



# COVID-19: The road to recovery

The quickest, sharpest decline in history has been followed by the quickest, sharpest rebound, so the question now is: Where do we go from here? In this paper we take a look back at the history books and call on some veterans of the industry to help understand what the road to recovery might look like.

## Key Highlights

- Looking back, history suggests a V-shaped market recovery is rare. And recoveries take time.
- Timing markets has proven almost impossible, and the ongoing uncertainty surrounding the current situation is unlikely to make this easier.
- Nonetheless, we look to the future and start to build positions for the 'after-corona', gradually and with the patience to find attractive entry points, without trying to time the bottom.
- Looking beyond the immediate recovery, we are likely to see some long-term legacy from this crisis as well.
- In the current context, humility and risk management are key words.

## FEATURED AFFILIATE CASE STUDIES FROM:

HARRIS ASSOCIATES



## Positioning for the recovery • by Esty Dwek, Natixis Investment Managers Solutions

The quickest, sharpest decline in history (-35% in 23 days on the S&P500 index) has been followed by the quickest, sharpest rebound (up 30% in four weeks), so the question now is: *Where do we go from here?*

### A bumpy transition

Before we dive into markets and how they might behave going forward, let's have a look at what 'getting back to business' might look like.

We have seen some encouraging news that we are likely past the peak of the pandemic across many Asian and European countries as well as some US states and many governments are looking at re-opening gradually from May. But this process is going to be gradual and staggered across regions, countries, US states and industries. This will also need to be done without sparking a new spike in cases, suggesting it will not be a straight line. As a result, the recovery will be slow and the transition to a "post-corona" world will not be seamless.

Moreover, fundamentals are still deteriorating (rapidly), and we do not know how bad the economic picture will get, nor for how long. Indeed, it will be some time before we can accurately assess the scale of the damage and the longer-term impact.

Encouragingly, stimulus has been much quicker and larger than during previous crises—policymakers learned from 2008—but these measures cannot guarantee we avoid negative second round consequences in terms of bankruptcies and defaults.

### Bear markets take time

Since their March 23 trough, equity markets have rebounded sharply, with most indices retracing about 50% of their losses. The strength of this bounce raises the question: Is this a bear market rally or a V-shaped recovery? To start with the answer, only time will tell, but we believe that another leg down is likely.

Looking back, history suggests a V-shaped market recovery is rare. Since the 1920s, the S&P 500 index has experienced 14 bear markets (as defined by a 20% decline). During these periods, there were 19 bear market rallies in excess of 15% before falling again. On average, these temporary bounces lasted 70 days, with ~22% performance, but the dispersion of results has been significant.

In the latest example, during the global financial crisis, it took 517 days from the its peak for the market to reach its low point on March 9, 2009, after three bear market rallies. Moreover, stimulus announcements do not usually coincide with market bottoms, even if they help shore up confidence. It took about 6 months after TARP in 2008 to reach the bottom and another month after the American Recovery Act & Reinvestment Act in February 2009.

And recoveries take time. Only one bear market (1932/33) saw markets recover to prior peaks within a year. Historically, it has taken 15 months (on median) for the MSCI AC World index to recover to prior peaks after bottoming, and about 20 months for the S&P 500 index, the MSCI Europe index and the TOPIX index to recover to prior peaks. It took four years after the global financial crisis for markets to return to pre-crisis levels.

### Unconvincing bounce

Looking at the current rebound, the leadership of the rally has not been convincing. Typically in the US market, while defensives outperform on the way down, cyclicals should lead on the way up. In addition, sovereign bond yields should rise, the CCC segment of high yield should lead and gold should retreat. We have seen the opposite since the end of March—defensives and higher quality credit are leading, Treasury yields have remained flat (in part thanks to central bank actions) and gold climbed.

In the US, the S&P500 index quickly retraced to 50% of its losses, but has found that level a difficult resistance to break. A similar level also acted as a ceiling during the dot com crisis and the global financial crisis.



### Historical bear market recoveries

Start date	Number of days	% Increase
10/29/29	2	18%
11/13/29	148	46%
12/16/30	72	25%
5/2/31	24	25%
10/5/31	35	30%
1/5/32	10	18%
12/16/30	27	19%
5/2/31	2	16%
10/5/31	32	19%
1/5/32	35	16%
12/16/30	110	37%
5/2/31	48	17%
10/5/31	393	23%
1/5/32	153	16%
12/16/30	47	19%
5/2/31	105	21%
10/5/31	30	20%
1/5/32	8	18%
10/5/31	47	24%
1/5/32	28	26%

Source: Natixis Investment Managers Solutions & Bloomberg as at 24.04.2020

What could prevent a retest of the lows is the speed and scale of this crisis' stimulus. Policymakers have been more pro-active and aggressive than in the past, which should help shore up confidence and limit the damage, but it cannot prevent the economic crisis that is unfolding. Also, the bigger the rebound rally, the less likely we are to go all the way back down, but it does not preclude another leg down.

### Breaking the trend of a cyclical rallies



Source: Natixis Investment Managers Solutions & Bloomberg as at 24.04.2020

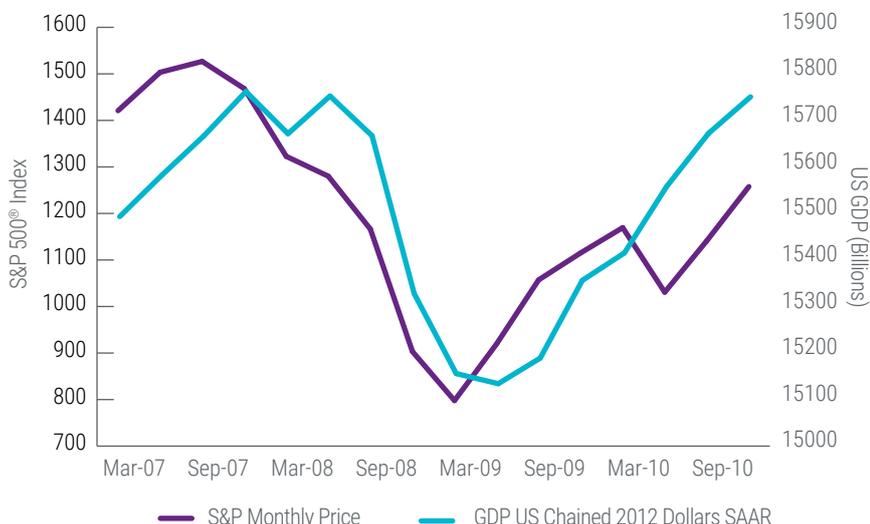
### Where do we go from here?

In our view, markets are being optimistic and looking to 2021, but this suggest the recent rebound is not pricing in the reality of the situation, the risks that still lie ahead, nor the scars we might be left with. Yes, markets typically front-run economic data, and fiscal and monetary support is (and will be) massive, but markets cannot just ignore fundamentals, both in terms of growth and earnings. In addition, the ramp up in activity is likely to be much slower than anticipated, suggesting it will take quarters and not months to recuperate output losses.

As such, and given the 'quality' of the rebound so far, we believe that markets will likely see another leg down in the coming months. Nonetheless, we will make it through this crisis, and we look to who might come out first and how to allocate in such an environment.



### Looking back to the Global Financial Crisis



Source: Natixis Investment Managers Solutions & Bloomberg as at 24.04.2020

## Who comes out first?

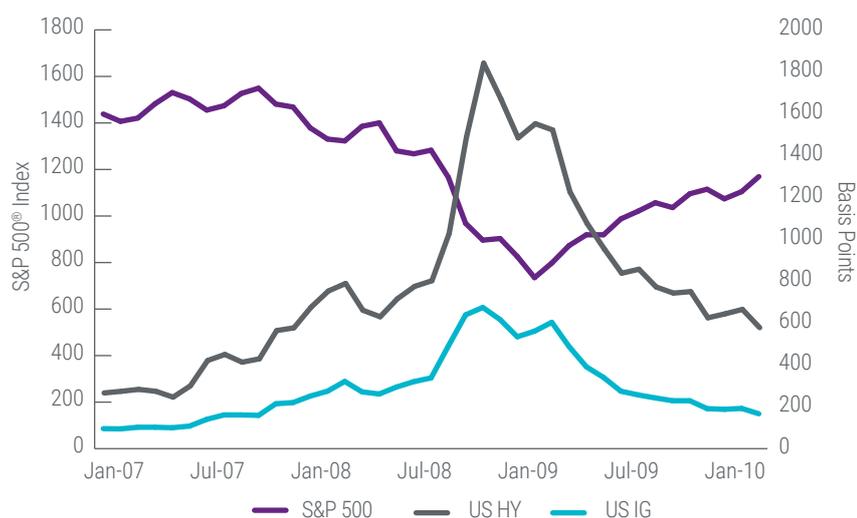
Timing markets has proven almost impossible, and the ongoing uncertainty surrounding the current situation is unlikely to make this easier. As such, we look at which asset classes we would add—gradually—and in what order, with history as a guide.

Typically, credit spreads tend to peak before equity markets bottom. And both start to recover before we see a recovery in economic data. For earnings, the picture is more complicated. In the last recession, equities bottomed only a month before earnings did, and in the recession before that they bottomed 10 months after.

In addition to the historical guidance, the scale and scope of central bank support makes a strong case for credit markets as a first allocation—“buy what the central banks are buying” is a pretty easy adage to follow. Moreover, while spreads did not reach 2008 levels, they are much more attractive than they have been for some time, offering attractive entry points. We highlight a preference for investment grade (IG) over high yield (HY), given much more central bank support and less default risk. There are attractive opportunities in HY of course, but risks are higher and selectivity is key, suggesting this is more for the skilled portfolio manager than for broad indices. We also see opportunities in emerging market (EM) debt, but in hard currency they are more at risk with USD strength, and in local currency they are more at risk of currency depreciation, so we wait to be more advanced in the recovery.



### Credit spreads have not reached 2008 levels



Source: Natixis Investment Managers Solutions & Bloomberg as at 24.04.2020

In terms of equities, as mentioned above, the bounce so far has not shown the value and cyclical leadership we “should” see. However, this is not a typical crisis and some obvious winners such as technology and healthcare might continue to outperform even in a rebound. This suggests growth and defensives might continue to find support on a structural level, even if cyclicals lead parts of the recovery. Moreover, lower for longer interest rates and bond yields imply a lost catalyst for value sectors.

Given sector breakdowns across geographies, the US market with its growth tilt is likely to outperform Europe and its heavy weight to value and financials. Expectations that US growth will hold up and recover better than Europe, which means earnings should recover quicker also support the US. Emerging Asia should benefit from being first in-first out of the crisis and should outperform other EM regions.

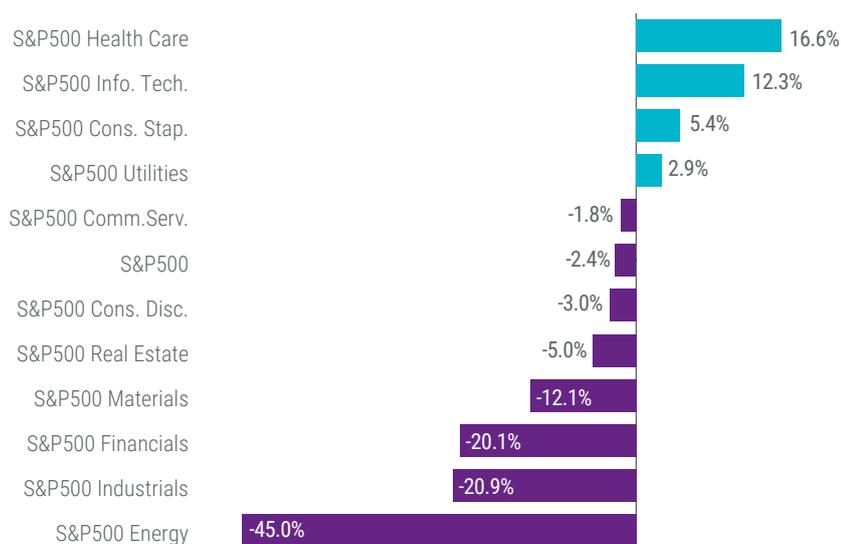
### Longer term legacy

Looking beyond the immediate recovery, we are likely to see some long-term legacy from this crisis as well. The de-globalisation trend that began even before the pandemic will only be exacerbated as reliance on global supply chains has created vulnerabilities. As such, we expect the repatriation of strategic industries such as healthcare and defence to begin in earnest. Given even bigger reliance on technology, protecting this industry will become paramount.

Fiscal and monetary support for businesses is coming at the expense of dividends and share buybacks, which are both being slashed. This could take away some of the appeal of equity markets in the short term, though lower for longer bond yields mean equities still look attractive on a relative basis.

---

### Winners and losers since February's peak



Source: Natixis Investment Managers Solutions & Bloomberg. Sector returns calculated from 19.02.2020 to 24.04.2020.

While we like to focus on the winners, some obvious losers have also emerged from this crisis, including airlines, tourism and of course the shale oil industry, which could take years to recover.

### Conclusion

The path out of this crisis is unlikely to be seamless and we believe that markets are currently underestimating the risks ahead as well as the economic and earnings reality. As such, we believe that downside risks remain and that equity markets are likely to remain volatile and see another down leg.

Nonetheless, we look to the future and start to build positions for the 'after-corona', gradually and with the patience to find attractive entry points, without trying to time the bottom. We also believe that active managers have the opportunity to take advantage of market dislocations in this environment. In the current context, humility and risk management are key words.



**Esty Dwek**  
Head of Global Market Strategy,  
Natixis Investment Managers  
Solutions



**FEATURED AFFILIATE CONTRIBUTORS:**

**EQUITIES • Growth**



**Aziz V. Hamzaogullari, CFA®**  
Chief Investment Officer  
and Portfolio Manager,  
Loomis, Sayles & Company

**EQUITIES • Value**



**William C. Nygren, CFA®**  
Partner and  
Portfolio Manager,  
Harris Associates

**EQUITIES • ESG & Thematics**



**Jens Peers, CFA®**  
Chief Executive Officer and  
Chief Investment Officer,  
Mirova US\*

**EQUITIES • ESG & Thematics**



**Karen Kharmandarian**  
Founding Partner and  
Portfolio Manager,  
Thematics Asset Management

**FIXED INCOME • US**



**Daniel J. Fuss, CIC, CFA®**  
Vice Chairman and  
Portfolio Manager,  
Loomis, Sayles & Company

**FIXED INCOME • European**



**Philippe Berthelot, CFA®**  
Co-Chief Investment Officer  
Fixed Income,  
Ostrum Asset Management

**ALTERNATIVES • Volatility**



**Simon Aninat**  
Portfolio Manager,  
Seeyond

**ALTERNATIVES • Private Debt  
Real Assets**



**Denis Prouteau**  
Real Asset Private Debt  
Chief Investment Officer,  
Ostrum Asset Management



## EQUITIES • Growth

**Aziz Hamzaogullari, Loomis, Sayles & Company**

It is impossible to predict events such as 9/11 or COVID-19. And we believe that it is futile to try and estimate how long they will last and how deep the impact might be. The good news is however that you don't have to predict these events to be prepared for them. There's no such thing as a 'risk on' day or a 'risk off' day, as if investors allocate capital rationally one day and not the next.

The best preparation requires a disciplined approach to doing the right thing every day. If you look at any profession, those who are successful are both disciplined and consistent. At the top of a cycle people tend to think very long term. They start talking about 'the next decade'. Conversely, at the bottom of the cycle they tend to focus on the next quarter and forget about the next 10 years.

We allocate capital every day in the way that, we believe, everyone should allocate capital—with an informed view of risk reward. If you truly understand the importance of this relationship, you should be prepared for whatever tomorrow may bring.

As a result, this environment has provided us with some tremendous investment opportunities. There has been more activity in the portfolio than there has been in a long while. Typically, we invest in one or two companies per year, but recently we have invested in five new businesses, which is a significant amount of activity for us.

And when we buy, we buy with the intention of being truly long-term investors. In fact, we have analysed the holding period of our portfolio companies in the past and it is longer than 98% of the peer group. These are the times that define portfolios for the next 10 years. Investors should take full advantage of them, but do so by acting rationally.

“It is impossible to predict events like 9/11 or COVID-19. The good news is you don't have to actually predict these events to be prepared for them.”



## EQUITIES • Value

Bill Nygren, Harris Associates

On average, the S&P 500 has taken 8 months to reach new 52-week highs after bottoming out. It's not clear that we have seen the bottom yet in 2020, but it is clear that it will take time to get back to where we were. It is easy for investors to become obsessed by short-term price movement, but the underlying value of a business does not move as swiftly as stock price or often with as much magnitude.

As we entered the shutdown, the S&P 500 traded at a 2020 GAAP P/E ratio of around 23x, which, converting earnings to cash flow, means the typical company was expected to generate 4%-5% of its market cap in 2020 cash. Mathematically, most of the total value of a growing company comes from the aggregate cash it will generate in the years 2023-2050 and beyond.

If cash flows dropped to \$0 for the entirety of 2020, the aggregate value of market should fall by about 5%. We do not believe cash flows will completely fall to \$0 for the year. However, we have seen the stock market drop far more dramatically than 5%.

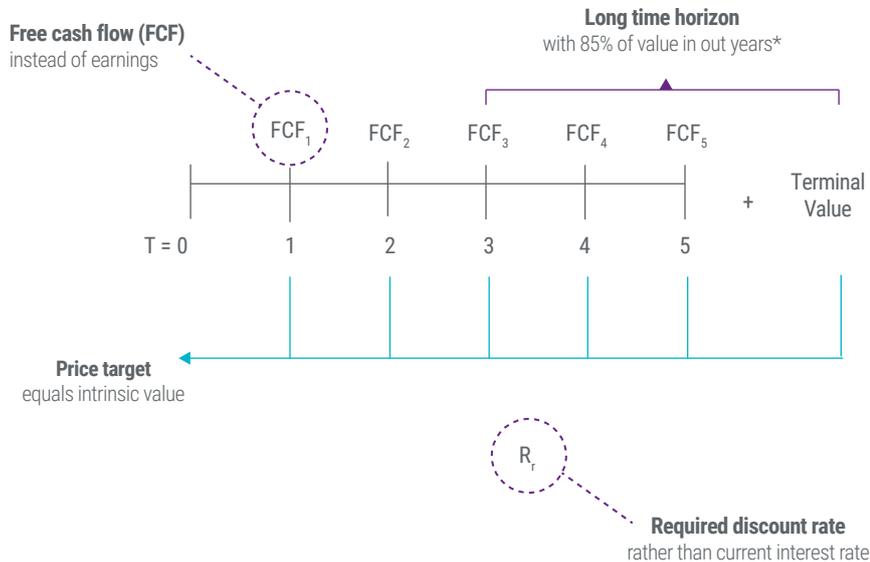
The truth is that it is still too soon to know what will happen. Shutting down the economy will certainly cause a severe drop in GDP, but even draconian scenarios should not frighten long-term thinkers. These types of dislocations provide opportunity for strong performance for those who are patient to weather the storm.

It's worth remembering that a litany of frightening events have occurred over the past three decades and yet the S&P 500 has increased 11-fold. The question investors should be asking themselves is 'How much will this affect the long-term cash flows of businesses?'. Beware of extrapolating near-term costs into perpetuity.

“It's worth remembering that a long list of frightening events has occurred over the past three decades and yet the S&P 500 has increased 11-fold.”



### Measuring business value with a long-term focus



Source: Harris Associates as at 28.02.2020. \*Forecasted free cash flow calculated for a typical company, defined as a company with a 20% return on equity, a discount rate of 8% and net income growth of 4% for 10 years and 1% into perpetuity.

**EQUITIES • ESG & Thematics**

**Jens Peers, Mirova US**

During the crisis, we've seen that many ESG strategies have seen inflows while non-ESG strategies on average have experienced outflows. By taking a longer term view and focusing on companies that are believed to help create a more sustainable future, most ESG strategies, including ourselves, have little to no investments in some sectors which have underperformed the most during the coronavirus crisis, such as fossil fuels, tourism, aviation and financials. On the other side, a preference for health care stocks and companies with on average lower levels of debt compared to the broad market, certainly helped as well.

Looking ahead to any potential recovery or normalization, long-term trends—demographic, technological, environmental and governance-related transitions—will continue to drive performance. We'll still need to adapt to urbanization and invest in solutions for climate change—even though we've seen that pollution and CO2 emissions have actually been lower during the crisis.

However, we're also going to see an acceleration of the digitalization of our economy. Many people are now used to doing video conferences, working from home and ordering things online, but many businesses are starting to think about that a lot more too.

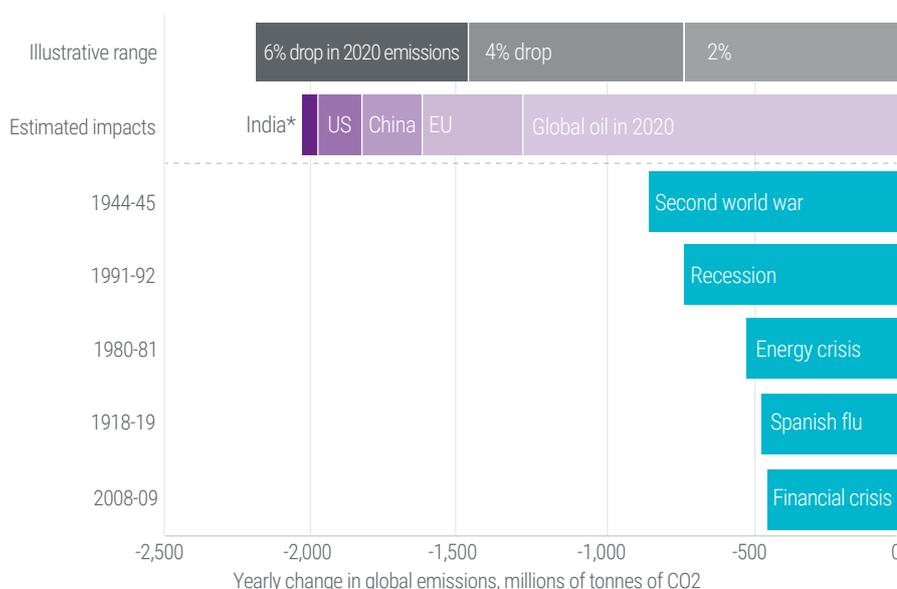
Supply chain management will also be increasingly important. We've seen that Wuhan is probably the global production center for many different industries, including many basic components for pharmaceuticals and the car manufacturing industry. Centralizing all your production centers in one specific city can lead to significant disruptions in your supply chain management, so companies that have a wider distribution or sourcing network will continue to benefit in the future.

I think it's really important to construct your portfolios around the things that you'll believe will create a sustainable, long term future. That's why we only invest in the companies we like—and we like them because they have the right products to benefit from these important long-term trends, they are well managed and they don't take irresponsible risks.

“The long-term trends—demographic, technological, environmental and governance-related transitions—will continue to drive performance.”



**Coronavirus could trigger the largest ever annual fall in CO2 emissions**



Source: Carbon Brief analysis of emissions data from the Carbon Dioxide Information Analysis Centre (CDIAC) and the Global Carbon Project; analysis of assessments from ICIS and the US Energy Information Administration; analysis of daily data from India's Power System Operation Corporation (POSOCO). Chart by Carbon Brief.

## EQUITIES • ESG & Thematics

Karen Kharmandarian, Thematics Asset Management

The current period has only served to highlight structural currents that have been reshaping the economic landscape over the past years. The change in company leadership does not simply reflect a passing fad, but points towards the increasing role that technology has to play in our daily lives, whether that be related to work, consumption or leisure.

By way of illustration the representation of technology related stocks in global equity indices has almost doubled over the past 7 years. Economic agents will also likely adapt accordingly to the current situation and that may mean addressing consumption patterns and some views on what sovereignty means for governments. Looking long term that could represent an attractive opportunity for investors that thoughtfully capture the emergence of these new themes and focus selectively on firms that are likely to be prime beneficiaries.

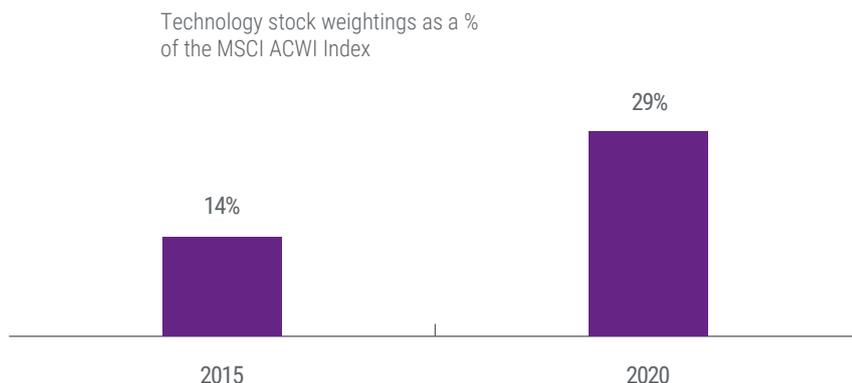
The robustness and quality of business models that offer solutions to adapt to an evolving world have demonstrated their resiliency by providing higher revenue visibility associated with attractive growth prospects and sound balance sheets. However the active manager's role will be to sort the wheat from the chaff, in other words identifying firms well positioned to benefit from long term trends rather than stocks that are responding simply to short term interest

“The active manager's role will be to sort the wheat from the chaff [...] identifying firms well positioned to benefit from long term trends.



---

### The representation of technology in global indices has risen dramatically



Source: Thematics Asset Management and MSCI as at 31.03.2020

---

## FIXED INCOME • US

### Dan Fuss, Loomis, Sayles & Company

By background and by habit I like to buy into severe market declines. This is unlikely to be a smooth recovery and there will be substantial bumps along the way.

I would say our official outlook is certainly to be hoped for. That is that the recovery will not be V-shaped, but a very big U i.e. we go down very, very sharply. And then, as the impact of the virus starts to pass and activity gradually returns, we start the upswing. There's not an immediate rebound, but a gradual uptrend in the economy.

As such, I can understand people buying equities right now. I can even see the attraction of investment grade if you feel the Fed is going to keep buying for a long time. But, I think we have to be particularly careful on credit. A lot of the earnings models will need to be changed. Many cost structures are not flexible enough for significant reductions in revenues; especially when revenues fall faster than costs can be adjusted. From a cash-flow standpoint, once you go negative, that's a real headache.

Mentally, I'm preparing for inflation because I think there's a real risk that it will return. Do we have the tools to fight it? Yes. Would we be willing to slow the economy again in order to stem it? The answer there is less clear cut, especially when total revenues are far short of expenses. I expect inflation to be comparable to the '50s and '60s, where it crept in at first and then at a point, started to accelerate. I don't anticipate a return of the conditions experienced in the late '70s, at least not in the U.S. But then again, it is very hard to isolate ourselves from the rest of the world.

“ I can understand people buying equities right now. I can even see the attraction of investment grade [...] But, I think we have to be particularly careful on credit.



## FIXED INCOME • European

### Philippe Berthelot, Ostrum Asset Management

Nearing the end of April, one can notice that the bulk of risky assets has recovered more than half of the slaughter in prices that occurred since mid-March 2020. IG and HY corporate bonds are still lagging in this respect. But one could wonder whether or not credit as a whole is the right place to be in such turmoil as the global economy is entering into its largest contraction since WWII! Let's not hide the fact that credit will be featured with further waves of downgrades (€50 bn to €80 bn for € IG) including several fallen angels but as we can see, a lot of it is already priced in at current levels. On top of it, we do not foresee default rates skyrocketing like in the US but rather a rise to 7.5% by year-end at worst (much above 10% for the US default rate because of the Shale oil sector massacre to come).

This is a crucial moment when active investments can make the difference vs passive investments: active sector allocation and active issuer picking will be key in the end: some issuers will suffer like hell or eventually vanish in the case of bankruptcy. Even if we're still navigating into uncharted territory, with some genuine uncertainty about the letter defining the recovery to come (U, V, L or W shape?), we are constructive on credit at current levels for both IG and HY in Europe (1.5% yield in IG vs -0.5% for the 5 y German Sovereign bond).

What's next? This all-time unknown pandemic crisis, will have structural consequences comprising a shift from global to local supply chains: the «just in time» rule with zero inventories will soon be replaced by the « Just in case » one. Let's forget about the double digit ROE obsession for CEOs or CFOs! The short-term earnings focus will morph into longer one, combining a robust and quality focus for employees, clients or providers including much more green consumerism, i.e. a 'sustainable' Capitalism: welcome to Capitalism 2.0!

“What's next? A 'sustainable' Capitalism [...] Capitalism 2.0.



#### Constructive on credit at current levels



Source: Bloomberg & Ostrum as of 23/04/2020

## ALTERNATIVES • Volatility

Simon Aninat, Seeyond

The reality is that some of the recent corrections have occurred extremely quickly and the reversals have often been equally sharp. This can lead to some CTAs, managed futures and trend following strategies, which often rely on a trend to be somewhat prolonged to capture the momentum, not only missing out on the correction but also to risk playing catch-up and being incorrectly positioned in a reversal (see chart below).

When you look at traditional diversification opportunities, there remain very few compelling options in the current environment. Bonds have historically been the obvious hedge for the equity portion of a portfolio, but with so much debt around the world trading at record low yields, it is questionable whether this is still the case.

While the trajectory of the recovery from the equity markets' lows we have seen in March 2020 is uncertain, history suggests that it may be a bumpy ride – especially in the early stages. Even if we've already seen elevated spikes of volatility, there is still potential for a volatility strategy to provide diversification and alpha to investor portfolios, both now and over the coming years.

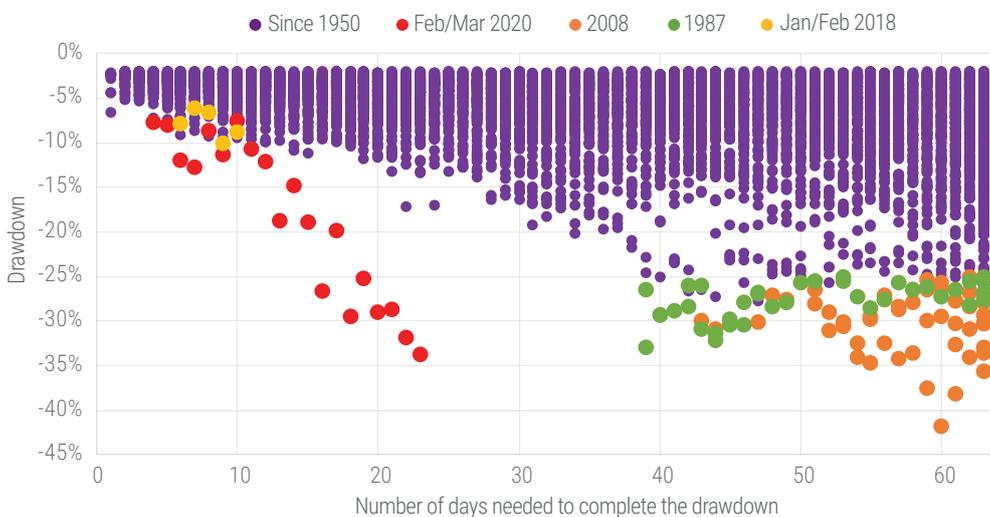
Indeed, a strategy that is contrarian on volatility, buying low and selling high, would benefit from a bumpy ride of Equity markets by dynamically adjusting its volatility exposure. This can provide comfort to investors that want to use volatility as a diversification strategy.

It is very difficult to provide a specific figure with respect to allocations of such a strategy in portfolios. All investors and portfolios are different and therefore an investment would need to be aligned with the associated risk tolerance and/or time horizon. However, what we can say based on conversations that we've had with clients is that a volatility strategy can typically represent up to 10% of the equity portion of a portfolio.

“Even if we've already seen elevated spikes... there is still potential for a volatility strategy to provide diversification and alpha.”



### The speed of market crashes keeps rising



Source: Seeyond, Bloomberg, as of 17/03/2020. Analysis of market drawdowns since 1950 (considering 3 months' rolling windows) on the S&P500.

## ALTERNATIVES • Private Debt Real Assets

### Denis Prouteau, Ostrum Asset Management

#### The impact of the crisis: too early to tell

The current situation is much more acute than previous crises, but the full impact on valuations remains to be assessed. There have been upwards margin revisions, integrating higher bank funding costs, but the price discovery process has only started. There isn't currently enough data to confidently take advantage of new opportunities across our three expertise—but we are prepared for when the dust settles.

#### Infrastructure: resilient in periods of crisis

Infrastructure debt has proven very resilient throughout crises - energy, water, telecom and transportation remain vital. We anticipate some downgrades for the riskiest sectors and transactions; however, we do not expect major payment defaults in 2020, at least not in Europe. The infrastructure projects in our portfolios generally benefit from a comfortable cash buffer which should help weather a prolonged slowdown.

This crisis could change things taken for granted in the past. For example, green energy projects in the context of extremely low fossil fuel prices. Will governments still prioritize sustainable infrastructure even when economies are contracting, and unemployment is at an all-time high? This crisis forces our teams to consider much broader risk factors—experience from previous crises is essential to properly managing and monitoring existing transactions.

In terms of potential opportunities, health infrastructure could see more attention, with more public institution involvement.

#### Real Estate: acceleration of certain trends

Secular trends could be accelerated or triggered. For example, the retail sector could see an acceleration of e-commerce, particularly for groceries, promoting the shift towards a flexible omnichannel model. This would not necessarily be to the detriment of small, local retailers, which have proven their utility during this crisis. Offices could see imposed remote working push corporates to reconsider work space volume, with a greater focus on well-being and productivity. There will also be increased demand for technology integration, particularly PropTech (property technology) and MedTech (medical technology), impacting all aspects of life and business.

#### Aircraft: turbulence ahead

This recovery looks more challenging than past crises, and difficulties may linger until Q3 2021. Nevertheless, markets seem confident in airlines' capacity (at least the largest ones) to face the crisis thanks to their respective governments' support.

Currently, investment opportunities arise from airlines aiming to secure their cash position, either through unsecured transactions or through the financing of unencumbered aircraft. These opportunities must be examined cautiously: aircraft values have not yet evolved, credits have not yet deteriorated, margins have evolved but can still increase. Once the situation has stabilized, there will be some opportunity to invest in aircraft secured debts with new market standards (in terms of Loan to Value (LTV), covenants and margins), based on lower aircraft values.

“After the crisis, real assets will not only be looked at differently, they will be different assets altogether.”



## Additional notes

This material has been provided for information purposes only to investment service providers or other Professional Clients or Qualified Investors and, when required by local regulation, only at their written request. This material must not be used with Retail Investors.

**In the E.U.** (outside of the UK and France): Provided by Natixis Investment Managers S.A. or one of its branch offices listed below. Natixis Investment Managers S.A. is a Luxembourg management company that is authorized by the Commission de Surveillance du Secteur Financier and is incorporated under Luxembourg laws and registered under n. B 115843. Registered office of Natixis Investment Managers S.A.: 2, rue Jean Monnet, L-2180 Luxembourg, Grand Duchy of Luxembourg. Italy: Natixis Investment Managers S.A., Succursale Italiana (Bank of Italy Register of Italian Asset Management Companies no 23458.3). Registered office: Via San Clemente 1, 20122 Milan, Italy. Germany: Natixis Investment Managers S.A., Zweigniederlassung Deutschland (Registration number: HRB 88541). Registered office: Im Trutz Frankfurt 55, Westend Carrée, 7. Floor, Frankfurt am Main 60322, Germany. Netherlands: Natixis Investment Managers, Nederlands (Registration number 50774670). Registered office: Stadsplateau 7, 3521AZ Utrecht, the Netherlands. Sweden: Natixis Investment Managers, Nordics Filial (Registration number 516405-9601 - Swedish Companies Registration Office). Registered office: Kungsgatan 48 5tr, Stockholm 111 35, Sweden. Spain: Natixis Investment Managers, Sucursal en España. Registered office: Serrano nº90, 6th Floor, 28006 Madrid, Spain. Belgium: Natixis Investment Managers S.A., Belgian Branch, Louizalaan 120 Avenue Louise, 1000 Brussel/Bruxelles, Belgium. • **In France:** Provided by Natixis Investment Managers International – a portfolio management company authorized by the Autorité des Marchés Financiers (French Financial Markets Authority - AMF) under no. GP 90-009, and a public limited company registered in the Paris Trade and Companies Register under no. 329 450 738. Registered office: 43 avenue Pierre Mendès France, 75013 Paris. • **In Switzerland:** Provided by Natixis Investment Managers, Switzerland Sàrl, Rue du Vieux Collège 10, 1204 Geneva, Switzerland or its representative office in Zurich, Schweizergasse 6, 8001 Zürich. • **In the British Isles:** Provided by Natixis Investment Managers UK Limited which is authorised and regulated by the UK Financial Conduct Authority (register no. 190258) - registered office: Natixis Investment Managers UK Limited, One Carter Lane, London, EC4V 5ER. When permitted, the distribution of this material is intended to be made to persons as described as follows: in the United Kingdom: this material is intended to be communicated to and/or directed at investment professionals and professional investors only; in Ireland: this material is intended to be communicated to and/or directed at professional investors only; in Guernsey: this material is intended to be communicated to and/or directed at only financial services providers which hold a license from the Guernsey Financial Services Commission; in Jersey: this material is intended to be communicated to and/or directed at professional investors only; in the Isle of Man: this material is intended to be communicated to and/or directed at only financial services providers which hold a license from the Isle of Man Financial Services Authority or insurers authorised under section 8 of the Insurance Act 2008. • **In the DIFC:** Provided in and from the DIFC financial district by Natixis Investment Managers Middle East (DIFC Branch) which is regulated by the DFSA. Related financial products or services are only available to persons who have sufficient financial experience and understanding to participate in financial markets within the DIFC, and qualify as Professional Clients or Market Counterparties as defined by the DFSA. No other Person should act upon this material. Registered office: Office 23, Level 15, The Gate Building, East Wing, DIFC, PO Box 506752, Dubai, United Arab Emirates. • **In Taiwan:** Provided by Natixis Investment Managers Securities Investment Consulting (Taipei) Co., Ltd., a Securities Investment Consulting Enterprise regulated by the Financial Supervisory Commission of the R.O.C. Registered address: 34F., No. 68, Sec. 5, Zhongxiao East Road, Xinyi Dist., Taipei City 11065, Taiwan (R.O.C.), license number 2018 FSC SICE No. 024, Tel. +886 2 8789 2788. • **In Singapore:** Provided by Natixis Investment Managers Singapore (name registration no. 53102724D) to distributors and institutional investors only. Natixis Investment Managers Singapore is a division of Ostrum Asset Management Asia Limited (company registration no. 199801044D). • **In Hong Kong:** Provided by Natixis Investment Managers Hong Kong Limited to institutional/ corporate professional investors only. • **In Australia:** Provided by Natixis Investment Managers Australia Pty Limited (ABN 60 088 786 289) (AFSL No. 246830) and is intended for the general information of financial advisers and wholesale clients only. • **In New Zealand:** This document is intended for the general information of New Zealand wholesale investors only. This is not a regulated offer for the purposes of the Financial Markets Conduct Act 2013 (FMCA) and is only available to New Zealand investors who have certified that they meet the requirements in the FMCA for wholesale investors. Natixis Investment Managers Australia Pty Limited is not a registered financial service provider in New Zealand. • **In Latin America:** Provided by Natixis Investment Managers S.A. • **In Chile:** Esta oferta privada se inicia el día de la fecha de la presente comunicación. La presente oferta se acoge a la Norma de Carácter General N° 336

de la Superintendencia de Valores y Seguros de Chile. La presente oferta versa sobre valores no inscritos en el Registro de Valores o en el Registro de Valores Extranjeros que lleva la Superintendencia de Valores y Seguros, por lo que los valores sobre los cuales ésta versa, no están sujetos a su fiscalización. Que por tratarse de valores no inscritos, no existe la obligación por parte del emisor de entregar en Chile información pública respecto de estos valores. Estos valores no podrán ser objeto de oferta pública mientras no sean inscritos en el Registro de Valores correspondiente.

• **In Colombia:** Provided by Natixis Investment Managers S.A. Oficina de Representación (Colombia) to professional clients for informational purposes only as permitted under Decree 2555 of 2010. Any products, services or investments referred to herein are rendered exclusively outside of Colombia. This material does not constitute a public offering in Colombia and is addressed to less than 100 specifically identified investors. • **In Mexico:** Provided by Natixis IM Mexico, S. de R.L. de C.V., which is not a regulated financial entity, securities intermediary, or an investment manager in terms of the Mexican Securities Market Law (Ley del Mercado de Valores) and is not registered with the Comisión Nacional Bancaria y de Valores (CNBV) or any other Mexican authority. Any products, services or investments referred to herein that require authorization or license are rendered exclusively outside of Mexico. While shares of certain ETFs may be listed in the Sistema Internacional de Cotizaciones (SIC), such listing does not represent a public offering of securities in Mexico, and therefore the accuracy of this information has not been confirmed by the CNBV. Natixis Investment Managers is an entity organized under the laws of France and is not authorized by or registered with the CNBV or any other Mexican authority. Any reference contained herein to "Investment Managers" is made to Natixis Investment Managers and/or any of its investment management subsidiaries, which are also not authorized by or registered with the CNBV or any other Mexican authority. • **In Uruguay:** Provided by Natixis Investment Managers Uruguay S.A., a duly registered investment advisor, authorised and supervised by the Central Bank of Uruguay. Office: San Lucar 1491, Montevideo, Uruguay, CP 11500. The sale or offer of any units of a fund qualifies as a private placement pursuant to section 2 of Uruguayan law 18,627. • The above referenced entities are business development units of Natixis Investment Managers, the holding company of a diverse line-up of specialised investment management and distribution entities worldwide. The investment management subsidiaries of Natixis Investment Managers conduct any regulated activities only in and from the jurisdictions in which they are licensed or authorised. Their services and the products they manage are not available to all investors in all jurisdictions. It is the responsibility of each investment service provider to ensure that the offering or sale of fund shares or third party investment services to its clients complies with the relevant national law.

In the United States: Provided by Natixis Distribution, L.P., 888 Boylston St., Boston, MA 02199 for U.S. financial advisors who do business with investors who are not U.S. Persons (as that term is used in Regulation S under the Securities Act of 1933) or persons otherwise present in the U.S. It may not be redistributed to U.S. Persons or persons present in the U.S. Natixis Investment Managers includes all of the investment management and distribution entities affiliated with Natixis Distribution, L.P. and Natixis Investment Managers S.A.

This document may contain references to copyrights, indexes and trademarks that may not be registered in all jurisdictions. Third party registrations are the property of their respective owners and are not affiliated with Natixis Investment Managers or any of its related or affiliated companies (collectively "Natixis"). Such third party owners do not sponsor, endorse or participate in the provision of any Natixis services, funds or other financial products.

The index information contained herein is derived from third parties and is provided on an "as is" basis. The user of this information assumes the entire risk of use of this information. Each of the third party entities involved in compiling, computing or creating index information, disclaims all warranties (including, without limitation, any warranties of originality, accuracy, completeness, timeliness, non-infringement, merchantability and fitness for a particular purpose) with respect to such information.

The provision of this material and/or reference to specific securities, sectors, or markets within this material does not constitute investment advice, or a recommendation or an offer to buy or to sell any security, or an offer of any regulated financial activity. Investors should consider the investment objectives, risks and expenses of any investment carefully before investing. The analyses, opinions, and certain of the investment themes and processes referenced herein represent the views of the portfolio manager(s) as of the date indicated. These, as well as the portfolio holdings and characteristics shown, are subject to change. There can be no assurance that developments will transpire as may be forecasted in this material. Although Natixis Investment Managers believes the information provided in this material to be reliable, including that from third party sources, it does not guarantee the accuracy, adequacy, or completeness of such information. May not be redistributed, published, or reproduced, in whole or in part.

**Amounts shown are expressed in USD unless otherwise indicated.**

**NATIXIS INVESTMENT MANAGERS INTERNATIONAL**

Limited company with a share capital of 51 371 060.28 euros  
Trade register n° 329 450 738 Paris Authorized by the Autorité des Marchés  
Financiers (French Financial Markets Authority - AMF) under no. GP 90-009.  
Registered office: 43, avenue Pierre Mendès-France - 75013 Paris

[www.im.natixis.com](http://www.im.natixis.com)

**NATIXIS INVESTMENT MANAGERS**

RCS Paris 453 952 681 - Capital : €178 251 690  
43, Avenue Pierre Mendès-France, 75013 Paris

[www.im.natixis.com](http://www.im.natixis.com)

**HARRIS ASSOCIATES L.P.**

An affiliate of Natixis Investment Managers  
Investment adviser registered with the U.S. Securities and Exchange Commission  
(IARD No. 106960), which is licensed to provide investment management services  
in the United States  
111 S. Wacker Drive Suite 4600  
Chicago, IL 60606, USA

[www.harrisassoc.com](http://www.harrisassoc.com)

**LOOMIS SAYLES & COMPANY, L.P.**

An affiliate of Natixis Investment Managers.  
Investment adviser registered with the U.S. Securities and Exchange  
Commission (IARD No. 105377).  
One Financial Center, Boston, MA 02111, USA

[www.loomissayles.com](http://www.loomissayles.com)

**MIROVA US**

Mirova US is a U.S.- based investment advisor that is a wholly owned  
affiliate of Mirova.

Mirova is operated in the U.S. through Mirova US.

Mirova US and Mirova entered into an agreement whereby Mirova provides  
Mirova US investment and research expertise, which Mirova US then combines  
with its own expertise when providing advice to clients.

888 Boylston Street, Boston, MA 02199, USA.

[www.mirova.com](http://www.mirova.com)

**OSTRUM ASSET MANAGEMENT**

An affiliate of Natixis Investment Managers

French Public Limited liability company with board of Directors

Share capital €27 772 359

Regulated by the Autorité des Marchés Financiers (AMF) under no. GP 18000014

RCS Paris n° 525 192 753

43 avenue Pierre Mendès France

75013 Paris

[www.ostrum.com](http://www.ostrum.com)

**SEEBYOND**

An affiliate of Natixis Investment Managers.

Limited liability company. Share capital : €4,963,183. RCS Paris no. 525 192 720.

Regulated by AMF under no. GP 17000034.

43 Avenue Pierre Mendès-France, 75013 Paris.

[www.seeyond-am.com](http://www.seeyond-am.com)