaps a 3-4% total return over the next 10 years is a more realistic expectation.⁵ And if the performance is anything like it was during the long period of secularly rising interest rates through 1981, then even that might be a bit optimistic.

3. Source: FactSet

4. For example, the price to earnings ratio for the S&P 500 as of YE 2016 is ~21, significantly above its long term average of ~16

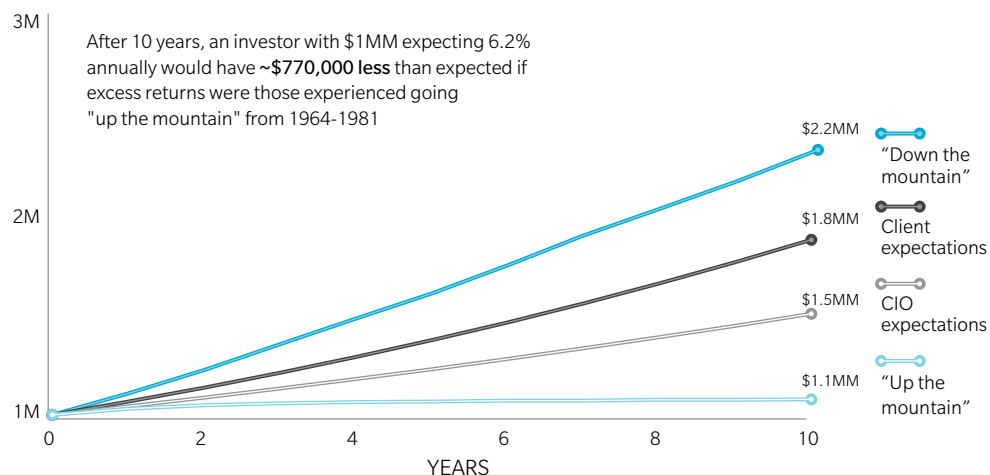
5. Credit Suisse Global Investment Returns Yearbook 2016

Regardless of whether you believe rates are going to ever get to 1981-levels again or whether they are just going to remain relatively low, it is hard not to argue that the long-term prospects for investors today are bleaker than they have been in a long time.

Investors don't always appreciate the historical uniqueness of this broader context, especially given the recently buoyant equity markets, which have dulled the pain and memory of the financial crisis and the "lost decade" of 2000-2010, where major indices were essentially flat.⁶ Investors are feeling cautious, yet generally optimistic about the future. Indeed, while investors have tempered their return expectations to some extent, many still haven't fully come to grips with the raw reality. Research suggests that individual investors still expect the 60 / 40 portfolio to return just over +6.0%, which given where rates are, implies an excess return of ~4% over the next 10 years or so – a far cry from the -1.4% experienced during the last secular increase in rates. While CIOs are more pessimistic, citing a total return of 3.9% (implying an excess return of just below 2%), their expectations are still well above returns experienced during the rising rate period.⁷ To put some hard numbers around this: if an investor has a portfolio of \$1 million, in 10 years the difference between what he would have if returns were consistent with CIO expectations vs. his own is \$350,000. More worryingly, if excess returns were consistent with what was experienced when rates were climbing "up the mountain" vs. what he current expects the difference balloons to ~\$770,000.

Exhibit 2: Total returns of a "60 / 40" portfolio are unlikely to match investor expectations

PORTFOLIO VALUE (\$)



1. Results are shown as \$1,000,000 compounded annually over 10 years. Does not include withdrawals, taxes, or fees.

2. For each respective scenario, annual returns are assumed to be: Client expectations - 6.2%, CIO expectations - 3.9%, "Up the mountain" - 0.6% (taken as the current 5-year T-bill yield of ~2% plus the excess returns of -1.4% on the 60 / 40 portfolio from 1/1/1964-10/1/1981. "Down the mountain" - 8.3% (taken as the current 5-year T-bill yield of ~2% plus the excess returns of 6.3% on the 60 / 40 portfolio from 10/1/1981-12/1/2016).

Sources: Bloomberg, FRED, Oliver Wyman analysis, Stone Ridge CIO Survey Q3 2016.

6. Arnott, Robert. (2010, January). "Was It Really A Lost Decade?" Research Affiliates.

7. Stone Ridge CIO Survey, 2016

In short, it may be increasingly difficult, if not impossible for investors to meet their return goals investing the same way that they have in the past. So what options do they have? Given the bleak outlook for long-term bonds, investors could “turn the dial” to be even more heavily weighted toward equities, but that is likely to create unacceptable wealth destruction risk. But if an investor cannot invest in bonds if they want to have a reasonable chance of growing their wealth, but cannot not invest in bonds if they need some assets to provide diversification and “ballast” to protect their wealth, then what are they to do? **This is the central dilemma facing all investors.**

SOLVING THE INVESTOR’S DILEMMA

One way to escape this dilemma is conceptually simple and is consistent with the tenets of modern portfolio theory on which the whole traditional portfolio is based. This may seem ironic, but since the basic theory has always been sound, it should be no surprise that the answer is found in applying the theory better, rather than rejecting it. The answer is to add new return streams that can both a) provide returns consistent with what investors have expected historically and need going forward to **grow their wealth**, and b) provide sufficient diversification so that investors can **protect their wealth**.

Put simply, this means that instead of “turning the dial” away from bonds toward more of the same types of risky assets that are already in the portfolio (riskier equities, high yield credit, etc.), investors need to turn it towards investments that can maintain (or even enhance) the return profile of their portfolios, but in a way that does not materially increase risk. But what other types of investments offer returns consistent with that of riskier/higher returning assets like equities, but can provide diversification properties that will allow investors to maintain or even reduce risk? And if the solution is so obvious, why haven’t investors embraced these new types of investments before? There are two explanations: first, many of these return streams haven’t been conveniently “packaged” as investments; and second, investors suffer from an acute form of regret syndrome, i.e., they don’t want to do anything too different because they fear it might underperform relative to doing nothing at all. The first of these is changing fast; and with it, investors must change their mindset from one driven by fear of the unfamiliar to one that embraces new opportunities.

This change in mindset starts with recognizing that the investable universe is much, much larger than what investors realize and what they “learn” about on CNBC.

THE INCREDIBLY EXPANDING INVESTABLE UNIVERSE

Most investors tend to be concentrated in asset classes with which they are most familiar, namely domestic equities and bonds. This is perfectly understandable, as in the relatively recent past, those two asset classes made up the lion’s share of what could be efficiently accessed. But as everyone in any business from software to dentistry to fashion knows, product lines, manufacturing techniques, and marketing strategies are ever-changing, and anyone who goes into the future with products and strategies from the 1980s, or even the early 2000s, is going to quickly discover himself falling behind. Investing is no exception.

The investable universe is constantly expanding, and anyone who is not taking advantage of the opportunities this expansion offers is almost surely holding a portfolio that is overly concentrated and inefficient.

A wide range of exposures once considered “un-investable,” or, more fundamentally, not even thought of as sources of returns, are now increasingly becoming available. Thanks to the confluence of a number of factors, it is now possible to invest in these high-return, low-correlation exposures through new securities and funds.

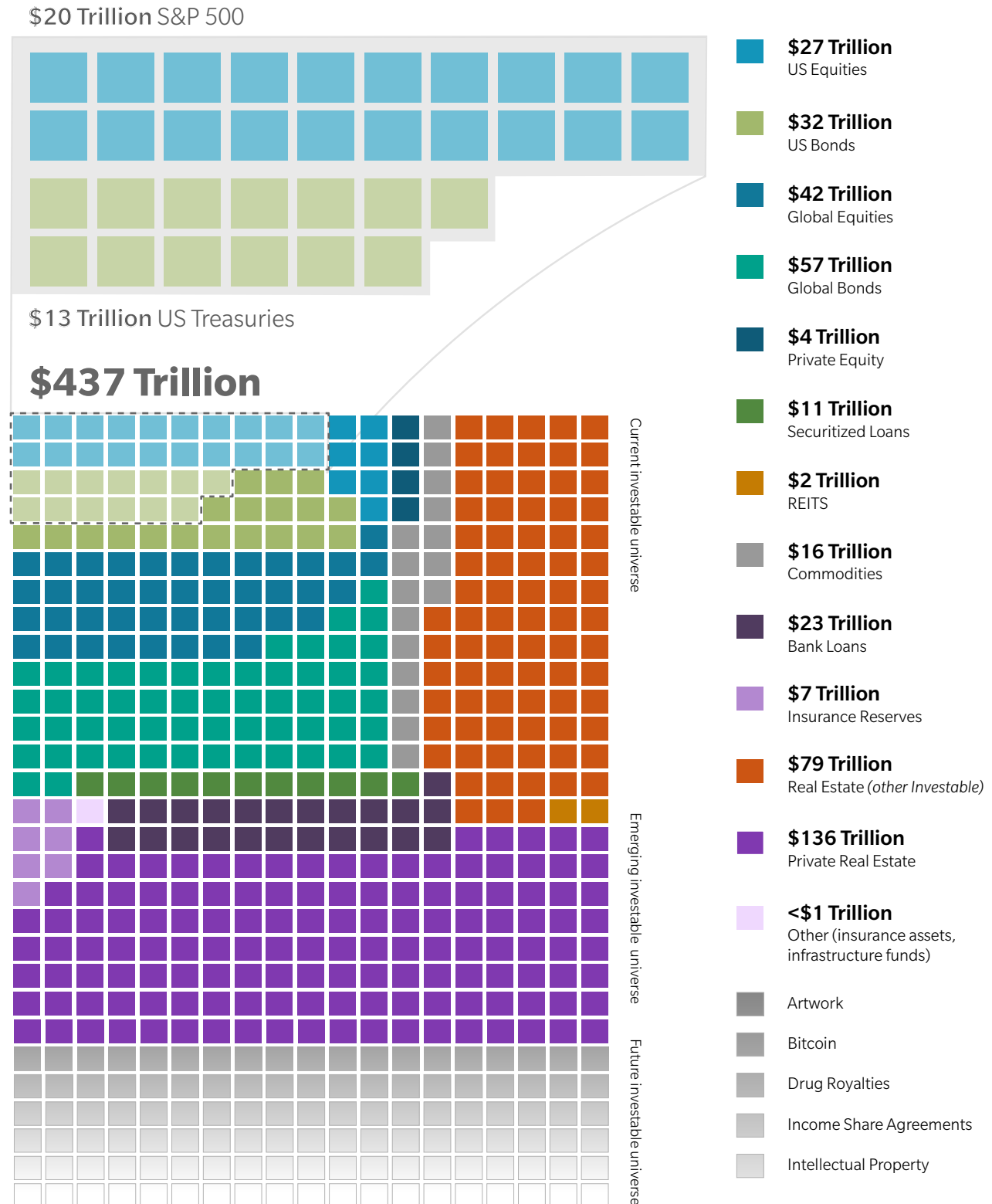
SHINING A LIGHT ON NEW SOURCES OF RETURN

In the past, investors were limited to combinations of market exposures that were packaged into securities such as stocks and bonds. Increasingly, investors are able to invest directly in individual market exposures that generate returns. Any exposure that generates a return could be considered a potential source. For example, the massive business profits “hidden” in the process of financial intermediation, such as bank lending, trading, and insurance underwriting, can be a potential source. Investors who search beyond the familiar to see this much broader view will discover that the types of exposures in their portfolios comprise just a tiny slice of what’s now out there. Exhibit 3 highlights just how small a portion domestic equities and bonds make up of the current universe. As the universe continues to push into the dark expanse beyond the current frontier, that slice is only going to get smaller. The irony is that investors have followed sound advice and diversified their portfolios, but even for those that have added a bit of foreign exposure or some real assets, the fact is that most portfolios are still extremely concentrated, limiting their ability to generate the level and consistency of performance required. From niche asset classes, to risk premia generated through intelligent exploitation of structural market inefficiencies and behavioral biases, to the massive exposures hidden in financial institution balance sheets – it is only when investors see the light and begin exploiting all the available opportunities that they will be on a sustainable path toward success.

STANDING AT THE BRINK OF A REVOLUTION

As alluded to above, there are countless sources of returns that have been available to financial institutions, whose lending, trading and underwriting activity has generated a steady stream of profits over the centuries. But times are changing – these “hidden” profits locked up in the dark expanses of financial institutions’ balance sheets are now being brought to light in forms that investors can access. This trend is driven by several factors: increased regulatory requirements for financial institutions make holding these exposures increasingly uneconomic; technological innovation makes it more efficient to originate and service these exposures off of traditional institutions’ balance sheets; and financial innovation makes it possible to structure vehicles that give investors access to targeted exposures.

Exhibit 3: Domestic equities (S&P 500) and bonds are a fraction of the investable universe.



1. For a complete description of sources by asset class, see Appendix A.

Sources: ACLI, AON, BIS, Bloomberg, CoreLogic, Federal Reserve Board, Guy Carpenter, NAIC, OECD, Oliver Wyman estimates, Preqin, Savill's, SIFMA, SNL, TEFAF, Thomson Reuters, UN, University of St Gallens, World Federation of Exchanges.

We are standing at the front end of a long-term shift in how risk is held, but most investors don't know it yet. Traditional media is stuck in the old paradigm – “investors hold 60% stocks, 40% bonds, but bonds are boring, so our coverage should be 90% stocks, 10% bonds.” Quiet as this shift in risk holding has been, though, this really is a revolution, not a fad. Here's how you can tell: when one party finds a way to make money by taking advantage of another, that's probably a fad – the disadvantaged party will learn to avoid the trap at some point. When innovation creates a situation where everybody can be better off than they were, that's a revolution.

And that's what we're seeing here. Financial institutions get access to capital that is far cheaper than the cost of the equity capital they previously had to raise to fund the growth of their businesses. Investors win by getting direct access to profits historically buried on the balance sheets of financial institutions (i.e., direct access to returns from specific business lines rather than a share of an entire business via its equity) that offer attractive risk, return and diversification features. Moreover, direct investment in these exposures leads to a return stream that is not only likely to be higher – because buying financial institution stock is a very expensive way to invest in the loans and other activities those firms engage in – it's also less risky. That's because by buying stock in any company, investors inevitably expose themselves to equity market or “beta” risk. This is especially true when buying financial firms that have among the highest betas of anything in the market – instead of the uncorrelated or low-correlated returns investors want, they end up with maximally-correlated holdings that crash hard whenever the market falls. The new approach captures the benefit of these risk premia and lessens the cost of risky equity exposure. Finally, these types of transactions can also be beneficial to the economy and society at large. That's because the most dangerous thing for an economy is risk concentrated in financial institutions – think Lehman or AIG. By spreading big risks around, the strategies discussed here make the economy far more robust and resilient.

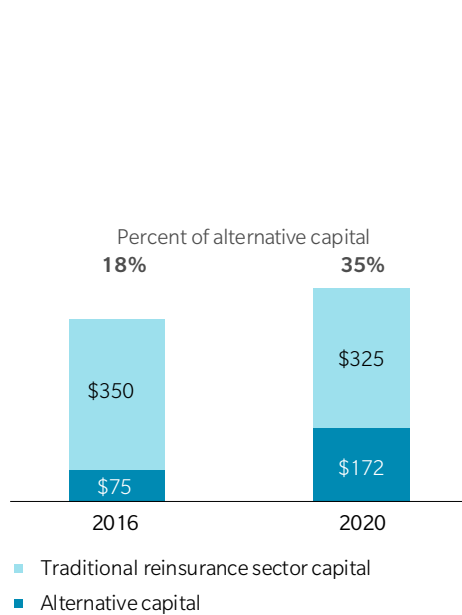
In summary: the first wave of financial innovation “democratized investments” by making it possible for large numbers of retail investors to access the equity and bond markets via lower cost mutual funds and ETFs. This is the next wave that will “democratize balance sheets,” by uncovering a much broader array of exposures arising from financial intermediation and making them available to investors in cost-effective structures.

A few examples will highlight how the societal and financial market trends we have described are leading to broadly-beneficial opportunities. Consider the alternative lending and catastrophe reinsurance markets, which are projected to grow rapidly over the next several years (see Exhibit 4).

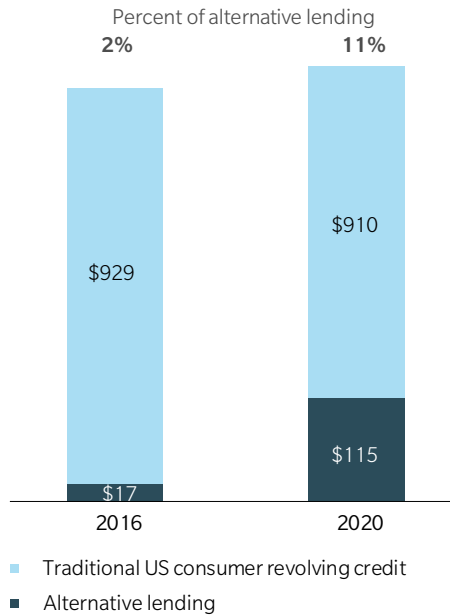
Exhibit 4: Growth of catastrophe bonds and alternative lending

\$ BILLIONS

Reinsurance Capital



Alternative Lending



Note: Alternative capital includes industry loss warranties, catastrophe bonds, side cars, and collateralized reinsurance.

Sources: A.M. Best and Guy Carpenter, Fed Flow of Funds, Morgan Stanley Global Marketplace Lending, and Oliver Wyman analysis.

The alternative lending market. Banks have been tightening credit standards and reducing willingness to lend due to stricter regulatory requirements around capital and liquidity. Stepping into this void are non-traditional or alternative lenders who are making loans to consumers and businesses. Among the advantages of alternative lenders is the ability to leverage technology – which makes the origination and servicing of loans more efficient; and non-deposit funding – which reduces regulatory strictures while providing investors an attractive way to access the underlying exposures. It is now possible to invest directly in certain types of loans (e.g. small business credit, ex-student borrowers) either through direct investment (i.e. peer-to-peer) or via investment in professionally managed institutional vehicles that purchase loans in bulk. Each approach has its advantages, but both offer investors access to a new source of attractive risk premia, which have previously been the sole province of banks. In our case study below, **“Alternative Lending: Disrupting banks, benefiting borrowers and investors,”** we provide some additional perspectives on this market and the opportunity for investors.

CASE STUDY 1 – ALTERNATIVE LENDING: DISRUPTING BANKS, BENEFITING BORROWERS AND INVESTORS

Perhaps no new financial product since the advent of mutual funds a generation ago has had an impact on the lives of so many people as alternative lending has and will. Small business owners who used to have to spend months begging their local banker to borrow a few thousand dollars to purchase inventory for the holiday season can now go online and borrow the money in a matter of days. The potential to spark innovation and entrepreneurship around the world is thrilling. But as we noted above, it's not just the borrowers who will benefit – the opportunity for investors is equally tremendous. The old joke was that bankers followed the 3-6-3 rule – take deposits at 3 (percent), lend at 6, and be on the golf course by 3. Bankers no longer work those kind of hours, but in return for their greatly increased efforts, they found ways to extract a lot more than the traditional 3% spread from borrowers – from business loans to credit cards to student debt, the banks now capture 5, 10, even 20 percent while borrowing from the government and depositors at a rate right around zero. But in addition to the fact that this was tough on borrowers, not much flowed through to bank investors either – over the last ten years, investors in bank and financial stocks suffered a roller-coaster ride of volatility while receiving an annual return of only 0.2% per year on average, even less than the 0.7% per year return on cash.⁸ This is no surprise when you think of all the money banks spend, not just on staffing, but on big buildings, advertising, and all the other costs that must be incurred in order to run such a business. Today, there are hundreds of alternative lending platforms around the world that are exploiting advances in technology to underwrite these loans while cutting out costly intermediaries.

Of course making a substantial loan to any one borrower will always involve default risk. But a diversified portfolio of loans can mitigate such risks enormously. Moreover the risks associated with consumer and business lending are much less correlated with stocks and other asset classes than one might initially expect. The reason is that stock markets anticipate trends in the broad economy. Think back to the last financial crisis. Stocks crashed in the Fall of 2008, but unemployment and business failures peaked quite a while later, in late 2009/early 2010. Short-term loans made before the crisis hit were mostly or fully paid off by then. And the loans made after the market plummeted were made at higher rates that reflected the increased default risk. As a result, alternative lending, while it has better and worse periods just as all assets do, did not tank along with broader markets, and is not that likely to do so in the future. The combination of strong returns and low correlation for investors along with a consumer-friendly technology platform for borrowers can be expected to drive continued growth in this space, disrupting the traditional bank-dominated market in the years to come.

8. Based on the performance of the iShares U.S. Financials ETF and the 3-month Treasury yield.

Catastrophe reinsurance. Imagine a large insurer like Allstate who is able to sell hurricane-insurance policies to millions of Floridians. While this can be a great business there's an enormous lurking risk: if a big hurricane actually hits Miami, in addition to the devastating and tragic human toll, there's going to be perhaps \$100 or \$200 billion of property damage. And, while Allstate is a big, wealthy company, it simply cannot afford to pay that amount of money out in a year, much less if storms hit in back-to-back years. Thankfully, there is a solution that allows them to continue to write policies: reinsurance. Allstate's friends at big reinsurance companies like Swiss Re and Munich Re will happily take some of the risk off their hands. But this just passes the buck, so to speak—the reinsurers, of which there are just a handful that can really bear this magnitude of risk, are then stuck with the exposure. Growth in reinsurance demand is outstripping the ability of reinsurers to provide it and is coming at the same time as the industry is consolidating as insurers increasingly prefer to work with just a few trusted partners. Given these trends, reinsurers are being forced to take bigger and bigger risks. Saying “no” to their most important insurance clients like Allstate, however, just isn’t a commercially viable strategy. The value of global assets in need of insurance protection continues to grow, and if reinsurers want to remain relevant and grow their businesses, there is a lot of pressure to say “yes,” which means constantly bumping up against the limits of what their balance sheets can bear.

What are they to do?

They can turn to the markets and try to raise some additional capital from shareholders, but that is really expensive. And they don’t need it: they only need targeted capital for their “fat-tailed” businesses that pose the risk of sudden severe losses — think natural disasters or the risk arising from insuring airplanes, not the fairly predictable risks like life insurance. Investors, in turn, are constantly looking to find attractive places to invest, especially in today’s low return environment, but simply investing in the equity (or the equities) of reinsurers to get exposure to the general business results isn’t particularly attractive as it introduces a large amount of equity beta. A much more attractive return stream would be one that is “linked” to the specific exposures and associated underwriting results of the reinsurer. Fortunately, for both the reinsurers and investors, there is an alternative: insurance-linked securities.

Insurance-linked securities have returns that are linked to the specific underwriting results of reinsurers — i.e., a year of few natural disasters produces a high return; a year of very costly natural disasters results in poorer returns. Reinsurers get low cost capital to help finance the specific tail risks to which they are exposed; investors get a return stream with an attractive risk-adjusted return that is uncorrelated to everything else in their portfolios. After all, it is hard to see how a hurricane in Florida would cause the stock market to collapse, or more perversely, how an equity market collapse might cause a hurricane. Given the mutual benefit to investors and insurers, it is not surprising then that third-party investment in insurance-linked investments like catastrophe bonds, quota shares, and collateralized reinsurance contracts, is projected to grow to \$170 billion of the \$500 billion reinsurance market by 2020, up from \$75 billion today.

CASE STUDY 2 – BEYOND CATASTROPHE REINSURANCE: EXPANDING THE CONCEPT TO INVESTMENT BANK BALANCE SHEETS

It isn't only insurance companies that are in the business of offering catastrophe insurance. Investment banks do it, too, but their instrument of choice isn't insurance contracts, but options. And it isn't earthquakes, hurricanes, and other natural disasters that they offer protection for, but sharp movements in market prices. For most investors, this conjures up notions of those painful periods when the equity market crashes. However, just as the old saying goes, "one man's trash is another man's treasure" those sharp moves in market prices could be up or down – it just depends on your perspective. For example, in the market for options on crude oil, for instance, airlines are especially exposed to the risk of a sharp appreciation in crude oil prices, so they want to buy options that protect them if prices go up. In contrast, oil producers like Mexico, are exposed to sharp depreciation in crude oil prices, so they want to buy contracts that protect them if the price falls. This "two-way" need for protection applies to other markets as well, such as foreign currencies and certain other agricultural commodities. In other words, what is a bust for one man is a bonanza for another. From a bank's perspective, the ability to offer protection on both sides means that there is an opportunity to make money (i.e., excess returns over cash) from selling both put and call options.

But why? Where does the opportunity to make money come from?

To understand this business, revisiting the insurance analogy is helpful. Just like catastrophe risk, buyers of protection are willing to pay a premium for protecting against whatever bad outcome they are worried about. Or to put it in more technical terms, "downside variance" is persistently overpriced, i.e., the cost of the protection that the buyer has to pay is greater than the expected benefit they will get from it. In insurance, this means that individual policyholders pay premiums that in the aggregate are greater than what insurers expect to pay out in claims on average over time. For option buyers, it means they pay more in aggregate than what banks expect to pay out due to market volatility. In both cases, insurers and banks profit over time from holding such exposures. This is the edge that institutional sellers of variance enjoy. It's a perpetual money making machine. If they had infinite access to cheap capital, they would take positions in as many options as hedgers were willing to buy.

But like the insurers, they don't.

Banks are limited in the risk they can take by the capital they are willing and able to deploy, which opens the door to investors to enter these markets and gain exposure. And just as an insurance company bundles many individual policies together which it then offers reinsurers, so too can an investment bank bundle many individual options together which it can then offer to investors. It's another "win-win": banks get access to capital to help sustain and grow their businesses. Investors get access to an attractive risk premia that arises from the structural overpricing of downside variance. And like that, the "variance risk premium" is born.

There are also many newer types of emerging risk premia on the horizon. Take Bitcoin. It has all the hallmarks of a frontier market, with gut-wrenching volatility, lots of “spin” and rumor, and significant doubt around whether it would ever be suitable for wider investment. However, as the market for Bitcoin begins to mature and price volatility decreases, it may no longer just be relegated to the fringes of finance; it, too, could be packaged into an investable asset class that could provide investors with a unique source of return and diversification. For example, consider this:

- Bitcoin exhibits volatility characteristics that are not so different from emerging market FX. For over a year now, the volatility of Bitcoin has settled down considerably and doesn’t look all that different than what some of the more volatile emerging market currencies have experienced throughout their history.
- Bitcoin is small, but growing – its \$16 billion market cap is dwarfed by the \$6.1 trillion and \$7.6 trillion in Japanese Yen and Euro, respectively, but one year ago Bitcoin’s market cap was \$6.4 billion and daily trading volumes in the past year averaged \$30.9 million USD, showing growth rates comparable to the valuations of startups that have created rapidly expanding new markets (e.g., Uber, Snapchat).
- Bitcoin could be an effective hedge against local hyperinflation and broader geo-political risks. Like gold, there is a fixed amount to “mine” so its value cannot be “hyper-inflated” away by a central-bank rolling the printing presses. And while physical gold is costly to hold and keep secure, Bitcoin involves no such “cost of carry.”
- Bitcoin has provided an uncorrelated return stream (0.03 correlation with S&P 500) and, with no structural link to markets, is likely to remain uncorrelated in the future.

Bitcoin is just one instance of an asset class that most investors don’t even think about. For another example, consider ISAs (income share agreements), which can be an attractive alternative to traditional student loans, as they allow students to borrow money to pay for education in exchange for a share of their future income. Packaging these agreements into a diversified pool of exposures could be a win-win. Purdue University is running an ongoing experiment to see if ISAs can lower the costs of financing education for students while giving investors another source of diversifying returns.

Additional investment opportunities are arising outside of the financial sector as well. For example, pharmaceutical companies monetize future drug royalty revenues by selling participation through bonds and other financial instruments. A range of entities organized to hold patents are generating investable returns streams from intellectual property. Investment funds are pooling investor capital to invest in fine art (e.g., sculptures, paintings, photographs) to capture returns from the appreciation and eventual sale of the underlying assets, broadening the potential pool of high-end art investors. One of the largest markets in the world, the residential real estate market, is still largely unavailable for investment in a diversified manner, but this is likely to change as well: there are emerging business models focused on helping homebuyers finance down payments, which can provide the raw material required to enable direct equity participation in diversified residential real estate.

The examples above are just the beginning: we believe the world is undergoing a structural change driven by technology, financial regulation and financial innovation that will alter the way risk is held. No longer will so much risk be concentrated on so few financial institution balance sheets; rather it will be scattered among the portfolios of millions of individual investors. This arrangement is more robust and efficient, and has the potential to benefit investors, lenders, borrowers, and the economy more broadly.

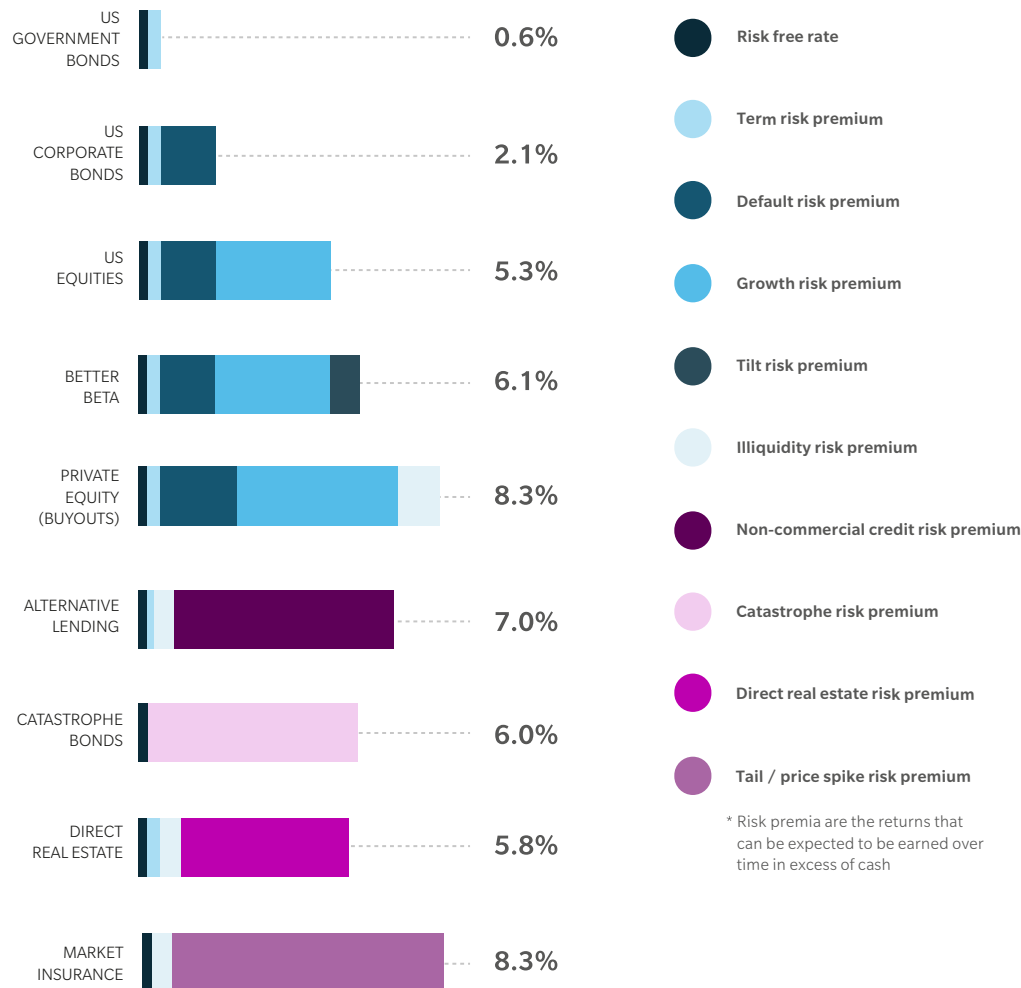
A STARK CHOICE: COMFORTABLY FAIL VS. UNCOMFORTABLY SUCCEED

Investors face a stark choice: stick with what's comfortable and hope that the approach that has worked in the past will work as well in the future; or adopt a new mindset for how to build portfolios that take into account the structural changes in the world. Given the arguments militating in favor of the former, we believe investors must move beyond their comfort zones and embrace a much wider array of risk premia, breaking free of the equity – bond orthodoxy.

STARTING WITH THE RAW MATERIAL

Like any complex structure, a building, an airplane, a computer . . . an investment portfolio is built out of underlying raw material that is combined in a way to satisfy a particular objective. For an investment portfolio, the raw materials are risk exposures, which are the underlying building blocks of assets. Exhibit 5 illustrates this concept, showing how the expected returns of assets are really just a result of exposures to different combinations of the underlying risk premia. Remember, assets don't generate excess returns, the underlying risks do.

Exhibit 5: Risk premia deconstruction: the fundamental building blocks of assets



Note: See Appendix B for a detailed description of how risk premia were estimated.

Sources: Bloomberg, JPMorgan Long Term Capital Markets Assumptions (2017), Oliver Wyman industry sources, Oliver Wyman analysis.

Why is this important? First, by thinking in terms of the raw material, it forces a shift in mindset from asset class types, which are really just convenient labels, to the essence of what is driving the return stream – risk premia. This can free up investors from thinking that everything must fit neatly into an asset class label, and think more open-mindedly and critically about the types of risk premia to which they want exposure. Second, the use of asset class labels will tend to convince investors that they are more diversified than they actually are. Labels can obfuscate underlying similarities in terms of risk premia, especially if the investments are bucketed into different asset classes (e.g., when viewed in risk premia terms, equities share a lot with high yield bonds).

As Exhibit 5 highlights, there are many other risk premia that are available that provide a much broader selection of raw materials from which an investor can build and diversify their portfolios. Whether those risk premia are accessed by repackaging exposures on financial institution balance sheets (e.g., non-commercial credit risk, catastrophe risk, tail risk/price spike risk) or through “tilting” an equity portfolio toward riskier parts of the market to capture risk premia via factor exposures (e.g., momentum, value, or smaller capitalization), the benefits of building a portfolio out of a greater selection of building blocks can be significant.

PORTFOLIO ARCHITECTS WANTED

Investors need to think of themselves as portfolio architects. Their job is to take the raw material and construct a portfolio that can most reliably meet their return objectives while being robust to the widest possible array of market scenarios. This means adhering to the following three construction principles.

RULE #1:

FIND RISK PREMIA THAT SHOULD DELIVER A POSITIVE RETURN

The purpose of investing in risky exposures is to generate a return greater than cash. If an investor could be content and meet all of his objectives by simply holding cash, then he might as well do so. But if he is going to be an investor and take risk, then the portfolio should be made up of exposures that collectively offer a sufficiently high risk premium to meet his objectives given the risks he is willing to take.

It is important for investors to recognize, however, that investing in an asset with price volatility doesn’t necessarily mean that it will generate an excess return, or a risk premium commensurate with that risk (see our case study — ["A Cautionary Tale: The GSCI and the elusive risk premium"](#)). Investments generate a risk premium due to a) the existence of an explicit transfer of risk; b) an exploitation of structural inefficiencies in the market; or c) persistent behavioral biases. If none of these conditions exist, then an investor must question whether they are simply assuming uncompensated price volatility. This is always important, but is particularly critical in today’s environment, where every basis point of return matters—it is the difference between having a chance of meeting objectives or falling short. There is no room for error.

This raises the issue of bonds. More precisely, do they offer reasonable return compensation for the risk that the investor assumes? While it is impossible to say whether bonds will deliver the same historical risk premium (the term premium above cash), there is no denying that: 1) even if the excess returns of bonds is consistent with history, given the low cash rates, total returns will be much lower and well below most investors’ required returns; and 2) the risk-return profile of bonds is structurally unattractive, i.e., while there is always the prospect that rates could fall further (look at Japan and much of the Eurozone), the relative “benefit” of that outcome given the floor on rates compared to the potential loss of capital in the case of rising rates (particularly if they rise much more quickly than expected) makes the trade-off highly asymmetric.

Moreover, because bonds are commonly seen as the only truly reliable hedge to equities, investors arguably pay an implicit insurance premium to hold them. This is compounded by uneconomic demand in the market (e.g., from pension funds that are increasingly looking to immunize their fixed liabilities), which may further inflate valuation and lower future expected returns.

All that said, investors may be seduced into thinking that despite their extremely low expected returns and highly asymmetric risk-return profile, bonds still have an important diversification role to play in a portfolio. We explore this issue of diversification next.

CASE STUDY 3: A CAUTIONARY TALE: THE GSCI AND THE ELUSIVE RISK PREMIUM

The beginning of the 1990s was an interesting time. Communism and glam rock were gasping their last breaths, and Japan looked like it was going to soon own the world. It was also the dawn of a new age in investing, as investors, sick and tired of their equity and bond portfolios were searching for something that could actually provide some real diversification and still give them high returns. So some very smart people at one of the world's top investment banks thought and thought—what could diversify these traditional asset classes, offer high returns and be investable by the ordinary investor? And then they had it. It was a “eureka” moment: a commodity index! After all, what could be farther from equities and bonds than the corn fields of Nebraska, the oil wells of Texas, and the stockyards of Chicago? And so the Goldman Sachs Commodity Index (GSCI) was born.

There was one question, however, that needed an answer. How should gold, silver, live hogs, wheat, aluminum, nickel, soybeans, cocoa, and so many other commodities be mixed together? The simplest answer, of course, was to weight them all equally.

Except that it didn't work all that well. The “back-test” performance using data from 1984-1990 offered something that had half as much return as equities. That wouldn't fly with investors. See Table A below.

Table A: “In Sample (1984-1990)” Equal Weight

S&P 500	GSCI
+14.6%	+7.5%

So the team went back to work and back-tested different schemes until they found one that worked. And then it happened . . . “eureka” yet again. The “production value” weighting scheme was born. Is there a strong economic rationale for why a weighting scheme like production value should be used? Not important. The results spoke for themselves.

Table B: “In Sample (1984-1990)” Production Weighted

S&P 500	GSCI
+14.6%	+18.1%

Investors loved the numbers. An idea became a product and a product became an industry. Dollars flowed into the index, so much so that analysts accused the Index of causing a world-wide food shortage as the index sponsor rushed to buy futures to cover exposures.

Unfortunately, not everyone lived happily ever after. After a quarter century, when all was said and done, how did the GSCI do? What were the real, live, i.e., not back-tested, cumulative return results? Zero. Nada.

Table C: “Out-of-Sample (1991-2016)” Production Weighted

S&P 500	GSCI
+9.9%	-0.04%

And so, what’s the lesson to be learned from the risk premium that wasn’t? Beware of backtesting. If the numbers look too good to be true, they probably are. Remember that just because there’s a risk exposure doesn’t mean there’s a risk premium. In order for there to be one, three things have to hold:

- Is the premium **Persistent** across time?
- Is it **Pervasive** across markets?
- And is it **Intuitive**?

For the GSCI, the returns haven’t been persistent and they haven’t been pervasive (some commodities have generated returns and others haven’t). As for the intuition, a common argument is that commodities might offer a risk premium as producers (Exxon, Shell, corn farmers, etc.) are willing to pay a premium to hedge their future sales. But there are equally strong arguments in the opposite direction, i.e., that commercial consumers (e.g., American Airlines, Delta Airlines) are willing to pay a premium to hedge their future purchases. Depending on the situation, an investor who goes long the commodity by purchasing futures may end up with a positive return (in the case when the hedge demand from the producers is greater than that from the consumers), but might just as well end up with a negative return if the consumers want to hedge their purchases more than producers want to hedge their production. Is this an intuitive explanation for a risk premium? We don’t think so either.

So whether it is a commodities strategy, a new-fangled equity risk factor strategy or some other magical return stream, investors would be wise to keep this tale in mind and ask themselves the three basic questions: Is it Persistent? Is it Pervasive? Is it Intuitive? After all, there are a lot of risks out there that investors can take, but not all of them will pay them a premium.

RULE #2:

ADD ENOUGH RISK PREMIA TO DIVERSIFY YOUR PORTFOLIO

Whether an investor is accumulating wealth or spending it down, a portfolio with similar expected returns but with lower volatility, less frequent and less severe drawdowns will provide a meaningfully better chance of meeting one's objectives. Central to this is building a portfolio that is sufficiently diversified across a range of return streams. Traditionally, given the primacy of equity risk, that has meant bonds. Going forward, however, investors are urged to question whether bonds should serve as the primary source of equity market diversification. In particular,

- Expected bond returns are incredibly low, presenting a significant drag on a portfolio. These returns may be biased even lower given the artificially high demand for hedges to equity exposure as well as some evidence suggesting increasing use of bonds by institutional investors seeking to immunize fixed liabilities.
- Durations of bond indices have steadily risen, increasing investors' exposure to any future rate increases.
- Most bonds come with such low volatility that investors need to add a tremendous amount to provide a significant offset.⁹
- The ability for bonds to provide a offset to a large equity fall is limited by the absolute magnitude of how far rates can continue to fall.

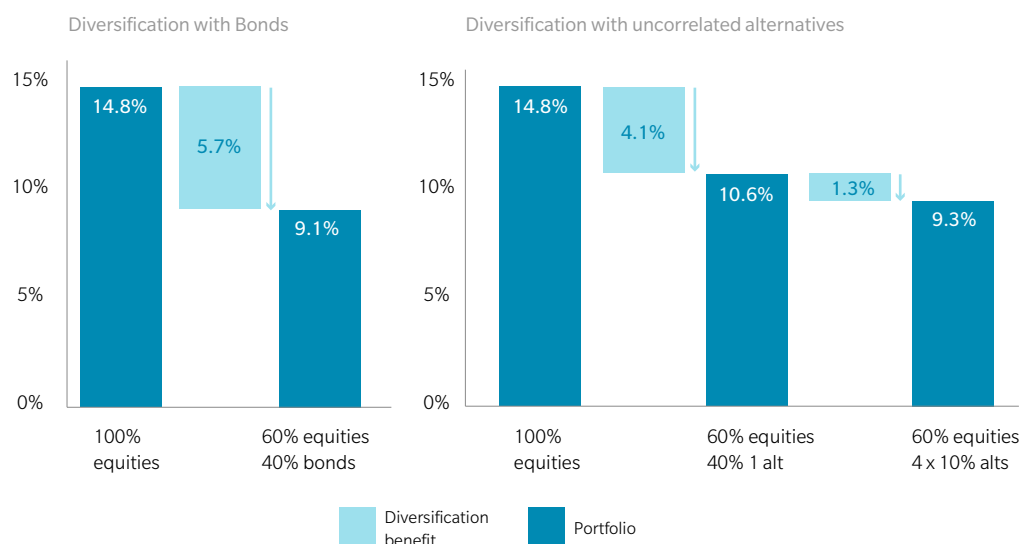
Investors have a choice. Instead of exclusively, almost reflexively, relying on bonds, investors must now consider alternative sources of returns that are uncorrelated to equities. But how much is required? Just as investors will typically allocate nearly half of their portfolios to bonds to provide sufficient diversification and reduce risk down to an acceptable level, so too must they consider adding a similar amount of these other return streams. **What most investors do not realize**, however, is that it doesn't matter whether these return streams have bond-like volatility (e.g., 6%) or equity-like volatility (like 15%). In one of the great triumphs of portfolio math, even if you substitute a higher volatility diversifying asset (with zero correlation), the reduction in risk is actually similar to the case when you substitute in a lower volatility asset (like bonds). As higher volatility assets typically provide higher returns, the beauty of this is that you can substitute in a higher volatility asset, reduce your risk as if you were adding bonds, and not have to suffer the return drag and highly asymmetric risk profile they bring.

Exhibit 6 highlights this phenomenon. Look first at the figure on the left, which shows that if a portfolio is comprised of 100% equities, it has a volatility of around 15%. Putting 40% of it into 10-year bonds reduces the risk by almost 40%, to 9%. Not too shabby. The figure on the right is similar, but instead of using bonds, we show the impact of allocating 40% to a return stream with zero correlation to equities (bonds have historically been slightly negative, actually), but with a significantly higher volatility of 15%. Amazingly, volatility is reduced almost as much despite allocating to a return stream that has the same volatility as equities! Even better, an investor can achieve an additional reduction in risk by spreading that 40% allocation across more uncorrelated return streams. The resulting portfolio volatility of adding four of these uncorrelated return streams is almost exactly the same as if the 40% was in low returning, low volatility bonds. Diversification is the one truly free lunch in investing.

9. Technically, this only applies at typical durations and without the use of leverage.

Exhibit 6: Substituting uncorrelated return streams in place of bonds achieves similar risk-reducing benefits

VOLATILITY



1. Based on the JPM LTCMAs, we assume that bonds have a -0.3 correlation with equities.

2. Equities and alternatives are assumed to have volatility of 14.75% and to have no correlation with each other.

Sources: JPMorgan Long Term Capital Markets Assumptions (2017), Oliver Wyman analysis.

RULE #3: DON'T HAVE UNNECESSARY LIQUIDITY

The existence of the illiquidity premium is well-established both in theory and in practice. Investors require a premium to hold illiquid assets (or conversely, pay a premium to hold liquid assets).¹⁰ Investors in traditional portfolios are invested in mostly liquid assets, typically in the form of daily redeemable funds. This is a bad deal for any investor who is investing with long-term goals in mind. Illiquidity needs to be viewed like any other risk premium building block from which an investor can construct his portfolio—the vast majority of long-term investors need to add significantly more. The potential incremental returns from holding an illiquid asset vs. its liquid counterpart can range anywhere from 20 to 200 bps annually, depending on the asset.¹¹ While the premium will vary by asset class depending on the specific details of the investment terms and the depth of the underlying market, investors that restrict themselves to investing in highly liquid, daily redeemable funds or securities may be missing out on a significant source of incremental return.

Another way to look at this issue is to view liquidity as “the price of admission” to access many alternative investments that have the most favorable risk, return and diversification properties. Many of these investments have underlying exposures that are not liquid, so

10. Amihud, Y., Mendelsohn, H., & Pedersen, L. H. (2006). Liquidity and Asset Prices. *Foundations and Trends in Finance*, 1(4), 269-364

11. The lower end of the range is reflective of relatively less liquid investments which are slightly more difficult to trade than their liquid counterparts (e.g. private placements vs. public corporate bonds), while the higher end of the range is reflective of the most illiquid investments (such as private equity, which has a typical lockup period of 7+ years)

it is imprudent for managers of funds based on these to offer daily liquidity. For investors willing to give up this little bit of liquidity, they can get paid handsomely in the form of higher returns and improved diversification. While no investor should have 100% of his assets locked up for years, allocating a much larger share to illiquid investments is typically a well-compensated risk as few investors have such large near-term expenses or face such potentially large unexpected expenses that they wouldn't be able to sell other liquid investments to meet these needs.

A NEW MINDSET, A NEW PORTFOLIO

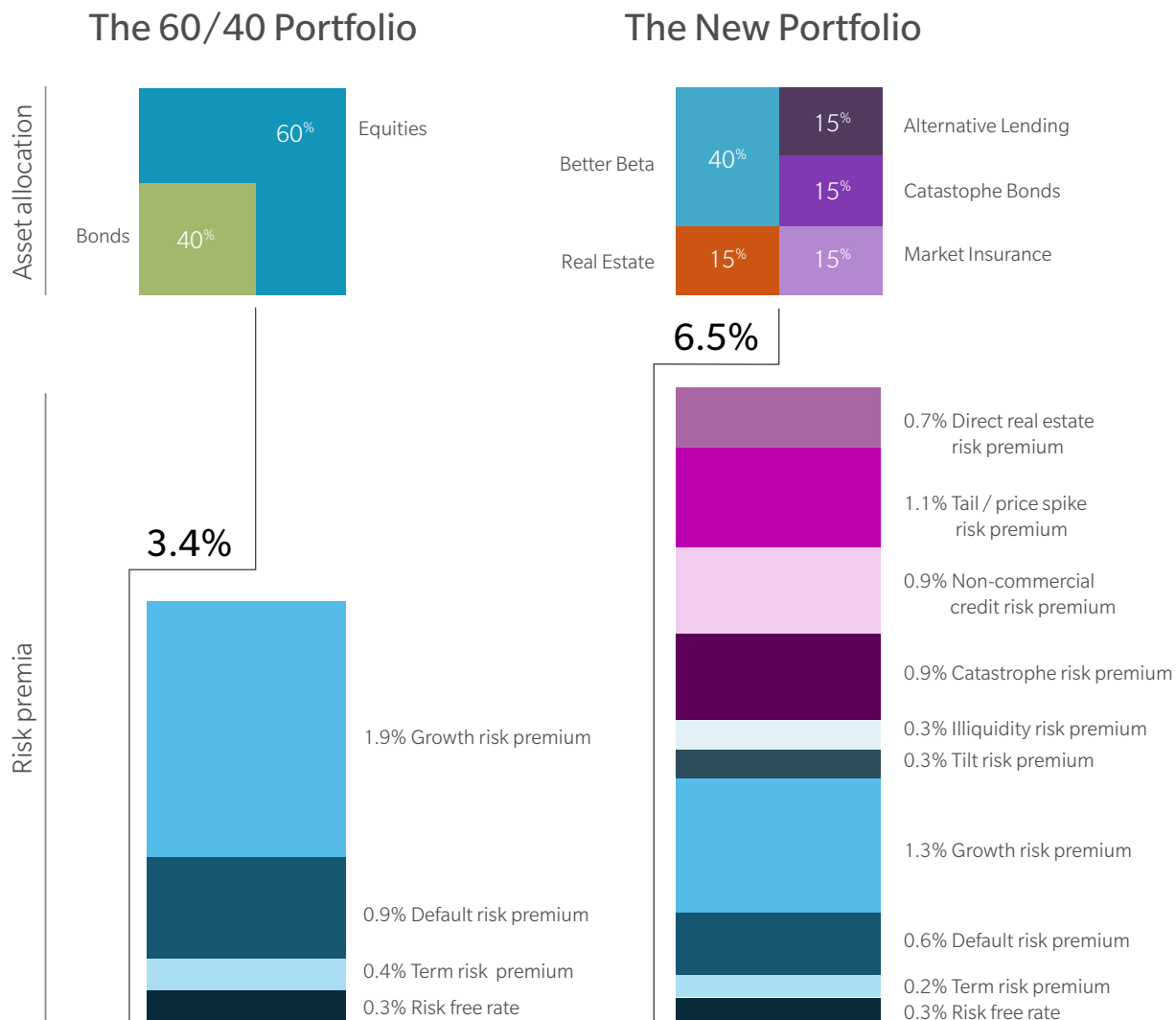
When an investor changes his mindset on how to construct a portfolio along the lines that this paper has argued, what does his portfolio end up looking like? The short answer is that it doesn't look anything like what he has today. It is not a tweak, a tilt, or a nip-and-tuck. It is a total reconstruction. It is no longer concentrated in just a couple of risk premia; it doesn't accept that adding diversifying assets means lowering returns; and it refuses to have liquidity that it doesn't need. It is built to squeeze out every last bit of return available for a given amount of risk – no risk is wasted.

Practically, this means the new portfolio (at the highest level) looks something like:

- **Equities (20-40%).** Equities will still have an important place in the portfolio, but the way they are held will change. Specifically, instead of relying on domestic market cap weighted and actively managed exposures to generate the equity beta, the portfolio will be “tilted” towards riskier (and therefore higher returning) parts of the stock market based on characteristics (e.g., value, size, momentum, quality, etc.) proven to be sources of persistent risk premia. No longer will the equity portfolio be a concentrated bet on the single equity risk premium; rather it will diversify exposure across a much wider array of equity risk premia to produce a significantly more robust, i.e., “better beta” equity portfolio.
- **Bonds (0%).** Yes, 0%. Investors have choices in the form of alternative risk premia that are both diversifying and offer significantly higher expected returns than bonds, especially in today's interest rate environment. Of course, not all alternative risk premia can be expected to provide both higher returns and meaningful diversification, so investors need to be selective about the type of risk premia added and how they are likely to interact with the rest of the portfolio.
- **Alternative risk premia (60-80%).** Paradoxically, what is now viewed as “alternative” becomes the “core” source of risk premia in the new portfolio. Taken in conjunction with the equity exposure, alternative risk premia that offer a persistent source of equity-like returns, but have no or low correlation to equities (and each other), result in a portfolio with significantly more attractive return-to-risk characteristics (as we will highlight below). Whether these alternative risk premia are those described in this paper, or any number of others that are just waiting to be uncovered, investors must adjust their mindset from seeing these as unique niche allocations, to seeing them as core holdings in their portfolios.

In Exhibit 5, we deconstructed asset classes into their underlying sources of return, i.e., risk premia. In Exhibit 7, we reconstruct these risk premia into portfolios to highlight the profound differences between the traditional and “new” portfolios.

Exhibit 7: Risk premia reconstruction: the traditional portfolio vs. the new portfolio



1. See Appendix B for a detailed description on how asset class risk premia were estimated.

2. To estimate the total contribution of each risk premia to portfolio returns, each asset class was decomposed into its underlying risk premia, which were then weighted by their respective asset class allocations and summed by risk premia type across the portfolio.

3. For purposes of illustration, we assume a risk free rate of 0.25%.

4. All returns are nominal and gross of taxes/fees.

Sources: Bloomberg, FRED, JPMorgan Long Term Capital Markets Assumptions (2017), Oliver Wyman industry sources, Oliver Wyman analysis.

The traditional portfolio is concentrated almost all in term, credit default and growth risk, which is not surprising given the concentration to equities and bonds. In contrast, the new portfolio is built from a much larger “stack” of risk premia, producing significantly higher and, given the diversification across these risk premia, much more consistent returns per unit of risk. But how much better off does it make investors?

The short answer: **a lot.**

ENJOYING THE FRUITS OF A BETTER PORTFOLIO

Some advisors question whether “conservative investors” should make such a big change. That depends on what you mean by “conservative.” The logical definition is someone who wants a high probability of meeting his financial goals. As we will see, under this definition the new portfolio is actually much more “conservative” than the traditional portfolio, because it makes the investor significantly better off.

But what does it mean to be better off? It can mean different things for different investors, but generally speaking, it means simply having a greater chance of meeting their return objectives while minimizing the likelihood of destroying wealth. But that can be somewhat abstract—we prefer to look at more concrete metrics, like how much extra money will the investor be able to spend in retirement, or how much more are they likely to be able to leave to their loved ones.

To provide a sense of how the new portfolio and 60 / 40 help investors meet these types of concrete goals, we simulated thousands of potential return paths (after all, no one knows exactly what path will ultimately realize) for both portfolios. The results are shown in Exhibit 8.

Exhibit 8: Potential benefits of switching to the new portfolio

I WANT TO BE ABLE TO ...

Model inputs & assumptions

Starting portfolio value: \$1MM

Age: 62

Risk tolerance: Low

Years in retirement: 30

(requires 95% likelihood of not running out of money)



Withdraw \$37,000/year instead of \$31,000 and still be sure I won't run out of money

Or



Have \$1.2 million more after 30 years to pass on

Or



Spend \$160,000 right now and still be comfortable that you'll have money left over

[Note:](#) See Appendix C for a detailed description of model methodology, assumptions, and limitations.

[Source:](#) Oliver Wyman analysis.

Whether the retiree wants to spend more each year, leave more to their children or grandchildren, live the high life for a couple of years, or just throw the largest 92nd birthday party in the history of the world, investing in the new portfolio gives them the flexibility to make those choices without increasing the chances that they'll run out of money.

REGRET SYNDROME

The main risk moving to the new portfolio is not so much that it fails to meet the investor's goals, but rather that it underperforms the traditional portfolio. This risk is real, particularly for financial advisors that have discretion over how to invest a client's money: underperforming for too long or by too much can trigger unpleasant client conversations, especially if they're an early adopter of an approach like this.

Making changes of the magnitude described in this paper is not easy; but not confronting the reality is more dangerous. It is therefore extremely important that investors understand the trade-offs that they are making based on facts and analysis, not on suspicions or hunches. The stakes are too high.

To help shine light on this issue, we ran a Monte Carlo simulation and looked at each one of the thousands of simulated return paths and compared the performance of the 60 / 40 to the new portfolio to see how often and by how much, the new portfolio underperforms. Unlike the analysis above, which was focused more on the benefits that the new portfolio provides over a lifetime, we compared performance over the shorter horizons that can be so important, e.g., for those running a business. While it may be nice to say "just trust me, you'll be better off in 30 years", that promise can ring hollow to someone who is looking at his account statement and notices that he has underperformed a basic 60 / 40 portfolio for the last year or two. The truth of the matter, however, is that he doesn't have to worry all that much, as highlighted by the results of our simulation.

Exhibit 9: Probability of the new portfolio underperforming the 60 / 40 over different time horizons

Underperform by more than:	Time horizon		
	1 Year	3 Years	5 Years
0%	27.2%	14.0%	7.6%
2%	10.9%	7.0%	4.2%
4%	2.9%	2.9%	1.7%

1. Results are based on the difference between 1-year, 3-year, and 5-year cumulative returns over 4,000 simulations. At the end of each time period, the probability that the relative difference (percent change in cumulative returns from a "60 / 40" portfolio and the new portfolio) exceeds 0%, 2%, and 4% was calculated.

2. See Appendix C for a detailed description of model methodology, assumptions, and limitations.

Source: Oliver Wyman analysis

While there is no way to completely eliminate regret syndrome, especially over very short time horizons, the risk is small relative to the more certain benefits over time. Of all the risks that investors face, this is one that most should be willing to take on.

FOLLOW THE LIGHT

Light is beginning to shine down on new sources of return that have largely been hidden from investors' views. This light is illuminating a new investable universe, one in which the old rules that forced investors to accept bond or bond-like returns in order to diversify and protect their portfolios no longer hold. In this new universe, there is a much wider array of return streams that not only help investors protect their wealth, but also grow it without having to be so reliant on the equity risk premium.

Investors have a choice to make. Do they comfortably fail or uncomfortably succeed? Failing comfortably means investing largely as before and making incremental changes; succeeding uncomfortably means adopting a new mindset and fundamentally altering what portfolios look like. In the approach described in this paper, making this change implies turning the traditional portfolio inside-out, where core holdings become the satellites and a new breed of alternative risk premia become the core. Admittedly, this is going to be a huge change, and many investors won't get there overnight. But a path forward has been illuminated. Whether investors choose to sail cautiously or speed courageously along it, the direction is clear.

APPENDIX A:

THE EXPANDING INVESTABLE UNIVERSE

ASSET CLASS	SOURCE
US equities	Bloomberg, World Federation of Exchanges
US bonds	Bloomberg, Federal Reserve Board, SIFMA
Global equities	World Federation of Exchanges
Global bonds	BIS, SIFMA
Private equity	Preqin
Securitized Loans	Thomson Reuters, SIFMA
Insurance assets	Aon, Bloomberg, Guy Carpenter, NAIC, University of St Gallens ILS report
Real estate (REITs)	SNL
Real estate (other investable)	Savill's
Infrastructure funds	Bloomberg
Commodities	UN Commodity Statistics Report
Private real estate	Savill's
Insurance reserves	ACLI, AON
Bank loans	Bloomberg, CoreLogic, FDIC, Federal Reserve Board

NOTES

1. Data shown are the most recent available.
2. Securitized loans includes CLO, CAO, CBO, ABS, CMBS, and RMBS (agency and non-agency).
3. Insurance assets includes catastrophe bonds/ILS, life securitization, and surplus notes. Insurance assets are included in "Other" in Exhibit 3.
4. Bank loans includes residential mortgages, HELOCs, small business, corporate, commercial real estate, and syndicated / leveraged loans.
5. Insurance reserves includes global P&C and Life insurance reserves.
6. Real estate includes residential, commercial, and farmland available for investment, less the value of REITs.
7. Infrastructure funds are included in "Other" in Exhibit 3.
8. Private real estate includes residential, commercial, and farmland not yet available for investment.

APPENDIX A:

INDIVIDUAL RISK PREMIA ESTIMATION

INVESTMENT	RISK FREE RATE	TERM RISK	DEFAULT RISK	GROWTH RISK	TILT RISK	ILLIQUID RISK	NONCOM CREDIT RISK	CAT RISK	REAL ESTATE RISK	TAIL PRICE SPIKE RISK
US Government Bonds	0.25	0.35								
US Corporate Bonds	0.25	0.35	1.50							
US Equities	0.25	0.35	1.50	3.15						
Better Beta	0.25	0.35	1.50	3.15	0.80					
Private Equity (Buyouts)	0.25	0.35	2.10	4.41		1.14				
Alternative Lending	0.25	0.18				0.57	6.01			
Catastrophe Bonds	0.25							5.75		
Direct Real Estate	0.25	0.35				0.57			4.58	
Market Insurance	0.25					0.57				7.43

NOTES

1. We use an incremental risk premia sizing approach to estimate the risk premia shared across assets in our analysis (e.g., the term risk calculated in government bonds is carried forward to US corporate bonds, and US equities, and private equity, etc.)
2. The Better Beta risk premium is estimated using the US Equities risk premium plus the long-term average incremental returns of the MSCI Diversified Multi-Factor US Index over the MSCI US Index.
3. Estimates for the corporate credit risk and growth premium for private equity have been scaled by 1.4x to reflect the higher leverage in private equity relative to public equity.
4. Due to the lower duration of non-commercial loans, we assume a 50% haircut in the term risk premium for alternative lending.
5. Catastrophe bonds are assumed to have no term risk due to underlying collateral being invested in 1-3 month floating rate T-bills. As catastrophe bonds are based on data from 2002-2015, during which no large natural disasters occurred, we have adjusted the risk premium going forward lower by 100 bps, as long run returns are unlikely to match historical performance.
6. Based on Oliver Wyman industry sources, we assume that the market risk premium is 8%.
7. Illiquidity premia for alternative lending, market insurance, and direct real estate are taken as a 50% haircut of the illiquidity premium in private equity, as the specific investment vehicles through which these risk premia are accessed will be more liquid than the typical 7-year lock up period of private equity investments.
8. All estimates are nominal and gross of taxes/fees.
9. To estimate the total contribution of each risk premia to portfolio returns, each asset class was decomposed into its underlying risk premia, which were then weighted by their respective asset class allocations and summed by risk premia type across the portfolio.
10. For purposes of illustration, we assume a risk free rate of 0.25% for the foreseeable future.

Sources: Bloomberg, FRED, JPMorgan Long Term Capital Markets Assumptions (2017), Oliver Wyman industry sources, Oliver Wyman analysis

APPENDIX B:

RISK PREMIA BY INVESTMENT

ASSET CLASS	GROSS-OF-FEE RISK PREMIA	NET-OF-FEE RISK PREMIA	SOURCE
US Government Bonds	0.35	0.25	JPM
US Corporate Bonds	1.85	1.25	JPM
US equities	5.00	4.25	JPM
Better Beta	5.80	5.05	Bloomberg, JPM
Private Equity (Buyouts)	8.00	6.00	JPM
Alternative Lending	6.75	4.75	JPM
Catastrophe Bonds	5.75	3.75	Bloomberg
Direct Real Estate	5.50	3.50	JPM
Market Insurance	8.00	6.00	OW

INDIVIDUAL RISK PREMIA ESTIMATION

RISK PREMIA	DEFINITION
Term risk premium	Compensation for deferring repayment to the future
Default risk premium	Compensation for the possibility of borrower's inability to pay back the obligation
Growth risk premium	Compensation associated with the uncertainty of payouts and growth in a company's earnings
Tilt risk premium	Compensation for systematically tilting towards higher risk securities based on certain company fundamentals
Illiquidity risk premium	Compensation for the uncertainty in timing of and price for which an illiquid asset can be converted to cash
Non-commercial credit risk premium	Compensation for the possibility of individual / small business borrowers' inability to pay back their loans
Catastrophe risk premium	Compensation for potential catastrophes (e.g., natural disaster) that trigger an insurance payout
Direct real estate risk premium	Compensation associated with real estate valuations and operating income
Tail / price spike risk premium	Compensation for the possibility that the market experiences a significant downturn

APPENDIX C:

CAPITAL MARKET ASSUMPTIONS

	RETURN	VOLATILITY	CORRELATIONS						SOURCE
			EQUITIES	TREASURIES	DIRECT REAL ESTATE	DIRECT LENDING	CATASTROPHE BONDS	MARKET INSURANCE	
Equities	5.00	14.75	1.00	-0.30	0.30	0.33	0.00	0.20	a
Treasuries	0.35	6.25		1.00	-0.40	0.34	0.00	0.00	b
Direct Real Estate	5.50	10.75			1.00	0.12	0.00	0.00	c
Direct Lending	6.75	9.75				1.00	0.00	0.00	d
Catastrophe Bonds	5.75	10.00					1.00	0.00	e
Market Insurance	8.00	10.00						1.00	f

Source: a) JP Morgan LT CMAs (US large cap equities) b) JP Morgan LT CMAs (US intermediate treasuries) c) JP Morgan LT CMAs (US core direct real estate) d) JP Morgan LT CMAs (direct lending) e) Historical Swiss Re Cat Bond Index (2002-2015) f) Oliver Wyman industry sources

OVERVIEW OF METHODOLOGY

- Generate an array of correlated normal random variables, based on the volatilities and correlations of each asset class
- Add the correlated normal random variables to the expected returns (excess returns over cash) and subtract out fees to obtain simulated correlated returns, net of fees
- Calculate the total principal in the portfolio at the end of each period by summing the principal in each asset, after the period's returns
- Calculate withdrawals as a percentage of the initial principal, adjusted for inflation in each period, using the forward implied cash rate and subtract withdrawals from the total portfolio principal
- Rebalance the portfolio each month to the target asset allocation
- If the total principal in the portfolio falls below 0, the portfolio has "run out of money" for the remainder of the simulation
- Repeat the above steps for the number of months and simulations specified

ASSUMPTIONS AND LIMITATIONS

- Returns are assumed to be normally distributed, which will understate tail risks
- Cholesky decomposition is used to generate correlated random returns
- Withdrawals are calculated as a fixed percentage of starting wealth, increased for inflation every month, to reflect how many retirees size portfolio withdrawals
- 4% withdrawals and a 30-year investment time horizon are used as default values to represent retirement planning "rules of thumb"
- Monthly portfolio balancing is used to prevent pro-rata withdrawals from resulting in negative values for individual assets
- Transaction costs are assumed to be negligible

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