OUTLOOK 2022

FLYING AT A LOWER ALTITUDE

CAMBRIDGE
ASSOCIATES

Celia Dallas
Chief Investment Strategist

Introduction

As we peer over the horizon, with the strongest annual economic growth in nearly 50 years almost behind us, we anticipate growth will return to a lower altitude. Our base case for 2022 is consistent with consensus expectations of slower, but above average, real global economic growth and elevated global inflation that should subside in the second half of the year. Higher inflation has remained stickier longer than expected, as above average goods demand and labor shortages have created supply side bottlenecks. Experienced pilots prepare for turbulence and 2022's forecast comes with potential storm clouds, including those related to the unwinding of extraordinary levels of fiscal and monetary stimulus, persistent inflationary pressures, a Chinese regulatory-driven slowdown, and COVID-19. As the Omicron variant poignantly reminds us, the virus may continue to disrupt economies and markets, even as the world is adapting aided by medical breakthroughs. High valuations also make many markets unusually vulnerable to negative surprises and limit their upside potential. While our outlook is positive, diversification is required.

Positive macroeconomic conditions should provide support for sustained earnings growth, boosting prospects for equities to outperform high-quality bonds even accounting for high valuations. We anticipate interest rates will be under pressure as central banks pull back support, but moderating inflation pressures and gradual monetary policy normalization should limit rate increases. Within equities, our most contrarian view is for Chinese A-shares to outperform global equities next year. Targeted monetary and fiscal support should boost A-shares at a time when developed market policymakers are looking to tighten. Beyond China, we are skeptical that other emerging markets will deliver strong equity returns given their narrowing GDP growth premium relative to developed markets and the potential for fiscal and monetary policy tightening.

As private investments' stellar returns continue to attract capital, the lines between public and private managers are blurring. In fact, more non-VC funds are investing in venture capital deals than VC funds! With companies choosing to stay private longer, many managers, including hedge funds, long only funds, and venture capital funds are seeking to invest in private companies prior to and through public offerings. Indeed, 17% of our US venture capital index consists of public companies. Several less-trafficked private capital destinations, like Asian markets (outside of the already commonplace Chinese destination) and more specialized European strategies (e.g., tech and health-care focused strategies) are also worthy of pursuit.

Equity market prospects are never homogenous and 2022 looks set to offer a wide dispersion in valuations at a time when earnings contributions across sectors is expected to become more balanced. Such conditions offer active managers greater opportunity to distinguish themselves (hopefully to the upside!). Interest in active management will also benefit from increased shareholder engagement—the other E in ESG. Investors concerned about long-term portfolio resilience amid heightened systemic risks in climate change and social inequality are engaging with managers (and managers with portfolio companies) to seek change. We expect the trend toward active engagement practices to gain momentum in 2022 as investors increasingly move to align portfolios with net zero emission targets.

Continued strong economic growth will support real estate and infrastructure investments. We prefer investments focused on secular trends, such as the growing demand for healthcare and broadband usage, digitization, and decarbonization, given generally elevated valuations and disruptive trends in some sectors (e.g., retail and office real estate). Attractive opportunities exist in medical properties, data centers, digital infrastructure and renewables. For investors looking for other attractive sources of diversification to shelter from potential storm clouds, specialty finance and credit opportunities are less trafficked than other private credit areas and offer appealing returns across the credit cycle. Global macro managers also offer appeal in the current environment, given these managers tend to be long volatility.

The following compilation of investment views for 2022 delve more deeply into these lower-altitude investment themes and opportunities. ■

Joe Comras
Associate Investment Director, Investment Strategy

Inflationary Pressures Will Moderate Some in Second Half

Consumer price inflation is above pre-pandemic trend in the United States and Europe, while producer prices are surging seemingly everywhere. Consistent with consensus forecasts, we expect mounting inflation pressures to ease by second half 2022 as demand for goods abates and supply constraints moderate.

Excess inflation is the result of severe supply and demand imbalances, largely driven by extraordinary fiscal and monetary policies that boosted demand amid pandemic-related supply constraints. The composition of consumer spending also shifted from services to goods. Demand for goods has been running above pre-COVID-19 levels, which has strained supply chains. Input costs have also surged amid elevated commodity prices. Coal and natural gas shortages in China and Europe, respectively, created an energy crisis. Energy prices have declined sharply after peaking in October but remain historically expensive.

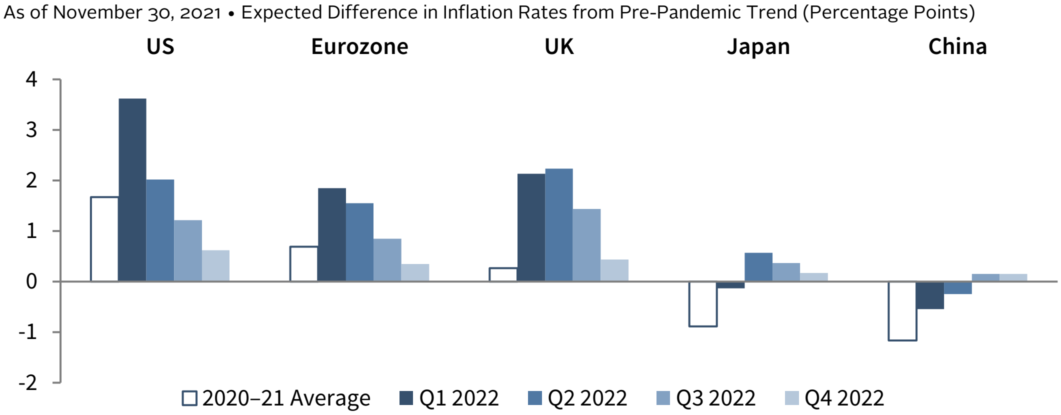
In 2022, we expect demand for goods to soften as growth slows—due to waning effects from fiscal stimulus and gradual tightening of monetary policy—and consumer spending shifts back to services amid rising vaccination levels and new COVID-19 treatments. Meanwhile, the supply of goods should improve for several reasons. First, manufacturers have increased the use of existing capacity to meet demand. Next, energy costs are likely to continue declining with additional supplies of natural gas and coal coming online. Finally, tight labor markets should ease as financial cushions built up since 2020 are spent down and virus concerns fade.

Though we expect inflation to moderate, it is unlikely to fully revert to pre-pandemic trend in 2022 given some more persistent supply constraints, such as the semiconductor shortage, port congestion, and skill mismatches in the labor force. Near-term risks skew to the upside; tighter-than-expected labor markets or a re-imposition of COVID-19 restrictions could lead to stickier inflation, prompting central banks to tighten more than currently expected. Over the longer term, secular forces such as decarbonization and onshoring could also put upward pressure on prices.

Despite elevated uncertainty, we believe goods demand normalization combined with near-term supply improvement will help inflationary pressures ease by the end of 2022. ■

INFLATIONARY PRESSURES MOUNTING BUT EXPECTED TO PEAK IN 2022

As of November 30, 2021 • Expected Difference in Inflation Rates from Pre-Pandemic Trend (Percentage Points)



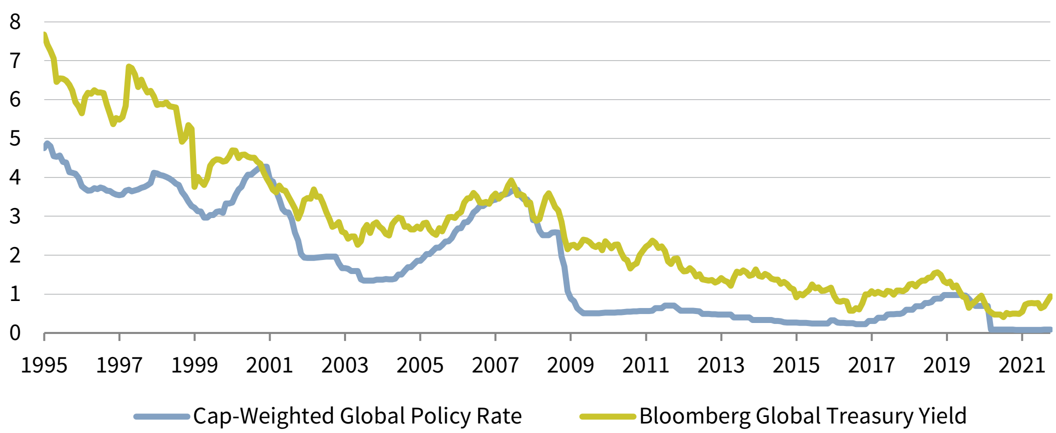
Sources: Bloomberg L.P. and Thomson Reuters Datastream. See page 20 for chart notes.

TJ Scavone
Investment Director, Capital Markets Research

Government Bond Yields Are Likely to Rise as Central Banks Remove Support

Long-dated government bond yields rose in 2021 on strong economic growth and surging inflation. Central banks have maintained their easy money policies despite the rapid recovery in economic conditions, likely keeping yields lower than they would have been otherwise. This may soon change now that several major central banks are starting the process of dialing back support. Most notably, the Fed began tapering asset purchases in November, and its first rate hike could come as early as mid-2022. Some central banks have already started hiking rates (e.g., New Zealand, Norway), while others (e.g., United Kingdom, Canada) are expected to follow suit soon.

TREASURY BOND YIELDS SHOULD RISE WITH POLICY RATES
January 31, 1995 – October 31, 2021 • Percent (%)



Sources: Barclays Bank PLC, Bloomberg Index Services Limited, and Thomson Reuters Datastream. See page 20 for chart notes.

The case for higher government bond yields is also supported by the likelihood that yields in most developed markets are still too low relative to underlying economic conditions, even after accounting for central bank policies. Ten-year US Treasuries were yielding 1.43% as of November 30, which is still near the lower end of our growth-implied fair value range of 1.4%–3.0%. While US nominal growth is expected to fall to 8% in 2022 from an anticipated 10% in 2021, it is still predicted to outstrip the 4% average rate of growth since 2000.

Above-trend nominal growth and the start of policy normalization will likely push yields higher in 2022. However, their path will likely be uneven, and the magnitude of any rise will probably be limited given central banks intend to move extremely cautiously. The ECB, for example, continues to push back against expectations of rate increases, and Fed officials are currently forecasting a relatively shallow hiking cycle and a long-run neutral rate of just 2.5%. In the past, the Fed's estimate of the long-run neutral rate has acted as an anchor on the ten-year yield. Stronger-than-expected real growth and inflation could force central banks to revise the path of policy rates higher, which would increase the upside for yields. Yet, macro uncertainty is a two-way risk—unforeseen events or too much tightening too soon could dent growth and send yields lower. ■

Thomas O'Mahony
Investment Director, Capital Markets Research

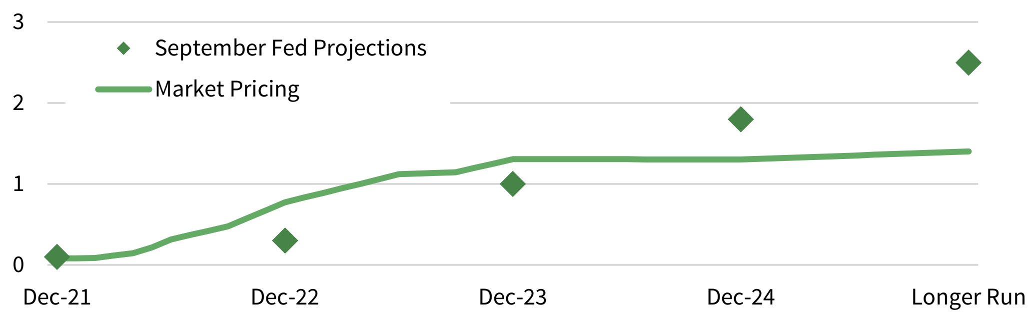
The Dollar Finds Temporary Support

The US dollar tends to appreciate during two broad economic regimes. One is when the US economy is materially outperforming its global counterparts, attracting capital looking to benefit from the superior US prospects. The other is when growth slows sharply, attracting safe-haven-seeking capital. This is the "dollar smile" model of the currency, and looking at 2022 through this lens suggests some dollar strength may be in store.

The appreciation of the dollar in recent months can be attributed to both sides of the smile to some extent. The outperformance of the US economy has reduced the output gap in the United States more quickly than has occurred in any other major economy. Even if the upward pressure on inflation rates caused by supply-chain disturbances proves short-lived, this removal of slack raises the prospect of inflation stabilizing at a more elevated level than was evident pre-pandemic. This prompted the Fed to become more hawkish as the year advanced, supporting the US dollar. On the other side of the smile, virus-induced slowdown fears and some idiosyncratic concerns about China have also boosted the dollar via risk aversion.

THE MARKET EXPECTS MORE HIKES IN THE SHORT RUN THAN PROJECTED BY THE FED, THOUGH LESS IN THE LONG RUN

December 2021 – December 2025 • Percent (%)



Sources: Bloomberg L.P. and Federal Reserve. See page 20 for chart notes.

Despite the market pricing in a more hawkish Fed, it remains short of pricing in the rates profile implied by the Fed's September projections. As we head into 2022, the path of least resistance would appear to be for US short rates to continue to move higher, particularly versus peers such as Japan, the Euro Area, and Switzerland, which have more subdued core price pressures. This should ultimately offer some support to the dollar for a time. A material deterioration in growth expectations may be required for the Fed to meaningfully back away from these projections, which could similarly boost the dollar via a de-risking of positioning. Regardless, the dollar is richly valued versus its history and faces the headwind of a large current account deficit. Therefore, the dollar's potential upside likely remains limited in magnitude when compared to past hiking cycles, as well as limited in duration. As always, the confidence intervals around currency forecasts are wide.

A strengthening dollar can be a challenge for non-US risk assets, particularly emerging markets where it raises the cost of capital and can spur capital outflows. Other things being equal, a rising dollar is also a headwind for commodities, given they are priced in the currency. However, current patterns of fluctuation in supply and demand dynamics look set to continue to dominate this impact in the near term. ■

Global Equity Performance Exceeds That of High-Quality Bonds

Kevin Rosenbaum
Global Head of Capital Markets Research

Global equities have returned more to investors than high-quality global bonds in nearly three quarters of the last 30 years. The margin of outperformance during those years has been considerable, averaging 12.5 percentage points. That high historical success rate, along with our view that healthy economic activity will support both positive earnings growth and risk appetite, leads us to expect that equities will yet again outperform high-quality bonds.

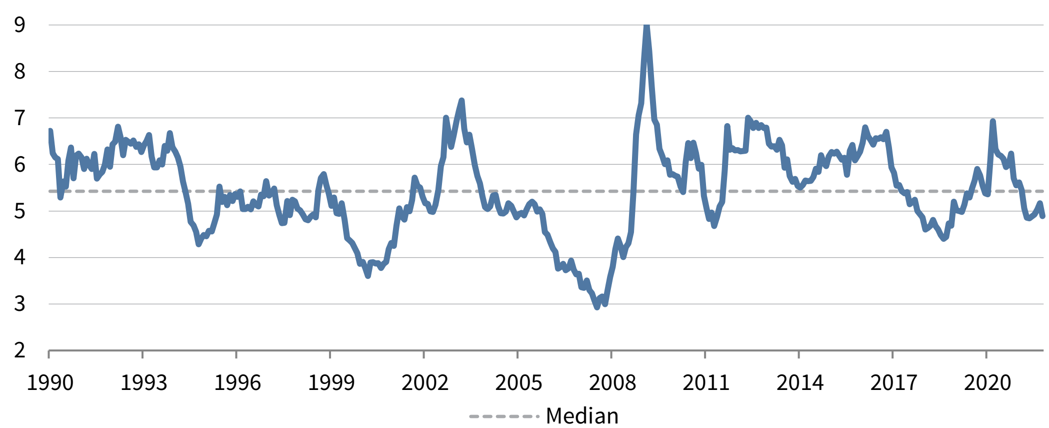
Global economic activity is expected to grow by 4% in 2022. While that real rate is 2 percentage points less than what the world is expected to achieve in 2021, it is higher than the 3% growth rate we've averaged over the last few decades. Next year's growth will be supported by cautious and well-telegraphed central bank actions and rising vaccination levels, with the G20 now aiming to have 70% of the world vaccinated by next September. Strong business demand should also be a key support, as companies look to restock historically depleted inventories.

Healthy economic growth is likely to support earnings growth. At present, analysts forecast global earnings will grow by 7% in 2022. While that forecast, like all forecasts, is unlikely to match what comes to pass precisely, it's not unreasonable. Consider that over the last few decades, earnings growth has averaged roughly 5%. In the past, when global leading indicators suggested growth would be above trend in the next year—as they are projecting again now—earnings growth averaged 13%.

Healthy economic growth should also support risk appetite. While it's true that equity valuations are high relative to history—the MSCI World Index currently trades at 29x cyclically adjusted earnings!—it is also true that there are not many obvious pockets of value. And, investing is all about trade-offs. Looking at equity prices a different way, in which earnings yields are compared to bond yields, valuations don't appear nearly as stretched. In fact, equities offer a reasonable spread over low-yielding bonds. We expect that reality will limit any major rotation out of equities. ■

GLOBAL EQUITIES OFFER A REASONABLE SPREAD OVER GLOBAL BONDS

January 31, 1990 – October 31, 2021 • Global Equity Earnings Yield Less Global Bond Yield (%)



Sources: FTSE International Limited, MSCI Inc., OECD, and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties. See page 20 for chart notes.

China A-Shares Outperform Global Equities

Celia Dallas
Chief Investment Strategist

China's equity markets have lagged global equities sharply thus far in 2021 in the face of a regulatory crackdown. We expect Chinese equities, particularly China onshore A-shares, to outperform global equities in 2022. Such shares are inexpensive relative to global equities and are relatively insulated from the regulatory stresses that have disproportionately hit the offshore market. We expect targeted monetary and fiscal support should benefit A-shares relative to global equities, where policymakers are looking to reduce emergency fiscal and monetary supports.

Big tech companies that have listed offshore have been in the crosshairs of Beijing's regulatory moves and have dragged down equity performance. In contrast, the onshore A-share market is underweight tech, particularly the consumer discretionary and communication services sectors that include stocks like Alibaba, JD.com, Meituan, and Tencent. The China A-share market has been a relative haven with respect to Chinese equities and continues to see steady inflows as investors rotate out of offshore tech companies. Further, as real estate prices soften, onshore equities are likely to attract more domestic capital that would otherwise be invested in apartments.

China A-shares also offer reasonable value relative to global equities, with the ratio of their normalized P/E ratios trading at the 16th percentile of historical relative valuations. In absolute terms, relative to its own history, the MSCI China A-share market trades above its median, but not excessively so (65th percentile). At the same time, earnings momentum for China A-shares has remained robust. Year-to-date, only real estate, communication services, and consumer discretionary sectors have seen forward 12-month earnings estimates decline meaningfully in the MSCI China Index. Not only are these sectors underweight in the A-share market relative to the MSCI China Index, but the earnings deceleration in these sectors has been lesser in the onshore market. If the People's Bank of China eases monetary policy later this year or early next, as seems likely, onshore earnings momentum may increase, as that market tends to benefit disproportionately from credit expansion. And, if this easing occurs as the rest of the world begins tightening, China A-shares should outperform. ■

Read more in "VantagePoint: China; Reassessing Risks and Opportunities," by Celia Dallas, Aaron Costello, and Vish Ramaswami, Cambridge Associates LLC, 2021 and "Has the Approaching Debt Default by Chinese Property Developer Evergrande Created Opportunities for Investors?" by Wade O'Brien, Cambridge Associates LLC, October 2021.

ACCELERATING PRIVATE SECTOR CREDIT PROVIDES A BOOST TO ONSHORE CHINA A-SHARES

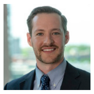
December 31, 2012 – November 30, 2021

Phase of		Change in Growth Rate (ppt)*		AACR (%)
Credit Cycle	**End Date**	**Credit Growth**	**Industrial Profits**	**China A-Shares**
Expansion	Mar-13	12	45	5
Contraction	Apr-14	-13	-9	-10
Expansion	Jul-17	9	7	16
Contraction	Feb-19	-4	-36	-8
Expansion	Feb-21	5	198	21
Contraction	Current	-5	-170	-2

*The increase/decrease is the percentage point (ppt) difference between the starting/ending trailing 12-month change in growth rate (y/y%). It represents momentum's acceleration or deceleration.

Sources: MSCI Inc., National Bureau of Statistics of China, People's Bank of China, and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties. See page 20 for chart notes.

Don’t Expect EM ex China Performance to Impress



Stuart Brown
Associate Investment Director, Capital Markets Research

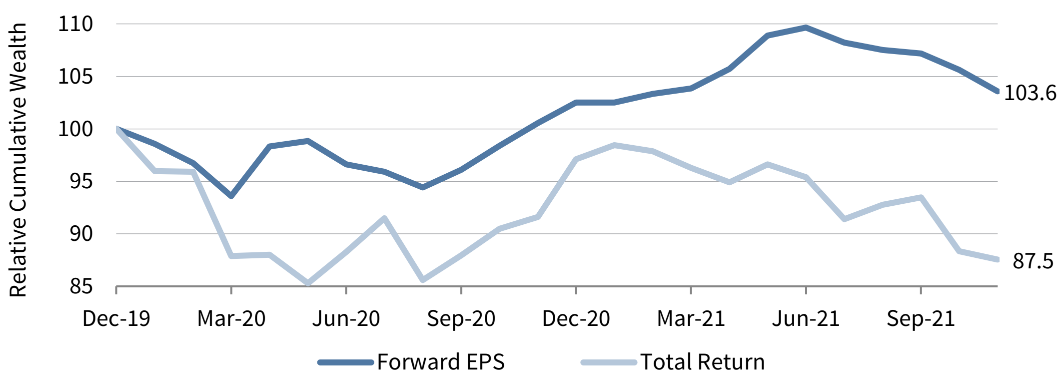
Emerging markets ex China equities have underperformed their DM peers this year due, in part, to greater economic and political challenges, which have weighed on sentiment toward the bloc. We expect these issues to persist into next year and are skeptical that EM ex China equities can outperform DM equivalents.

The COVID-19 vaccine rollout has accelerated in emerging markets, but several forces are likely to weigh on EM ex China. The difference between EM ex China 2022 GDP growth expectations (5%*) and the same figure for DM (4%) is at its lowest point in decades. Linked to this fact is that EM economies are expected to rein in fiscal spending more than DM peers. But EM ex China policymakers face a catch-22 if tempted to draw on fiscal levers to support growth, as markets would likely balk at any such move over fiscal sustainability fears. Further, several EM ex China central banks have lifted policy rates this year—well before DM counterparts—and will likely continue doing so in 2022. EM ex China’s export-heavy economies are also at risk from China’s economic deceleration given their large trade exposure. On the political front, the situation seems set to remain volatile, particularly in Latin America, which could dampen market appetite. Lastly, we also expect the US dollar to rise modestly in 2022, which is yet another hurdle for EM ex China equities.

Still, the fundamental outlook is constructive, which we expect will limit the extent of any underperformance by EM ex China equities. Recent market pricing has created an attractive relative valuation discount versus DM, all while relative EPS expectations have outperformed. EM ex China return-on-equity has also rebounded sharply and should remain healthy in an environment of solid demand, semiconductor shortages, and sticky commodity prices. But DM has maintained its ROE advantage thanks to near record-high US margins. EM ex China could gain in this regard if higher wages, supply disruptions, or regulatory developments threaten US profitability. That said, we expect any relative EM ex China ROE improvement will be modest and not significantly influence performance. ■

EM EX CHINA PERFORMANCE HAS LAGGED DM EVEN AS EARNINGS OUTLOOK HAS IMPROVED

December 31, 2019 – November 30, 2021 • EM ex China vs Developed Markets • Rebased to US$100 on December 31, 2019



Sources: Bloomberg L.P., MSCI Inc., and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties. See page 20 for chart notes.

Venture Capital Will Continue to Crush It

Andrea Auerbach
Global Head of Private Investments

Globally, the venture capital (VC) industry will continue to evolve as capital floods in seeking compelling returns that can be had for those willing to wait. As of June 30, 2021, the USVC index generated a ten-year net IRR of 18.7%, and for the more impatient, it registered a one-year net return of 88.1%. Strong performance explains why there are now more non-VC funds investing in VC deals than VC funds themselves, who have plenty of their own capital to invest with a projected $106 billion in commitments for 2021, breaking industry records.

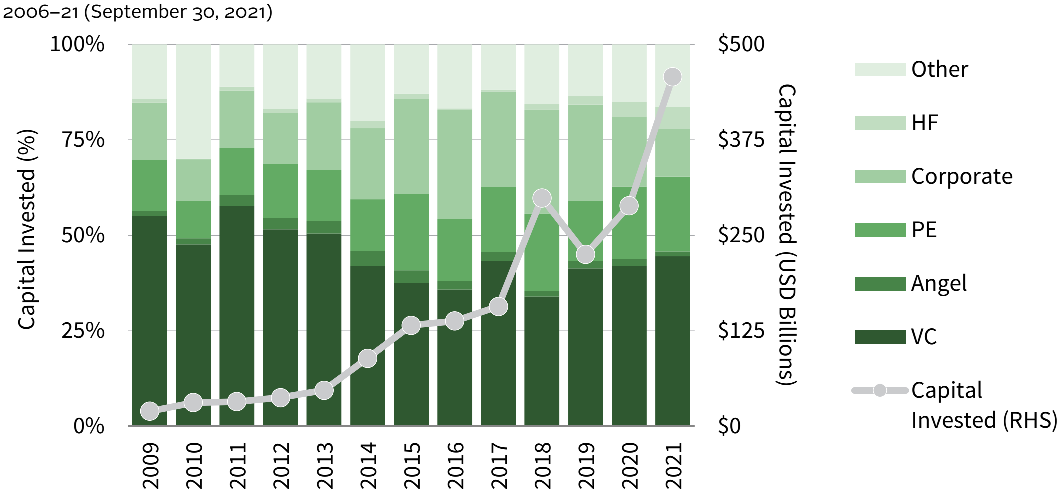
As fund sizes and available capital swell and companies choose to stay private for longer, later-stage venture investing has grown, particularly with the emergence of crossover investing, whereby managers invest in a private company prior to and through a public offering. While this strategy has been around for some time, it was more episodic and smaller in scale in the past. Most companies that are crossover candidates are venture-backed technology businesses, exhibiting strong growth that has accelerated in a COVID-19–constrained world. Managers with skills on both sides of the private/public line, including some hedge funds and long-only funds, continue to attract meaningful capital for this strategy and account for quite a bit of the non-VC investment in venture capital.

VC managers have been mobilizing their fight response to this permanent development, with many creating “full stack” capabilities, typically forming separate vehicles to allow them to invest in and maintain pro-rata ownership in portfolio companies. VC managers are also adding public market capabilities to be more formidable as their companies crossover into the public arena. With VC-backed IPOs accounting for an average of 84% of IPO value over the last three years, these are necessary skills to woo entrepreneurs and to build additional value for investors post IPO. As a result, we expect public companies to continue to be a significant presence—currently 17%—in the USVC index, if not even more so as VC firms expand their full stack capabilities.

All of this will create challenges for investors expecting only certain skills from certain investment managers. Regardless, we expect venture capital will continue to crush it next year. ■

SHADOW CAPITAL: NON-VC FIRMS HAVE INCREASINGLY PARTICIPATED IN VC DEALS IN RECENT YEARS

2006–21 (September 30, 2021)



Source: PitchBook. See page 20 for chart notes.

Interest in Private Investments Continues to Expand

Vish Ramaswami
Managing Director, Private Equity

Investors with mature private investment programs tend to have private exposure to major developed markets, such as the United States and Europe. While many of these investors have added Chinese exposure to their private programs over the last decade, interest has recently increased in less-trafficked Asian markets and more specialized European strategies. We expect this interest will continue to expand next year.

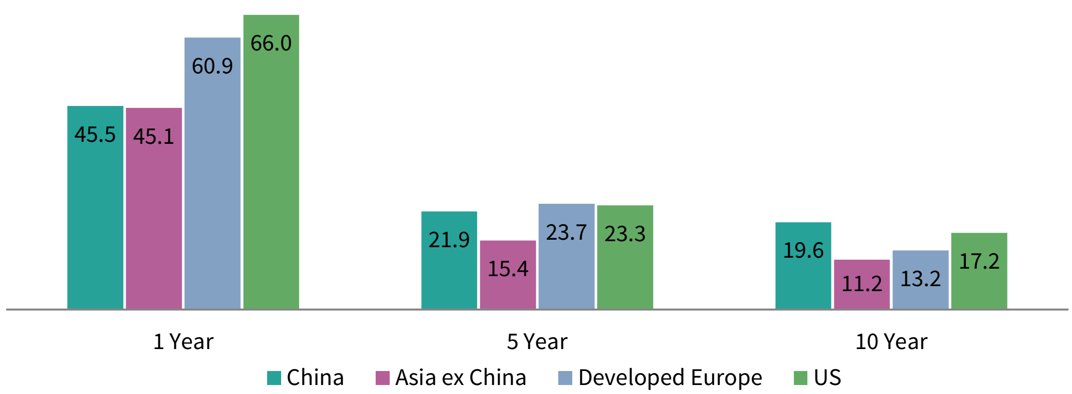
In Asia, China has overshadowed the rest of the continent in terms of private capital raised for some time. In fact, between 2015 and 2021, investors committed 1.2 times as much capital to China private equity and venture capital as they did to the rest of Asia combined. But with China's geopolitical tensions seemingly always in the news and its recent regulatory announcements, many investors have given greater attention to other destinations.

One such destination is India. Home to many examples of PE- and of late, VC-backed companies listing publicly, India is expected to grow strongly over the coming years. Beyond India, developed Asia-Pacific countries—Australia, Japan, Korea—also offer appeal. Each has strong debt and equity capital markets, offers accelerating corporate divestiture activity, and presents less regulatory or geopolitical risk than China or India. Across all jurisdictions, founders or controlling families are selling businesses outright.

Beyond less-trafficked Asia, more specialized European strategies have also attracted greater attention. These include the emergence of technology- and healthcare-focused strategies and an expanded number of lower mid-market buyout managers. Traditional European growth equity and venture capital have also attracted greater attention, given compelling recent performances.

PERFORMANCES ACROSS JURISDICATIONS HAVE ATTRACTED ATTENTION

As of June 30, 2021 • Horizon Private Equity and Venture Capital Returns



Source: Cambridge Associates LLC.

Will this interest in Asia ex China markets and more specialized European strategies come at the expense of other markets? Not necessarily, because investors rightly focus on selecting the best managers globally. But in each of these sometimes overlooked market segments, there are strong managers capable of delivering returns on par with or better than global peers. We expect this reality will continue to drive interest in these markets. ■

Many Real Estate Assets Will Be Boosted by Secular Tailwinds

Wade O'Brien
Managing Director, Capital Markets Research

We believe a healthy macro backdrop and strong demand for inflation-sensitive assets will support most real estate assets in 2022. However, given stretched valuations for many core assets and COVID-19–related uncertainty around some sectors, we think return prospects are highest for assets that benefit from secular trends, such as the growing demand for healthcare and broadband.

Real estate funds posted strong returns in 2021, pushing cap rates to historical lows. Many sectors that were last year's laggards turned into this year's winners and vice versa. COVID-19–impacted sectors like retail and residential outperformed the broad REIT index, while previous darlings like data centers underperformed. The office sector was an exception to the rule, underperforming again given the Delta outbreak and uncertainty over what "hybrid" work schedules will mean for long-term demand.

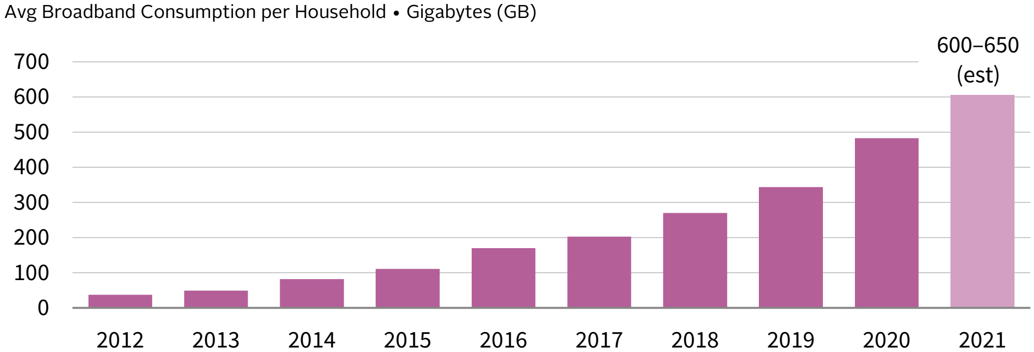
A broadening economic recovery should support fundamentals and thus asset prices in 2022. Return to office and reduced supply will mean vacancy rates eventually decline for office properties, and a rebound in business travel should boost still subdued hotel sector revenues. Industrial properties, which saw positive NOI growth in 2021, may continue to see strong tenant demand given exploding ecommerce volumes.

Rising inflationary pressures and thus interest rates are often cited as a headwind, but inflationary pressures are likely to ease during second half 2022. Even if they do not, inflation has not historically been a headwind for REITs. Over the last 30 years, REITs on average have returned over 16% when inflation was greater than 2%, more than double the performance below this level. Operators are able to pass on rising costs to tenants via rent increases, and assets like housing with short leases may have strong inflation-hedging potential.

Sectors that benefit from secular tailwinds include medical properties, where rising drug research spending is generating more demand for lab space and senior housing, which should benefit from an aging society. Demand for data centers also continues to soar as mobile app usage explodes and working from home boosts broadband usage. Both medical and data centers benefit from higher barriers to entry given demand for customized space. Finally, notwithstanding high valuations, industrial assets should remain in demand if ecommerce volumes continue to rise. ■

DATA CENTERS MAY BENEFIT FROM BROADBAND GROWTH

Avg Broadband Consumption per Household • Gigabytes (GB)



Sources: Axios and OpenVault. See page 20 for chart notes.

Allocations to 21st-Century Infrastructure Increase

Minesh Mashru
Senior Investment Director, Real Assets

The infrastructure market has evolved since the financial crisis. Almost a majority of current investing is now in "21st-century infrastructure," which includes digital and renewable assets. Given the expected importance of both sectors to future growth, we anticipate that investors will commit greater amounts of capital to each in 2022.

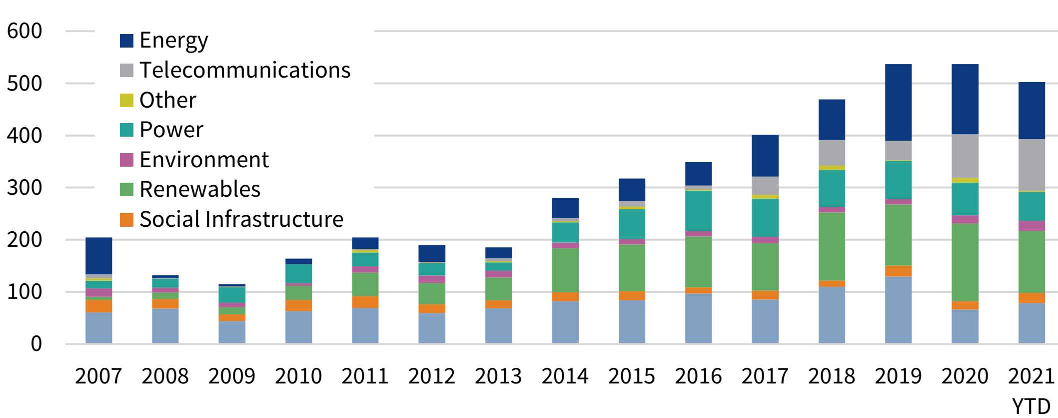
Data usage is forecast to grow by around five-fold by 2025 as the digital economy continues to expand. This includes growth in analytics, government and industrial usage, social media, and streaming, with 5G and the Internet of Things ("IoT") further catalyzing this level of digitization. However, growth cannot be sustained without significant infrastructure investment, and most OECD countries lag Asian peers in fiber rollouts, for example. Hence, Europe and the United States are increasingly focusing their recovery agendas on this, which may benefit infrastructure investors. Valuations have risen materially as investor interest has grown, supported by post-COVID-19 trends. Thus, managers that are able to develop fiber or data centers, for instance, can often benefit from later-stage investors.

Renewables are expected to overtake other fuel sources as the dominant global energy in the coming years, increasing from around 10% of the total market today to around 50%–60% by 2050. This is driven by energy investment increasingly concentrated on solar and wind assets, particularly displacing coal. While government subsidies supported this initially, renewables today are increasingly the cheapest energy source, and the inclusion of carbon taxes would provide a further advantage. Renewable investors have hence benefited from increased demand, with developers particularly well rewarded by investors seeking attractive long-term contracted yields and the ESG benefits of holding such assets.

However, these opportunities are not without risks, which may include performance concerns, a more competitive environment, development problems, or increasing construction costs. In summary, infrastructure has demonstrated robustness since the onset of COVID-19, with any challenges mainly in more cyclical assets (e.g., transportation) versus newer-age infrastructure. Greater confidence in infrastructure's defensiveness will likely support the asset class's growing liquidity and the next phase of 21st-century infrastructure growth. ■

INFRASTRUCTURE TRANSACTIONS HAVE TENDED TO INCREASE THROUGH TIME

2007–21 (December 3, 2021) • Infrastructure Transaction Volume by Sector (US$ Billions)



Source: Inframation Group.

Expect Lackluster Returns on Most Liquid Credits

Wade O'Brien
Managing Director, Capital Markets Research

Low yields on many liquid credit assets curbed returns in 2021, a trend that seems likely to continue in 2022. Central banks have begun hiking rates and curbing asset purchases as strong growth pushes inflation higher, a headwind for fixed rate assets in particular. Despite strong 2021 performance, floating-rate collateralized loan obligation (CLO) liabilities may again outperform, aided by reasonable spreads. Still, most liquid credit is likely to underperform higher-spread private credit, which often benefits from higher-quality underwriting.

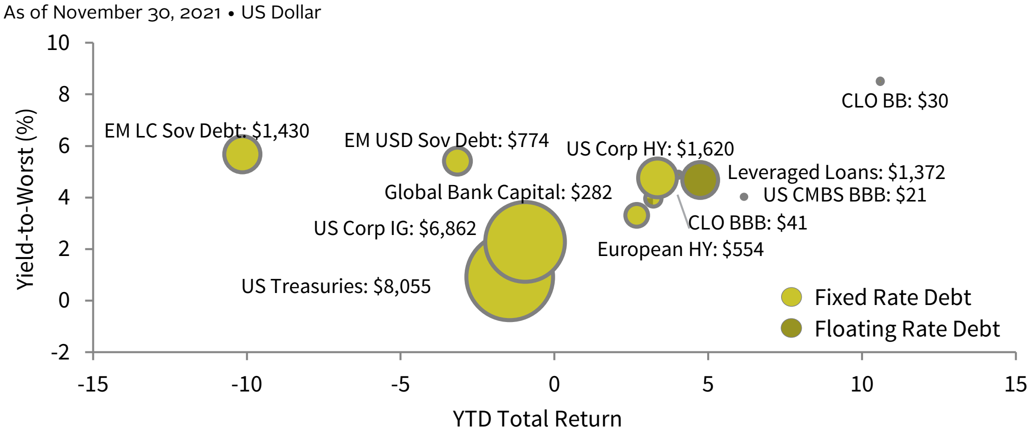
Strong economic growth and rising inflation in 2021 pushed government bond yields higher, hurting core fixed income returns. While growth may moderate somewhat in 2022, persistent inflationary pressures mean market expectations for rate hikes are being moved forward. Unfortunately, spread compression in many credit assets has resulted in scant cushioning to offset rising rates. As an example, the current spread on BB-rated corporate bonds (around 230 bps) has only been this low 28% of the time, though leveraged loan spreads are much closer to historical medians.

The flipside is that a strong economic recovery has helped corporate fundamentals rapidly rebound, and they may continue to improve in 2022. Metrics like net leverage and interest coverage for high-yield borrowers are now better than historical averages, and default rates have fallen below 1%. Rating agencies are scrambling to reverse last year's downgrades, and a dramatic upgrade cycle is in turn improving metrics for structured finance vehicles like CLOs.

Next year, assets like US high-yield bonds and broadly syndicated loans with sub-5% yields may only generate low/mid-single-digit returns, and longer-duration investment-grade bonds could post losses if there are more rate hikes than expected. Within liquid credit, CLO liabilities stand out by offering higher spreads than similarly rated corporate peers, though liquidity is a consideration. Private credit strategies like direct lending, which offer higher spreads and demonstrated their resilience during the pandemic, should do better still. Assuming that ample liquidity has been reserved to meet anticipated spending and other needs, cash is not compelling, as low yields will continue to drag on portfolio returns. Short-duration exposure to high-quality securitized and corporate credit is a compelling alternative. ■

MANY CREDIT INVESTMENTS OFFER MODEST YIELDS

As of November 30, 2021 • US Dollar



Sources: Bloomberg Index Services Limited, Credit Suisse, and J.P. Morgan Securities, Inc. See page 20 for chart notes.

Frank Fama
Global Co-Head of Credit Investment Group

Look to Specialty Finance and Credit Opportunities Strategies for Diversification

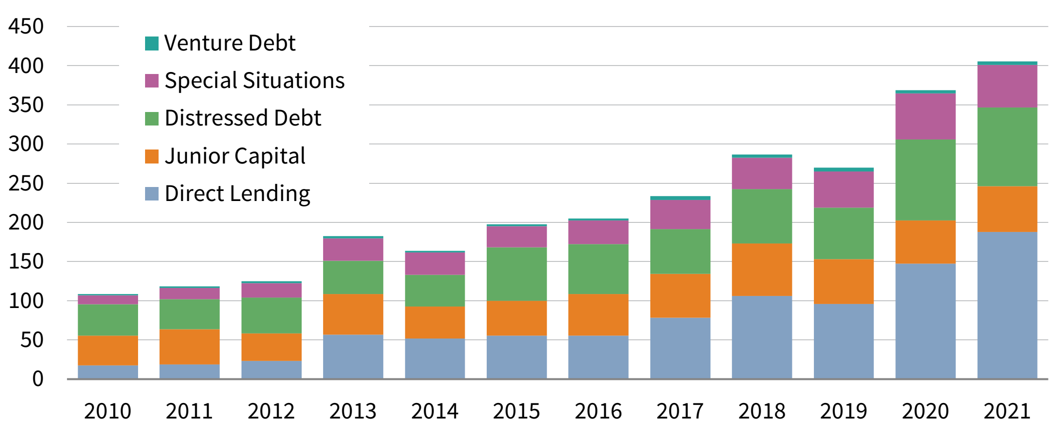
Diversifying private credit strategies provide a good complement to portfolio mainstays. While we believe the economic outlook remains strong, it is not without risks. In direct lending, growing amounts of dry powder are pressuring deal structures and pricing. As a result, we anticipate that commitments to less-correlated private credit funds, such as those focused on life sciences, asset-based lending, and flexible credit strategies, will increase next year.

Specialty finance encompasses most niche credit strategies. For instance, life science–focused funds lend to firms with patented, cash-flow generating drugs. These funds are well placed to capitalize on the growth in drug development. A portfolio of loans secured by a balanced drug portfolio would protect investors in a recession and be less correlated to the broader equity and credit markets. Asset-based lending strategies, where cash flows are not dependent on the performance of a corporate borrower but instead on a pool of cash flow generating assets, also look attractive. These strategies can provide a hedge against potential headwinds facing the market and deal structures, which have weakened in recent years. Most specialty finance strategies offer the added benefit of an attractive yield and a short duration, making them an interesting choice for a diversifiers' allocation.

Credit opportunities with flexible mandates across special situations and distressed represent another appealing private credit area. Given the unprecedented action by governments and central banks, the distressed opportunity failed to materialize in 2021. However, there are periodic—albeit short-lived—dislocations over a credit cycle. Credit opportunities managers that have proven their ability to pivot to high-quality, stressed credit during market sell-offs are an attractive way to play the distressed cycle. These managers also originate differentiated new financing opportunities in less crowded segments of the market. In addition to offering a more "all-weather"–type approach to generating returns, these strategies retain the benefit of yield and many stress shorter durations, offering another arrow in the credit investor's quiver. ■

DRY POWDER IS INCREASING IN MOST CREDIT STRATEGIES

2010–21 (November 30, 2021) • US$ Billions



Source: Prequin.

Macro Hedge Funds Should Benefit from Improved Opportunities

Meisan Lim
Senior Investment Director, Hedge Funds

Rising inflation and moderating growth are generally associated with a higher risk premium as investors start to price in a potential shift in market regime. In the past, global macro managers have generally benefited from better alpha opportunities that arise from volatility. With this backdrop, we expect macro hedge fund performance to be better than average next year.

Because macro hedge funds do not take explicit market risk, have a flexible mandate in which they can go long or short, and can access a wide variety of instruments, managers tend to generate returns that are uncorrelated to major markets. By not relying on the direction of markets, macro managers must count on alpha to generate attractive risk-adjusted returns.

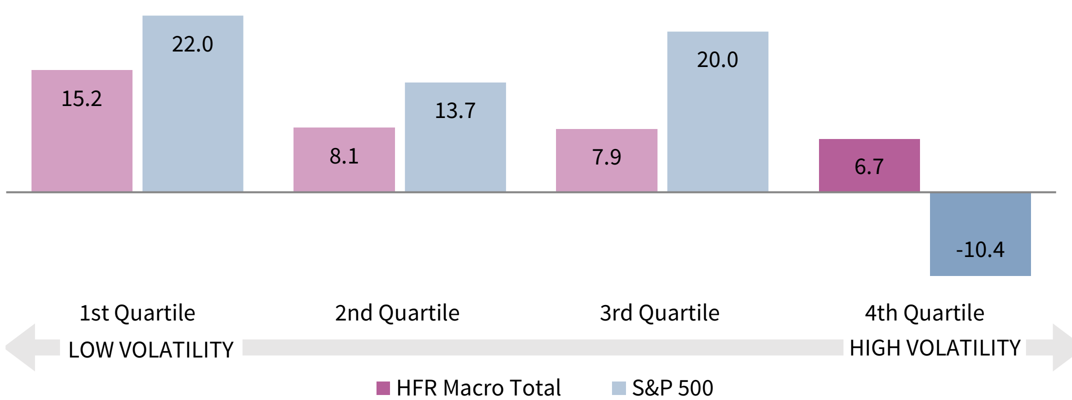
While a volatile market may not be friendly to most investment strategies, having pockets of volatility to exploit can be advantageous to global macro. In fact, the average macro strategy has traditionally outperformed equities by a large margin when markets were most volatile. Of course, the dispersion of hedge fund returns is wide, so any given hedge fund could look much different than the average.

Interestingly, the data show that global macro can do well in low volatility regimes too, with an S&P 500 upside capture of nearly 50%. Rather than a portfolio "insurance," macro is thus more of a diversifier that is expected to be up across all regimes. We believe this return characteristic is partially due to the flexible approach that allows macro managers to nimbly reverse course when the market proves them wrong, particularly when the size of assets is not an impediment for moving nimbly.

Global macro strategy is likely to profit from uncertainties ahead. Still, that does not mean managers in this space can only outperform in an adverse scenario. ■

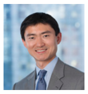
AVERAGE MACRO STRATEGY HAS OUTPERFORMED EQUITIES IN VOLATILE MARKETS

First Quarter 1990 – Third Quarter 2021 • AACR of Quarterly Performance by VIX Quartiles (%)



Sources: Chicago Board Options Exchange, Hedge Fund Research, Inc., Standard & Poor's, and Thomson Reuters Datastream. See page 20 for chart notes.

The Other E in ESG Accelerates: Engagement by Shareholders



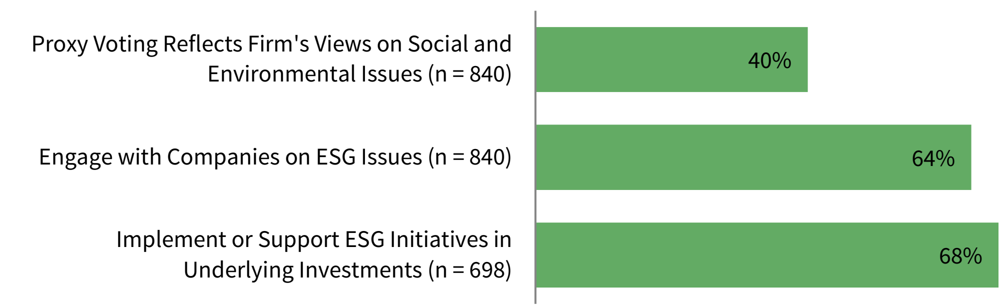
Liqian Ma
Global Head of Sustainable and Impact Investing Research

In the midst of heightened awareness of systemic risks in climate change and social inequality, many investors concerned about long-term portfolio resilience have used their voice to seek change that benefits all investors and the broader system. We expect investors will adopt active engagement practices to a greater extent in 2022, assuming significant policy changes around climate and social issues do not materialize.

Engagement will continue to be a critical lever for investors to align portfolios with net-zero targets and seek real world change. Whereas divesting (screening) or proactive investing in positive solutions (impact investing) may lead to immediate outcomes for the portfolio, engagement may be a more nebulous and frustrating activity that may not yield immediate results because each individual investor or institution has limited influence. Management teams may resist change, climate-related shareholder resolutions may fail, and proposed actions may be watered down in reality. Indeed, climate resolutions have historically received underwhelming support from some of the largest asset managers. Nonetheless, for investors that put in the hard work to refine their direct engagement strategies or back managers that pursue effective engagement strategies, we expect long-term dividends.

A growing number of fund managers across asset classes are employing engagement as part of their ESG strategies; this includes a meaningful percentage of both marketable and private managers.

FUND MANAGERS ARE EMPLOYING ENGAGEMENT IN THEIR ESG STRATEGIES
As of October 15, 2021



Source: Cambridge Associates LLC. See page 20 for chart notes.

The key for 2022 and beyond will be heightened transparency and accountability. Standards like the 2020 UK Stewardship Code and industry initiatives such as Say on Climate are recent examples of efforts to raise the bar. Moreover, engagement on climate change will increasingly focus on requiring portfolio companies to adopt science-based targets in line with the Paris Agreement. Investors need to be cautious about greenwashing as managers may claim to engage with management teams but show little evidence. Engagement strategies can vary widely, but the most effective managers unlock investment returns as well as drive real world positive impact. That's a winning combination that is worth our collective attention and engagement. ■

Read more in "Investing in a Net-Zero World: A Guide for Investors," by Chris Varco and Simon Hallet, Cambridge Associates LLC, 2021.

Active Equity Manager Performance Benefits as Breadth Widens

Kevin Ely
Managing Director, Public Equities

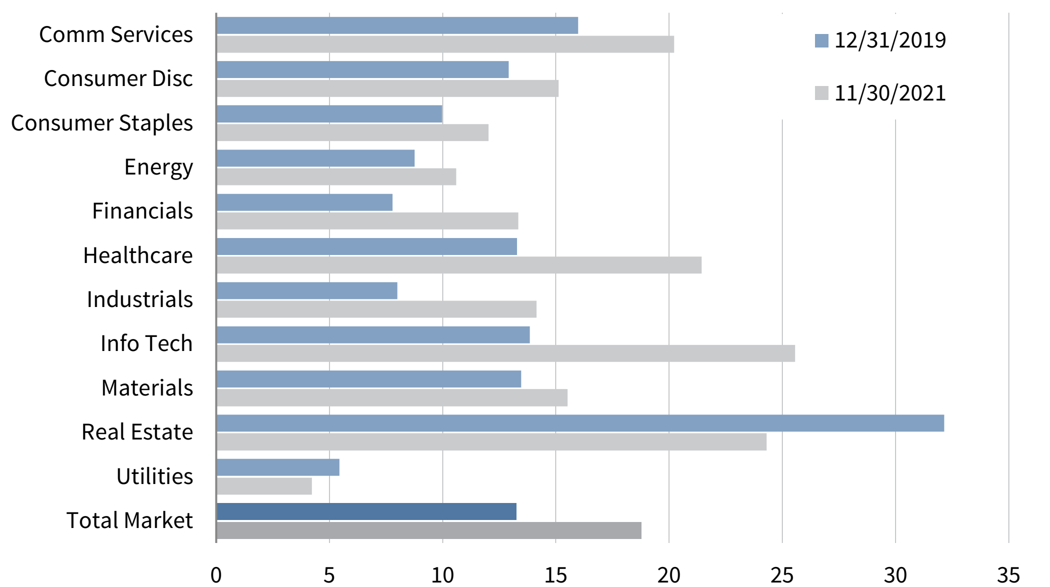
A market environment with a wider breadth of winners and losers provides greater opportunity for skilled active managers to distinguish themselves. Given the more balanced earnings contribution across sectors relative to 2020–21 and the widely dispersed equity valuations, we expect the breadth of winners and losers will be wider in 2022. This market backdrop should provide a greater opportunity for skilled active managers to distinguish themselves relative to passive benchmarks.

With the economic environment of the last couple years, it makes sense that the market coalesced around a small group of sectors whose earnings were either stable or improving, relative to a large group whose immediate future was in doubt. Moving into 2022, consensus expectations reflect a shift toward a more normal earnings contribution across sectors in the S&P 500 Index. As an example, the technology sector is a pandemic beneficiary. Its proportion of the S&P 500 Index's total earnings went from 18.9% in 2019 to 28.6% in 2020. Since March 2020, the technology sector has contributed a third of the index's return, which is nearly as much as the next three largest contributing sectors combined. As earnings contribution broadens, more opportunity exists for stock selection beyond a small collection of sector winners.

A wider range of valuation dispersion within sectors and across the market can provide more opportunity for skilled active managers to benefit from stock selection. Valuation dispersion relative to pre-pandemic and longer-term averages remains elevated across the S&P 500 Index and within nearly all of the index's 11 sectors, as indicated by the spread between the 25th and 75th percentile forward price-earnings ratio. That supports a higher potential for skilled active managers to benefit from applying a more targeted approach to selecting stocks. ■

SKILLED ACTIVE MANAGERS CAN BENEFIT FROM A WIDE SECTOR VALUATION DISPERSION

S&P 500 Index Forward P/E Ratio Dispersion by Sector Pre-Pandemic vs Current



Sources: FactSet Research System and Standard & Poor's. See page 20 for chart notes.

Capital Flows to Cryptoassets Increase, Despite Volatility

Sean Duffin
Investment Director, Capital Markets Research

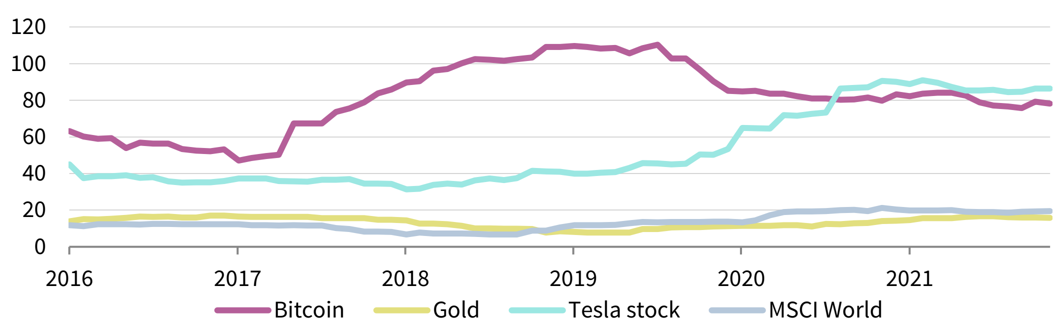
Digital assets* saw considerable inflows in recent years as investors searched for alternative sources of return amid excessive equity and bond valuations. We expect this momentum will continue next year as regulators increasingly approve easy-to-access cryptocurrency exchange-traded funds (ETFs). Still, global regulatory challenges persist, and cryptoassets will remain highly volatile until there is more clarity on future regulation.

The arrival of the first US futures-based bitcoin ETF marks a milestone for cryptocurrencies. Investors previously had to hold these assets directly or through crypto exchanges, limiting their accessibility and broader adoption. The futures-based ETF structure, which is costlier and not backed by actual bitcoin, offers investors daily liquidity and can be held in traditional brokerage accounts. Clearly, there was plenty of pent-up demand for bitcoin exposure in ETF form. In fact, the debut of the ProShares Bitcoin ETF saw $1.03 billion in inflows in its first two trading days, the fastest pace that any ETF has ever reached $1 billion in assets under management. Still, futures-based ETFs are not an attractive way to gain exposure to cryptoassets due to their high fees and cost of rolling contracts. But more alternatives are rapidly emerging. At least 30 additional cryptocurrency ETFs are currently seeking SEC approval, including those that are "physically" backed by bitcoin and those that track other cryptocurrencies like Ethereum.

While we expect additional Securities and Exchange Commission approvals to boost capital flows into the space, a broader cloud of regulatory uncertainty still hovers over the asset class. Throughout 2021, China's intensifying crackdown on cryptoassets contributed to major volatility in bitcoin prices. Unexpected surprises or outright bans on cryptoassets by global policymakers could have similarly negative impacts next year. As long as the threat of tighter regulation looms, we expect bitcoin and other cryptocurrencies to remain highly volatile.

BITCOIN'S VOLATILITY IS STILL MORE LIKE INDIVIDUAL STOCKS

January 31, 2016 – November 30, 2021 • USD Terms • Rolling 2-Yr Annualized Standard Deviation (%)



Sources: LBMA, MSCI Inc., and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.

Read more in "Crypto Considerations," by Sean Duffin, Cambridge Associates LLC, 2021.

Overall, as cryptocurrencies become accessible through ETFs, it stands to reason that capital flows will increase. Beyond cryptocurrencies, funds that seek to capitalize on blockchain technology are also likely to see increased flows. However, investors should carefully watch regulatory developments and brace for continued volatility in the space. ■

* We refer to digital assets or cryptoassets as a catch-all term to describe cryptocurrencies, crypto tokens, crypto commodities, and all other blockchain applications

Brendan Castleman, David Kautter, Kristin Roesch, Caryn Slotsky, Francesco Dell'Alba, and Zack Barrett also contributed to this publication.

CHART NOTES

INFLATIONARY PRESSURES MOUNTING BUT EXPECTED TO PEAK IN 2022
The 2020–21 average is based on actual data through October 2021 and interpolated through December 2021 based on forecasted 4Q2021 levels. Forecasts are based on Bloomberg consensus estimates. Pre-pandemic trend growth is based on trend-line inflation from April 2015 through December 2019.

TREASURY BOND YIELDS SHOULD RISE WITH POLICY RATES
Data are monthly. The Cap-Weighted Global Policy Rate includes developed markets countries with a weight of more than 1% in the Bloomberg Global Treasury Index and is calculated based on their respective market capitalization relative to the total market capitalization of the modified index.

THE MARKET EXPECTS MORE HIKES IN THE SHORT RUN THAN PROJECTED BY THE FED, THOUGH LESS IN THE LONG RUN
Market pricing data is taken as the one month OIS (Overnight Indexed Swap) rate at various forward starting points. The 'Longer Run' data point is five years forward starting. Market data as of December 1, 2021.

GLOBAL EQUITIES OFFER A REASONABLE SPREAD OVER GLOBAL BONDS
The data reflect the difference between the cyclically adjusted real earnings yield less the global government bond real yield. The MSCI World Index, FTSE World Government Bond 7-10Y Index, and the OECD Total CPI Index were used.

ACCELERATING PRIVATE SECTOR CREDIT PROVIDES A BOOST TO ONSHORE CHINA A-SHARES
China A-Shares are represented by MSCI China A Onshore Index price returns, in local currency terms. Private-sector credit is represented by aggregate financing to the real economy less government bonds and equity financing on the domestic stock market by non-financial enterprises. Industrial profits data are decumulated (i.e., are based on monthly values, rather than accumulated YTD values) and gaps in data are linearly interpolated. Industrial profits data are also smoothed using a two-month rolling average. Industrial profits and private credit data for the first expansion cycle begin March 31, 2013. Industrial profits and private credit data are through October 31, 2021.

EM EX CHINA PERFORMANCE HAS LAGGED DM EVEN AS EARNINGS OUTLOOK HAS IMPROVED
EM ex China and Developed Markets are represented by the MSCI Emerging Markets ex China Index and the MSCI World Index, respectively. Total return data for all MSCI indexes are net of dividend taxes.

SHADOW CAPITAL: NON-VC FIRMS HAVE INCREASINGLY PARTICIPATED IN VC DEALS IN RECENT YEARS
Dataset includes all Global Venture Capital Deals, as defined by PitchBook. Deal categorizations are based on the sole/primary investor(s). When there are multiple primary investors involved in a deal, the full deal amount is attributed to each investor; therefore, deals may be included more than once in different investor categories. Deals with no sole/primary investor listed are not included in the dataset.

DATA CENTER MAY BENEFIT FROM BROADBAND GROWTH
Data shown as gigabytes consumed, downstream and upstream. Data for 2021 are forecasted.

MANY CREDIT INVESTMENTS OFFER MODEST YIELDS
The area of each bubble represents the current market value of each index, shown in USD billions. CLO BBB bubble is covered by US Corp HY and Leveraged Loans, Global Bank Capital is represented by the Bloomberg Global Contingent Capital Index, CLO BBB by the J.P. Morgan CLO BBB Index, CLO BB by the J.P. Morgan CLO BB Index, US CMBS BBB by the Bloomberg US CMBS Investment Grade Baa Index, US Corp IG by the Bloomberg US Corporate Investment Grade Index, EM LC Sov Debt by the J.P. Morgan GBI-EM Global Diversified Index, EM USD Sovereign Debt by the J.P. Morgan EMBI Global Diversified Index, European HY by the Bloomberg Pan European High Yield Index, Leveraged Loans by the Credit Suisse Leveraged Loan Index, US Corp HY by the Bloomberg US Corporate High Yield Index, and US Treasuries by the Bloomberg US Intermediate Treasury Index. Total returns data for EM LC Sovereign Debt are in USD terms. Yield for the Credit Suisse Leveraged Loan Index is calculated as the three-month LIBOR plus three-year discount rate.

AVERAGE MACRO STRATEGY HAS OUTPERFORMED EQUITIES IN VOLATILE MARKETS
Returns are net, except for first quarter 1990 to fourth quarter 1998 for S&P 500 where gross returns are used due to lack of data. Hedge Fund Research data are preliminary for the preceding five months.

FUND MANAGERS ARE EMPLOYING ENGAGEMENT IN THEIR ESG STRATEGIES
The n = 840 represents marketable fund manager responses and the n=698 represents private investment fund managers.

SKILLED ACTIVE MANAGERS CAN BENEFIT FROM A WIDE SECTOR VALUATION DISPERSION
Chart represents difference in valuation multiples between firms at the 75th and 25th percentiles of each respective sector.

INDEX DISCLOSURES

Bloomberg Global Treasury
The Bloomberg Global Treasury Index tracks fixed-rate, local currency government debt of investment grade countries, including both developed and emerging markets. The index represents the treasury sector of the Global Aggregate Index. The index was created in 1992, with history available from January 1, 1987.

Bloomberg Pan European High Yield Index
The Bloomberg Pan-European High Yield Index measures the market of non-investment grade, fixed-rate corporate bonds denominated in the following currencies: euro, pounds sterling, Danish krone, Norwegian krone, Swedish krona, and Swiss franc.

Bloomberg US CMBS Investment Grade Index
The Bloomberg US CMBS Investment Grade Index measures the market of US Agency and US Non-Agency conduit and fusion CMBS deals with a minimum current deal size of $300mn. The index is divided into two subcomponents: the US Aggregate-eligible component, which contains bonds that are ERISA eligible under the underwriter's exemption, and the non-US Aggregate-eligible component, which consists of bonds that are not ERISA eligible.

Bloomberg US Corporate High Yield Index
The Bloomberg US Corporate High Yield Bond Index measures the USD-denominated, high yield, fixed-rate corporate bond market. Securities are classified as high yield if the middle rating of Moody's, Fitch and S&P is Ba1/BB+/BB+ or below. Bonds from issuers with an emerging markets country of risk, based on the indices' EM country definition, are excluded. The US Corporate High Yield Index is a component of the US Universal and Global High Yield Indices.

Bloomberg US Corporate Investment Grade Index
The Bloomberg US Corporate Investment Grade Index includes publicly issued US corporate and specified foreign debentures and secured notes that meet the specified maturity, liquidity, and quality requirements. To qualify, bonds must be SEC-registered. It is not possible to invest directly in an unmanaged index.

Bloomberg US Intermediate Treasury Index
The Bloomberg US Intermediate Treasury Index includes all publicly issued, US Treasury securities that have a remaining maturity of greater than or equal to one year and less than ten years, are rated investment grade, and have $250 million or more of outstanding face value.

Credit Suisse Leveraged Loan Index
The Credit Suisse Leveraged Loan Index uses a single "blended" Moody's/S&P/Fitch rating to compute averages sorted by rating. There are nine blended ratings: Investment Grade (which is excluded from the index), Split BBB, BB, Split BB, B, Split B, CCC/Split CCC, Distressed/Default and Not Rated.

FTSE World Govt Bond Index
A broad index providing exposure to the global sovereign fixed income market, the index measures the performance of fixed-rate, local currency, investment-grade sovereign bonds. It comprises sovereign debt from over 20 countries, denominated in a variety of currencies.

J.P. Morgan CLO Index
The J.P. Morgan CLO Index (CLOI) offers total returns and analytics based on observable pricings of a representative pool of bonds following a stated methodology, and is published daily. The index holistically captures the USD-denominated CLO market, representing over 3,000 instruments at a total par value of US $236.1 billion. It will allow market participants to track securitized loan market valuations, and complements last year's debut of the J.P. Morgan Asset-Backed Securities Indices (ABS Indices).

J.P. Morgan EMBI Global Diversified Index
The JP Morgan Emerging Markets Bond Index (EMBI Global Diversified) is a uniquely weighted version of the EMBI Global. It limits the weights of those index countries with larger debt stocks by only including specified portions of these countries eligible current face amounts of debt outstanding. The countries covered in the EMBI Global Diversified are identical to those covered by the EMBI Global.

J.P. Morgan GBI-EM Global Diversified Index
The JP Morgan Government Bond Index-Emerging Markets Global Diversified Index is a uniquely weighted version of the GBI-EM Global. It limits the weights of those index countries with larger debt stocks by only including specified portions of these countries' eligible current face amounts of debt outstanding. The countries covered in the GBI-EM Global Diversified are identical to those covered by the GBI-EM Global Index.

MSCI World Index
The MSCI world index, which is part of The Modern Index Strategy, is a broad global equity index that represents large and mid-cap equity performance across 23 developed markets countries. It covers approximately 85% of the free float-adjusted market capitalization in each country and MSCI world index does not offer exposure to emerging markets.