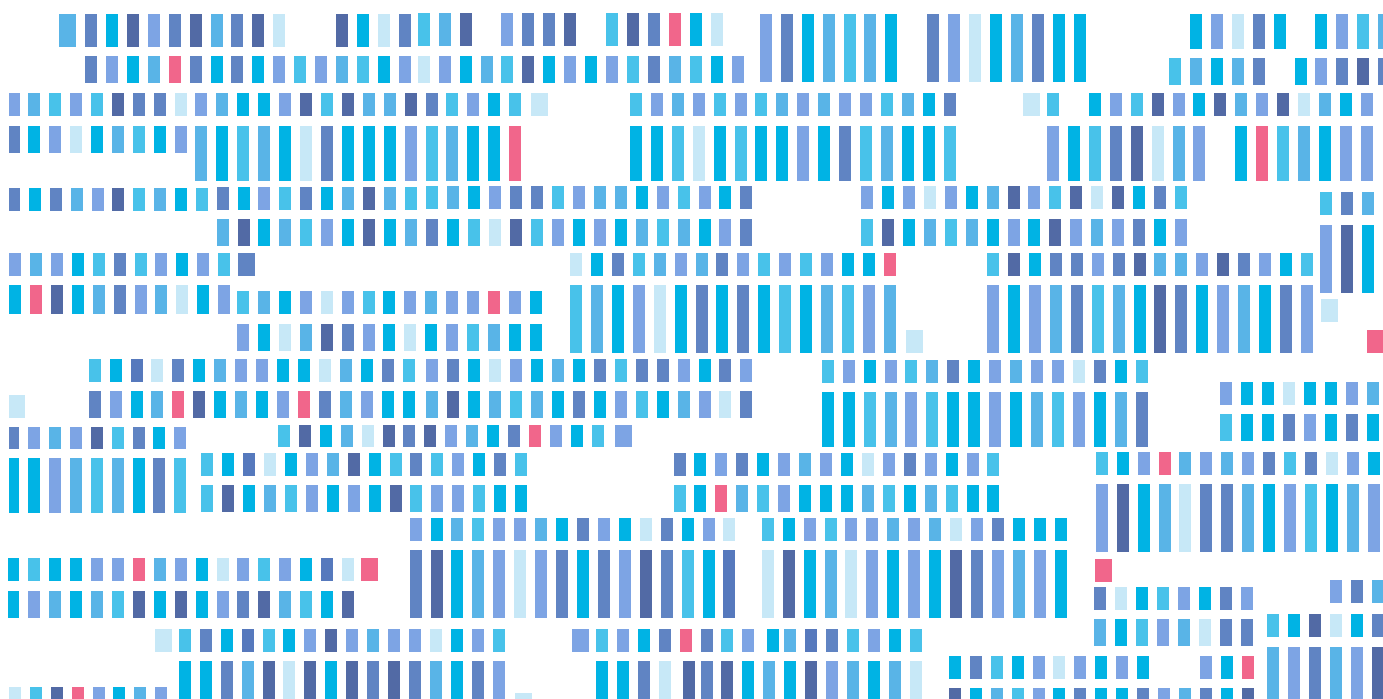


NEGATIVE RATES & NEGATIVE INTEREST RATE POLICY:

A study of the consequences for
investment professionals

December 2020



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Foreword from the Chief Executive

That Albert Einstein once described compound interest as the "Eighth Wonder of the World" is probably an urban myth – with the quote retroactively ascribed to him by a modern 'financier' to lend greater authority to their client advice. No doubt Einstein would have considered the consequences of compound interest when the rate is negative (and one suspects that this 'financier' almost certainly did not), yet there is no doubt that the powerful effects of compound interest remain just as true once rates turn negative.

This paper explores the impact of today's negative rates on markets and financial institutions. The CFA UK working group which authored it first assembled in January 2020 to discuss this already well-established phenomenon, but then had to freeze activity during the early Spring as Covid-19 took hold and governments around the world injected in excess of US\$15,000,000,000,000 of fiscal and monetary stimulus into the global economy. Rates tumbled again and when the group reconvened their own projections for global interest rates 'shifted left' and negative rates were beholden to be a deeper, broader and longer-lasting phenomenon than before.

The compound interest quote ascribed to Einstein is often used by advisors to underscore to their clients how nest-eggs will grow if left alone. What would this 'financier' or advisor say today when many benchmark rates are negative and a multi-asset portfolio of cash, bonds and equities yields little more than zero even in nominal terms? As finance professionals, CFA UK members need to ask themselves this question too. How should we advise our clients in today's climate of negative rates?

This paper looks at three plausible macro-scenarios for the global economy and then tours these landscapes of negative rates through the eyes of banks, corporates and pension funds drawing conclusions about equity, fixed income, real estate and gold. The central conclusion is worrying for both the investment profession and end-investors: the risk-reward trade-off has worsened with lower prospective returns and more market distortions. Of course, conversely, the cost of capital is low for those seeking to be "invested in"!

In this environment, like any other, a client's investment portfolio must remain 'Suitable'. It is a foolish and unethical endeavour for finance professionals to advise clients to chase short-term returns at the expense of accumulating increased long-term risk. So, client expectations must be managed perhaps more than ever before; and risks highlighted along the way.

So, is compound interest still the "Eighth Wonder of the World" when rates turn negative? I would be interested to hear members' thoughts about the group's conclusions and whether you see additional consequences for our profession in these unprecedented times.



Will Goodhart
Chief Executive, CFA UK

Executive Summary

- The experiment with ultra-low interest rates¹, and Negative Interest Rate Policy ("NIRP") generally, has been reignited by the Covid-19 recession of 2020. We look at the consequences for the investment profession by considering the effect of negative rates on fixed income, equity and real estate assets and on banks, pension funds and gold. We highlight market distortions and we analyze three potential macroeconomic scenarios that could develop from the current global context over the next eighteen months.
- Negative rates have driven fixed income and certain equity and real estate valuations to levels where prospective returns are likely to be far lower than investors have been used to. Lower rates and hence lower discount rates may, if sustained, justify current valuations but, by definition, they imply low real investment returns ahead. Even a hedging asset such as gold may have delivered the bulk of its return potential, compared to history, absent a scenario of slump.
- Policymakers want NIRP to kindle risk-seeking behaviour amongst market participants, and the corollary of this for investors is that NIRP fosters an increasing number of what we term market distortions (see below). Taken together with lower expected returns, these suggest heightened risk for investor portfolios. Setting realistic investor expectations and ensuring portfolios are diversified is likely to be as important as ever in client communications and investment activity.
- We present three macroeconomic scenarios for the next 18-24 months that are used to inform our comments on the various sectors and asset classes. We see the most likely scenario being a slow but gradual, U shaped, economic recovery where short rates do not, quite, go negative in the US and UK. But we also comment on V and L shaped scenarios.
- This year, despite lower yields encouraging investment allocations from fixed income into equities, and indeed savings into investment, and despite sharply higher government debt issuance, demand for fixed income has not waned with US data suggesting outflows from equities and inflows to fixed income. At the macro level we concur with the idea that there is a savings glut, perhaps for demographic and technological reasons as well as confidence issues. Yet we believe there is a lower bound for negative rates at the short end (the so-called Reversal Rate²) and hence at the longer end too, as suggested by the failure of German and Japanese yields to move lower during the Covid crisis. Critically, this means that the risk/return trade-off for fixed income has deteriorated compared to any time in the last 40 years, and the asset class's portfolio diversification benefits are reduced.
- Some NIRP driven market distortions that we see include:
 - Negative real returns offered on Government bonds which are after all still risky assets³
 - a complex shift in credit risk (part real, part perceived) from investors to central banks and governments that have increasingly provided credit, subsidies and grants direct to corporates, and hence to some extent on to holders of their respective sovereign currencies;
 - an increased appetite for higher forecast return but less liquid, infrequently priced, alternative assets which paradoxically are often viewed as less risky than liquid assets because of the lack of mark-to-market volatility;
 - a deterioration in corporate credit profiles, particularly in sectors such as energy and hospitality, part-driven by investor demand for higher yielding debt;
 - a continued increase in weightings of lower quality bonds within all fixed income indices, making portfolios more vulnerable to shocks;
 - reduced diversification benefits to multi-asset portfolios from G7 Government bonds as their yields have reached or are approaching a realistic lower bound;
 - a de-equitisation process which has seen debt replace equity on corporate balance sheets and a related reduction in investment liquidity and market transparency as private equity has replaced public equity;
 - bank profitability impaired, such that many banks would do better for their shareholders if they were to shrink rather than expand their balance sheets;
 - increased liabilities for pension funds, growing solvency strains for insurers and weakening corporate sponsor balance sheets promoting schemes to switch to alternative assets; and
 - an historically wide divergence in the relative valuation between Growth and Value equities.
- While our paper focusses on the risks to investors, we note of course that there are also counterfactual positives, most notably including the incentives that an extraordinarily low cost of capital creates for both borrowers and investees. Today's unprecedented low rates mean that the risk/return profile on government and corporate investment projects (particularly long-term infrastructure projects such as are needed to address carbon emission reduction targets and broader social and environmental goals) looks more attractive than ever before.
- In light of reduced real and nominal returns prospects for a number of assets and of the risks and distortions engendered by NIRP and super-low interest rates, we conclude this paper with six questions that we think investment professionals should bear in mind when constructing portfolios or advising clients. These questions cover return expectations, risk analysis, portfolio liquidity and professional conduct.

¹ When we mention low or negative rates we are talking in this paper of nominal rates unless we specifically mention that we are discussing real, inflation adjusted, rates.

² For more on the Reversal Rate see the Banks section

³ And at a time when Government Debt/GDP ratios are soaring which some might see as increasing the risks involved in providing sovereign credit

Introduction

The Global Financial Crisis (GFC) of 2007-9⁴ started as a sub-prime mortgage shock but quickly escalated into a standstill in credit globally, leading banks to collapse, governments to issue record bail-outs, and triggering a period of illiquidity and scarcity never seen before. To contain the economic damage monetary policy-makers began adopting extraordinary measures, often referred to as unconventional monetary policy. Eventually, this included taking rates well below what was previously considered the lower-bound for monetary policy and into negative territory, purchasing securities in the markets to increase money supply, mostly but not limited to bonds, and flattening yield curves⁵.

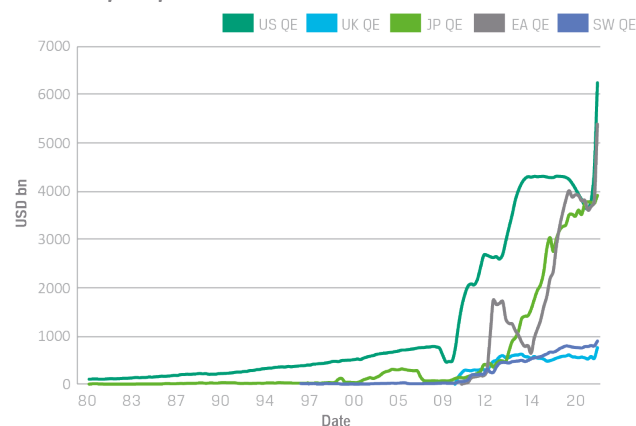
The Swiss National Bank (SNB) actually pioneered NIRP back in the 1970s and returned to it again in 2014, but on both occasions they had the same, very specific objective that put Switzerland in a category on its own: preventing their safe-haven currency from excessive appreciation. In the 1970s Switzerland failed to deter foreign capital with negative rates and capital controls, as their consistently tight rein on finances was the ultimate reason behind the foreign inflows. The currency appreciation only ended when the SNB started focusing exclusively on the exchange rate with large amounts of unsterilized interventions, but this came at the cost of inflation spiraling seriously out of control.

By end-2019, negative rates had been enacted in Japan and the Eurozone, as well as economies interlinked with the latter like Scandinavia. The details of the experiment in each was different but with many commonalities and debate has continued to rage about both their fairness and their effectiveness. One key debate is about the level of the so-called Reversal Rate - a term used to describe the interest rate point where the net effects of further rate cuts become counter-productive for the economy and lending (see Banks). In Japan and the EU short- and long-term interest rates did not break through to materially new lows even in the Covid-19 contraction of H1 2020, suggesting those markets may have been at or at least near the Reversal Rate.

Now, the Covid-19 pandemic has led to the first truly global downturn in decades and a further bout of stimulus from policymakers in every jurisdiction. Given the limited room for further short-term interest rate cuts, this intervention has extended beyond conventional rate cuts to the direct provision of credit and liquidity to the markets, and further unconventional tools (see Figure 1 for central bank balance sheet trends).

National and local governments have now increased public spending while seeing tax revenues decline, which has resulted in an unparalleled increase in fiscal budget deficits. Thus, governments borrowing requirements have increased at a time when monetary policymakers are trying to incentivise investors to shift to riskier assets. Further, as sovereign debt burdens have risen, governments have more incentive to favour low rates⁶.

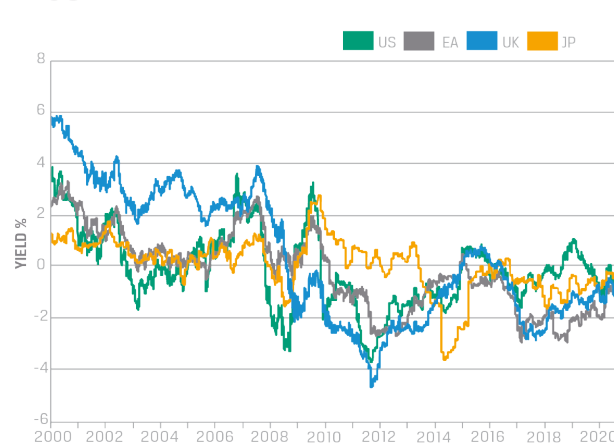
FIGURE 1 - SIZE OF QUANTITATIVE EASING (QE) FOR US, UK, EURO AREA AND JP



SOURCE: Citi

Negative rates, once thought anomalous and transitory, have now proven not to be and seem set to prevail for several more years (see Figure 2 for a short-term real yield of major economies).

FIGURE 2 - 2-YEAR REAL YIELD



SOURCE: Bloomberg

⁴ Also known as the Great Recession

⁵ Known as yield curve control and also Operation Twist, the name given to the Federal Reserve's approach

⁶ and perhaps also to desire positive inflation to help erode the liabilities in real terms

Macroeconomics Scenarios

In this section, we describe three scenarios, representing possible developments of the current macro-economic context. We use these three scenarios to inform our discussion of the implications of negative interest rates for global capital markets and their principle users throughout the rest of this paper.

The base case of the macroeconomic outlook is what is otherwise called "U-shaped", or "low-for-longer-rates" scenario (U). We attach a 60% probability to this scenario over a time horizon of approximately the next 18 months⁷.

Under this scenario, the Covid-19 pandemic persists within current bounds and with no significant further negative economic surprises. People adapt to the continuous uncertainty, but consumption may not return to pre-pandemic levels before the end of the time horizon, in part due to limits to consumption caused by lock-down related restrictions, in part due to precautionary savings. For similar reasons, some business sectors do not fully restart normal operations either.

The economic shock of 2020 impacts both nominal trend growth and the long-term interest rate equilibrium. The global economy stalls for a considerable period before eventually bouncing back by the end of the 18 month time horizon, aided by unprecedented policy support - hence the "U" shape.

Unemployment decreases gradually from the pandemic peak but remains significantly above pre-pandemic levels. Even in presence of recovering job vacancies as lock-down restrictions are relaxed, a strong push to wages is absent.

The pandemic has affected both demand and supply of commodity markets, disrupting supply chains and global growth. Energy and industrial metals tumbled at the peak of the pandemic crisis, they have partially recovered since then, but no sustained appreciation is further expected for commodity prices.

Inflation is expected to remain subdued due to lower consumption, a depressed labour market, a difficult outlook for most commodities and slack in various industries (in particular those related to energy and transportation). While there might be pockets of inflation in areas where demand has increased as a result of Covid-19 or where the pandemic has caused significant supply bottlenecks, overall the challenge for fiscal and monetary policy is to sustain demand and avoid deflation. Inflation is expected to rebound near the end of the time horizon as a result of an increase in aggregate demand, helped by large fiscal programmes. Fiscal measures might include direct government spending, tax cuts and deferrals, and additional liquidity provisions. Temporary transaction tax cuts seem politically more plausible under scenario U than income tax cuts.

Monetary policy remains very accommodative as central bankers keep monitoring data and global developments. Policy rates remain positive in both the US and the UK (even if some government bond maturities dip into negative territory from time to time), while the ECB starts a very gradual normalisation of the deposit rate towards 0% near the end of the time horizon. However, negative rates remain prevalent at the front end of the curve for both the EU and Japan.

At the peak of the pandemic central banks added corporate bonds, including junk bonds, to their asset purchase schemes. As companies struggled to maintain liquidity due to a collapse in revenues, the corporate bond market appeared to be a cheap option to raise funds. In many countries banks were encouraged to loosen their credit lending criteria via government-guaranteed programs. Corporates took advantage of the favourable borrowing conditions to increase liquidity and extended maturities. Corporate debt overhang, especially in the US and the UK, is an important risk factor in scenario U and leaves companies in our time-horizon more focused on deleveraging than investing.

Despite higher unemployment than historic average and the lack of economic growth, net private savings remain above pre-pandemic levels as risk aversion prevents a rapid recovery in consumer spending. As restrictions on personal activities and businesses are further relaxed, near the end of the time horizon the release of some of these savings results in an increase in aggregate demand, an acceleration in economic recovery and a modest uptick in inflation.

Increased savings, a continued preference for safe assets and a market dominated by price-insensitive central banks constraining the net supply of bonds also result in low long-term government yields; this occurs despite high levels of debt to GDP ratios and fiscal deficits - see Box 1 below on the relationship between government debt levels and government yield.

The 10-yr term premium for the US curve has been consistently decreasing since the GFC; and more recently the curve has inverted (Figure 3). Under scenario U the curves are expected to return to an upward-sloping shape, with the 10-yr premium proxy for the US curve remaining below 100bps, as indicated in Table 1.

FIGURE 3 - US 10-YR TERM PREMIUM



Our other two macro scenarios are: the "L-shaped", or "more negative rates" scenario (L); and the "V-shaped", or "positive inflationary" scenario (V). We attach a 15% probability to scenario L occurring, and a 25% probability to scenario V. Both the scenarios share the same 18-24 months forward-looking time horizon as scenario U.

⁷ By comparison a CFA Institute global survey in April (<https://www.cfainstitute.org/-/media/documents/survey/cfa-coronavirus-ec-report-2020.ashx>) revealed 79% of respondents thought the recovery would be slow to stagnant in the short term and just 10% opined on a quick V-shaped recovery.

Table 1 reports our assumptions for key economic variables in the three scenarios U, L & V.

Factor	US	UK	EU	JP
Headline Inflation (%) U: L: V:	 [0.5, 1.5) [-0.5, 1.0) [1.5, 3.0)	 [1.0, 2.0) [0.0, 1.5) [2.0, 3.0)	 [0.0, 1.0) [-.05, 1.0) [1.0, 2.0)	 [0.0, 0.5) [-0.75, 0.25) [0.5, 1.25)
Policy Rate (%) U: L: V:	 [0.0, 0.25) [-0.5, -0.25) [0.25, 1.0)	 [0.1, 0.25) [-0.75,- 0.2) [0.1, 1.0)	 [-0.5, -0.25) [-0.75, -0.5) [-0.5, 0.75)	 [-0.1, 0.0) [-0.75, -0.1) [-0.1, 0.3)
10-yr Yield (%) U: L: V:	 [0.0, 1.25) [-0.5, -0.25) [1.0, 2.5)	 [0.1, 1.0) [-0.3, 0.5) [1.0, 2.25)	 [-0.5, -0.25) [-1.0, -0.25) [0.0, 1.5)	 [-0.1, 0.2) [-0.75, -0.2) [-0.1, 0.5)
10-yr - 3-m Spread (bps) U: L: V:	 [0, 100) [0, 50) [100, 200)	 [0, 75) [0, 50) [75, 150)	 [0,50) [0, 50) [0, 150)	 [-20, 20) [0, 50) [-25, 50)

Table 1: CFA UK Expectations in 3 scenarios. Figures in brackets express ranges

Table 2 below describes the key features of these other two scenarios. In particular, the features are provided as differentiators relative to scenario U, following this structure:

- 1) Status of the global pandemic
- 2) Shape of the economic recovery
- 3) Job market and unemployment
- 4) Inflation dynamics
- 5) Policy response
- 6) Tail risks

<p>Scenario L (more negative rates)</p>	<ul style="list-style-type: none"> • Situation with Covid-19 worsens markedly, leading to additional significantly negative economic consequences • Double-dip recession, possibly with slow recovery toward the end of the forecast horizon • Very high unemployment, with 50% of workers who lost their jobs as the lockdown took hold in H1 2020 not back in the labour market • Higher probability of deflation for much of the period, with a slump in commodities (energy and industrial metals). Subdued inflation returns towards the end of the forecast horizon, on the back of policy stimulus and lasting disruptions to supply chains • U.S. and U.K. embrace negative rates. Front-end rates turn meaningfully negative, but anchored by beliefs that the Reversal Rate is around -1% • Potential for alternative negative-rate enablers. Bold measures might include an electronic money system where paper currency is taken off par. No restrictions on the circulation of paper currency, but a price mechanism introduced to adjust the value of cash • Central banks around the world introduce an ECB-like deposit tiering to support banks where margins are squeezed by negative rates • QE and once-unconventional asset purchases become common • Liquidity is provided with repo and money market operations • Monetary authorities introduce curve control across the three- to 10-year maturities to keep term premiums positive while still capping them • Central bank independence is called into question with the increased coordination needed to enforce fiscal and monetary policies • Scenario made more probable by a disorderly Brexit disrupting UK and EU economies 	<p>Scenario V (positive inflationary)</p> <ul style="list-style-type: none"> • Situation with Covid-19 improves, with current restrictions lifted more rapidly than anticipated • Consumer habits (e.g. around travel and hospitality) return to normal before the end of the time horizon • Government intervention to support businesses, jobs and consumers withdrawn only slowly while taxes do not rise • With regulatory policy more supportive, the banking industry can grow lending earlier in this recovery than post-GFC • Real GDP recovers to pre-pandemic levels before the end of the time horizon • Unemployment does not fall as fast as GDP recovers, but only 10% of those made unemployed by lockdown are not back to work by the end of the horizon • From low levels, the inflation rate picks up more quickly than expected in the U-shaped scenario. Energy price recovery is driven by increasing demand and sustained production cuts; steps required to keep Covid-19 suppressed are still affecting the efficiency of production and service sector capacity; weak business investment before Covid-19 has been compounded by the sharp investment slump in 2020 causing bottlenecks in various industries; and friction, trade and otherwise, between China and the West is still evident • Expectations of future inflation and inflation volatility are repriced upwards as: central banks, reflecting on muted inflation 2009-2020, maintain a significant degree of stimulus even as inflation climbs to and marginally beyond targets; and we see the beginnings of a partial relocation, perhaps nationalisation, of key supply chains, with potential inefficiencies being priced in • Central banks remain engaged with QE and asset purchases but reduce their scale and scope (e.g. large programmes of corporate bond purchases not extended, hence increased volatility for all asset classes involved) • Central banks signal modest base rate tightening towards the end of the time horizon, but markets anticipate more of that ahead. 10-yr yields sell off and term-spreads widen meaningfully, even when the short end begins to rise.
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Table 2: Summary of the key differentiators between CFA UK's U, L, V Scenarios

Box 1: Government Debt levels; Implications for Inflation, Bond Yields and TaxV Scenarios

Public debt has been on an upward trajectory since the GFC and before. Now the Covid-19 pandemic has prompted unprecedented increases in fiscal deficits and a sharp jump in already stretched debt/GDP ratios. The IMF expects the average across advanced economies to exceed 130% by the end-2020.

The question of debt sustainability is complex and possibly spurious for countries with monetary sovereignty. The argument, according to proponents of Modern Monetary Theory (MMT) at least, is that a country with monetary sovereignty does not need to borrow at all, as its government can literally create the money it needs to pay for goods and services. Such a policy may lead to excessive levels of demand, and therefore to inflation but, as we write, most economies are grappling with the opposite problem, namely a demand deficit evidenced by excessive levels of unemployment, low inflation and low real interest rates. This demand deficit is particularly acute in the current environment of a global pandemic, associated restrictions and a generalised increase in consumer and investor caution. Nonetheless, there may also be structural long-term dynamics at play today; as populations age in many of the industrialised economies, investment needs decline, compounded by both falling relative prices of capital investment goods and technological innovation. The result is a chronic shortage of demand relative to savings – the so-called Savings Glut, which contributed to ever lower real interest rates.

Despite what MMT proponents might argue, the reality is that governments do borrow to finance fiscal deficits and therefore levels of government debt are surging from already high levels. Conventional economics maintains that government deficits crowd out private investment and raise interest rates – but the situation today is different. Far from pushing real interest rates higher, rising government debt/GDP ratios since 2009 have been accompanied by falling rates, as shown in Figure 4, as a result of QE and the private sector savings surplus. Furthermore, lower real interest rates have reduced governments' costs of debt allowing them to sustain higher debt levels, all else being equal⁸.

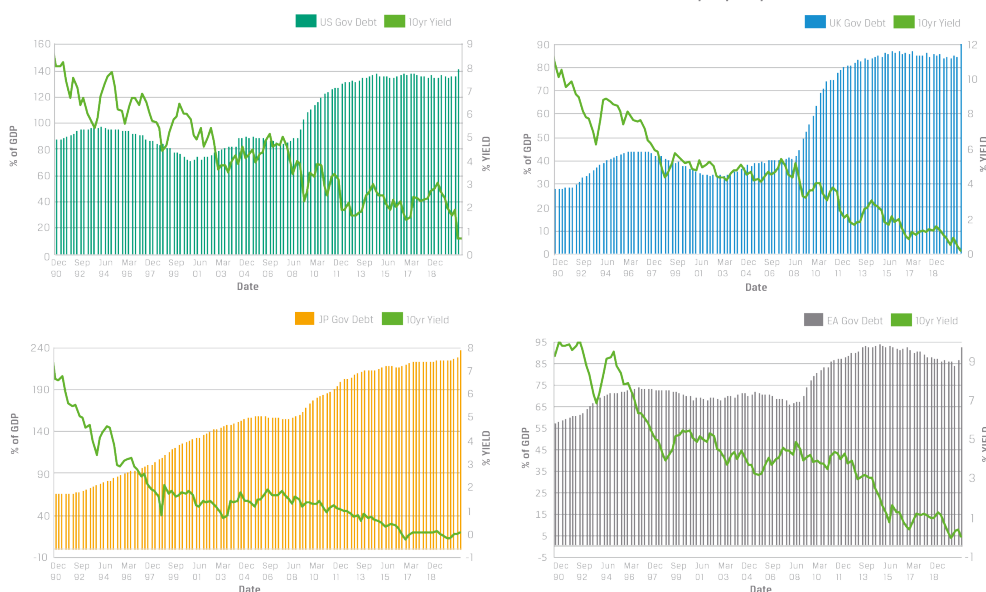
Japan, long considered a unique case, may in fact be an indicator of what is to come for other major developed economy bond markets. Japanese government debt has exceeded 100% of GDP for 20 years and is expected to reach 268% of GDP this year – yet long-term interest rates have declined steadily and now hover around zero. There has also been no structural fall in the value of the Yen. Looking further into history, in the 325 years since the founding of the Bank of England, British government debt/GDP has exceeded 100% for over 35% of the period with few funding problems except in a tiny minority of cases where debt was owed in foreign currencies⁹.

Despite this, there is an expectation building of taxes having to rise to fund the expanded deficits, with mention of potential wealth, capital gains and corporate taxes. While taxes may well have to rise in due course, we believe most of that process will be deferred beyond the time horizon of our three scenarios if governments want to avoid a counter-productive snuffing out of fragile economic recovery in 2021.

The additional demand shock generated by the Covid-19 pandemic has resulted in central banks launching additional and substantial asset purchase programmes. These are aimed at compressing yields further, and implicitly supporting the financing of the huge fiscal deficits now prevalent across major economies. Again, Japan may be a precursor to what will happen in other developed economies, as the Bank of Japan (BoJ) now holds around 50% of the Japanese government bond market. The balance sheet of the BoJ has ballooned to over 100% of GDP but, as noted above, this has not resulted either in excessive levels of inflation – indeed, the BoJ has consistently failed to meet its inflation target of 2% – or higher interest rates.

In summary, whilst major economies and their governments are facing a huge challenge in supporting employment and economic activity, the increases in government debt levels, whilst unprecedented in peace time, appear unlikely to result in a dramatic increase in bond yields or inflation, at least within our study's time horizon of 18-24 months.

FIGURE 4 - GOVERNMENT DEBT / GDP VS 10YR GOVERNMENT YIELD FOR US, JP, UK, EA



SOURCE: CRI

⁸ For example, in 1990 the US Federal government spent over 3% of GDP on interest costs, at a time when the ratio of federal debt to GDP was around 55%, while in 2019 the cost of servicing the federal debt was less than 2% of GDP although the level of debt had increased to over 100% of GDP

⁹ The National Debt; A Short History, Martin Slater, The Hurst Publishers, 2018

Fixed Income

We consider the impact of negative rates on bond investor behaviour and list six trends that we identify as potential market distortions, examining four of these in greater detail. In Table 3 we also discuss the asset class outlook under each of our three macro-economic scenarios.

The Impact of Negative Rates

While the success of NIRP is hard to measure, fixed income yields have certainly continued their 25-30 year trend of decline. Lower bond yields should ordinarily encourage investment allocations from fixed income into equities and bank savings into higher risk investment products - a rise in risk appetite which is, in fact, part of the objective of NIRP. However, growing demand for fixed income has more than outpaced supply: life-insurers and pension funds still require these assets to match their liabilities, be more certain to achieve their yield target, respect their clients' later-in-life risk aversion and meet their regulatory requirements; post the GFC, regulators have required banks to hold much more government bond liquidity; and demand has continued from reserve-accumulating nations such as Japan and China¹⁰.

Some Distortions

With rates now so low, significant further yield declines look unrealistic and a number of market distortions are increasingly evident:

- 1. The "hunt for yield":** investors are driven to reallocate to riskier fixed income assets, moving up the yield curve by extending portfolio duration, moving up the credit curve by reducing credit rating quality¹¹, accepting weaker covenants, collateral and liquidity and taking on bonds with more embedded optionality and complex structures.
- 2. The growth of alternatives:** investors are reallocating away from traditional fixed income into "alternatives", a very broad asset class with many different products such as structured debt, 'shadow-banking', derivatives and private placements¹², which would typically offer higher returns but much less liquidity.
- 3. The end of immunisation:** if there is a lower bound for negative rates at the short end (the Reversal Rate), and by extrapolation at the longer end, then fixed income's risk/return traditional attribute is impaired. Indeed, perhaps much of fixed income no longer offers diversification benefits as an off-set to other "risk-on" assets in downturns¹³.
- 4. Relocation of financial capital:** financial capital is shifting from low yielding financial centres (e.g. Japan, the Eurozone, Scandinavia, Switzerland) and concentrating in those with higher policy rates (e.g. the US, Australia and Emerging Markets), stressing FX funding markets and making yields worse for those same investors.
- 5. Money market instability:** money markets are becoming increasingly unstable as the competition for funding intensifies between government bills, commercial paper, repos, bank deposits and FX.
- 6. The government 'put':** Central bank intervention in response to the GFC and Covid-19 pandemic, whilst effective in stemming asset price declines, has left the market to question the extent to which investors are actually taking liquidity/default risks in the first place. The presumption of a policy "backstop" that provides investors with informal but ultimate protection in times of crisis, may be undermining the degree of compensation investors are now demanding for taking such risk, effectively re-basing the fair value of credit spreads (already narrow) at even lower levels.

Instead of shifting allocations from fixed income, much of this is instead a shift in the composition of fixed income assets towards increased duration, credit risk, optionality, and private assets. Overall, the effect on the industry is transformational and, along with other new regulatory and environmental concerns, bond markets will demand more flexibility and expertise from investors as they navigate this environment for their clients.

¹⁰ China's High Savings: Drivers, Prospects, and Policies, IMF Working Paper, December 2018

¹¹ See OECD 2020, Corporate Bond Market Trends, Emerging Risks and Monetary Policy, <https://www.oecd.org/corporate/corporate-bond-market-trends-emerging-risks-and-monetary-policy.htm>

¹² On shadow banking see <https://voxeu.org/article/radar-rise-shadow-banking-europe> and <https://www.imf.org/en/News/Articles/2017/09/13/sp091417-shadow-banking-and-market-based-finance>

¹³ Page and Panariello - When Diversification Fails, Financial Analysts Journal 2018, Volume 74, Issue 3 - show that most asset classes are ineffective as hedges in tail events. We additionally demonstrate this for government bonds in Figure 8 at the end of Box 2.

Box 2: More on fixed income market distortions

Increasing credit risk - A backdrop of low and negative rates has driven a "hunt" for additional yield, pushing even traditionally "conservative" institutional investors to re-think risk tolerance and consider lower-rated investments. Riskier 'High Yield' markets have doubled in size, with the market for tradeable BB rated or below up from US\$1.2trn to in excess of US\$2.3trn globally (Figure 5 below). Meanwhile the share of BBB rated bonds in higher grade IG indices has doubled from 20% to 40% since the GFC (Figure 6 below). While this growth highlights a clear rotation back into HY bonds, the tightening in spreads (Figure 7 below) makes the potential for yield enhancement questionable.

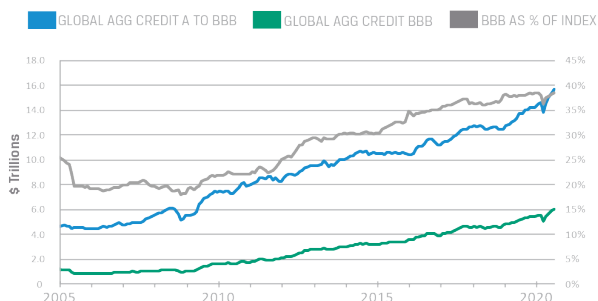
Corporates and financials have taken stock of the opportunity this presents, issuing longer duration, or in overseas markets, or with looser covenant and security packages or even issuing when previously they might not have had access to capital markets. Thus, **lower quality bonds today form a greater proportion of fixed income indices**. There has been a marked increase in issuance of high yield, hybrid bonds and leveraged loans. Whilst these are not necessarily bad or dangerous, they are attractive to investors because they offer more risk and hence more return, perhaps making portfolios more vulnerable to shocks, systemic and idiosyncratic, and creating future points of fragility.

FIGURE 5 - GROWTH OF THE US HIGH YIELD MARKET



SOURCE: Bloomberg-Barclays Indices (US HY Bond Index)

FIGURE 6 - BBB BONDS HAVE GROWN AS A PROPORTION OF THE INVESTMENT GRADE MARKET



SOURCE: Bloomberg Barclays Global Aggregate Corporate BBB Bond Index

FIGURE 7 - GLOBAL BBB CORPORATE BOND AVERAGE SPREAD

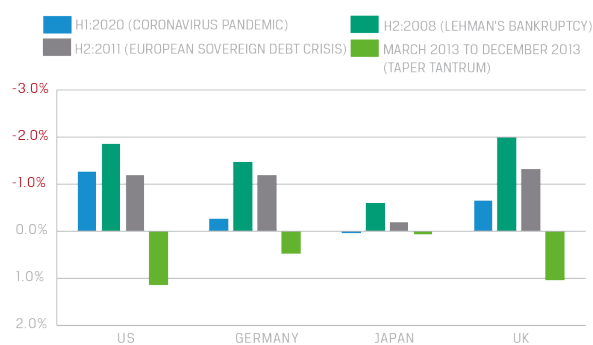


SOURCE: Bloomberg Barclays Global Aggregate Corporate BBB Bond Index

Fixed Income's traditional defensive hedging role - the role of fixed income, in particular government debt, in a multi-asset portfolio is largely a defensive one, certainly to limit losses and perhaps to deliver a gain when uncorrelated risk assets fall. Whilst it is clear that the so-called zero bound does not necessarily apply to government bond yields, there is a concern that traditional safe-haven bonds now have limited room for further price appreciation in the event of further risk asset price declines.

The pattern of events in March 2020 exacerbated these concerns, as yields in major developed government bond markets rose mid-month even as equity markets collapsed. However, the mid-March sell-off of safe-haven bond markets proved short-lived and was most likely the result of a rush for liquidity. Looking at the entire first quarter of 2020, 10yr US Treasury yields declined significantly (by over 100bps) thus providing a strong hedge against the fall in risk assets. Of course, US yields came into 2020 at a level significantly above zero; the downward yield-shift in other major developed government bond markets was noticeably weaker (see Figure 8 below).

FIGURE 8 - CHANGES IN GOVERNMENT BOND YIELDS IN 4 RECENT CRISES

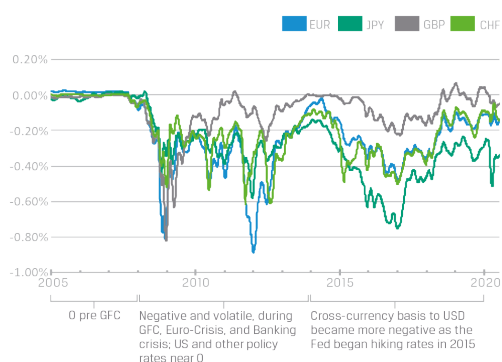


SOURCE: Bloomberg

The tiny fall in 10yr yields in Q1 for Japan and Germany, markets where yields were already negative at end-2019, lends weight to the argument that ultra-low yields reduce the effectiveness of government debt as a hedge against risk assets. The negative correlation between bonds and equities is evidently less reliable as yields decrease further.

Foreign exchange swaps - FX Swaps are commonly used to finance foreign currency investments and hedge the FX risk. Historically, the cost/benefit of an FX swap was close to the difference between the two currencies' interest rates (Covered Interest Rate Parity, CIP). However, post the GFC the deviation from CIP, known as the FX basis, increased substantially (See Figure 9 below). For many foreign investors (most notably Japanese and European buying US Dollars), the basis was negative and penalised them, whilst conversely US investors benefitted. The reason for this phenomenon is hotly debated but the most popular explanation attributes this to the imbalance in the net flow of capital, e.g. Japanese and Eurozone investors sought safe positive US yields but not vice-versa, while capital rationing in banks meant they required greater returns to arbitrage the difference.

FIGURE 9 - 1 YR CROSS-CURRENCY BASIS TO USD FOR MAJOR CURRENCIES



Impairment of money markets - NIRP has led to large increases in reserves held at central banks, causing changes to the central banks operational and legal platform (e.g. remunerating all reserves). In both the US and the Eurozone unsecured overnight lending between financial institutions plummeted when policy rates were cut close to zero or lower and institutions already had plenty of low cost liquidity (see Figures 10-12 below). This has led to strains. Notably when unwinding policy in 2019 the Federal Reserve had to introduce technical changes as falling reserves led to unstable repo rates. Other strains have built as commercial paper, repo and cheap government bill issuance competed for the same money. Money Market funds are not equipped to deal with negative rates and, with limited ability to pass negative rates on to retail depositors, banks would want to avoid a flow of money market fund assets into deposits.

FIGURE 10 - EONIA (UNSECURED EUR OVERNIGHT LENDING) VOLUMES POST 2000

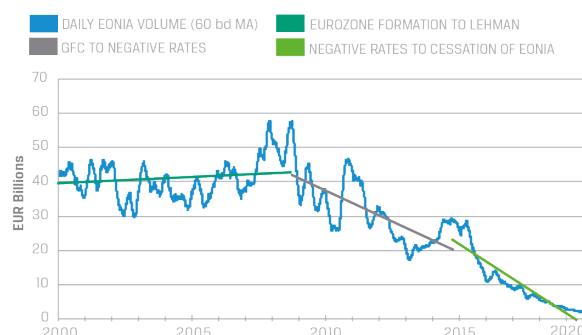


FIGURE 11 - FED FUND VOLUMES AND RATE POST-2007

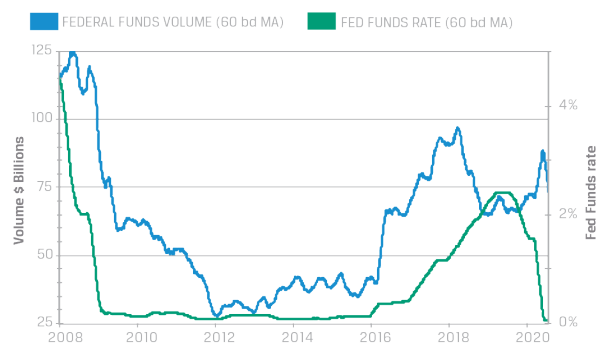
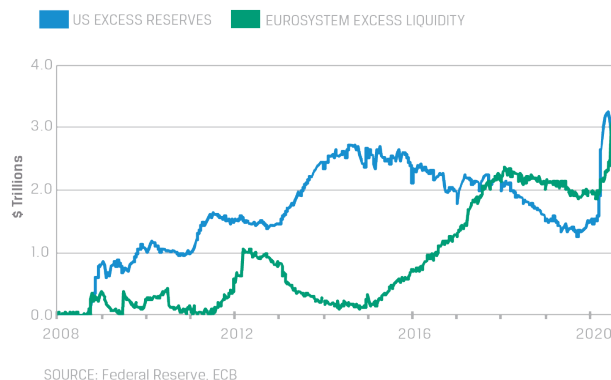


FIGURE 12 - US & EUROSISTEM EXCESS RESERVES, 2008-20



We conclude this section charting a course for bond markets with our three scenarios (see Macroeconomic Scenarios) in Table 3 below.

Fixed Income: 3 Scenarios Summary Table

Aspect	U Shaped Scenario: Lower for longer	L Shaped Scenario: More Negative Rates	V Shaped Scenario: Positive Inflationary
<u>Rates</u>	See Table 1 (p 9)		
<u>Curve</u>	See Table 1 (p 9)		
<u>Credit Spreads</u>	Relatively unchanged – ample policy support, including for credit markets.	Widen at a slow pace, as businesses struggle against a backdrop of a much deeper & permanent shock to demand, loan defaults continue to increase.	Tighten further. A sharp rebound in credit conditions fuels a further tightening in spreads across the credit spectrum, with certain HY sectors outperforming their IG counterparts.
<u>Money Markets & FX Basis</u>	Less stressed, low rates not great but accommodation helps.	Stressed front-end could steepen sharply or flatten depending on liquidity and support. Demand for cash picks up. FX Basis widens.	Normalisation of money markets but very dependent on unwind of policy, i.e. reserves need be managed through b/s taper.
<u>Shift in fixed income allocations</u>	Shift towards fixed income continues despite low expected returns.	Shift to fixed income continues but may slow if yields fall materially further.	Some reversal out of fixed income as longer duration assets underperform but the asset class remains a core investment for most existing holders.
<u>FI effectiveness as a hedge</u>	Moderately effective, but less so than in previous crises.	Utility as a hedge further diminished. Despite widening distribution of negative rates, market cannot accept a 10y rate of -1%.	Diversification and risk-off benefit returns.

Table 3: Summary of the key differentiators between CFA UK's U, L, V Scenarios for Fixed Income

Equities

We consider the impact of negative rates on valuations and explore three trends that we identify as potential market distortions. In Table 4 we also discuss the asset class outlook under each of our three macro-economic scenarios.

The Impact of Negative Rates

What is the link between negative rates and equity valuations? We can think of the required rate of return¹⁴ (RRR) on equities as the sum of the risk-free rate (Rf) (often seen as the real yield on 10-yr US Treasury) and an equity risk premium (ERP). All else equal, as Rf decreases the required rate of return for equities falls, which in turn leads to higher valuations (Price/Earnings multiple expansion). Indeed, the combined market capitalization of the Wilshire 5000 Index of US stocks reached a level equivalent to 190% of national GDP in August 2020, exceeding heights reached in the 2000 bubble¹⁵.

However, things are unlikely to be equal if long term interest rates have reached zero. Equity valuation also depends on the other component of RRR, the ERP, and on expectations of corporate profit growth in the future, as in the simple Gordon dividend discount model:

$$\text{RRR} = \text{Dividend Yield}^{16} + \text{Expected Growth} = \text{Rf} + \text{ERP}$$

Two other factors could push RRR upwards (and market PE multiples downwards) if Rf goes negative. Negative interest rates are likely to be associated with both a weaker macro and corporate earnings growth outlook than otherwise and greater uncertainty which may push ERP up and PE multiples down.

The classic example of a market where valuations fell even as bond yields moved lower is Japan between 1989 and 2010¹⁷. The prospective PE in 1989 was 40x as investors looked forward to a continuation of the Japanese growth miracle and bond yields were 5%. By 2010 the PE had fallen to 13.5x and bond yields were 1%¹⁸. Of course, Japan in 1989 was experiencing a huge bubble, but that does tell us that starting valuations matter: even lower bond yields today cannot help equities if high PE multiples already reflect excess optimism about future growth and volatility.

The current 1-year forward PE multiple for the MSCI World Index is ~20.6x¹⁹, a 10-year high similar to levels achieved in 2000/2001²⁰. Negative rates make it easier to justify these higher PE multiples by comparing equities with bonds, but the scale of the equity rally since the Covid-19 low of March 2020 also reflects more positive (or less negative!) views on the fundamentals for profits, albeit largely in a narrow range of sectors such as Technology, Healthcare and Staples. They also happen to be sectors where negative interest rates are most supportive to valuation either because cashflows are thought to be of longer duration (Tech and Health) or are more predictable and bond-like (Staples).

¹⁴ We are here talking of the real, after-inflation, required rate of return on stocks and the real bond yield.

¹⁵ Though GDP was depressed by Covid-19. See Forget the Dotcom Bubble. This Time It's Even Bigger, Ven Ram, Bloomberg, Aug. 28, 2020

¹⁶ The Gordon model uses dividend yield but in a more complex form can also start with earnings/price

¹⁷ <https://ftalphaville.ft.com/2010/08/25/325791/japan-the-big-pffft-and-pe-ratios>

¹⁸ Investors in Japan ultimately had to confront fears of deflation too and that worry may also feature in today's markets. Other examples of falling bond yields coinciding with falling stock valuations have included Europe and Emerging markets in the 2010s and the USA in the 4 years after the Tech bubble burst in 2000.

¹⁹ Bloomberg as of 12 August 2020.

²⁰ At the time of the dot-com bubble: Bloomberg as of 12 August 2020.

Some Distortions

With regard to market distortions in the equities, we highlight three:

1. De-equitisation - Global annual net equity issuance²¹ has been on a downward trend for decades, driven by large corporate buyback activity spurred, in part, by very low interest rates making the cost of debt appear even cheaper relative to equity. The Covid-19 shock highlighted the resulting balance sheet vulnerabilities: global equity raising was up robustly in H1 2020 and for 2020 global share buybacks are predicted to be just half of 2019 levels²², reflecting corporate need to conserve cash and bolster balance sheets. This reversal, however, may prove only temporary.
2. Growth versus Value stocks - Since around 2007, Growth stocks (with higher valuation multiples and faster expected growth than average) have, in a reversal of much of prior history, outperformed their counterparts, Value stocks (with lower valuation multiples and slower growth). Drivers of this include the commercial success of the mega-cap technology names, but low interest rates appear to have played their part. Very low rates support the valuation of Growth stocks' future profits and also tend to damage profitability of financials, a classic Value sector. But the Growth boom goes well beyond sector effects and investors should take note that the valuation of Growth stocks vs Value stocks looks extended on a range of measures²³.
3. Speculative IPOs - In 2018-19, 70-80% of IPOs were loss-making, a level last seen in the 1999 Tech bubble. Further, the surge in Growth stocks combined with the low cost of capital driven by negative rates have contributed to the rise of so-called special purpose acquisition companies (SPACs) that raise money from public equity in order to acquire unspecified private companies²⁴. SPAC listings are rising significantly in 2020²⁵. Shareholders in SPACs do not know what the acquisition target will be ahead of that transaction taking place and the acquired companies have effectively by-passed the traditional (more stringent) IPO process²⁶. Investors should be aware of the risks associated with these speculative IPOs, especially as they may persist under negative rates.

We conclude this section on equities with Table 4 overleaf in which we outline our expectations for equity markets under our three different scenarios described in the Macroeconomics section.

²¹ Share issuances adjusted for de-listings and buybacks. For data see <https://www.nber.org/papers/w21909>

²² <https://www.reuters.com/article/us-health-coronavirus-buybacks-analysis/for-shrinking-stock-markets-corona-crisis-looks-like-a-turning-point-idUSKBN23M222>; Grasp this chance to revive public markets: <https://www.ft.com/content/12533446-c908-408e-8da6-1aee5e05cc62>

²³ <https://www.aqr.com/Insights/Perspectives/Is-Systematic-Value-Investing-Dead>

²⁴ These entities were previously popular in the 1980s <https://www.nytimes.com/2020/07/14/business/dealbook/spac-blank-check.html>

²⁵ <https://spacinsider.com/stats/> 2020 YTD 160 SPAC IPOs have raised US\$60 billion compared to 226 SPAC IPOs raising US\$46 billion in the 10 years from 2009-19

²⁶ Moneyball legend Billy Beane joins SPAC wave: <https://www.ft.com/content/03af250b-6acf-4b23-9608-a90b291f75f3>

Equities: 3 Scenarios Summary Table

Aspect	U Shaped Scenario: Lower for longer	L Shaped Scenario: More Negative Rates	V Shaped Scenario Positive Inflationary
<u>Equity Market Performance</u>	Equities potentially vulnerable to a correction ²⁷ in the near-term given a still shallow recovery path, but ultimately we expect this scenario to be positive for equities . US equities likely to lead near-term but non-US equities to lead in 2021. We would expect a reasonable returns profile for EM equities ²⁸ . High PEs today suggest future medium-term real returns on equities more in the 5% per annum range than 6%-7% delivered in recent decades and lower than 5% if PE multiples fall again.	Could be a renewed bear market for equities ²⁹ . It may become more difficult to find countries or sectors that consistently out-perform, with active equity selection returning to the fore. US equities may out-perform non-US and EM , especially as EM equities performance depends on a healthy level of global growth. Towards the end of the horizon, a renewed recovery in equities likely as further policy measures are seen to reduce deflation risks.	This scenario would be particularly positive for equities in the initial 12 months as profits and balance sheets recover sharply, while uncertainty reduces and rates rise only slowly. Non-US markets & EM very likely to outperform given more exposure to cyclical sectors.
<u>Fundamentals</u>	Gradual earnings recovery with bouts of uncertainty over the pace.	Earnings fail to recover materially in H1 2021 and improve thereafter.	Robust earnings recovery in most sectors.
<u>Valuation</u>	Limited scope for multiple expansion outside the Growth sectors.	While more negative rates theoretically provide some valuation support through lower Rf assumptions, investors will demand a higher ERP as corporate earnings & balance sheet prospects remain uncertain and the risk of deflation increases.	Uncertainty reduces as corporate prospects improve, applying downward pressure to ERP, multiples can initially expand in anticipation of rapid profits recovery even as central banks start to raise rates gently.
<u>Sector Performance</u>	In the near-term investors continue to favor: (i) sectors more insulated from Covid-19 and supported by long-term secular trends, e.g. technology & healthcare; and (ii) the balance sheet leaders in sectors directly affected by the pandemic. Later, as recovery progresses, cyclical sectors will likely outperform.	Defensive sectors such as Utilities, Consumer Staples and Telcos would likely outperform. The bank sector is likely to fair especially badly given the impact of negative rates on margins and of recession on balance sheets ³⁰ .	The ERP for stocks most affected by Covid-19 pandemic & other cyclical stocks would likely fall, resulting in rebound in sectors such as Travel and Hospitality, Financials & Industrials. Historically, when the yield curve steepens as rates rise, Consumer Discretionary, IT and Industrial sectors have outperformed ³¹ .
<u>Style Performance</u>	Growth may continue its outperformance in the near term, with Value assuming leadership as the recovery becomes more entrenched.	Growth likely to outperform in relative terms.	Value likely to outperform. Growth stocks may suffer relatively as earnings growth becomes more widespread.
<u>Equity Market Distortions?</u>	A continued gradual reversal of de-equitisation trend, as we expect corporates and banks to bolster their balance sheets.	A reversal of the de-equitisation trend, with balance sheet risk to the fore. SPAC listings likely to fair badly.	De-equitisation continues as corporates confidence in leverage and buy-backs recover. Potentially more SPACs until rates rise.

Table 4: Summary of the key differentiators between CFA UK's U, L, V Scenarios for Equities

²⁷ Often said to be a fall of 10% rather than the more severe bear market drop of >20%

²⁸ MSCI EM trading at a 1-year forward multiple of 15x compared to the MSCI World at 20.6x : Bloomberg, as of 12 August 2020.

²⁹ An equities bear market often being thought of as a fall of over 20% from the recent peak

³⁰ See Banks section - raft of significant rights issue from large banks could be a possibility

³¹ What the yield curve can tell investors, C. Dhanraj, iShares, 2019 <https://www.ishares.com/us/insights/sectors/what-the-yield-curve-can-tell-equity-investors> and Impact of changes in the level, slope and curvature of interest rates on U.S. sector returns, Jareno-Cebrian et al, 2019 <https://www.tandfonline.com/doi/full/10.1080/1331677X.2019.1632726>

Real Estate

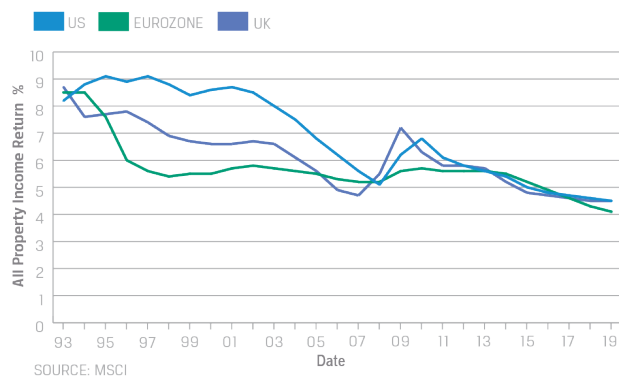
We consider the impact of negative rates on real estate valuations and financing and highlight two distortions which could be at play. In Table 5 we also discuss the asset class outlook under each of our three macro-economic scenarios.

The Impact of Negative Rates

Valuations

Property is priced on its yield, typically relative to other benchmark rates and so the outlook for the sector is inherently linked to the path of interest rates. Low interest rates and bond yields tend to make the income offered by commercial property more attractive to investors. This was certainly the case in the years before Covid-19. As bond yields fell or remained low, the "hunt for yield" led investors to accept lower yields for real estate. Figure 13 below shows how income returns across an aggregate of all property classes in three major developed markets have declined steadily during the period of low interest rates to end-2019.

FIGURE 13 - ALL PROPERTY INCOME RETURNS ACROSS MAJOR REGIONS



This trend had been supported by the positive, albeit muted, outlook for economic growth in much of the world. Investors have been willing to pay for the expectation of future rental growth. Looking forward, a lower for longer environment featuring negative interest rates will continue to provide support for valuations on a relative basis. However, without the prospect of stronger growth, the relative valuation afforded by low or negative interest rates may not prove sufficient for investors.

Financing

Real estate capital values are also closely correlated with transaction volumes, and the lifeblood of property transactions is debt financing. Continued negative or ultra-low interest rates should benefit real estate markets, assuming credit markets allow financing at terms that are accretive to returns.

However, that scenario is dependent on a positive, or at least not excessively negative, outlook for fundamentals. In circumstances where negative interest rates exist and persist, this is not guaranteed. Under the L and to some extent also the U shaped scenarios described above, the negative interest rate environment may in fact see lenders retreat from real estate lending due to default concerns, as well as a widening of spreads to compensate for this risk.

This is somewhat reminiscent of what occurred in the lead up to the GFC. Real estate sector leverage entered the Covid-19 recession at comfortable levels, but we are already starting to see signs of debt increasing within some real estate funds in order to meet target returns, in particular in the US. Investors should stay alert to risks of a "negative feedback loop" between markets and lenders, as a result of debt covenant breaches. So far during the Covid-19 pandemic we have seen banks adopt relaxed policies on covenant breaches, but this may not continue. Should real estate values fall enough to breach loan-to-value limits with little sign of a potential remedy a forced sale process may start in a market with little liquidity, resulting in significant discounts. Such transactions would have a knock-on impact on property prices generally. The same could occur where tenants are unable to pay their rents due to lockdown, impacting debt service coverage ratios for landlords.

Some Distortions

Releveraging - Even if financing is readily available at low interest rates, these circumstances may encourage investors to move higher up the risk curve by increasing leverage in portfolios, in order to offset lower expected returns as a result of lower property yields and lower rental growth. This could raise the level of risk for any given return worsening the downside case.

Tenant credit quality - The distortion in real estate valuations created by this environment, which has seen yields in many cases fall to historic lows, may begin to reverse if the promise of economic growth fades and tenant defaults rise. One consequence of NIRP is to keep weak companies on life support; thereby storing up more problems for real estate markets down the line.

We conclude this section charting a course for real estates markets with our three scenarios (see Macroeconomic Scenarios) in Table 5 below.

Real Estate: 3 Scenarios Summary Table

Aspect	U Shaped Scenario: Lower for longer	L Shaped Scenario: More Negative Rates	V Shaped Scenario: Positive Inflationary
<u>Rental income</u>	Some localised interruption and rent deferrals / short terms rent holidays due to COVID, however most corporates able to weather the weak economy, aided by low borrowing rates. Uptick in yields may offer better income returns for investors towards the end of the horizon.	Significant bankruptcies, and rental holidays required for many surviving tenants due to continued lockdowns. Greater difficulty reletting when tenants do default.	Little interruption, with most rents deferred during lockdown subsequently recovered. Sharp recovery may see some stronger companies take advantage of low rates to expand, increasing rental demand. Lower yields may mean lower income returns.
<u>Capital values</u>	Decline in the short term due to recession, however fiscal and monetary support keep capital losses to 5 – 10% and recovering by the end of the horizon.	Sustained capital value declines in the region of 10 - 20%, with little sign of recovery. Illiquidity and covenant breaches result in gapping down of valuations.	Weakness among more COVID-exposed sectors, but fundamentally sound assets with strong tenant covenants see little if any falls.
<u>Yield spread</u>	Gap over government bonds and interest rates remains broadly intact. Retail spreads widen.	Yield gap widens as investors flee to lower risk assets and property values decline.	Yield gap narrows as investors continue to favour real estate, and interest rates increase at the end of the time horizon.
<u>New supply</u>	Slowdown in construction due to recession. Little speculative development during period of uncertainty, however, recovering towards the end of the horizon.	Significant reduction in new projects. Lack of bank financing for development, as well as risk-off approach from investors.	Short term decline in new construction due to recession, however certainty afforded by improving pandemic backdrop gives confidence to undertake higher risk projects.
<u>Debt financing</u>	Debt financing still readily available for lower risk deals, although spreads widening in some cases. Lenders generally accommodative on covenants.	Lenders retreat from real estate financing. Spreads widen, credit dries up and covenant breaches occur.	Little impact on the availability of financing. Spreads widen in short term but remain low. Many banks waive short term covenant breaches given visibility on recovery.
<u>Sector performance</u>	Logistics and residential able to weather the recession better. Retail and hospitality struggle.	All sectors come under pressure to varying degrees. Affordable housing and logistics perform best. Offices suffer as corporate defaults increase. Retail and hospitality fare worst due to ongoing lockdowns.	Logistics and residential see little impact at all. Offices perform strongly during recovery. Hospitality improves as pandemic is brought under control. Secondary retail still faces structural challenges, however, returns supported by higher yields.
<u>Style performance</u>	Core, defensive real estate and long income fare best. Opportunistic investors may be able to take advantage of dislocations.	Core, prime, long income investments hold up better. Certainty of income the most important factor.	Core plus and value-add investors perform well during upswing. Some chances for opportunistic investors.

Table 5: Summary of the key differentiators between CFA UK's U, L, V Scenarios for Real Estate

Banks

We consider the impact of negative rates on banks' business models and distortions they introduced. In Table 6 we also discuss the outlook for these critical engines of the economy under each of our three macro-economic scenarios.

The Impact of Negative Rates

When adjusting rates, banks are at the fore-front of a central banker's considerations. With reserve accounts at the central banks and as the main provider of credit to the non-financial economy, banks are the main conduit through which the central bank transmits monetary policy. However, this also leaves them susceptible to side-effects from policy changes, especially as policy becomes more unconventional, and more so given the modern financial system's pro-cyclicality and its prominence in recent crises³². Banks are a crucial factor in the level and presence of the Reversal Rate. As explained earlier, beyond the Reversal Rate the transmission of monetary policy breaks down as savers withdraw cash from the banking system and/or banks cease to pass on low rates or expand loan books because it is unprofitable. In most countries, central banks have tried to reap the macro benefits of lower rates while cushioning their banking systems with cheap funding and interest rate tiering.

In the Eurozone, the impact of Negative Interest Rate Policy (NIRP) on banking profitability has been much scrutinised with mixed conclusions. The most cited positive impact on banks of ultra-low and negative rates is the benefit of a stronger macroeconomic backdrop. It is held that customers can service and repay loans more easily and are also more likely to borrow to invest.

If the interest rate decrease is confined to just shorter maturities then banks can increase their Net Interest Margin (NIM) as they lend at a longer-term rate than they borrow at. Furthermore, the asset quality of the bank balance sheet gets a boost from lower rates if they lead to increased asset valuations, help corporates to service their borrowing and thus also lead to lower loan loss provisions.

Central bank policy on tiering and TLTROs (cheap loans to financial institutions) to cheapen funding and allow banks to profit from maturity transformation³³ have also helped banks. However, the negative impacts on European Banks are better known:

- NIM is more likely to decrease as the yield curve flattens when longer-term rates fall further than short-term. Given the longer duration of loans versus the deposits that the banks finance them with, this may initially benefit the balance sheet as the value of fixed rate loans increases, but new business is then written at this lower rate level;
- Eurozone loan growth has lagged the US (see Figure 14);
- Whilst negative rates have been passed on to corporate deposits, they have rarely been passed on to retail depositors (for various reasons, including the risk of litigation and the loss of customers), thereby weakening their transmission mechanism and compressing bank NIM.
- Higher regulatory capital requirements (post-GFC) require banks to hold significant positions in liquid high-quality assets and these now earn lower or even negative yields.

³² EM Crisis 1997-98, 2008 Global Financial Crisis, 2012 European debt crisis

³³ The targeted longer-term refinancing operations (TLTROs) are Euro-system operations that provide financing to credit institutions. The ECB also introduced a so-called tiered system of interest rates whereby a portion of bank deposits is exempted from the negative interest rates.

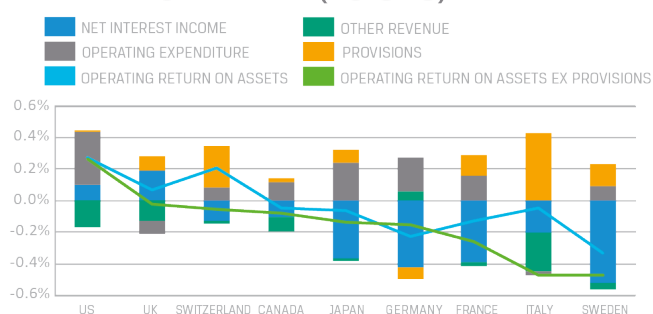
FIGURE 14 - EUROPEAN & US COMMERCIAL LOAN GROWTH (YOY)



Some Distortions

Underlying profitability (or lack thereof) - Prevailing evidence³⁴ suggests that while NIMs have decreased, overall banking profitability has thus far held up as loan volumes have increased, positive wider economic effects have reduced Non-Performing Loans (NPL) provisions and banks have increased fee income. However, this overall picture breaks down into a two-tier picture: negative rate jurisdictions are mostly to the right of Figure 15 below, with "suffering a significant drop in RoA as falling NII has more than off-set the one-off benefit of reduced NPL provisions.

FIGURE 15 - BREAKDOWN OF CHANGE IN MEDIAN BANK PROFITABILITY (2013-18)



SOURCE: IMF, Global Financial Stability Report April 2020

Disrupted business models - Whilst the ECB has concluded that much of the decrease in bank profitability is due to the backdrop of poor economies and competition from digital challengers, there are regional variations, e.g. between Southern vs Northern European banks. Certainly, current European bank equity valuations – typically trading below 0.5x book asset value³⁶ – imply that there has been some structural damage wrought to the banking sector and indeed these valuations may indicate that banks actually should shrink rather than grow their assets³⁷. There is a possibility that the various NIRP distortions on banks described above may manifest themselves more extremely as the NIRP environment persists over the long-term. If so, then the long running concern is that negative rates may hamper the ability of banks to provide not just credit but potentially other services.

³⁴ 2020, Boucinha, Miguel, Burlon, Lorenzo, Negative rates and the transmission of monetary policy, https://www.ecb.europa.eu/pub/economic-bulletin/articles/2020/html/ecb.ebart202003_02_4768be84e7.en.html

³⁵ IMF Global Financial Stability Report April 2020 <https://www.imf.org/en/Publications/GFSR/Issues/2020/04/14/global-financial-stability-report-april-2020>

³⁶ Similar to levels reached during the GFC

³⁷ <https://www.hsbc.com/investors/results-and-announcements/all-reporting/interim-results-2020-quick-read>

We conclude this section charting a course for banks with our three scenarios (see Macroeconomic Scenarios) in Table 6 below.

Banks: 3 Scenarios Summary Table

Aspect	U Shaped Scenario: Lower for longer	L Shaped Scenario: More Negative Rates	V Shaped Scenario: Positive Inflationary
<u>NIM</u>	Stabilises at reduced level.	Further reduction in NIM negatively affecting bank profitability. Reduced if rates can be passed on to retail, however this seems unlikely.	Some increase as short term long term spreads widen.
<u>NII / Loan Volumes</u>	Stable, central bank support facilitates ongoing lending activity.	Reduction, unlikely that loan volume increases due to poor economic outlook.	Increased NII, mostly from NIM. However positive macro backdrop may also positively influence loan-book expansion.
<u>NPL Provisions</u>	Stable vs prior pandemic, as recent increases tail off.	Increase due to pro-cyclical nature, causing a further drag on profits.	Similar to U-shaped Scenario. However, rising interest rates could potentially impede the ability of vulnerable corporates to repay debt, or refinance at lower rates over longer-term.
<u>Capital</u>	Possible weakening in capital ratios, but given tightening of regulation since the GFC buffers should be sufficient to face stress.	Recent results have not indicated significant decreases in capital ratios, but this scenario is likely to erode capital and weaker institutions will need equity issues.	Banks may suffer a reversal of the capital strengthening since the GFC as assets expand. However, buffers should be sufficient to face stress at most institutions.
<u>Liquidity</u>	Stable.	Sharp deterioration as banks struggle with funding.	Stable.
<u>Long term profitability</u>	Stable at current depressed levels.	Dire, resulting in a systemic risk to the banking sector.	Stable with a slowly unwinding positive trend.
<u>Assets</u>	Stable.	Decreases due to heavy provisions and limited new lending activity.	Increase.
<u>Retail Deposit rates</u>	Close to zero but positive, until rebounds with broader rates	Banks may be forced to pass negative rates on to retail clients, potentially creating a scramble for cash.	Increases as monetary policy is tightened.
<u>Other income</u>	Declines in primary issuance and deals reduces advisory income. Trading income may periodically see some benefit from volatility but this is unlikely to be sustained.	Little advisory income but potential increase in trading income from volatile markets.	Some pick-up as primary issuance and trading volumes increase.

Table 6: Summary of the key differentiators between CFA UK's U, L, V Scenarios for Banks

Corporates

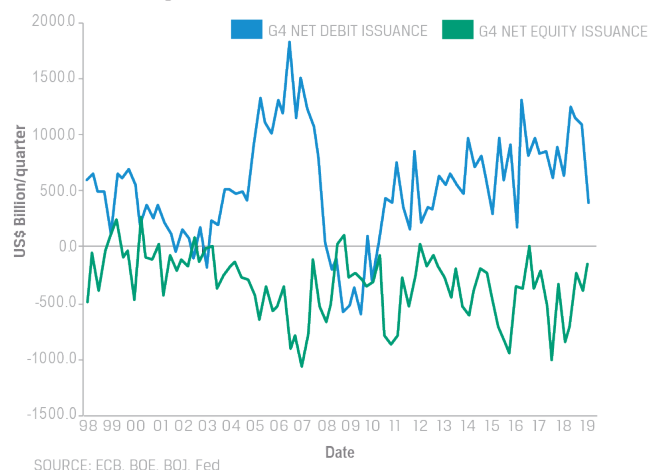
We consider the impact of negative rates on Corporates with particular regard for corporate balance sheets and financial policy and highlight the distortions that this has produced. In Table 7 below, we also discuss the corporate finance outlook under each of our three macro-economic scenarios.

The Impact of Negative Rates

Generally, Corporates have been beneficiaries of NIRP⁴⁰; it has enabled them to borrow at lower rates for longer on more favourable documentation and access new pools of capital expanding the breadth of funding options that would have been previously unavailable to them. Equity issuance conditions have also been good, though accessed less.

After the GFC, corporate financial leverage has steadily increased as the lower interest rates on debt (especially post-tax) has meant it became more cost-competitive than equity and more easily serviceable⁴¹. This can be seen in Figure 16 below:

FIGURE 16 - G4 NON-FINANCIAL CORPORATE SECTOR EQUITY AND DEBT ISSUANCE



Figures 17 and 18 illustrate how the higher leverage has so far mostly funded share buy-backs (in the US – the phenomenon has extended to other markets but been less pronounced) compared to capex. Innovative and more complex forms of finance such as hybrids, sale-and-leaseback finance and supply-chain finance have helped corporates either to structure their debt more efficiently or hide it off their balance-sheets. As the fall in yield has been across the curve, corporates have issued bonds at ever-longer maturities, terming out their debt maturity profiles to reduce refinancing risk.

In our U- and L-shaped scenarios we expect many corporates to remain cautious about increasing investment levels. However, we do think that (especially if risk premia also stay low) negative rates will encourage corporates (as well as investors perhaps Governments) towards investments with longer pay-back periods than have been considered for many years.

In this context, we note that by reducing the cost of capital applied to green infrastructure, NIRP and super-low long term interest rates are boosting corporate demand for renewable energy assets/projects and hence may prove to be part of the solution to climate change⁴² and potentially also wider environmental and social goals.

FIGURE 17 - G4 NON-FINANCIAL CORPORATE SECTOR CAPEX AS A % OF GDP

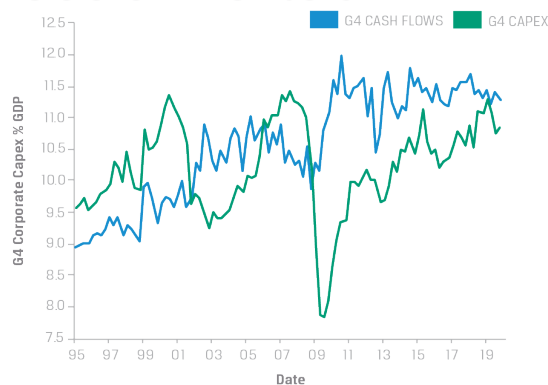
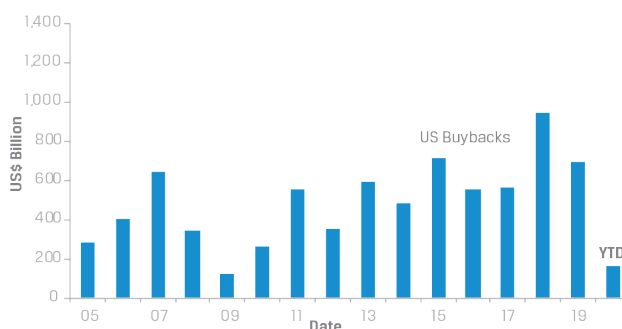


FIGURE 18 - US SHARE BUY-BACKS 2005 - 2020 YTD



Data refers to announced buybacks, and 2020 YTD refers to YTD to May 2020
SOURCE: Bloomberg

⁴⁰ In the immediate term, however, we anticipate Finance Directors will, perhaps counter-intuitively, be in risk-off mode due to the uncertainties created by Covid-19. Corporates will look to take maximum advantage of cheaper government-supported and non-government funding and further reduce risk by increasing liquidity, terming-out debt maturities and deleveraging (in some cases through equity issuance) until there is strong confirmation that a V-shaped recovery is under-way.

⁴¹ This viewpoint has been challenged by the Covid-19 demand shock which has severely impacted cashflows and corporates' ability to service their increased debt across many sectors

⁴² See Climate Change Analysis in the Investment Process, a paper by CFA Institute, 2020.

The Main Distortion

Credit migration - The rating agencies had been steadily reflecting the worsening corporate balance sheets in their credit migration data, particularly in the US since 2014 and more recently in Europe, as can be seen in the Bloomberg screens of S&P credit migration data in Figures 19 & 20.

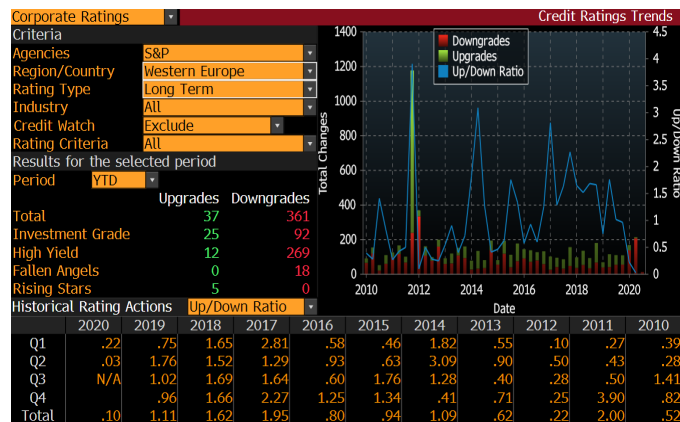


Figure 19, Western European Credit Rating Trends 2010-20;

Source: Bloomberg, S&P

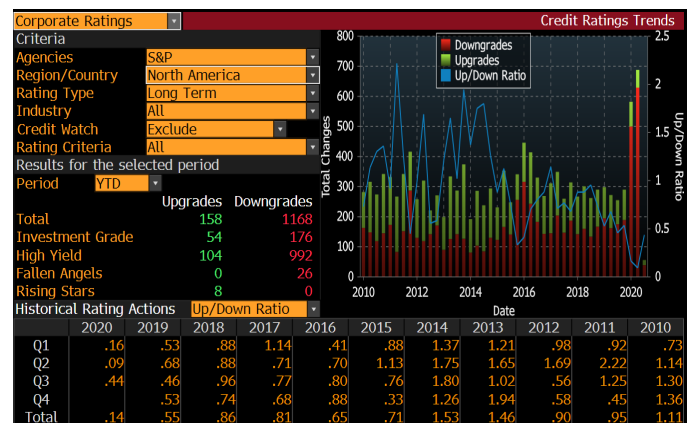


Figure 20, North American Credit Rating Trends 2010-20;

Source: Bloomberg, S&P

The Covid-19 crisis, however, acted as a catalyst for agencies to accelerate this trend and push many companies' credit ratings even lower. The rating agencies took the view that weakened corporate balance sheets now offered insufficient protection for the forecast sharp falls in sales, profits and cashflows which in turn meant worsening debt service ratios even as interest rates fell.

We conclude this section charting a course for corporates with our three scenarios (see Macroeconomic Scenarios) in Table 7 below.

Corporates: 3 Scenarios Summary Table

Aspect	U Shaped Scenario: Lower for longer	L Shaped Scenario: More Negative Rates	V Shaped Scenario: Positive Inflationary
Leverage	Focus on absolute debt reduction rather than expansion. Limited share buy-backs.	Equity raises where possible to avoid multi-notch downgrades. Few share buy-backs.	Discretionary cash-flow goes to capex rather than dividends or debt reduction. Selective share buy-backs.
Default Rates (estimates global average sub-IG)	Modest pick-up compared to long term average to c.4%	Strong rise to 8-12%; highest in US. Further direct government subsidy is a potential mitigant.	Stable at 3%
M&A Activity	Modest pick-up in activity 2021-22 facilitated by accommodative debt-markets.	Limited and opportunistic activity, driven by financially strongest companies and PE/vulture funds.	Strengthening activity, especially in cyclical sectors looking to re-bound strongly from CV-19 shut-down
Share Buy Backs/ Distributions	Pick-up in distributions as moderate recovery will support cash flow generation.	Limited discretionary distributions. Priority to financial flexibility.	Flexibility supported by improving market conditions and extended maturities. High levels of discretionary distributions.
Capital Strategy	Reduced investment levels with possible exception of infrastructure such as renewable energy and fibre; cancelled/ cut dividends.	Deep cuts to investment in most sectors; deeper cuts to dividends.	Ramp up in capex and infrastructure investment while dividends re-bound to pre-CV-19 levels in most cases within 2 years.

Table 7: Summary of the key differentiators between CFA UK's U, L, V Scenarios for Corporates

Defined Benefit Pension Schemes

We consider the impact of negative rates on Defined Benefit Pension Schemes ("schemes") and the distortions that negative rates are having on scheme liabilities and the asset markets they invest in. At the end of the section in Table 8 we also summarise the impact of each of our three macro-economic scenarios on scheme funding positions.

The Impact of Negative Rates

Globally, schemes have been struggling to adapt to a low interest rate environment since the GFC. Now they increasingly face the ultra-low and negative yield scenario.

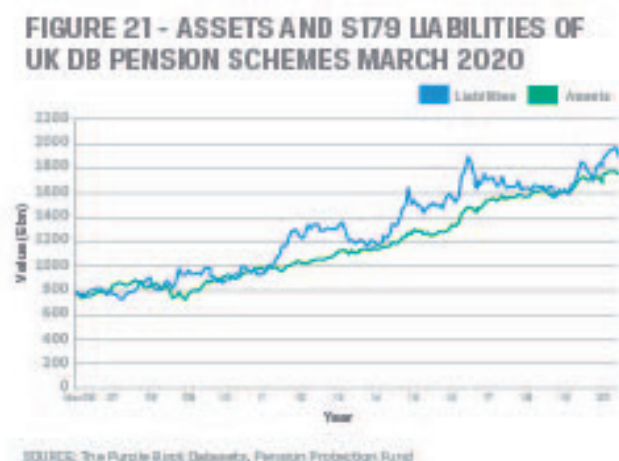
Box 3: How a DB scheme's funding level is quantified

A scheme's funding level is the present value of its assets minus the present value of its liabilities, so:

$$\text{Funding Level} = \text{Assets} - \text{Liabilities}$$

If this is positive, then the scheme has a surplus and is sufficiently funded; if negative, then the scheme is in deficit.

Asset and liability valuations are both sensitive to movements in financial markets. As an illustration, Figure 18 charts the aggregate assets and of liabilities of UK pension schemes since 2006.



The process of valuing schemes' liabilities can be broken down into two phases:

- Phase I: Cash flow projection – where liability cash flows are projected into the future with valuations driven by inflation expectations⁴³ and mortality assumptions.
- Phase II: Discounting – where the above projected liability cash flows are then discounted back to a 'present value' (PV) using an appropriate discount rate.

In this period, we can see that the value of liabilities has been more volatile than the value of assets and so recently funding level volatility has been primarily driven by the volatility in the valuation of liabilities rather than asset value volatility.

In the UK the discount rate used to value pension liabilities is linked to UK government bond yields⁴⁴ so the current low interest rate environment has made it harder for under-funded schemes to meet their pension obligations because of the significant increase in the PV of liabilities. The Pension Regulator (TPR) estimates the aggregate deficit of UK DB scheme liabilities now stands at £200bn⁴⁵; meanwhile the Equable Institute estimates the unfunded liabilities of the US state pension schemes will have risen to US\$1.62trn⁴⁶ from US\$1.16trn in 2009 and just US\$100bn in 2001.

While schemes are acutely aware of the significant asset and interest rate risks they are exposed to and diversification of assets has been a focus, hedging against further falls in interest rates has not always attracted the same level of enthusiasm. Whether to hedge interest rate risk is still an on-going debate with little consensus on whether interest rate risk is a rewarded or unrewarded risk. Many schemes have been holding off implementing this kind of protection fully until rates had risen, in order not to 'lock in' at low rates.

Distortions

Negative interest rates in themselves are not the only pain point for schemes:

- There is the effect of uncertainty around future interest rates (i.e. interest rate risk) that presents a further challenge, particularly when there had, until recently, been an expectation that rates cannot fall below zero. This uncertainty is significant for schemes because medium- and long-term expectations for interest rates are key factors in determining an appropriate funding strategy, deficit recovery plan and investment strategy and, for schemes in deficit, there is the potential knock-on impact on the employer's covenant^{47 48}.
- Further, the second-order sensitivity of liabilities to interest rates (i.e. convexity) increases as interest rates fall and the rate of change in duration increases as rates go lower and lower. So, if the liabilities of a scheme remain unhedged, a fall in interest rates results in the funding level deteriorating at a faster rate than it would improve if interest rates were to increase by the same amount.
- Changes in interest rates also directly affect the scheme's assets – investments held by the scheme such as fixed income, real estate and infrastructure. As we have seen in earlier sections of this paper, lower rates have underpinned valuations of both 'risk assets' (such as equities) as well as fixed income, but they mean that replacement investment yields are much lower.

Using the above we can illustrate how changes in asset performance and interest rates affect schemes funding levels – the net present value of assets less liabilities – under the 3 scenarios presented in this paper:

⁴⁴ For example, The Pension Regulator considers the low dependency discount rate to be somewhere in the range of Gilts +0.5% pa to Gilts +0.25% pa. See p57, para 238 of the TPR's consultation document on the Defined Benefit Scheme Funding Code: <https://www.thepensionsregulator.gov.uk/-/media/thepensionsregulator/files/import/pdf/db-funding-code-of-practice-consultation.ashx>

⁴⁵ Reported by the Pension protection Fund ("PPF") at <https://www.ppf.co.uk/ppf-7800-index>

⁴⁶ <https://equable.org/wp-content/uploads/2020/08/State-of-Pensions-Media-One-Pager.pdf>

⁴⁷ See this FT article which recounts the experience at the \$350bn CALPERS pension scheme since the 1990s: <https://www.ft.com/content/80ff5ee1-cc36-4140-9f25-f60b14b3720c>

⁴⁸ <https://www.isio.com/news-opinion/opinion-suspending-deficit-contributions/>

⁴³ if increases in payments are linked to inflation

We conclude this section charting a course for pensions with our three scenarios (see Macroeconomic Scenarios) in Table 8 below.

Pensions: 3 Scenarios Summary Table

U Shaped Scenario: Lower for longer	L Shaped Scenario: More Negative Rates	V Shaped Scenario: Positive Inflationary
Neutral – rates remain low meaning no further changes to valuations of fixed income assets or liabilities. Provided credit defaults are limited and Equities perform reasonably there may be some improvement in funding for those schemes not just invested in government bonds.	Negative – further rate falls lead to another increase in the measurement of liabilities. Schemes that are matched may see commensurate gains in their fixed income holdings but those with risk asset holdings (without derivative overlays) will suffer the double-whammy of a hit to asset valuations.	Supportive - positive developments with both upward asset valuations and reducing liabilities due to rising rates.
(no change)ΔFunding Level =(no change)ΔAssets -(no change)ΔLiabilities	(▼) ΔFunding Level= (▼) ΔAssets (▲) -ΔLiabilities	(▲) ΔFunding Level= (▲) ΔAssets (▼) -ΔLiabilities

Table 8: Summary of the key differentiators between CFA UK's U, L, V Scenarios for DB Pension Schemes

The Future

There are typically three strategies for trustees and their sponsor to adopt to improve scheme funding levels:

1. Remain unhedged, and hope for a rise in interest rates to reduce the valuation of liabilities
2. Increase sponsor "deficit" contributions
3. Target higher asset returns

A possible solution exists with the combination of interest rate hedging and investments in income-generating assets producing higher returns and cashflows which contractually match the payment profile of a scheme's liabilities. While each scheme's circumstances are different, there is growing support for combining both a Liability Driven Investment (LDI) approach with a Cashflow-Driven Investment (CDI) approach. This is argued to improve portfolio efficiency by both (i) hedging interest rate risk and (ii) maintaining a target return to continually improve the funding level by (iii) assuming credit and/or illiquidity risk.

The most desirable, but highest risk option is the first; given the increased sensitivity to further interest rate falls, it could be prudent for schemes to be hedged against further falls in interest rates. However, the ongoing hedging debate and hope for higher interest rates will often prevent schemes from implementing a liability hedge if they have not already done so.

The second option, sponsor deficit contributions, may not be viable as it depends on the financial strength of the sponsor and the extent of other strategic capital commitments in the sponsor's business⁴⁹.

The third option is the most popular but, as explained throughout this paper, increasingly looks the least likely: the achievement of higher returns from assets. Today, this is taking the form of encouragement of a push into private assets - both debt and equity. By their nature, schemes have less need for liquidity than many other investor types and so can seek to commit a portion of their capital into illiquid assets for incremental returns.

⁴⁹ Research by Isio's Pension Practice suggests that up to 20% of sponsors have already requested a suspension in deficit contributions <https://www.isio.com/news-opinion/opinion-suspending-deficit-contributions/>

Gold

We consider the impact of negative rates on the price of gold and whether this is itself another market distortion. At the end of the section in Table 9 we also summarise the impact of each of our three macro-economic scenarios on investments in gold.

The Impact of Negative Rates

The gold price has surged in 2020 in response to a slump in real interest rates, generous global monetary and fiscal stimulus, a weaker dollar and investor purchases through exchange-traded funds in response to uncertainty about the Covid-19 recession.

Gold continues to play a part of many investment portfolios because it has been an accepted form of money for millenia and has often proven to be a store of value in times of monetary dislocation and a diversifying asset.

In the very long run gold, for investment purposes, is a real cash alternative in the sense that, unlike paper money, the price of gold should, over time, adjust for inflation. For that reason, gold should, all other things equal, be more attractive if interest rates are very low and very attractive if real rates are negative, as they are now, because gold should then be a better store of value than paper cash holdings that are generating negative real returns. Recently this relationship (gold price and negative rates) has been particularly strong⁵⁰ as illustrated in Figure 22 below.



Figure 22: Gold price relative to US 10-year Treasury Yield, 2015-2020, Source: Bloomberg

Yet, as with other assets, the price that investors pay for gold will also matter in the long run, both for the returns to be earned and the scale of any diversification benefits⁵¹. Valuing gold, rather than modelling the factors that drive the short-term gold price, is nebulous. At a simple level, one can look at a chart of the real, inflation-adjusted, gold price, which has risen back towards highs reached during uncertainty peaks such as the second oil shock of 1979-80 and the 2011 Eurozone crisis. This suggests that a lot of good news (for gold, that is!) is already priced in, but no doubt there are scenarios where gold can go considerably higher, perhaps if the US dollar, in which it is priced, weakens markedly and/or inflation spikes higher without an accompanying sharp rise in longer dated interest rates.

While gold is seen as an inflation hedge over the long term, our view is that over the next 18-24 months the trend of real interest rates and the visibility of macro recovery will determine gold's performance.

We conclude this section charting a course for gold with our three scenarios (see Macroeconomic Scenarios) in Table 9 below.

U Shaped Scenario: Lower for longer	L Shaped Scenario: More Negative Rates	V Shaped Scenario: Positive Inflationary
Gold remains well-supported (and perhaps going higher due to weak macro recovery and concerns about the impact of monetary expansion on fiat currency. Possible price weakness in second half of the 2-year scenario.	Gold should do well in this scenario of more negative interest rates and further macro instability, despite that scenario being one that is closer to deflation.	Gold sells off (probably heavily) as interest rates become less negative and reduced uncertainty erodes premia on risk assets, even as inflation expectations edge higher.

Table 9: Summary of the key differentiators between CFA UK's U, L, V Scenarios for the Gold price

⁵⁰ Of course, there is a lot more driving the gold price that just negative rates, but those are our focus here. Supply of the metal also matters and for some other drivers see for example Convexity Gives Gold Buyers One More Reason to Cheer: Macro View, 2020-08-07 06:45:00.0 GMT, by Ven Ram

⁵¹ The volume of supply of physical gold will also matter in the medium to longer term.

Conclusions

It should be clear from the foregoing that negative and ultra-low interest rates by definition imply lower and low investment returns ahead, perhaps sharply lower in real terms if inflation were to pick up significantly (not our core scenario). This is most evident in bond markets, but valuations have also been driven sharply higher in popular parts of the equity market (Technology) and property markets (Logistics) and for gold.

At the same time there are an increasing number of what we term market distortions resulting from NIRP and ultra-low rates. One of the most important is that the classic "risk-free" asset, G7 Government bonds, appear now to offer asymmetric risks as yields approach a lower bound - as suggested by the failure of German and Japanese 10 year yields to make new lows during the severe Covid slump of H1 2020. They appear unlikely to provide the portfolio diversification benefit during "risk-off" episodes that they have in the past.

A key aim of current monetary policies is to stimulate increased risk-appetite amongst businesses, consumers and investors. However, rather than stimulating real business investment, this may be coming at the risk of investors assuming inappropriate risks in the "hunt for yield" and businesses favouring debt over equity in their capital structures (hence the de-equitisation and credit migration of recent years). We have identified numerous distortions that may be sources of risk, including:

- a perception that radical intervention has shifted some corporate credit risk from investors to central banks and governments implying that a perceived Fed Put is in operation for credit as well as equities⁵² and even that governments will directly intervene to keep companies trading;
- an increased appetite for higher forecast return but less liquid, infrequently priced, alternative assets;
- a deterioration in corporate credit profiles in certain sectors as investor demand for higher yields makes additional leverage seem attractive to finance directors and treasurers;
- a bizarre situation in which already low bank net interest margins are undermined by a policy (low base rates) that is intended to promote credit creation;
- pockets of speculative activity in the equity market, notably around SPACs, even at a time when macroeconomic risks are high.

Questions for the Profession

So, what does this mean for our profession? We have at least 6 questions that investment professionals should consider given these implications of negative rates:

1. **Return expectations:** are my client's return expectations reasonable given the low expected future returns offered on many assets?
2. **Contributions:** in light of the above, are my client's current contributions (or savings) sufficient to meet their objectives?
3. **Risk levels:** conversely, are some clients assuming too much risk in order to hunt for yield in a low return world? For example, are risks now higher than they were for traditional portfolios with high government bond weightings?
4. **Risk Management:** when considering risk, what are the limitations of my risk model(s) in relation to the assets in which the portfolio is invested? Do they, for example, rely completely on historic correlation, volatility and drawdown data which may not hold in the future? How have I addressed those limitations, even if only qualitatively?
5. **Portfolio (il)liquidity:** how long would it take to liquidate the client's entire portfolio? How much would it cost to do so? How do those figures compare with the past and is the level of exposure to illiquid assets still appropriate for the client's needs?
6. **Conduct:** as the hunt for yield continues, are my client advice and investment decisions accounting equally as much for the risk characteristics of a product/asset as its return potential? Are my fees likely to look reasonable in a lower return world?

⁵² The Fed Put refers to the idea that monetary policy will be eased if there are sharp falls in equities prices hence leading to a perception that equity losses may be limited.

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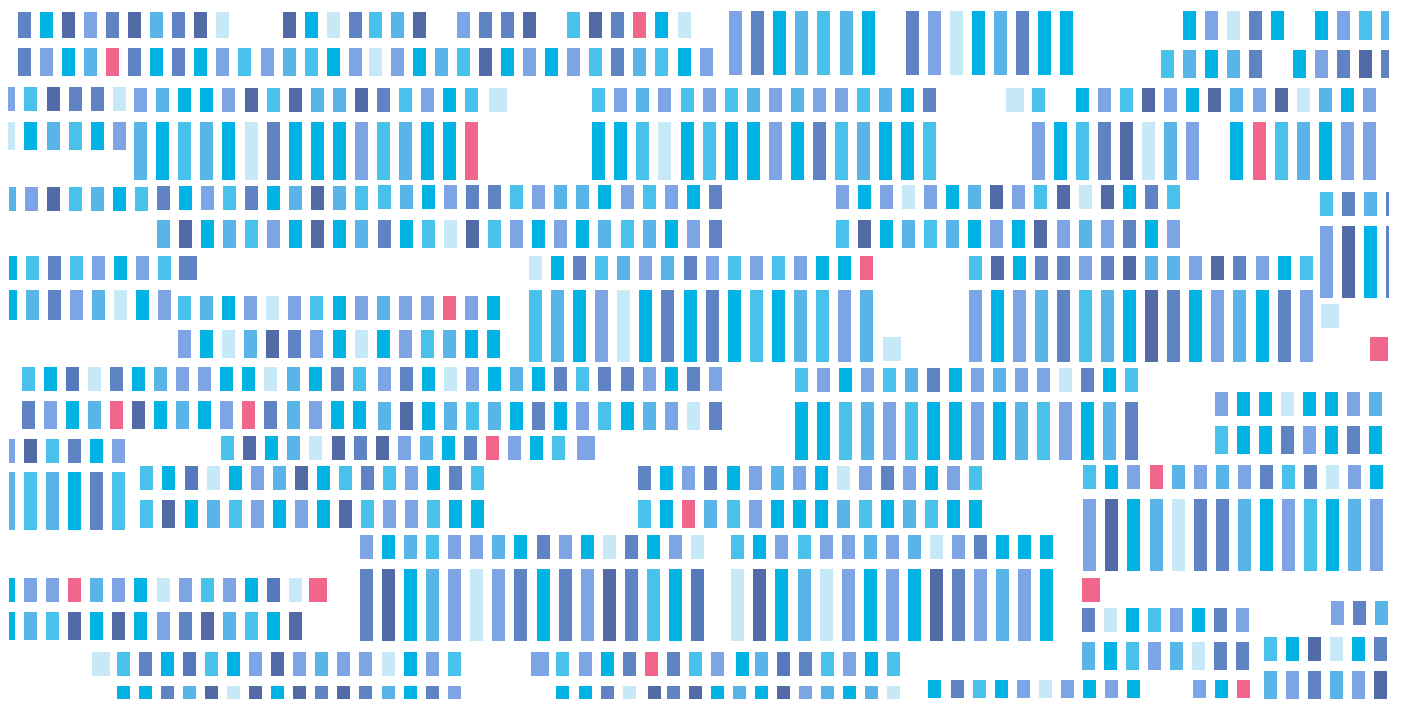
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