2 Exploiting mean reversion

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2.1

Reversion to the mean and what it means for portfolios

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The arrival of the worst global pandemic in more than a century moved every asset price in the world, and its departure will do the same. It is time to position portfolios to exploit what comes next.

- COVID-19 has caused huge economic and financial market disruption, but it is neither unstoppable nor a trend
- Instead, we believe the pandemic's impacts are temporary, causing massive valuation distortions in 2020 that will unwind in 2021
- Many asset prices and relationships between assets have strayed far from their long-term relationships
- Just as COVID moved every asset price in the world, the same will occur as it departs
- We expect a "reversion to the mean," in which certain sectors will be major beneficiaries
- These include COVID-cyclical sectors, small-cap equities and some of the most beaten-down national and regional markets
- After the most significant dispersion of asset prices in history, exploiting this mean reversion will be crucial to your portfolio's return opportunities in 2021

COVID-19 has split the world's companies into winners and losers. The eruption of the pandemic and the unprecedented steps taken to combat its spread disrupted economic activity and everyday life profoundly. Demand surged for certain companies' goods and services but collapsed for others. Roughly half the world's asset prices experienced a major boost, while the other half suffered. Enormous monetary and fiscal stimulus has helped support markets as a whole, but fiscal actions did not narrow the gap in performance between COVID beneficiaries and COVID underdogs.

To be clear, there are good reasons why certain markets, sectors and companies should have outperformed during a major health crisis. However, COVID-19 is not one of our **Unstoppable trends**. While it will undoubtedly leave some permanent impacts, it will not be a new driver of secular growth or decline for many years to come.

The relationships between many asset prices have stretched very far from their long-term mean levels – too far in our view. Financial history holds a clear lesson for us here. When relationships between asset prices reach extremes such as these, reversion to the mean ultimately follows.

We believe that mean reversion for many financial assets could begin soon. In 2021, we believe the shock of the pandemic's economic effects will fade, with broader economic growth accelerating as healthcare solutions to COVID are introduced. As a new economic growth cycle takes hold, traditional forces will reset asset prices for 2021. This is not to say that all high-performing assets during the pandemic will suffer when it leaves. While some may indeed fall, many of them may enjoy further gains. The issue is largely about relative performance. Many of the pandemic's weakest performers could become the strongest performers in the recovery that will begin in 2021.

In our view, most investors are unprepared for this mean reversion. Many have made good returns from technology, media and other substitutes that have allowed the world to maintain its economic equilibrium far better than one might have expected during the pandemic. But as investors, we must not be complacent. We must assess what is likely to lie ahead and make smart portfolio decisions. As prices between assets normalize as COVID departs, exposures to last year's losers might be a winning strategy.

COVID's temporary distortions

The economic distortions created by COVID-19 are all around us. For example, demand for single-family homes, do-it-yourself building materials and furnishings, and consumer staples has surged. So too has demand for digital solutions that allow us to work from home and consume while remaining socially distant. In contrast, "socially close" activities including travel, eating out, traditional shopping and office work have had to be dramatically curtailed to limit the spread of the virus.

COVID's huge hit to economic growth – and policy steps to mitigate those effects – have similarly generated an unprecedented and pervasive divergence in asset prices. To highlight the distortion, we divide the world's equities into "COVID cyclicals" and "COVID defensives," depending on the virus's effects upon their businesses. COVID defensives include "stay-at-home" beneficiaries, such as digital entertainment, online retail, and consumer staples. COVID cyclicals include "leave-your-home" beneficiaries, such as hotels, restaurants, airlines and office REITS. The distortion can be seen in global equity performances and in the sovereign credit performance of predominately "COVID-cyclical" national economies - **FIGURES 1** and **2**.

While information technology has traditionally been classified as a cyclical industry, we designate it as a COVID defensive. Despite big booms and busts in the past, communications technology has transformative long-term growth properties – see [Digitization: The age of hyper-connectivity is upon us] in **Unstoppable trends**.

FIGURE 1. COVID DEFENSIVES OUTPERFORMING COVID CYCLICALS

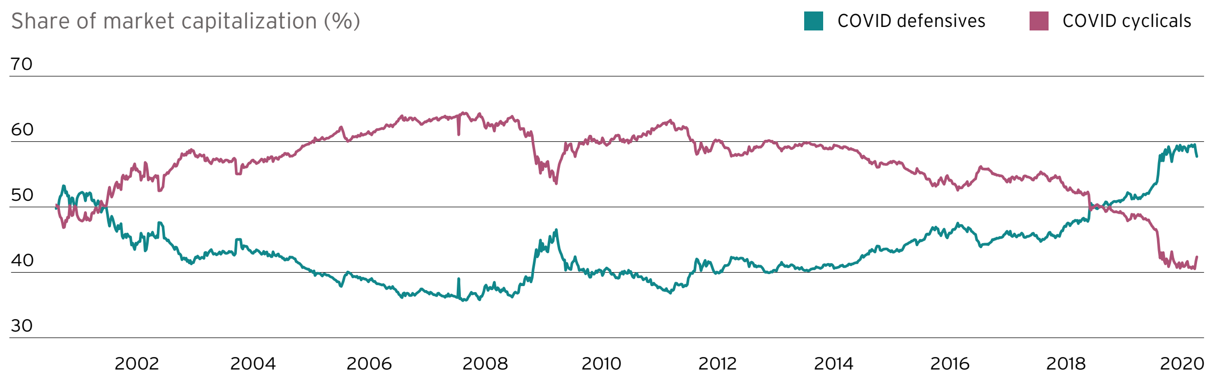
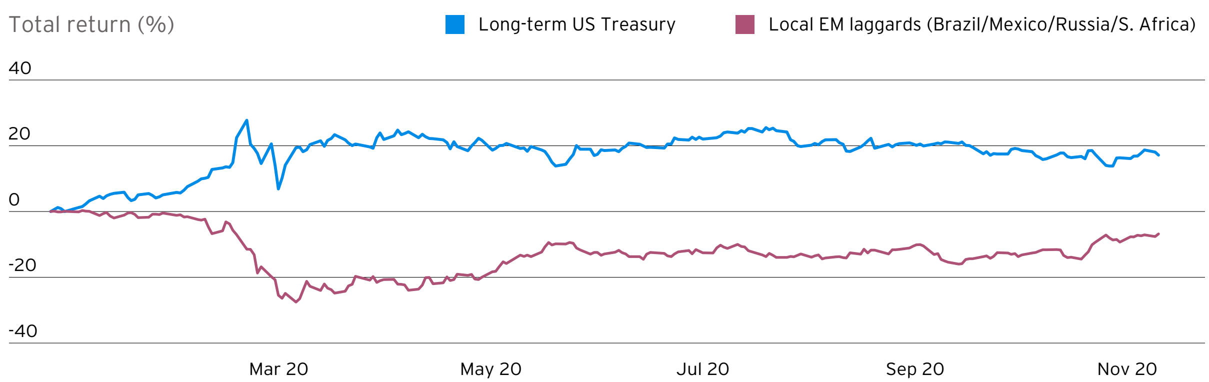


FIGURE 2. US TREASURIES OUTPERFORMING EMERGING SOVEREIGNS



Source: Bloomberg and FactSet as of 15 Nov 2020. Local EM laggards represented by Bloomberg Barclays indices. COVID cyclicals: Financials, industrials, energy, materials, real estate, consumer discretionary ex–Amazon COVID defensives: IT, healthcare, communication services, consumer staples, utilities, Amazon. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Index returns do not include any expenses, fees or sales charges, which would lower performance. For illustrative purposes only. Past performance is no guarantee of future results. Real results may vary. All forecasts are expressions of opinion and are subject to change without notice and are not intended to be a guarantee of future events.

In 2020, those properties allowed the economy to adapt to COVID restrictions in ways that would not have been possible had the crisis struck in any previous decade.

We have similarly reclassified real estate as a COVID-cyclical sector. That is as a result of the unique negative effects of social distancing upon key components of the sector, such as shops and office properties. The industries most negatively affected by COVID have created negative spillovers for the banks that have lent to them. Firms that have suffered huge revenue falls as they "wait out" the crisis have seen their balance sheets deteriorate, worsening their credit. Thus, financials are also part of the COVID cyclicals.

As dramatic as the distortions have been – both in the economy and in asset prices – they are temporary. By contrast, though, many investors may be positioning for these distortions to endure for much longer.

FIGURE 3:
US MARKET HAS MOST COVID DEFENSIVES

	COVID CYCLICALS (%)	COVID DEFENSIVES (%)
US	32.8	67.2
CHINA	40.6	59.4
EM ASIA EX-CHINA	41.4	58.6
EUROPE EX-UK	48.3	51.7
UK	55.4	44.6
JAPAN	56.3	43.7
LATAM	64.4	35.6
CEEMEA	70.5	29.5
ASIA EX-JAPAN	75.2	24.8

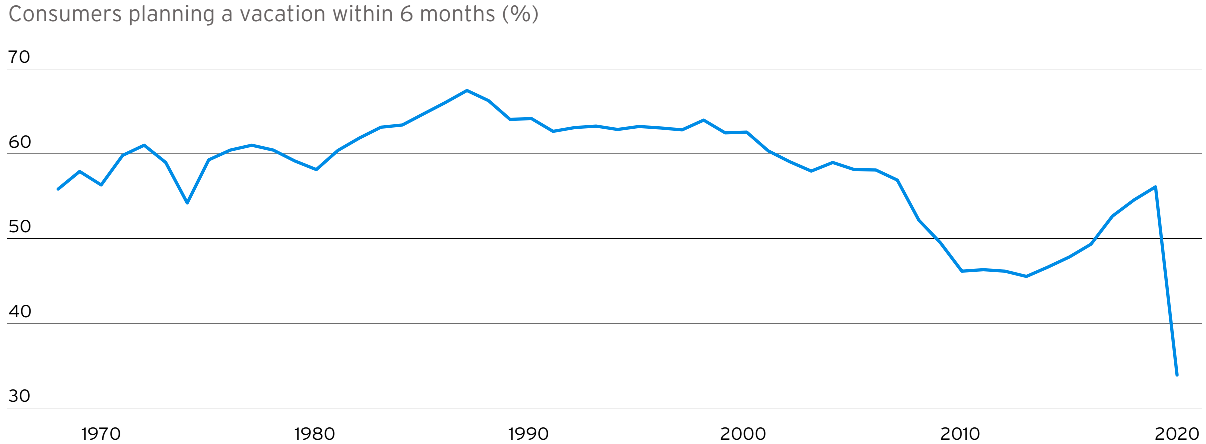
COVID cyclicals: Financials, industrials, energy, materials, real estate, consumer discretionary ex–Amazon. COVID defensives: IT, healthcare, communication services, consumer staples, utilities, Amazon. Source: FactSet as of 26 Nov 2020. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Index returns do not include any expenses, fees or sales charges, which would lower performance. For illustrative purposes only. Past performance is no guarantee of future results. Real results may vary.

How COVID's distortions will unwind

We expect a prolonged but multi-faceted victory over COVID-19 – see **Resilience, optimism and investor action**. The victory will be won by an army of vaccines, monoclonal antibody treatments and rapid delivery systems all designed to stop the pandemic through large-scale health interventions. As the new economic cycle takes hold in 2021, therefore, investors will look forward to what might be possible once again. Pent-up demand is building in the economy after so much of life went "on hold" in 2020. We believe the world's consumers will be keen to plan vacations once they feel safe to do so – **FIGURE 4**. Retail goods sales have been rising relative to services. Goods demand has been outpacing production. Thus, we see two sources of growth as inventories and supply lines refill. We expect a further ramping up of trade and industrial activity in 2021 – **FIGURE 5**. We also see travel, tourism and hospitality industries acting like a coiled spring wound tight, ready to expand strongly once COVID is no longer a threat.

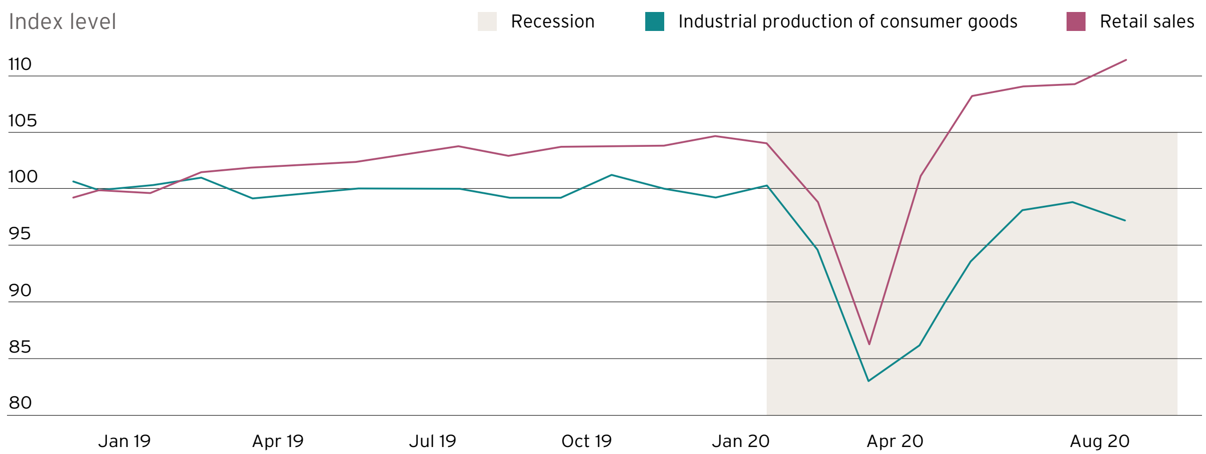
The US Federal Reserve has joined with other developed world central banks in actively seeking a higher inflation rate by maintaining an unusually easy monetary policy – see Overcoming financial repression. This will cause rates to rise along the yield curve over time. However, effective COVID vaccines will be an even more powerful trigger for stronger immediate economic growth, relieving the need for more drastic easing measures.

FIGURE 4. US CONSUMERS' VACATION INTENTIONS



Source: Haver Analytics as of 8 Oct 2020.

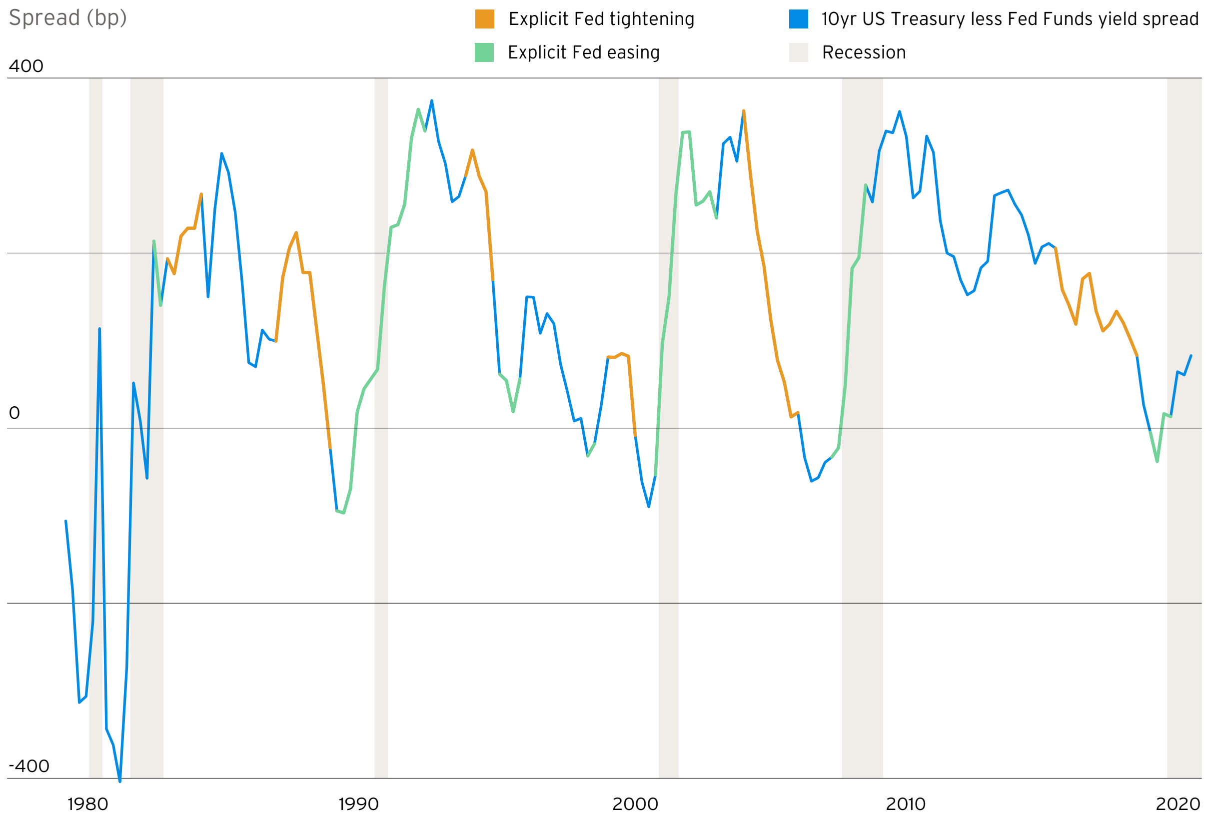
FIGURE 5. US GOODS PRODUCTION NOT KEEPING UP WITH DEMAND



Source: Haver Analytics as of 8 Oct 2020.

Prolonged Fed easing tends to steepen the US yield curve – **FIGURE 6**. So too would an economic recovery after COVID. Ten-year US Treasury yields could plausibly rise materially – albeit to a mere 1.5% – a year from now, leaving some bond investors nursing negative returns. The economic recovery from COVID will strengthen COVID cyclical corporate debt – **FIGURE 7**. We also expect it to instill recovery in the depressed financial sector. As the yield curve steepens, history says that COVID-cyclical financials may outperform tech – **FIGURE 9**. The same healthcare solutions will improve the fundamentals of commercial real estate credit.

FIGURE 6. FED EASING STEEPENS THE YIELD CURVE



Source: Haver Analytics, as of 25 Nov 2020.

FIGURE 7. US HIGH YIELD COVID DEFENSIVES VS COVID CYCLICALS

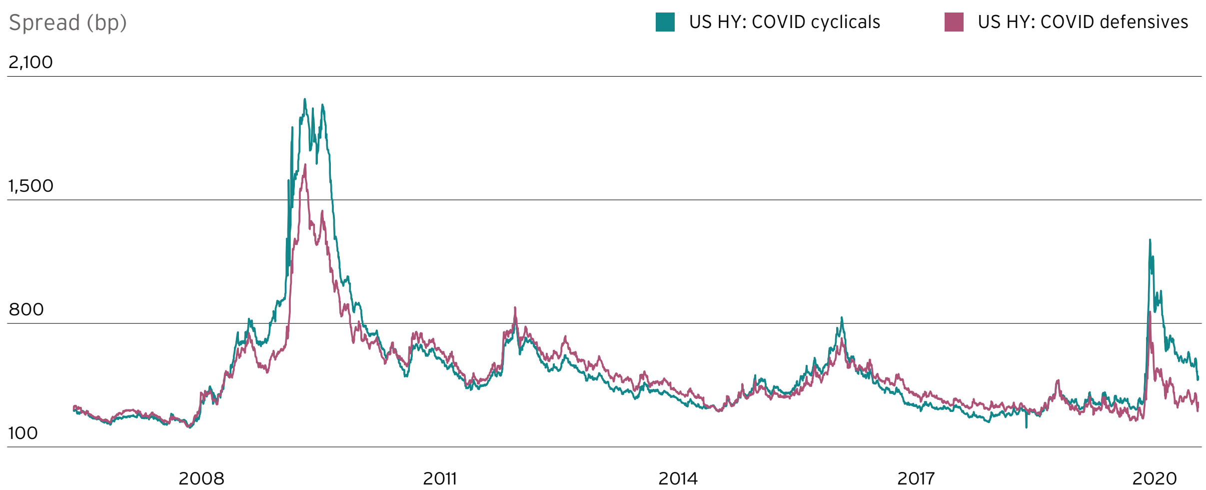
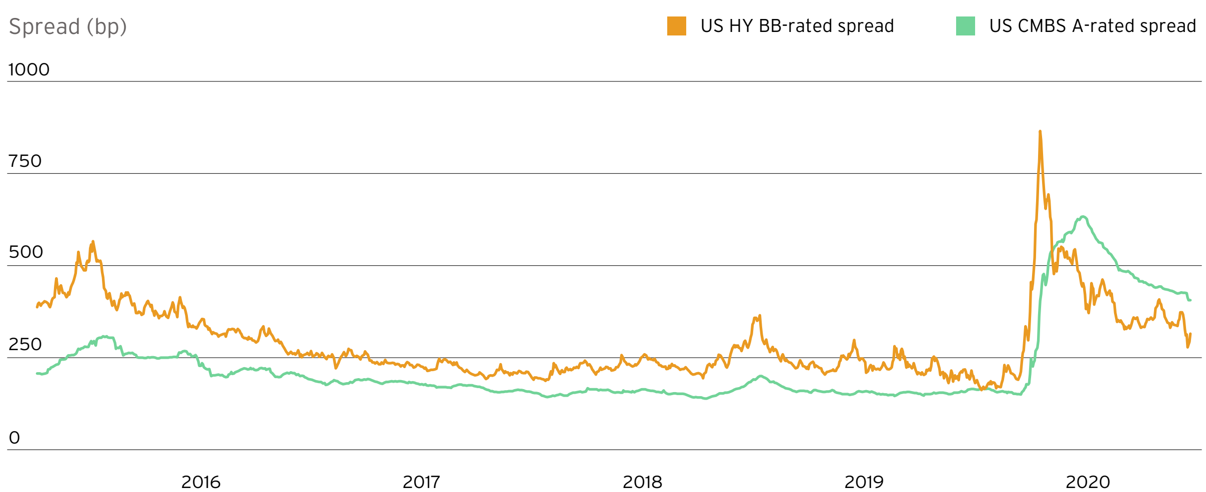


FIGURE 8. US 'A'–RATED CMBS VS BB–RATED CORPORATE SPREADS VS TREASURY



Source: Bloomberg and FactSet as of 15 Nov 2020.

COVID cyclicals: Financials, Industrials, Energy, Materials, Real Estate, Consumer Discretionary ex–Amazon.

COVID defensives: IT, Healthcare, Communication Services, Consumer Staples, Utilities, Amazon

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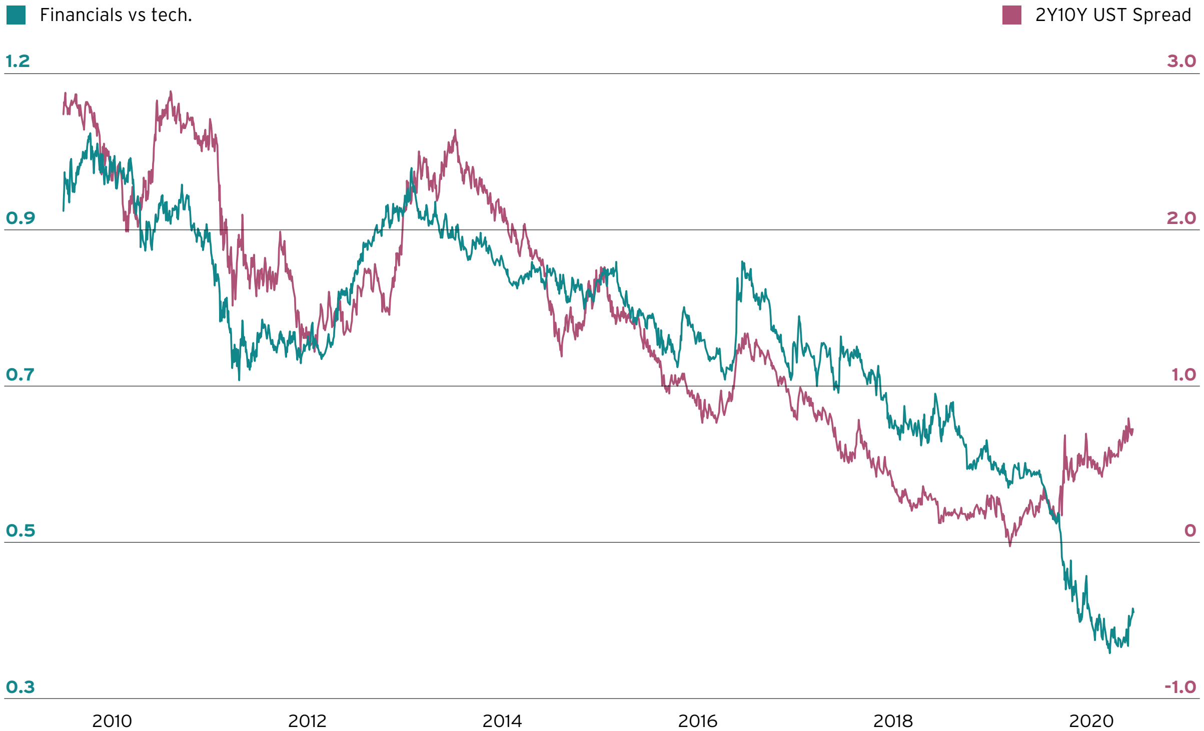
FIGURE 9. STEEPER YIELD CURVE POINTS TO FINANCIALS OUTPERFORMING TECH



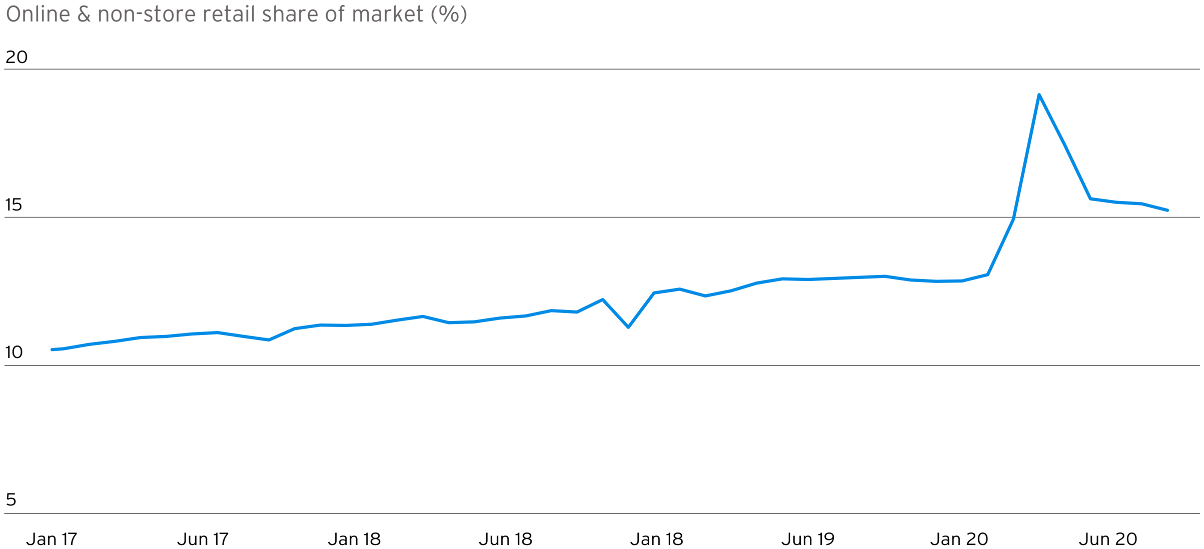
Financials and tech represented by S&P 500 Financials and Technology indices. Source: Bloomberg, as of 31 Oct 2020. Past performance is not indicative of future returns. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Index returns do not include any expenses, fees or sales charges, which would lower performance. For illustrative purposes only.

Technology: Stay invested but avoid excessive exposure

The same technology that keeps family members staring at their smartphones during dinner has helped retain many millions of services jobs. Thanks to powerful digital communications networks, the banking system has continued functioning without disruption. And consider how many more people might have caught COVID-19 if they had had to shop in crowded stores rather than receiving home deliveries. Had this virus struck twenty years ago, with the technology of the time, the current economic and health calamities would have been far worse.

COVID has thus accelerated the digital economy's advance, a shift that will not be unwound once the health crisis ends. Demand for office space and business travel will probably never return completely to pre-pandemic normality, with digital services gaining in share.

FIGURE 10. US E–COMMERCE GRABS MARKET SHARE



Source: Haver, as of 19 Aug 2020

However, we should consider how the COVID distortions have altered life and raised valuations for certain assets to unusually rich levels. As FIGURE 10 shows, the share of e-commerce retail sales grew most strongly when bricks-and-mortar stores had to shutter. Yet, when given a chance, a large share of buyers will return to stores. Recognizing that e-commerce is a much more efficient business model compared to traditional retail, it will not achieve total dominance due to the pandemic. In 2020, Amazon's market capitalization has risen to more than $1.5 trillion from $900 billion at the start of the year, adding an amount equivalent to the value of entire companies such as American Express on any given day. Of course, this is also a reflection of its rapid growth in web services, not just its retail operations. However, we do not expect traditional retailers to claw back market share, nor Amazon's wider business to deteriorate. Even were its market capitalization to increase further in the coming year, Amazon's year-to-date gain of 90% already represents an unsustainable level of appreciation. Simply put, some more depressed assets also deserve a place in portfolios. Passive investor portfolios have only followed markets into extrapolating the COVID impact as a lasting trend. This weakens both their diversification and likely returns in 2021.

Macroeconomic policy has also affected valuations in 2020. Consider that interest rates are set for the aggregate condition of the economy. Rates cannot go low enough for those companies in the greatest distress. For those with strong fundamentals, a one-off valuation surge is possible. This is what we saw in 2020, which will have consequences for returns in 2021.

Firms with above-average valuations and faster-than-average trend growth rates are particularly sensitive to movements in interest rates. In 2020, plunging rates help explain a sharp valuation gain for growth equities relative to value equities – FIGURE 11. Given its high proportion of COVID-defensive businesses and the strong balance sheets typical of large firms, the technology-heavy NASDAQ 100 Index rose to highs relative to the Russell 2000 Index only surpassed in the late 1990s tech bubble – FIGURE 12. The latter is dominated by smaller US firms far more impacted by COVID.

We think there is a risk that investors may extrapolate current exaggerated trends beyond the present "COVID-impact period." We do not see the fundamental performance of "digitization" sector firms challenged. Unlike other periods when we have needed to soothe investor fears, tech equities have surged in this crisis period.

We believe that you should still hold secular growth leaders from the COVID defensives in your portfolio. However, it is very important to avoid excessive concentration in individual equities and too great a weighting overall in such holdings. Within a globally diversified multi-asset class core portfolio that includes private market alternatives, we suggest that US large-cap technology shares be limited to 20% of total holdings. Technology, media and telecom sectors (TMT) should be limited to 50% of US equity holdings. In our view, this still provides ample long-term exposure to just one of our four **Unstoppable trends**.

FIGURE 11. FALLING BOND YIELDS, RISING GROWTH STOCKS

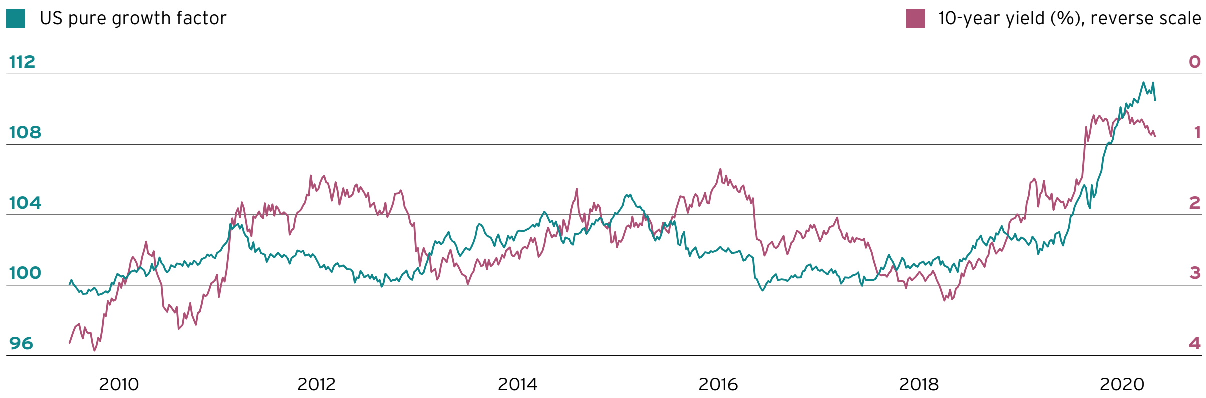


FIGURE 12. TECH SOARS VERSUS SMALL–CAPS

In Figure 11., US Pure Growth Factor is the Bloomberg US Pure Growth Index. Sources for figures 11 and 12: Haver Analytics and FactSet as of 15 Nov 2020. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Index returns do not include any expenses, fees or sales charges, which would lower performance. For illustrative purposes only. Past performance is no guarantee of future results. All forecasts are expressions of opinion and are subject to change without notice and are not intended to be a guarantee of future events.

FIGURE 13. GLOBAL MOMENTUM RELATIVE PERFORMANCE

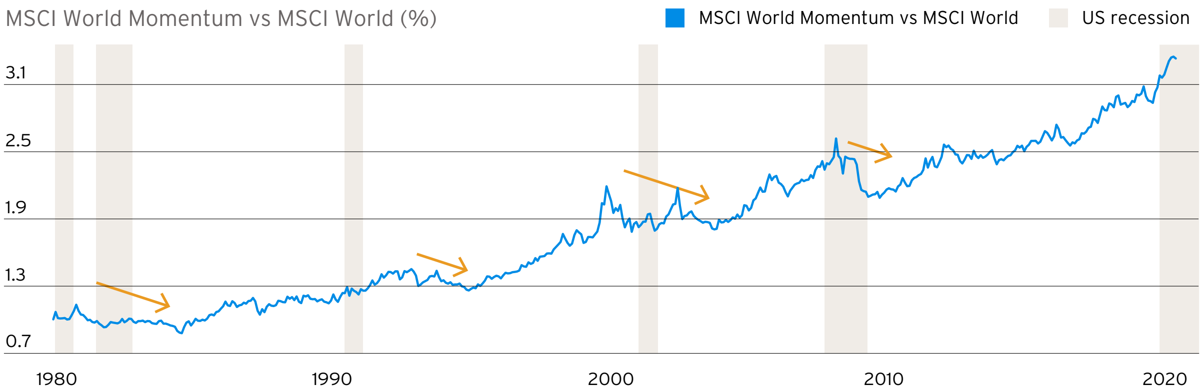
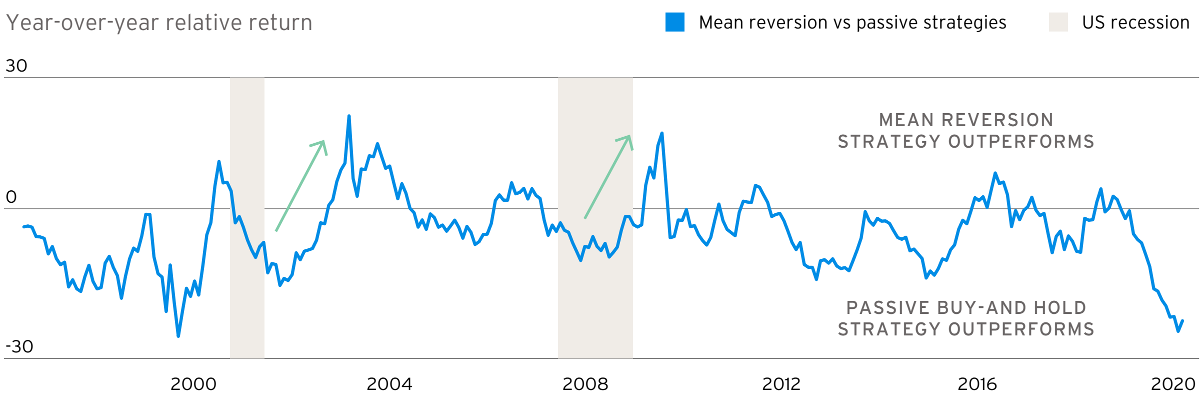


FIGURE 14. MEAN REVERSION STRATEGIES HAVE WORKED AROUND CYCLE TRANSITIONS



Source: Bloomberg as of 15 Nov 2020. Passive buy–and–hold strategy represented by buying and holding MSCI AC World Index. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Index returns do not include any expenses, fees or sales charges, which would lower performance. For illustrative purposes only. Past performance is no guarantee of future results. Real results may vary.

What if momentum investing loses momentum?

As the new economic cycle becomes further established in 2021, we expect long-lasting trends to be challenged. The strength of momentum investing is one of these. Over the past four decades, a simple approach of buying equities that had already done well recently has outperformed global equities – **FIGURE 13.**

Such returns are testament to the persistence of secular winners. Identifying these is a key part of our approach to helping you build a core portfolio. However, momentum is not guaranteed to be sustained, especially in the environment we foresee. This was most obviously the case in the late 1990s technology bubble period. Early in new economic and market cycles, the worst performing sectors most frequently see a reversion to the mean. This means a bounce-back in the worst-performing sectors as well as the potential for underperformance in prior leaders – **FIGURE 14.**

COVID cyclicals' comeback

In the present day, we see no fundamental negative developments for "digitization." But cyclical sectors such as financials, industrials and the traditionally defensive but now "COVID cyclical" sector real estate, are likely to rebound from collapse to recovery in 2021. This includes "leave-your-home" beneficiaries, such as hotels, restaurants, airlines and office REITS. We look also for a revival in beaten down small companies across the world, and the most COVID-impacted regions.

The Global Financial Crisis was a good example of the comeback we may see. The most negatively impacted crisis zones of 2008 provided the strongest returns of 2009 – **FIGURE 15.** This was before investors even understood that the worst had passed. We believe the same could apply to many of 2020's hardest hit regional markets – **FIGURE 16.**

FIGURE 15. RETURNS IN AND AFTER THE GLOBAL FINANCIAL CRISIS

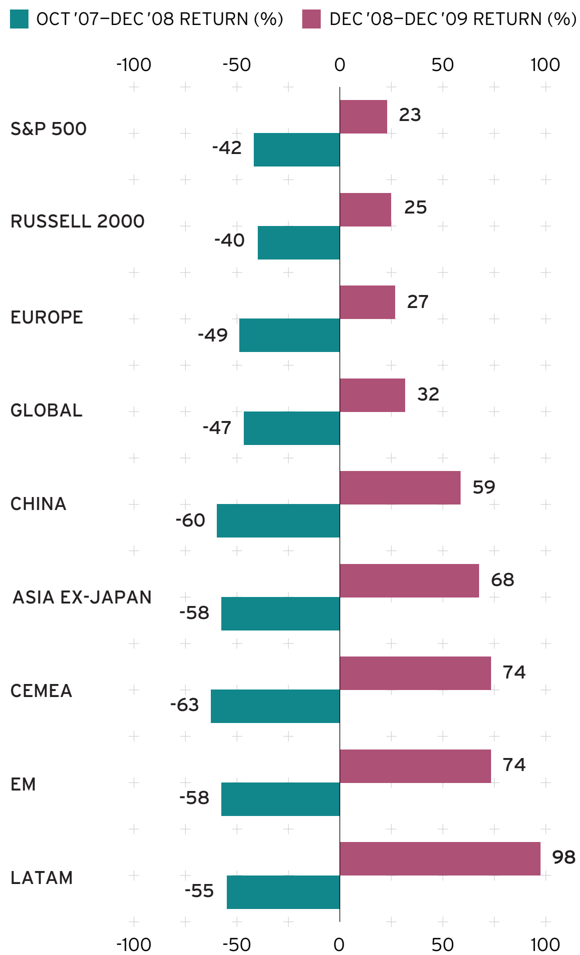
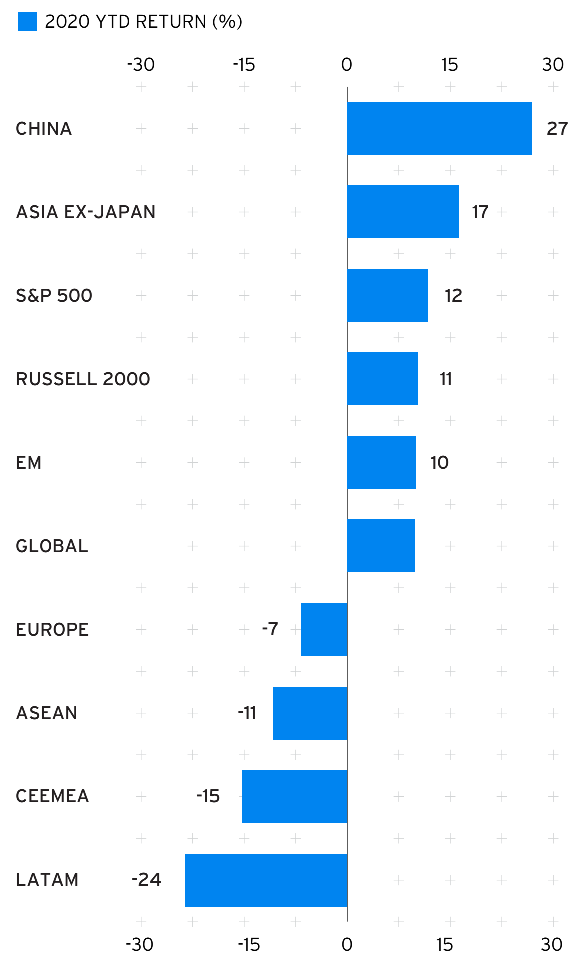


FIGURE 16. EQUITY PERFORMANCE AMID COVID–19



Indices shown are MSCI Indices, except for S&P 500.
Source: FactSet, through 26 Nov 2020. Past performance is no guarantee of future results, and future results may not meet our expectations due to a variety of economic, market and other factors. Real results may vary. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only.

Portfolios and mean reversion strategies

The coming departure of COVID-19 will be a process rather than a single event. Likewise, the distortions that have appeared in the economy during the pandemic will not unwind simultaneously. Nor will mean reversion across many asset prices occur at all once. Nonetheless, it is not too early to get core and opportunistic portfolios ready.

Exploiting mean reversion – the return to normal economic pricing relationships - will be crucial to seeking returns and managing portfolio risk over the coming year. But we see many investors positioned for "more of the same" rather than the realities of a new economy cycle and a world beyond COVID-19. This is understandable: it is always tempting to assume that the future will resemble the immediate past. Our message is clear, though: start preparing to exploit mean reversion. COVID's arrival came as shock; its departure should not.

Joseph Kaplan also contributed to this article.

2.2

Capitalize on distressed opportunities

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COVID's distortions have left various sectors facing widespread financial distress. This creates an opportunity for private market strategies to capitalize as returns and valuations revert to the mean over time.

- There are growing signs of financial distress within sectors hit hardest by the pandemic
- Such distress can provide investment opportunities accessible via certain private equity and real estate strategies
- In real estate, we see potential among hospitality assets
- In private equity, we are attracted to particular small- and mid-cap firms that are unable to access the public markets

COVID-19 has created some of the most extreme conditions that many businesses have ever endured, including a profoundly dire combination of collapsing revenues and high fixed costs. The difficulties were most acute in "socially close" industries, where the situation may not normalize fully any time soon. These harsh conditions have left many thriving businesses struggling to survive. In order to do so, they will likely require a capital injection or further restructuring of their balance sheets.

For cash-rich investors with a medium-term view, this sharp, short distress may potentially present attractive investment opportunities. We believe that some of the most compelling investments are not available via public markets. Instead, they are accessible via select private equity managers – especially in real estate in the hospitality sector – and in traditional/distressed private equity. As distorted operating conditions return gradually to more pre-COVID levels, we expect depressed profits to revert to their mean in 2022 or 2023. Distressed valuations will recover as well, enabling investors who are willing and able to sacrifice liquidity over a multi-year horizon to capitalize.

Real estate: A long recovery, but ripe for investment

Few segments within real estate have suffered more amid the pandemic than hospitality. Indeed, hotels are set to register their worst ever operating performance in 2020. In the US, revenue per available room – the industry's favored metric – is forecast to have fallen by 53% on average in 2020. That is more than three times greater than the previous record decline, which occurred during the Global Financial Crisis (GFC).[1] Financial distress for owners, developers and investors is already broadly in evidence, and is likely to intensify in the coming years. This creates opportunities for new investors who specialize in distressed opportunities and turnarounds.

Initially, we expect to see bank foreclosures. Thereafter, some property owners will decide that they are unwilling or unable to navigate the four- or five-year period leading to full recovery. Some will find themselves unable to adapt to potentially lasting changes in property demand. These include reduced business travel frequency, as more firms rely on technological alternatives such as videoconferencing. In the US alone, there are $15bn of hotel loans outstanding.[2] Hospitality investors who can provide structured solutions to recapitalize distressed assets will be well positioned in the environment.

Hospitality is already seeing nascent signs of a recovery. Total US occupancy rebounded from around 20% in early April 2020 to over 50% in August 2020, driven primarily by leisure demand in drive-to markets.[3] Nonetheless, hotel operating fundamentals may well not fully recover to pre-pandemic levels until 2023 or 2024. That is longer than the recoveries after the GFC and the 9/11 terrorist attacks.[4] Meanwhile, the recovery is likely to occur unevenly across the various guest cohorts of leisure, business, and group travel. We look for leisure – which represented some 70% of travel expenditure in 2019 – to drive the recovery initially.

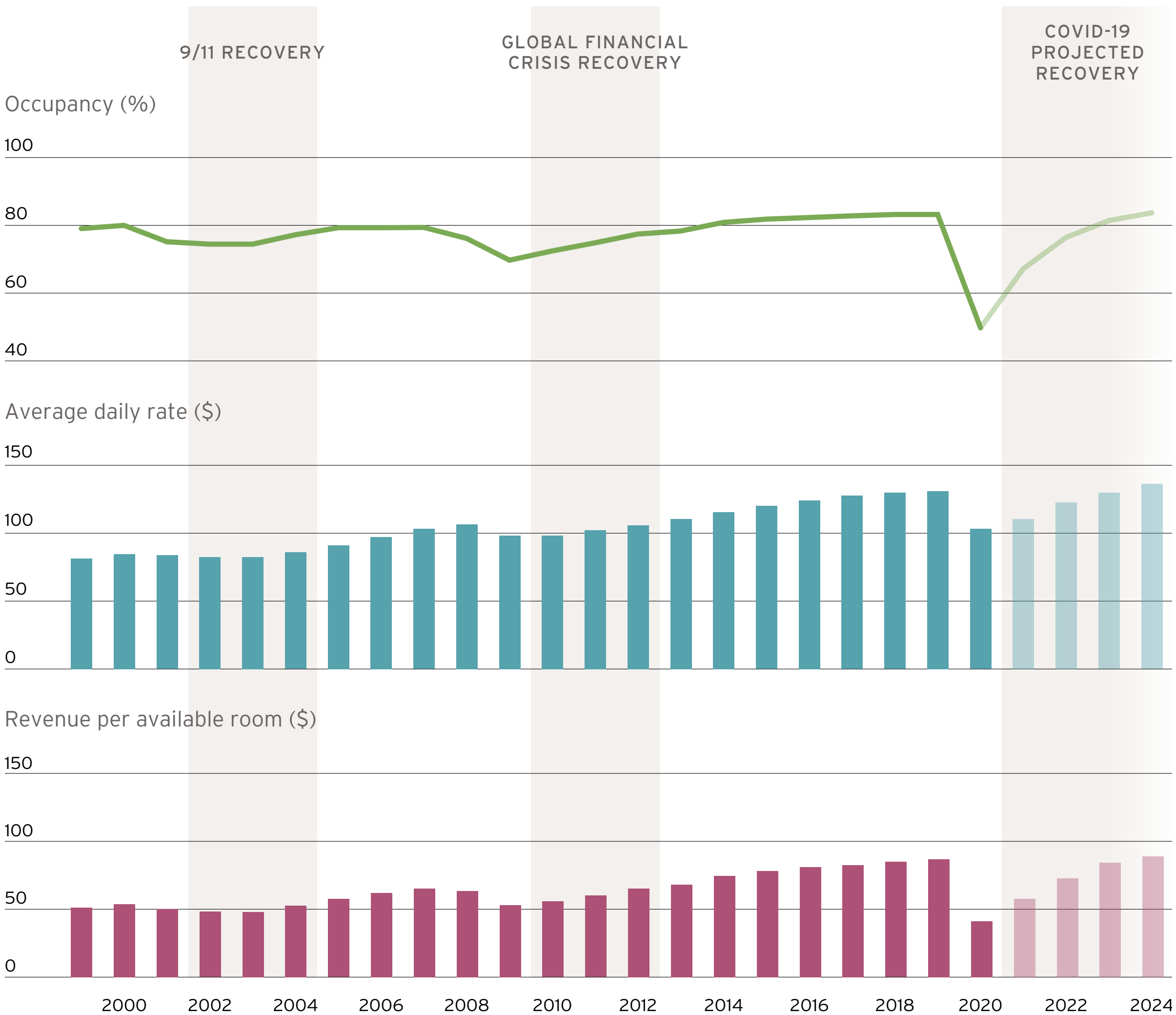
[1] CBRE, US Hotel Outlook, July 2020

[2] Estimated hotel loan principal outstanding as of 31 Dec 2019. Source: Company filings accessed May 2020

[3] Source: STR data through Aug 2020

[4] Source: CBRE, US Hotel Outlook, Jul 2020

FIGURE 1. TOTAL US HOTEL MARKET: HISTORICAL AND PROJECTED PERFORMANCE



Source: CBRE, US Hotel Outlook, as of Jul 2020. All forecasts are expressions of opinion and are subject to change without notice and are not intended to be guarantees of future events.

Historically, hotel property values have often begun to recover before operating fundamentals. That is due to advance bookings that can give potential hotel buyers a clear snapshot of demand twelve to eighteen months ahead. In the post-GFC period from 2010 to 2015, full-service hotels and limited-service hotels in the US experienced compound annual growth in values of 12.3% and 4.8% respectively.[5]

To capitalize upon the opportunity we see, we recommend seeking partners with demonstrable value-add hospitality experience of investing across cycles. We believe such managers are well-positioned to work on improving operating performance, reducing costs, and repositioning assets for the post-pandemic recovery.

[5] Source: Real Capital Analytics www.rcanalytics.com, as of May 2020.

Private equity: A buyer's market in some sectors

The financial distress arising from the COVID-19 economic downturn has created investment opportunities across a wide range of industries of interest to both the traditional buyout and distressed private equity markets. Industries such as healthcare and technology have proved more resilient to the pandemic's fallout. Indeed, some companies are experiencing growth. By contrast, "socially close" activities including travel, leisure, and traditional shopping have suffered enormously.

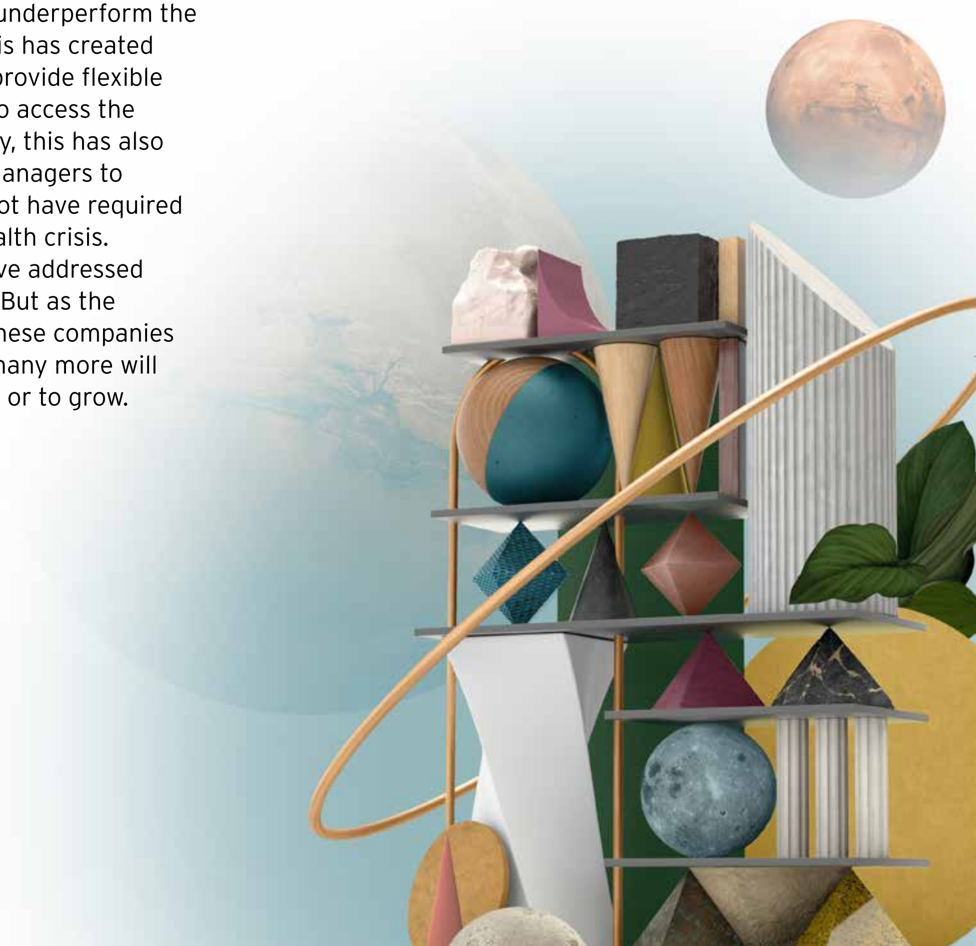
Despite the rebound in public markets, corporate revenues are still declining. In turn, we are seeing more defaults, continued credit rating downgrades, and attractive entry multiples for buyout transactions. This is why such periods present an unusual opportunity set for investors. While public prices are "up", private equity entry prices are "down" based on lower current EBITDA and declining sales. This is evidenced by credit market action. The rolling 12-month ratio of credit rating downgrades-to-upgrades for the S&P's Leveraged Loan Index stands at 7.87 as of September 2020. That is 48.8% above the GFC peak of 5.29 in February 2009. Also, the trailing 12-month institutional loan default rate reached 4.17% at the end of September, the highest level since 2009.

In terms of pricing, implied EV/EBITDA multiples[6] of enterprise value-to-earnings before interest tax depreciation and amortization in the third quarter of 2020 decreased by more than 20% from their year-earlier level of 15.7.[7] They remain favorable compared to recent years.

While this disruption is impacting businesses in different ways, companies across several industries are in need of capital in order to bolster balance sheets and find a path back to growth in a recessionary landscape. In particular, the small- and mid-cap market has languished. And it continues to underperform the broader market significantly. This has created an opportunity for sponsors to provide flexible solutions to companies unable to access the public markets. More importantly, this has also created new opportunities for managers to acquire companies that would not have required additional capital but for the health crisis. Admittedly, some companies have addressed their immediate liquidity needs. But as the pandemic continues to unfold, these companies could need further capital and many more will require funding to remain viable or to grow.

[6] EV/EBITDA divides a company's enterprise value (EV) – the combined value of a company's equity and debt – by its earnings before interest tax depreciation and amortization (EBITDA).

[7] Source: Pitchbook



Glossary

ASSET CLASS DEFINITIONS:

Cash is represented by US 3-month Government Bond TR, measuring the US dollar-denominated active 3-Month, fixed-rate, nominal debt issues by the US Treasury.

Commodities asset class contains the index composites — GSCI Precious Metals Index, GSCI Energy Index, GSCI Industrial Metals Index, and GSCI Agricultural Index — measuring investment performance in different markets, namely precious metals (e.g., gold, silver), energy commodity (e.g., oil, coal), industrial metals (e.g., copper, iron ore), and agricultural commodity (i.e., soy, coffee) respectively. Reuters/ Jeffries CRB Spot Price Index, the TR/CC CRB Excess Return Index, an arithmetic average of commodity futures prices with monthly rebalancing, is used for supplemental historical data.

Emerging Markets (EM) Hard Currency Fixed Income is represented by the FTSE Emerging Market Sovereign Bond Index (ESBI), covering hard currency emerging market sovereign debt. Global Developed Market Corporate Fixed Income is composed of Bloomberg Barclays indices capturing investment debt from seven different local currency markets. The composite includes investment grade rated corporate bonds from the developed-market issuers.

Global Developed Market Equity is composed of MSCI indices capturing large-, mid- and small-cap representation across 23 individual developed-market countries, as weighted by the market capitalization of these countries. The composite covers approximately 95% of the free float-adjusted market capitalization in each country.

Global Developed Investment Grade Fixed Income is composed of Barclays indices capturing investment-grade debt from twenty different local currency markets. The composite includes fixed-rate treasury, government-related, and investment grade rated corporate and securitized bonds from the developed-market issuers. Local market indices for US, UK and Japan are used for supplemental historical data.

Global Emerging Market Fixed Income is composed of Barclays indices measuring performance of fixed-rate local currency emerging markets government debt for 19 different markets across Latin America, EMEA and Asia regions. iBoxx ABF China Govt. Bond, the Markit iBoxx ABF Index comprising local currency debt from China, is used for supplemental historical data.

Global High Yield Fixed Income is composed of Barclays indices measuring the non-investment grade, fixed-rate corporate bonds denominated in US dollars, British pounds and Euros. Securities are classified as high yield if the middle rating of Moody's, Fitch, and S&P is Ba1/BB+/BB+ or below, excluding emerging market debt. Ibbotson High Yield Index, a broad high yield index including bonds across the maturity spectrum, within the BB-B rated credit quality spectrum, included in the below-investment-grade universe, is used for supplemental historical data.

Hedge Funds is composed of investment managers employing different investment styles as characterized by different sub categories – HFRI Equity Long/Short: Positions both long and short in primarily equity and equity derivative securities; HFRI Credit: Positions in corporate fixed income securities; HFRI Event Driven: Positions in companies currently or prospectively involved in wide variety of corporate transactions; HFRI Relative Value: Positions based on a valuation discrepancy between multiple securities; HFRI Multi Strategy: Positions based on realization of a spread between related yield instruments; HFRI Macro: Positions based on movements in underlying economic variables and their impact on different markets; Barclays Trader CTA Index: The composite performance of established programs (Commodity Trading Advisors) with more than four years of performance history.

High Yield Bank Loans are debt financing obligations issued by a bank or other financial institution to a company or individual that holds legal claim to the borrower's assets in the event of a corporate bankruptcy. These loans are usually secured by a company's assets, and often pay a high coupon due to a company's poor (non-investment grade) credit worthiness.

Private Equity characteristics are driven by those for Developed Market Small Cap Equities, adjusted for illiquidity, sector concentration, and greater leverage.

INDEX DEFINITIONS:

The Bloomberg Barclays Global Aggregate Bond Index is a flagship measure of global investment grade debt from twenty-four local currency markets. This multi-currency benchmark includes treasury, government-related, corporate and securitized fixed-rate bonds from both developed and emerging markets issuers.

Bloomberg Barclays US Corporate Bond Index measures the investment grade, fixed-rate, taxable corporate bond market. It includes US dollar denominated securities publicly issued by US and non-US industrial, utility and financial issuers.

Bloomberg Barclays US Treasury Index measures US dollar-denominated, fixed-rate, nominal debt issued by the US Treasury.

Bloomberg-JP Morgan Asia currency index is a spot index of the most actively traded currency pairs in Asia's emerging markets valued against the US dollar.

FTSE All-World Index is a stock market index representing global equity performance that covers over 3,100 companies in 47 countries starting in 1986.

The **FTSE Nareit Mortgage REITs Index** is a free-float adjusted, market capitalization-weighted index of US Mortgage REITs. Mortgage REITs include all tax-qualified REITs with more than 50 percent of total assets invested in mortgage loans or mortgage-backed securities secured by interests in real property.

MSCI AC Asia ex-Japan Index captures large and mid-cap representation across 2 of 3 Developed Markets (DM) countries* (excluding Japan) and 9 Emerging Markets (EM) countries* in Asia. With 1,187 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

MSCI China Index captures large and mid-cap representation across China A shares, H shares, B shares, Red chips, P chips and foreign listings (e.g. ADRs). With 704 constituents, the index covers about 85% of this China equity universe.

MSCI Emerging Markets Index captures large- and mid- cap representation across twenty-four Emerging Markets (EM) countries. With 837 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

MSCI Emerging Markets (EM) Latin America Index captures large and mid-cap representation across five Emerging Markets (EM) countries in Latin America. With 113 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

The **MSCI Global Alternative Energy Index** includes developed and emerging market large-, mid- and small-cap companies that derive 50% or more of their revenues from products and services in Alternative energy.

The **MSCI AC World Automobiles Index** is composed of large- and mid-cap automobile stocks across emerging and developed countries.

The **MSCI World Information Technology Index** tracks the large- and mid-cap IT segments across 23 developed markets countries.

The **MSCI World Index** covers large- and mid-cap equities across 23 Developed Markets countries. With 1,603 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

Nasdaq 100 is a large-cap growth index consisting of 100 of the largest US and international non-financial companies listed on the Nasdaq Stock Market based on market capitalization.

The **Russell 2000 Index** measures the performance of the small-cap segment of the US equity universe. The Russell 2000 Index is a subset of the Russell 3000 Index representing some 10% of the total market capitalization of that index.

The **S&P 500 Index** is a capitalization-weighted index that includes a representative sample of 500 leading companies in leading industries of the US economy. Although the S&P 500 focuses on the large-cap segment of the market, with over 80% coverage of US equities, it is also an ideal proxy for the total market.

The **S&P Global Dividend Aristocrats** is designed to measure the performance of the highest dividend yielding companies within the S&P Global Broad Market Index (BMI) that have followed a policy of increasing or stable dividends for at least ten consecutive years.

The **VIX** or the Chicago Board Options Exchange (CBOE) Volatility Index, is a real-time index representing the market's expectation of 30-day forward-looking volatility, derived from the price inputs of the S&P 500 index options.

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Bond rating equivalence

Alpha and/or numeric symbols used to give indications of relative credit quality. In the municipal market, these designations are published by the rating services. Internal ratings are also used by other market participants to indicate credit quality.

Bond credit quality ratings	Rating agencies		
Credit risk	**Moody's**[1]	**Standard and Poor's**[2]	**Fitch Ratings**[2]
Investment grade			
Highest quality	Aaa	AAA	AAA
High quality (very strong)	Aa	AA	AA
Upper medium grade (strong)	A	A	A
Medium grade	Baa	BBB	BBB
Not Investment grade			
Lower medium grade (somewhat speculative)	Ba	BB	BB
Low grade (speculative)	B	B	B
Poor quality (may default)	Caa	CCC	CCC
Most speculative	Ca	C	CC
No interest being paid or bankruptcy petition filled	C	D	C
In default	C	D	D

[1] The ratings from Aa to Ca by Moody's may be modified by the addition of a 1, 2, or 3 to show relative standing within the category.

[2] The ratings from AA to CC by Standard and Poor's and Fitch Ratings may be modified by the addition of a plus or a minus to show relative standing within the category.

choose to borrow money at a lower interest rate, while paying off its previously issued bonds. As a consequence, underlying bonds will lose the interest payments from the investment and will be forced to reinvest in a market where prevailing interest rates are lower than when the initial investment was made.

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