

A close-up photograph of an owl's face peering out from a tree hollow. The owl has yellow eyes and is looking directly at the camera. The background is the rough, textured bark of the tree.

EXPECTED RETURNS

2019
2023

**PATIENCE
IS A
VIRTUE**

5-year outlook

ROBECO
The Investment Engineers

EXPECTED
RETURNS
5

**PATIENCE IS A
VIRTUE**

2019-2023 outlook

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Foreword

Robeco has been publishing its Expected Returns since 2011. Over the years, our readers have continued to confirm that the underlying research has helped them make investment decisions. As a result, we have decided to maintain the same approach and deliver what you find most valuable.

Expected returns are a vital element of investors' strategic decision making. More specifically, asset liability management and strategic asset allocation require assumptions about expected returns and investment portfolio risks. The view we take in this report is based on a five-year outlook and the predictions we present can be used as input for the investment plans of our institutional and professional readership. Our estimates cover all the major asset classes over a five-year period from 2019 to 2023, and our point estimates are based on long-term, steady-state projections and deviations from this steady state based on the current macroeconomic environment and asset class valuations.

We substantiate our considerations and choices in detail, but also make a conscious effort to keep the discussion concise. Therefore, we only discuss the results required for our five-year return projections. The recurring theme in this report is 'Patience is a virtue', which is reflected not only in our market analysis but also in our special topics. This year's special topics address challenging questions for investors, such as whether corporate bonds should be included in a strategic portfolio. This topic gained in popularity following the publication of a report by the asset manager of Norway's sovereign wealth fund. Another topic addresses whether it is wise to diversify away from US equities, given the increasing divergence in risk compensation between the US and other markets. Should investors reallocate some of their US exposure or just remain patient?

The opinions in this report are those of Robeco Investment Solutions and need not necessarily be shared by other departments or subsidiaries of Robeco Group. We have included many references to academic and other articles for readers wishing to delve deeper into the topics presented.

We hope you enjoy reading this publication and find it helpful in navigating the investment landscape in the coming period.



Bart Oldenkamp
Head of Investment Solutions

For an assessment of the long-term expected returns, please visit www.robeco.com/expectedreturns.

1

Executive summary

Patience is a virtue

'Coming of age' – the title of last year's Expected Returns – reflected our view that what was then an almost record-long period of economic expansion still had some way to go. One year later, many indicators are virtually unchanged and the global economic cycle is enjoying a prolonged mature phase, as evidenced by the recent cyclical upswing. But as central banks continue their shift away from quantitative easing to tighter monetary policy, this expansion will slow.

With valuations for every major asset class looking stretched, a transition to the next phase could easily send markets into a tailspin. A recession at some point seems inevitable. So, what should investors do? Opting for a more defensive portfolio is often the default solution, but in the current economic climate there are risks associated with doing too much, too soon. The advantages of adopting a more patient approach therefore seems a fitting theme for this five-year outlook. ‘Patience is a virtue’ is thus our theme this year and underscores our view that there are still opportunities to harvest risk premiums in the major asset classes.

Despite having left the ‘sweet spot’ it was in at the start of the year, the global economy is still in relatively good shape. And although we may well have passed the peak of the expansion phase in some major economies, growth worldwide is expected to remain solid, albeit unexceptional.

Figure 1.1: GDP growth rates in emerging, world and advanced economies



Source: IMF, World Economic Outlook, April 2018

The upswing in the US is the second-largest since WWII – and still going strong. The only longer expansion phase was the one that followed the now almost forgotten and rather mild recession of 1990-1991. And yet there is still no recession in sight. This may be partly due to the gradual nature of the upswing – we have yet to see many of the excesses that often presage the onset of economic contraction – and the very gradual normalization of monetary policy. The Fed's transition to a more neutral stance has not been ferocious enough to bring the current expansion to a halt. Fiscal stimulus will also continue.

Another crucial factor is the behavior of the Chinese economy. In recent years, unsustainable levels of debt have fueled the country's growth. China's policymakers are well aware of this, but have demonstrated an unwillingness to take action that could curb growth significantly. However, thanks in part to its well-run central bank and the firm grip it has on its capital account, we believe that China will be able to maintain a relatively brisk economic growth rate without sparking a financial crisis, although the debt ratio will continue to rise.

According to our analysis, the Eurozone will continue to grow, benefitting from the fiscal stimulus in the US and ongoing expansion in China. A head-on collision between the larger member states over Eurozone commitments will be avoided. The most realistic forecast under these circumstances, as set out by the IMF in its latest annual outlook, is that the global economy will continue to expand at a moderate pace. Emerging economies will continue to outperform developed economies on average, but structural factors – in particular those of a demographic nature – will eventually set the latter on a lower growth path. So far, so dull. Hence, our motto for the world as a whole is 'Steady as she goes'.

For investors, this may all sound a bit too good to be true. But, of course, an institution like the IMF won't forecast a recession, even if the length of the current upswing is slowly starting to stretch credibility. On a five-year horizon, we are likely to experience a US recession at some point – if only on the basis of Minsky's maxim that stability breeds instability. It is difficult to predict when this will happen, but it could take place after the presidential elections in November 2020. The US authorities will probably let the economy grow above its potential in the run up to the elections, by implementing a procyclical policy mix that will ultimately prove unsustainable due to rising inflationary pressures and public debt levels. Trade tensions are likely to be kept in check as a serious escalation would be counterproductive and self-harm is not generally considered to be a viable political strategy.

It is clear that the investment environment could change dramatically in the next five years and that current conditions are already quite challenging, with compressed spreads, widespread overvaluation in the major asset classes and low volatility. For long-term investors, of course, it makes sense to start anticipating these changes, but they should not forget that patience is a virtue in the world of investing too.

General outlook for returns

It is difficult for investors to escape the late-cycle narrative and probably no surprise that all our projected average returns for the major asset classes are below the long-term averages again this year.

Table 1.1: Expected annual returns 2019-2023

Developed market equities	4.00%
Emerging market equities	4.50%
German government bonds	-1.25%
Developed global government bonds	-0.25%
Emerging government debt (local)	3.75%
Investment grade credits	1.00%
High yield	1.50%
Listed real estate	3.25%
Commodities	4.00%
Cash	0.50%

Returns are denominated in euros. Bond and cash returns are euro hedged, except for local currency emerging market debt. The value of your investments may fluctuate and past performance is no guarantee of future results.
Source: Robeco

The long-lasting, gradual post-Lehman macroeconomic upswing has led to tight labor markets in the major developed economies, particularly in Japan. Despite this, wage growth has been tepid so far. Some inflationary pressure can however be expected in the coming years, followed by a renewed slowdown once the US drifts into a long-awaited mild recession and the Eurozone and Japan experience a downturn. On a five-year horizon, we have therefore revised our average inflation forecast upwards slightly. Still, we remain convincingly below the long-term average. For government bonds, the outlook for the next five years remains negative on balance. German Bunds are significantly overvalued and the macroeconomic climate for sovereign debt will deteriorate first.

Valuation is also a negative factor for developed market equities, but they will benefit from the continued economic upswing initially. Emerging equities are generally quite cheap, but we have lowered our return outlook due to the unfavorable interest rate climate in the US, weakening fundamentals in some countries and lingering protectionism. Two bright spots in terms of relative valuation are emerging market debt and commodities. Nevertheless, we have lowered our average return expectations from last year's levels for the emerging asset classes. We have upgraded our expectations for investment grade and especially high yield bonds. These upgrades are the result of a better outlook for global and, in particular, US government bonds.

Special topics

'Patience is a virtue' is also the recurring theme for our five specials that are part of this five-year outlook.

1. Time to go on the defensive?

In last year's five-year outlook, we shared our concerns about US equity market valuations. But, as we all know, valuations are useless as a timing tool and this year has been no exception: the market has set new highs and valuations have risen to new levels. When in 2017 the famous Shiller P/E ratio reached 1929 levels, Nobel laureate Robert Shiller himself shared not only concerns about the valuations, but also made the judicious observation that markets could remain bullish for years to come. Patience is a virtue. Although the probability of negative returns is high, we think there is an even greater probability that returns will remain in positive territory on a five-year horizon. However, our analysis confirms Shiller's concerns: high CAPE levels are followed by periods of higher downside risk. Fortunately, there are rich pickings to be had for investors that share our view – pickings that go far beyond the brief analysis we present in this special topic. While history will not repeat itself, it will most certainly rhyme. A focus on downside risk for the coming five years is, in our opinion, particularly well advised.

2. Juggling with debt

In *The Wealth of Nations*, Adam Smith described what he referred to as the 'juggling trick': the use by heavily indebted sovereigns of 'pretended payments' to escape – at least for the time being – their debt burden. By pretended payments, he meant the further borrowing or printing of money, ultimately leading to the monetization of debt. Today, Adam Smith would probably add quantitative easing to his definition of pretended payments. A particularly poignant example of this juggling trick is the policy chosen by Japan. The Bank of Japan (BoJ) was the first central bank to undertake quantitative easing, pushing interest rates into negative territory. Recently it introduced an even more aggressive tool, yield curve control. The BoJ has capped its 10-year interest rate at 0% and, in effect, is setting the stage for monetization, as its balance sheet can theoretically be blown up to infinity, government debt is almost completely domestically owned, and regulation may force domestic financial institutions to maintain significant holdings of government debt. As a market participant, it would be unwise to lean into the wind when it comes to the central bank, at least in the medium term. Patience is a virtue. Adam Smith's juggling trick will remain in vogue for a while yet.

3. Oil will have to be written off at some point. But not yet!

Stranded assets are currently a big concern in the energy sector. The prospect of oil and gas reserves remaining unused due to the ongoing energy transition poses a tough question for investors: should they sell all their carbon-intense holdings or would that be premature? As the transition to a low-carbon economy will be gradual, global demand for oil will remain strong on a five- to ten-year horizon, partly because of the ongoing rise of emerging economies. Furthermore, the valuation of oil majors is based on proven reserves which will be converted into actual production. In our opinion there is, as yet, no carbon bubble to speak of. So far, the changes brought about by the transition to a low-carbon economy have had little impact on the oil price. As the energy sector currently accounts for more than 6% of the MSCI World Index, it is too large to be ignored by investors who want broad market exposure. Disregarding the sector at this point in time would also be inadvisable in view of the interesting opportunities it offers active investors to add value.

4. Should we exclude corporate bonds from strategic asset allocation?

What should and should not be included in strategic asset allocation is a hotly debated topic among actuaries and asset allocators. Recently, the asset manager of the Norwegian sovereign wealth fund published a report recommending that corporate bonds be excluded from the fund's strategic asset allocation. Their main argument was that the returns on corporate bonds are merely a combination of the returns on government bonds and equities, making the entire corporate bond asset class redundant. However, we believe there are three reasons why corporate bonds should be included in strategic asset allocation: the replication argument is not conclusive, excluding them reduces diversification benefits, and allocating to corporate bonds makes it possible to harvest factor premiums that are unrelated to premiums in equities.

5. Diversifying away from US equities could be rewarded

One of the tools investors can use to tackle the issue of relative bond-equity attractiveness is the equity risk premium. Our analysis suggests that in the next five years US excess equity returns will flatten out or could even become negative compared to those in other markets. US Treasuries will therefore return to favor and investors may be rewarded for moving out of US equities and into other regions. Investment horizons and investors' ability and willingness to diversify away from the US will remain critical factors. Whatever happens in the end, in a world where the US still seems the powerhouse to beat, investors should be aware that there are risks associated with diversifying away from US equities too soon. Patience is a virtue.

2

Expected
returns
2019-2023

Valuation

“Faced with the choice between changing one’s mind and proving that there is no need to do so, almost everyone gets busy on the proof.”

This famous quote from John Galbraith is very pertinent to the current situation. The valuation levels of key markets remain stretched. In the next several sections, we will take a close look at valuation as a factor that determines expected returns over the medium term. We will demonstrate why we think that valuations in most asset classes are stretched. We believe our evidence is strong. However, markets have been very reluctant to follow the guidelines implied by valuation. Is it time to change our minds and look for other evidence?

We tried. We opened our mind to ideas as to why our models, ideas and historical lessons learned might not be a good guideline for predicting future returns (see box on page 16). Our valuation analysis therefore starts with an assessment in order to understand why valuations are where they are today. And we will show that it's not difficult to gather enough evidence to argue how valuations got where they are today. Does this mean we need to change our valuation toolkit, or can we stick to the existing one? We believe that our toolkit is still appropriate for a five-year investment horizon. However, with the words of John Galbraith echoing in our ears, it will be important to keep an eye on the evidence pointing the other way.

Our valuation assessment is summarized in the table below.

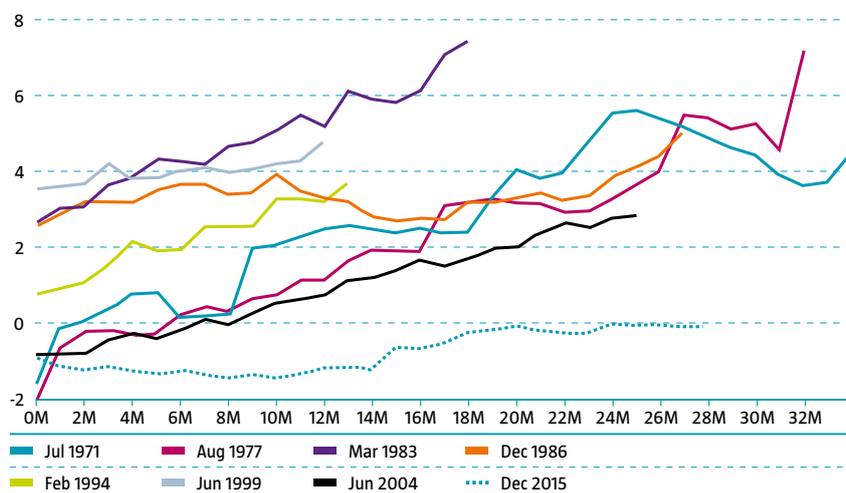
Table 2.1: Medium-term valuations

	Valuation
Bonds	
German government bonds	-/-
Developed global government bonds	-/-
Emerging government debt (local)	+/+
Investment grade credits	=
High yield bonds	-/-
Equity-like	
Developed market equities	-/-
Emerging market equities	+/+
Listed real estate	=

Source: Robeco. The medium-term influences correspond with our qualitative assessment of the valuation influences. Medium-term influences on equity-like are relative to developed equities. For credits we assess the excess return over government bonds.

Looking at today’s asset pricing, we are in exceptional territory. Never before in postwar US history have real short-term rates remained this low for this long in an expansion phase.

Figure 2.1: US real Fed funds rates over different Fed tightening cycles



Source: Thomson Reuters Datastream, Robeco

The value of valuation

What drives the cross section of expected returns for traditional asset classes? As Asness (2013) has demonstrated, when explaining the cross section of multi-asset returns, the value factor pops up everywhere. In previous editions of our Expected Returns series, we have continued to pay considerable attention to valuation as a factor that drives expected returns. As the fathers of value investing, Graham and Dodd already noted in 1934 that one must never take the perceived value of standard valuation metrics for granted. In their time, they worried about accounting distortions in earnings numbers.

Nowadays, the pitfalls around valuation have only increased. The prevailing wisdom in the financial community is that predictability increases with an increasing horizon, though some (i.e. Boudoukh 2008) have cast doubt on this as predictive statistics may become more inflated as the horizon lengthens. Thus, using valuation ratios to predict returns over the long term may be less effective than long-horizon return regressions suggest. This is also noted by Dimson, Marsh and Staunton (2014), who warn that we learn “far less from valuation ratios about how to make profits in the future than about how we might have profited in the past”. And the ongoing, sometimes heated debate between respected industry practitioners (see Asness 2017) as to whether valuation works for factor timing in equity markets, has only led to consensus about the direction of expected returns given a particular valuation level, not when or the degree to which a valuation signal will pay off.

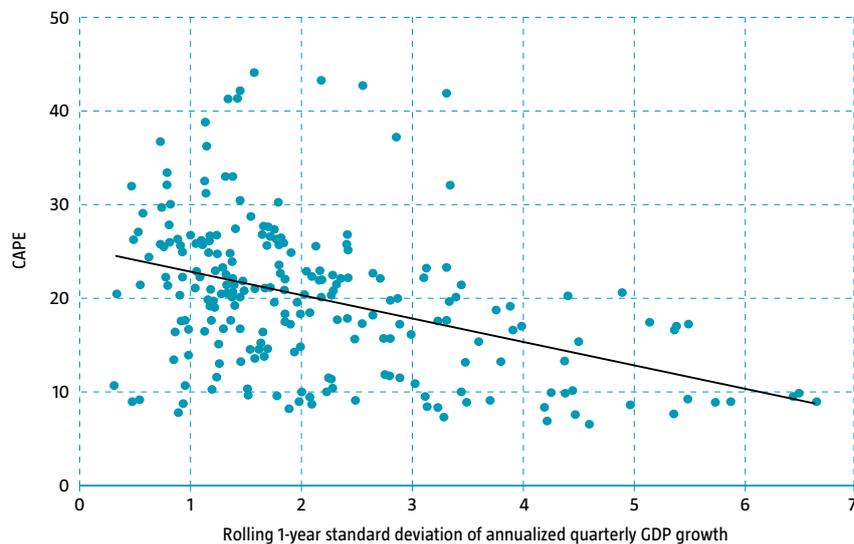
Moreover, when it comes to return predictability, the quality of the

valuation signal also matters. Recently Kok, Ribando and Sloan (2017) showed that a simple formulaic approach to value-based investing using standard metrics is flawed, as stocks with high book-to-market ratios are often not cheap, but just have temporarily inflated book values. Evidencing micro efficiency, cheap stocks are often cheap for a reason, as stock analysts correctly anticipate a decline in book value. Mean reversion to the individual stock steady-state valuation level thus often simply implies a decline in book value instead of a rise in prices for these stocks. The value of the standard book-to-market value for return predictability is restored once one adjusts the valuation ratio for the expected consensus decline in book value.

However, at the macro level, the efficiency of markets is not all that obvious, which suggests a role for valuation in expected return estimations. Samuelson’s famous dictum that stock markets are micro-efficient but macro-inefficient still applies and the current global market valuations based on improper discount rates might not reflect intrinsic value. Recent empirical research on mutual funds shows that most investors use the CAPM model to price risk and obtain discount rates to value future cash flows (Berk and Van Binsbergen, 2017). But in the end, CAPM, which assumes that the market is efficient, does not fully explain expected returns. Note that valuation is about cash flow projections as well; discount rates are just one side of the story. In short, the case for applying a sophisticated valuation framework remains solid, though the predictive value of valuation metrics must never be taken for granted.

No wonder many pundits, including the oracle from Omaha, have said that valuations make perfect sense; it is still valid to discount cash flow expectations using a low discount rate, resulting in inflated asset prices. However, discount rates alone may not be enough to justify high valuations; one also needs strong cash flow expectations. But critics have been silenced. A synchronized global cyclical upswing left little reason to doubt the optimistic consensus readings concerning cash flows. Strong economic data also led to a decline in macroeconomic volatility, prolonging a sense of visibility amongst investors of the market drivers. In such an environment, it is not surprising that asset price volatility and the demand for risk compensation has remained low. A very low annual volatility in US GDP is not inconsistent with above average US stock market valuations. Historically, the correlation between GDP volatility and valuation is strongly negative; low macro volatility tends to coincide with higher valuations.

Figure 2.2: Stable growth helps explain high market valuations



Source: Thomson Reuters Datastream, Robeco

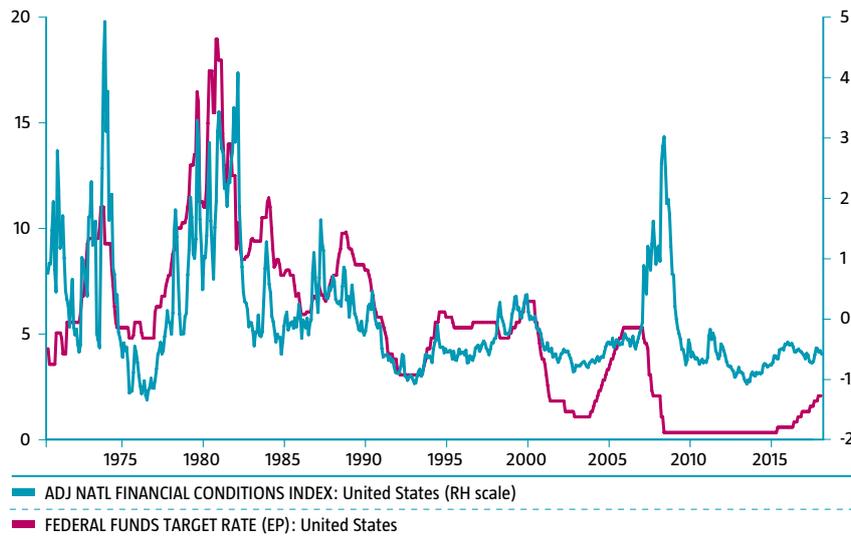
From that perspective, risky assets look expensive for a reason, as solid earnings growth and persistent low discount rates validate ex ante multiple expansion¹ and the spread compression seen in credit markets earlier. We believe that the key question for investors concerning valuation is not *whether* but *when* this comfortable but peculiar mix of high earnings and low discount rates will dissolve. Central bank asset buying seems to extend the current valuation regime, as global equity multiples and credit returns are still responsive to central bank balance sheets and forward guidance. This responsiveness can be inferred from the positive sensitivity of the global price/earnings ratios to changes in G3 central bank balance sheets. Excess liquidity brought into the banking system after the Lehman collapse will be with us for some time to come which could further sustain stretched valuations as price momentum is positively correlated with liquidity shocks. This remains a momentum-driven bull market. Ultimately, we believe this situation is unsustainable and market dynamics will create a new equilibrium.

There are several pathways which could dent valuations. Either central banks will start to take the punch bowl away, pushing up discount rates, or resilient earnings growth will outpace price appreciation or a combination of both will occur, as seen in previous expansion phases. In an age of unusually low interest rates, high valuations could very well persist for longer

1. Higher price-earnings ratio – the market is willing to pay a higher price for the same earnings.

than contrarians would like. As long as market fundamentals don't fall off the cliff and financial conditions only respond to measured central bank tightening with a lag, they could do just that. Another unusual aspect that keeps valuations elevated is that financial conditions have not shown much responsiveness to the Fed policy rate tightening yet, in contrast to previous cycles.

Figure 2.3: Central bank tightening is usually followed by deteriorating financial conditions



Source: Thomson Reuters Datastream, Robeco

A path of gradual decelerating economic expansion and a flattening yield curve is keeping enough worries alive to prevent a violent melt-up phase that would forebode a steep bear market, but at the same time prevents compression of excessive asset valuations. In this scenario, patience on the part of the bearish investors will be rewarded only after an explicit deterioration in financial and economic conditions as the expansion phase ends. Patience on the part of the bears is needed, but prudence on the part of the bulls is even more essential. Last year, we warned that a bull market often invents a narrative to validate stretched fundamentals. Perhaps we even formulated one ourselves above. The bottom line, however, is that we believe that the persistence of exceptional valuation levels tends to be overestimated. As already implied by the quote of Galbraith in the opening, the market is vulnerable to a confirmation bias. Stretched valuations are the observable state of affairs and, therefore, the world which is validated. In this valuation section, we extend our horizon from today's state of affairs and look at whether valuations can still be validated. We believe this is not the case for some key asset classes.

2.1 Cash

Cash is the central building block of our asset valuation framework, as it is the benchmark you hope to beat by adding risk to an investment portfolio. It is thus the ultimate reference point for any investment process. At the same time, cash is somewhat elusive when it comes to valuation, as it is, by definition, a component that is not determined by the market, but depends crucially on the policy pursued by central banks. This raises the interesting question of whether central banks are in the business of assigning a neutral valuation to the cash rate, or whether they at times have other motives.² It is interesting to note that central banks consider it their responsibility to move the policy rate towards a certain neutral rate. At the same time, they leave us in the dark as to what proper neutral cash valuation entails, with ECB's Constancio (2017) defining it mainly in terms of what it is not:

"The disconnect between low rates of government bonds and the real rates of return of capital invested by non-financial firms, indicates that any concept of natural rate of interest cannot simply be a result of the marginal productivity of real capital as Wicksell and other neo-classical economists believed."

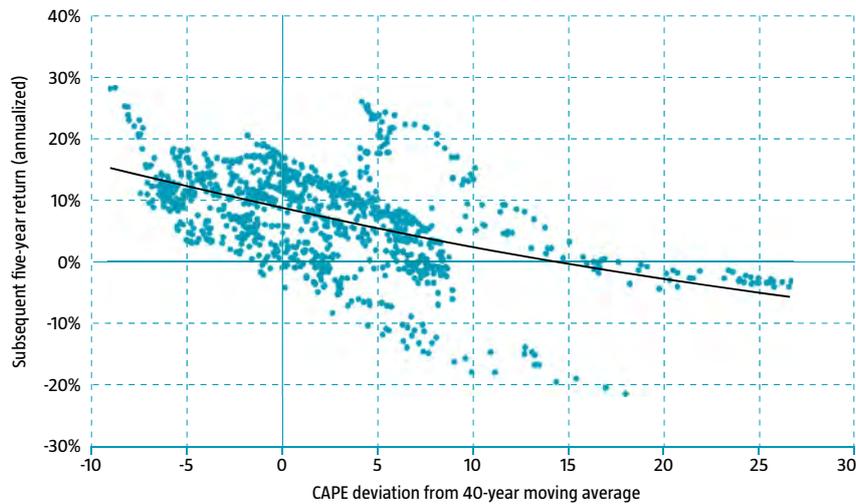
With nominal interest rates currently below zero, the question concerning the level of the neutral real rate has become even more relevant. With pundits arguing that the neutral rate of interest is structurally lower now, it is fair to note that the neutral rate of interest as such is unobservable (Friedman, 1968). This should lower one's confidence in claims based on cumbersome modelling efforts as to whether the level of the ex ante neutral rate has really changed for good.

Based on a tool like the Taylor rule, which captures the reaction function of central banks, it is clear that the European central bank in particular would like to keep policy interest rates low for longer. The other approach would be to look at the growth of the nominal economy, apply a liquidity discount and take that as the neutral valuation level. On the basis of this metric, rates are too low, especially in Europe. As interesting as this discussion is, judging whether rates are too low or too high from a longer-term perspective does not have much impact on how we expect interest rates to develop over the next five years. As there is no market force that determines rates, it is up to central banks to decide which path we take. As such, we prefer to refrain from making a qualitative call and instead will assess the direction of rates based on the macro tilt of the three scenarios.

2.2 Global equities

We revisit the famous Shiller CAPE (cyclically adjusted price-earnings ratio) to find out what it can tell us about the valuation of the US stock market. With a market cap of 60%, the US market dominates the developed market index. We will keep our discussion concise as the CAPE is also discussed extensively in our special topic 'Time to get defensive'. As noted there, we prefer to measure the CAPE versus its 40-year moving average. Currently at 32.1, the CAPE shows that the US market is overvalued as its 40-year average is 21.4. If the historical figure is any indication of the future valuation level that US equities eventually will drift towards, one can expect a 2% annualized return over the next five years for the US stock market. This would be well below our steady-state equity return of 7%. However, the total variance explained of subsequent returns in the regression used to derive this number is only 25%. Hence, a lot of the subsequent market return is not captured by the CAPE signal. This is shown in Figure 2.4. The return varies between -18% and 15% for a CAPE deviation of 10 points from the 40-year mean.

2. Contingency planning for instance could be a motive, see a speech by Constancio given on 25 May 2017 in which he argues that a standard, mechanical policy rule is not able to capture all the risks a central bank has to cope with.

Figure 2.4: Deviation of Shiller CAPE from its 40-year mean and subsequent five-year returns

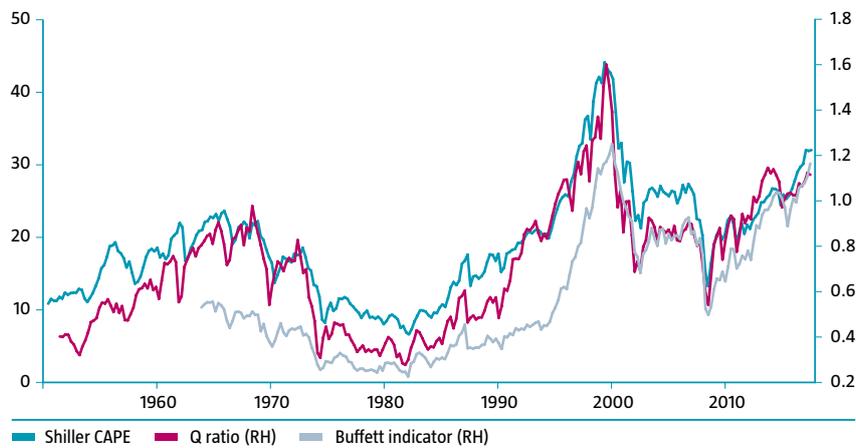
Source: Shiller, Robeco

The current level of the CAPE demonstrates that investors are willing to pay a premium for the ten-year real average earnings. As the CAPE generally mean reverts through lower equity prices, a high CAPE in principle points to a valuation risk for investors. However, a relatively high CAPE is not necessarily a reason to be pessimistic about expected returns. For example, the average real earnings could rise, justifying the premium paid by investors, leading to a lower CAPE. This explains why even at high deviations from the 40-year average CAPE level as observed today, investors still have historically earned decent double-digit returns in the subsequent five years. However, as shown in Figure 2.4, there is a feeling of ambivalence as these levels can herald a bear market, as well. Recent strong earnings growth may slump, leaving investors less inclined to pay a high multiple, leading to a fall in prices.

Unfortunately, cross-checking with other valuation indicators only confirms the signal sent by the US CAPE³. Both Tobin's Q (the market value divided by the replacement value of US firms) and the market capitalization of S&P 500-listed companies compared to the nominal US GDP point to an expensive equity market. Tobin's Q now stands at 1.11, implying that the market value exceeds the underlying asset base by 11%. The so-called Buffett indicator (1.168) tells us the S&P 500 companies are now 16.8% more expensive than the nominal added value of the entire US economy as of the first quarter of 2018. Both figures point to an expensive US market, confirming the CAPE's message. Note that higher CAPE levels have only been previously observed in the 1999-2000 period (and September 1929) and serve as a clear signal not to be too complacent about US equities.

3. For a discussion of these indicators, please refer to last year's Expected Returns publication: *Coming of age*.

Figure 2.5: Three valuation measures for US stock market – Tobin’s Q, Buffett indicator & Shiller CAPE

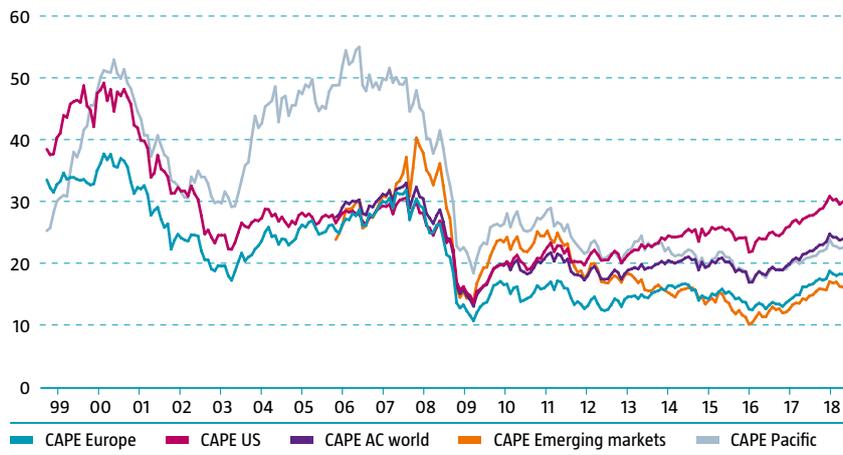


Source: Thomson Reuters Datastream, Robeco

Of the key developed markets, the US is the furthest on in the economic cycle. Valuations should reflect this: one can expect the US market to be the most expensive. Our estimates for regional CAPE levels based on the Shiller methodology confirm this. Although global stocks have overall been more expensive than last year, not all regions show the same stretched valuations compared to their own historical figures. With the global CAPE at 23.8, our simple regression model (analogous to the one introduced earlier) suggests that returns on global equities will be below the historical average for the next five years. Independent observations for this global market valuation model are limited and do not allow for firm conclusions. The current regional differences in valuation have been quite persistent, since the expansion began in 2009. This is interesting as limits to arbitrage, a lack of international diversification (home bias) or unchanged relative views of global equity investors could play a role in this. As discussed in our special about equity risk premiums, we could be at a turning point for regional equity allocation. Relative valuations could be on the move in the next few years now that compensation for taking risk in the leading US equity markets has deteriorated further.

Last year, we noted that given the decline in GDP growth in China relative to the developed markets, we expected the valuation discount of emerging markets to widen again. This has indeed started happening. The CAPE of EM versus global CAPE now shows a discount of 35% up from 31% in September 2017. At the margin, this has created some upside return potential in emerging markets compared to last year.

Figure 2.6: Regional valuation differences have persisted



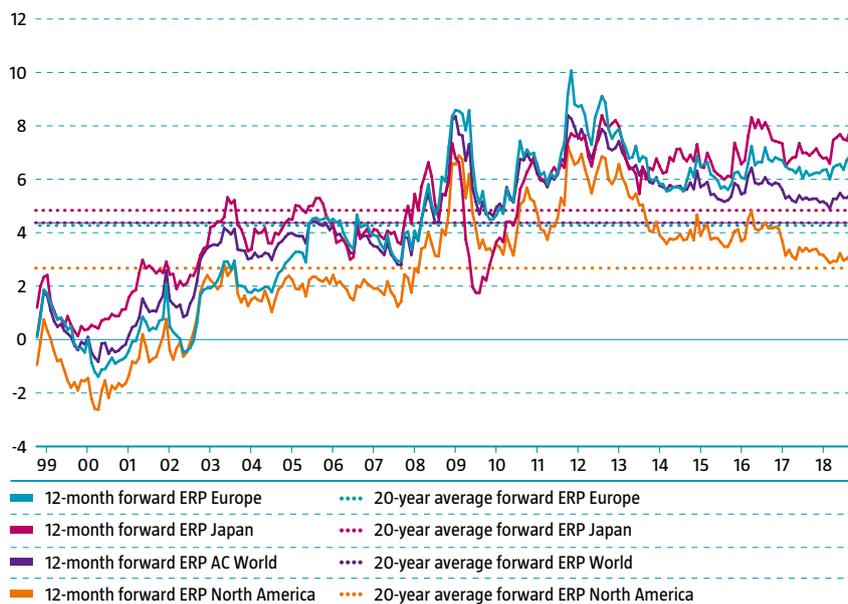
Source: Thomson Reuters Datastream, Robeco

Equity risk premium

Are you being compensated for taking equity market risk? Part of the answer to this question is answered by the most elusive concept we have in our toolkit for assessing equity market attractiveness: the equity risk premium. Elusive, as there is still much disagreement among academics and practitioners about this measure. The equity risk premium exists both as a backward- and a forward-looking concept. Backward, it is used to measure the excess return investors have received over time by investing in equities as compared to a risk-free investment (realized ERP). Forward, it is used as a measure for the excess return investors want to receive, i.e. the implied ERP. Using today’s equity valuation, one can derive this implied ERP³. A closer look at the Dimson-Staunton-Marsh data recorded since 1900 reveals that the realized equity risk premium for US equities has been 3.2% since 1900. The global historical equity risk premium adjusted for valuation gains stands at 2.8%, which is very close to our equity risk premium of 2.75%. The phenomenon of equities comfortably beating bonds over the past century is what Dimson, Marsh and Staunton (2002) called “the triumph of the optimists”.

3. To this end, one takes the (consensus) earnings forecasts and derives a discount rate to match today’s valuation. By comparing this discount rate with the risk-free rate, one obtains the implied ERP. Another less granular approach is to take the 12-month forward earnings yield minus the actual corresponding long-term bond yield.

Figure 2.7: Most regions still offer an attractive equity risk premium (in %)



Source: Thomson Reuters Datastream, Robeco

Looking at Figure 2.7, which shows the implied equity risk premium based on the 12-month forward earnings yield, there seems to be less reason for optimism concerning US equities. The implied equity risk premium now stands at 3.1%, below levels seen in recent years. By contrast, European and Japanese equities look more promising in this respect, as they still offer compensation to investors that is above historical values. The global equity risk premium has barely moved since our assessment last year as the decline in the US has been compensated by a modest uptick in other regions. In fact, as we argue at length in our special topic ‘The potential rewards of diversifying away from US equities’, the compensation for taking equity risk on US versus global stocks could be at a turning point to the detriment of the former. Not only the implied equity risk premium, but also cash yields gaining an edge over S&P 500 dividend yields for the first time since June 2008 demonstrates that alternatives to US equities are becoming more interesting.

In summary, global equities have become more expensive as shown by our preferred valuation metrics. Stretched valuations could be resilient, but ultimately should come down. We hold, and have effectively become more convinced of, the view put forward last year that the valuation tilt for the equity market will be negative for the next five years.

2.3 Government bonds

The valuation of sovereign bond markets has been a concern for us for many years. So far, this issue has not translated into significant losses. Stretched valuations have been supported by a number of factors such as the savings glut, quantitative easing, fears of secular stagnation and changing demographics – some factors we expect to play less of a role in the coming five years than they did in the last year. Note that we don’t expect all of these factors to completely lose their importance. They will likely continue to play a role in bond pricing for years to come.

Why do we think valuations are stretched?

To determine the value of government bonds, we first look at our steady-state framework. In this framework, the real return on government bonds is 1.25%, which is the sum of a

0.5% real return on cash and a 0.75% term premium on bonds. By today's standards, this sounds like a very high return. However, based on more than 100 years of data, we believe it is reasonable. Using the Dimson-Marsh-Staunton database, we derived a historical median real return of 1.75% and a GDP-weighted global bond index return of 1.82%. The historical bond returns captured 80% of economic growth. On this basis, our steady-state real return estimate would correspond to GDP growth of roughly 1.6%. Table 2.2 shows the IMF growth projections (average numbers) for the countries and regions comprising the JPMorgan Government Bond Index (JPM GBI).

Table 2.2: IMF GDP growth projections for countries constituting the JPMorgan Government Bond Index

	2013-2018	2014-2019	2015-2020	2016-2021	2017-2022	2018-2023
Euro area	1.17%	1.46%	1.56%	1.55%	1.56%	1.75%
United States	3.01%	2.75%	2.55%	2.23%	2.02%	2.00%
Japan	1.26%	1.02%	0.77%	0.47%	0.71%	0.69%
Canada	2.22%	2.23%	1.96%	1.91%	1.86%	1.83%
United Kingdom	1.76%	2.47%	2.28%	2.11%	1.81%	1.59%
Australia	3.14%	2.88%	2.97%	2.83%	2.90%	2.80%
Sweden	2.13%	2.52%	2.59%	2.60%	2.05%	2.11%
Denmark	1.38%	1.67%	2.06%	1.95%	1.75%	1.83%
GBI-weighted	1.92%	1.92%	1.85%	1.66%	1.61%	1.65%

Source: IMF, Robeco

Note that the GDP projections closely match our steady-state assumption. Table 2.3 shows the inflation forecasts.

Table 2.3: IMF inflation projections for countries constituting the JPMorgan Government Bond Index

	2013-2018	2014-2019	2015-2020	2016-2021	2017-2022	2018-2023
Euro area	1.60%	1.32%	1.15%	1.27%	1.73%	1.85%
United States	1.98%	1.80%	1.86%	1.95%	2.41%	2.22%
Japan	1.87%	2.05%	1.26%	0.86%	1.22%	1.24%
Canada	1.88%	1.90%	1.87%	1.87%	2.02%	2.10%
United Kingdom	2.23%	1.95%	1.64%	1.78%	2.24%	2.12%
Australia	2.50%	2.47%	2.37%	2.41%	2.40%	2.45%
Sweden	1.95%	1.75%	1.65%	1.77%	1.77%	1.84%
Denmark	2.00%	2.02%	1.73%	1.65%	1.59%	1.85%
GBI-weighted	1.88%	1.75%	1.52%	1.52%	1.95%	1.92%

Source: IMF, Robeco

The inflation forecast for most countries fell below the central banks' target level. For example, in its 2016-2021 forecast, the IMF expected inflation to average 1.27% for the Eurozone. This level is far below the ECB target of below, but close to 2% over the medium term. Clearly, with such expectations, our simple steady-state assumptions will be off the mark. Economic conditions have been far from stable during the cycle and hence, different

rules apply. For instance, in a sluggish recovery marked by fears of secular stagnation, investors will pay more attention to downside risks (i.e. deflation) and will accept yield levels much lower than our steady-state levels. Note, however, that the tide has been turning and with the return of synchronized global growth since 2016, expectations have been moving back to levels one would predict in a steady-state world. However, so far, real bond yields have not followed suit. In Table 2.4, we compare the year-end yield of the JPMorgan GBI with a fair value estimate based on the IMF projections where GDP growth is translated into real rates using different sensitivities.

Table 2.4: JPMorgan GBI yield versus fair value estimate based on different assumptions as to how GDP growth translates into real rates

Share of GDP growth returned to investor	2013-2018	2014-2019	2015-2020	2016-2021	2017-2022	2018-2023
80%	3.41%	3.29%	3.00%	2.86%	3.24%	3.24%
60%	3.03%	2.90%	2.63%	2.52%	2.92%	2.91%
40%	2.65%	2.52%	2.26%	2.19%	2.60%	2.58%
20%	2.26%	2.13%	1.89%	1.86%	2.27%	2.25%
0%	1.88%	1.75%	1.52%	1.52%	1.95%	1.92%
Year-end yield (previous year)	1.78%	2.21%	1.50%	1.58%	1.38%	1.46%

Source: IMF, JPMorgan, Robeco

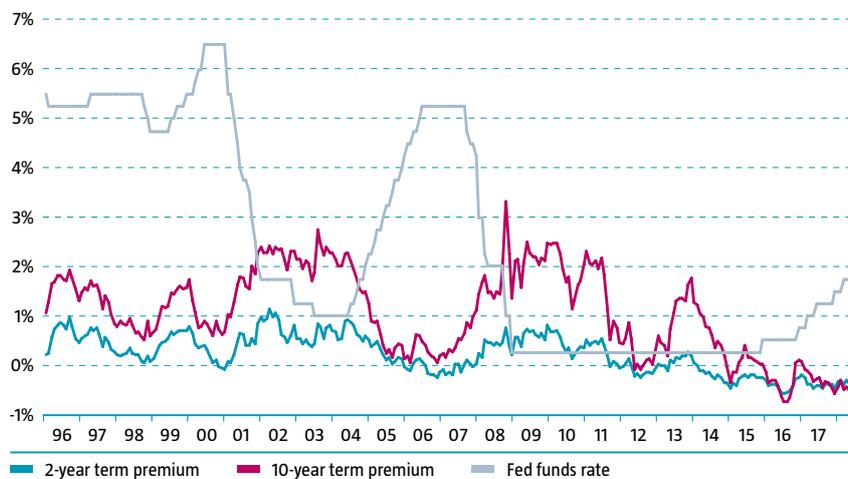
As one would expect, the 2014 year-end yield of the index was well below the level one would predict based on the growth and inflation projections. Especially when the index yield level stood at 1.5% which was equal to the medium-term inflation expectations at that time. Hence, an investor in the bond market would not have been compensated for expected real growth. At the end of 2017, we saw a more extreme situation which persisted throughout the year. The yield was even below the expected level of inflation! This seems at odds with the outlook. The IMF's inflation projections were not extreme; they were more or less normal. How can we explain this large gap?

Term premium

Part of the explanation lies in the term premium, which is the excess yield that investors require to hold a long-dated bond over a short-dated bond. Sometimes the term premium is simply calculated as the difference between the yield of these bonds, i.e. the slope of the yield curve. This is, however, not how we or most other practitioners define term premium. Above all, a term premium is the compensation for the risk that the future short-term Treasury bill will not perform as anticipated. The following example serves to illustrate the meaning of term premium. The yield of a 1-year Treasury bill is 2.3%. However, investors expect this yield to rise. The average 1-year rate is expected to be 3% over the next ten years. What would be the 10-year Treasury rate? The answer depends on the term premium. How much compensation does an investor require to invest in a longer-dated bond over short-dated bonds? In theory, the risk of holding a long-dated bond is greater than that of holding short-dated bonds. The sensitivity to rate changes (i.e. unexpected events) is much greater. Hence, one would expect a positive term premium. In our steady-state assumption, we expected this premium to be 75 basis points. In this simple example, this would result in a 10-year rate of 3.75%⁴. The term premium has, however, fallen significantly below our steady-state assumption. Figure 2.8 shows the term premium as calculated by the Federal Reserve for 2- and 10-year Treasuries⁵.

4. Hence the term premium is not equal to the slope of the yield curve. In this example, the slope is 3.75% -/- 2.3% = 1.45%, while the term premium amounts to 75 basis points.

5. Note that the estimation of the term premium is a much debated topic and that it varies.

Figure 2.8: Term premium of US Treasuries has declined

Source: Federal Reserve Bank of New York, Robeco

Figure 2.8 shows that the term premium used to rise when the Federal Reserve became dovish, and conversely, fell when it was hawkish. For example, following the Great Financial Crisis the Fed cut its target rate dramatically to 25 basis points. At that time, the term premium rose from 75 basis points to more than 2%. Following the announcement of ‘Operation Twist’ in September 2011, when the Federal Reserve indicated it would sell short-dated bonds to purchase long-dated bonds, the term premium fell to zero. Unlike the traditional bond buyer, the Federal Reserve did not demand a positive term premium when buying long-dated bonds. It was managing a different risk than the traditional bond buyer. Hence, the rules had changed. The Federal Reserve effectively pushed traditional bond buyers out of the market and they were not alone. The ECB and the Bank of England did the same and, of course, the BoJ continued its quantitative easing program.

Today’s negative term premium explains 1% of the yield gap introduced in Table 2.4. Given a business-as-usual term premium of 75 basis points, bond yields at the end of June 2018 would be trading at 2.5%, corresponding to a real rate that equals 40% of real GDP growth as illustrated in Table 2.4. Although this may not be enough by historical standards, we believe most investors would be happy to return to the market to obtain this yield. However, in order for this to happen, the market share of the non-traditional players in the markets – the central banks – would need to fall first. For more on this subject, see Chapter 3.

Yield curve

We have argued that actions taken by central banks have been the main cause of the fall in term premiums. However, central banks have not crowded out all traditional investors. Despite negative term premiums, investors can still find steep yield curves, especially in the Eurozone. Take for instance the steepness of the German yield curve as shown in Figure 2.9, which is based on Bundesbank data going back to 1972.

Figure 2.9: Bund yields are capped by the short end of the curve

Source: Deutsche Bundesbank, Robeco. Monthly data. The slope of the curve is the difference between the 10-year and 2-year interest rates.

The difference between 10-year and 2-year Bunds is close to its median at 1%. Hence, if yields remain constant, an investor will be rewarded for investing in 10-year paper compared to a 2-year paper. The investor will not only earn the yield difference, but will also profit from a positive price effect as the yield on the bond will fall as its maturity shortens (the roll-down). Generally, steep curves are considered a big positive for bond investors. The steeper the curve, the more investors are lured into the bond market. Of course, the interest rate risk of a 10-year bond is much higher than that of a 2-year bond. Rates can easily move up, eroding previous gains. The question is, how far? If one expects the ECB to remain on hold for quite some time, effectively anchoring the 2-year rate to its current level, movements in the 10-year rate will have a direct impact on the yield curve. How far can the 10-year rate move? To answer this question, we look at the 90th percentile of the slope of the yield curve. Based on Figure 2.9, a move to the 90th percentile would imply a 1% movement in 10-year rates. Such a move would bring the German 10-year rate to 'only' 1.3%.

Focus remains on central banks

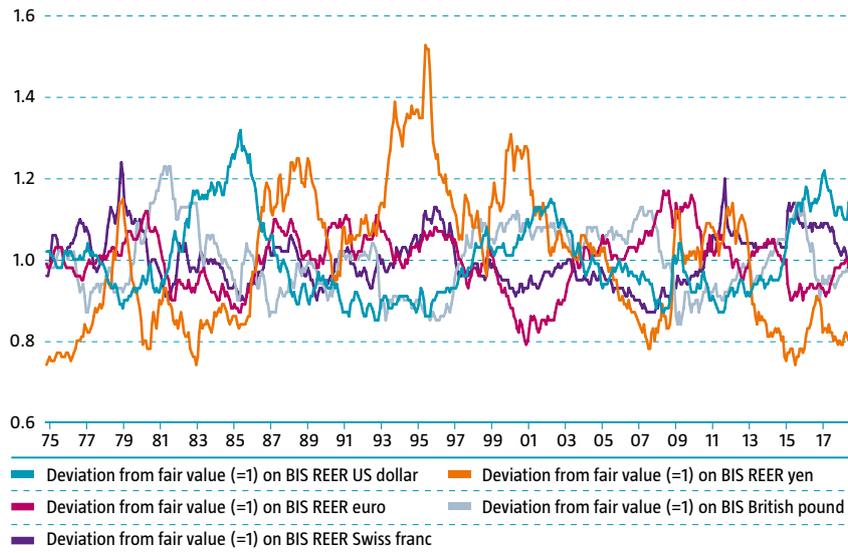
Our analysis clearly shows that government bond markets are not trading in line with our steady-state assumptions. Strikingly, the economic projections of the IMF are not that far from what we would expect in a steady-state environment. Hence, only one conclusion is possible: government bonds are overvalued! Of course, there is a good reason for this. As long as central banks are willing and able to 'manipulate' bond markets, our valuation measures will be a poor guide for future performance. Will central banks return to a more 'neutral' approach? Judging from the IMF projections, that is what one would expect. However, it is not at all clear how they would get there. For more on this topic, see Chapter 3.

2.4 Developed currencies

The law of one price tells us that the price of a particular item should be the same in different countries when measured in the same currency. Empirically, the law of one price does not hold up, but there is at least a tendency or convergence towards it, called relative purchasing power parity (PPP). Relative PPP describes a relationship between changes in inflation rates and in exchange rates. These changes drive the flow of traded goods. In the short run, nominal exchange rates do not always move in parallel with changes in inflation. Nominal exchange rates can significantly under- or overshoot inflation differentials causing deviations from relative PPP. We show these deviations in Figure 2.10 for the major developed market

currencies. As explained, in our 2016-2020 publication, deviations from trend relative PPP show a strong mean reversion over a period of five years, causing corresponding changes in nominal exchange rates. The view that a lot of exchange rate behavior is ultimately driven by changes in real exchange rates as real output shocks are translated into currency movements, underpins our valuation framework.

Figure 2.10: Main developed currencies: deviation from fair value based on relative PPP



Source: Thomson Reuters Datastream, Robeco

Our framework points to an appreciation of the euro against the US dollar as the real exchange rate of the dollar is now 16% above the fair value based on the trend relative PPP. Assuming a return to fair value, the USD should depreciate 3.4% year-on-year versus the EUR. By contrast, the Japanese yen is expected to appreciate. Based on Figure 2.10, we conclude that the yen is 20% undervalued which corresponds to an annualized appreciation of 3.7%.

Following our framework, it seems wise to hedge the risk of a USD depreciation. Figure 2.11 shows the 'implied cost' of such a hedge based on the currency forward market.

Figure 2.11: Annualized five-year return versus the euro based on forward market quotes



Source: Bloomberg, Robeco

Currency forward markets price in a relatively large depreciation of the US dollar against the euro. To protect against a possible drop of 3.4% in value, one would need to pay 2.8% today. On this basis, one could argue in favor of a US dollar hedge. Currency forward prices are based on interest rate differentials. A positive interest rate differential between the US and Eurozone makes US T-Bills attractive for Eurozone investors: there is a gain to be made. However, this gain is uncertain, as the US dollar can weaken versus the euro. If markets are efficient, one would expect this to be the case. If not, investors would overwhelmingly choose to invest in US T-Bills over Bundesschatzanweisungen. Given the relatively large differences in interest rates, the currency forward market is pricing in a depreciation of the US Dollar.

Historically, interest rate differentials have not been a good predictor of currency movements. Froot and Thaler (1990) examined 75 published studies of interest parity (i.e. currency movements are in line with interest rate differentials) and concluded that the average beta of a regression of the actual change in the exchange rate over a short interval against interest rate differentials over a matching time interval was -0.88, rather than 1.0, the figure which would be expected based on interest parity. Contrary to what the interest parity theory predicts, the average negative beta suggests that currencies with a relatively high interest rate don't depreciate, but instead show a tendency to appreciate. This finding is the basis for the well-known carry trade. To illustrate this, we compare the return of the US dollar versus the German mark/euro spot rate with the return an investor could lock in via the forward market using three-month contracts. If interest rate parity holds, the return of both strategies would coincide. In Figure 2.12, we observe that there have been periods where large deviations occurred. Especially during a large part of the 1990s, the forward market predicted a relatively significant decline in the US dollar. In reality, the US dollar appreciated⁶. The shaded areas in Figure 2.12 highlight periods where currency forward rates imply a decline in the US dollar of 50 or more basis points versus the German mark/euro on a quarterly basis, in line with current market pricing.

6. Which was in line with our fair value model, based on PPP.

Figure 2.12: Return on spot and forward currencies – carry can be very tempting



Source: Bloomberg, Robeco

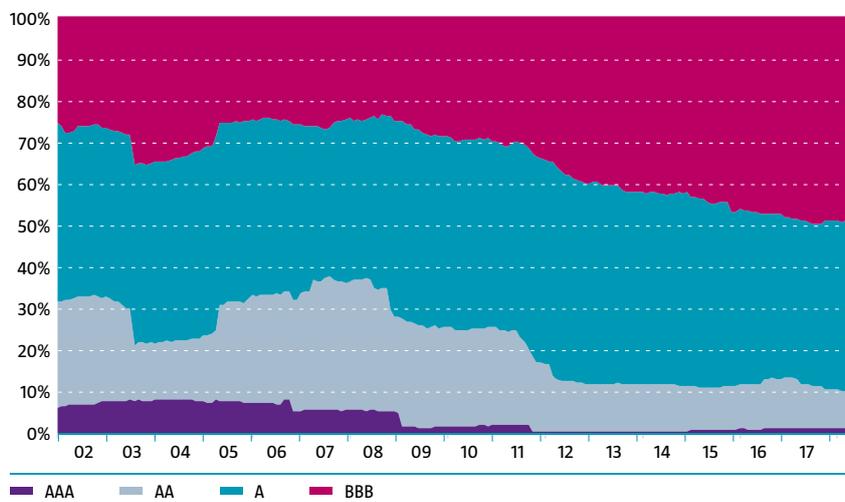
Hedging the currency exposure was relatively expensive in the shaded periods. The investor locks in a certain annual loss of 2% or more. This proved not to be the best strategy over the period shown in Figure 2.12. Instead of depreciating, the US dollar actually appreciated in most cases in the shaded areas.

We are therefore not convinced that the US dollar will weaken much more than what the forward market is already pricing in. We believe the USD will weaken, but that the actual loss might be even less than what markets are pricing in today given the positive USD carry. That does not mean that we would advise an outright position in the USD. Such a position goes hand-in-hand with higher volatility, especially for fixed income portfolios. We believe there are better opportunities to allocate risk. We therefore take a neutral position on the valuation of the USD. This is also our view on the British pound and Swiss franc. However, the Japanese yen is attractive, both from a fair value and forward pricing perspective. Given that the Japanese yen has also demonstrated that it belongs to the group of safe haven currencies, we take a positive stance with respect to its valuation.

2.5 Corporate bonds

The corporate bond landscape has changed over the years. Before the Great Financial Crisis, the majority of bonds had an index rating of A or higher. Today, almost 50% of the Global Aggregate Corporate Bond Index has a rating of BBB.

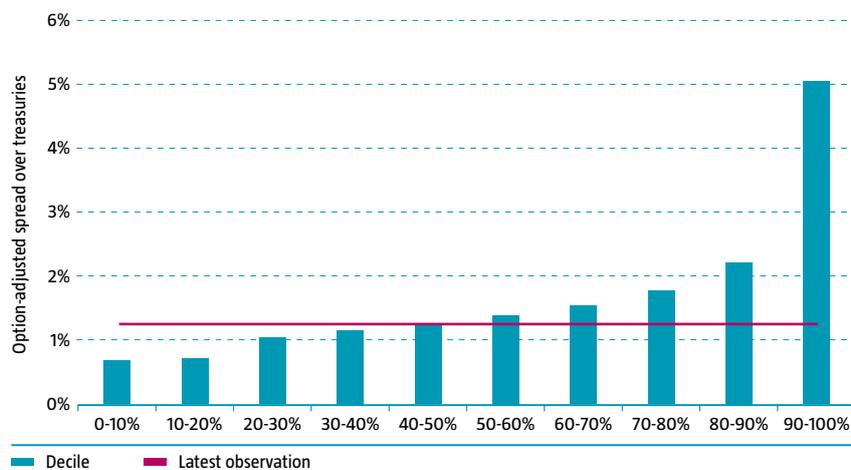
Figure 2.13: Bloomberg Barclays Global Aggregate Corporate Bond Index – credit quality has deteriorated



Source: Bloomberg Index Services Limited, Robeco

As the average credit quality of the index has changed, one must be careful about using historical aggregated data to judge today’s valuation. To illustrate this point, we compared the valuation at the end of June to the historical data for each rating class. Figure 2.14 shows the different deciles for the Global Aggregate Corporate Index. The line shows our latest observation, which is equal to the median. This seems to indicate that the valuation of the market is neutral. However, if we look at the numbers at the rating level, the market looks slightly expensive. The option-adjusted spread over Treasuries for single-A and triple-B corporate bonds is close to the 40th percentile. Still, the difference between the 40th and 50th percentile is rather small: only 10 basis points for a single-A rated bond.

Figure 2.14: Bloomberg Barclays Global Aggregate Corporate Bond Index – option-adjusted spreads (2000-2018)



Source: Bloomberg Index Services Limited, Robeco

The valuation should of course fit today’s macro picture. As stated previously, the IMF’s macro outlook for developed countries is close to what we consider normal based on our steady-state assumptions. The IMF forecasts are confirmed by survey data gathered by the ECB and the Federal Reserve.

We see the current low rate environment as supportive for corporate bond valuation. Figure 2.15 shows the average coupon and remaining maturity of BBB bonds in the Global Aggregate Corporate Bond Index. The latest levels compare very favorably with earlier levels such as those seen at the time of the Lehman default, when the average coupon was above 6%, compared to a level of less than 4% at the time of writing. This decrease lowers the bar for companies to meet their coupon payments. In markets like the Eurozone, the coupon level is close to the actual inflation level. In theory, companies can ‘easily’ outgrow their debt. Furthermore, the average maturity of corporate debt is at a healthy level of nine years, which dampens the effect of rate increases.

Figure 2.15: Interest rate payments have come down while maturities have been extended



Source: Bloomberg Index Services Limited, Robeco

Our earlier analysis is at odds with the deteriorating credit profile of the index. One would expect credit quality to improve as the interest burden drops. However, as borrowing becomes cheaper, it is easier to create shareholder value by increasing leverage. This is indeed what has happened.

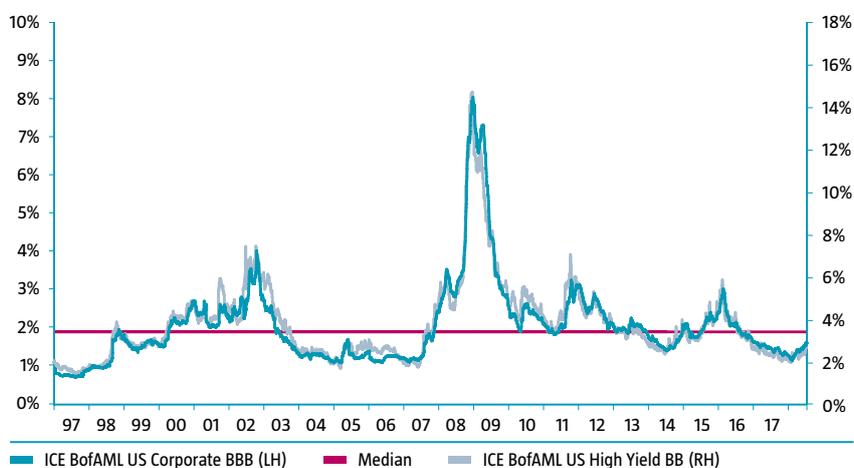
Figure 2.16: Debt of non-financial corporate sector has been rising



The graph shows the ratio of the outstanding amount of total debt securities in the non-financial corporations sector, all maturities, residence of issuer in the United States to the gross domestic product.
 Source: Bank for International Settlements, U.S. Bureau of Economic Analysis. Retrieved from FRED, Federal Reserve Bank of St. Louis. Calculations by Robeco.

With respect to valuation, we believe that the positive effect of the lower average coupon and improved debt service cancels out the negative effect of higher leverage, especially in a business-as-usual environment like the one described in the IMF growth scenarios. However, the leverage effect could become a real concern if growth disappoints, especially if the market is less willing to roll over maturing bonds. More on this topic can be found in Chapter 3. Compared to investment grade corporate bonds, high yield bonds are looking expensive. The high yield market is dominated by debt denominated in USD (more than 80%). Based on Bank of America ICE benchmark data, BB US High Yield is trading at close to its 20th percentile (1997-2018), which is 80 basis points below its median.

Figure 2.17: Option-adjusted spread for US corporate bond market



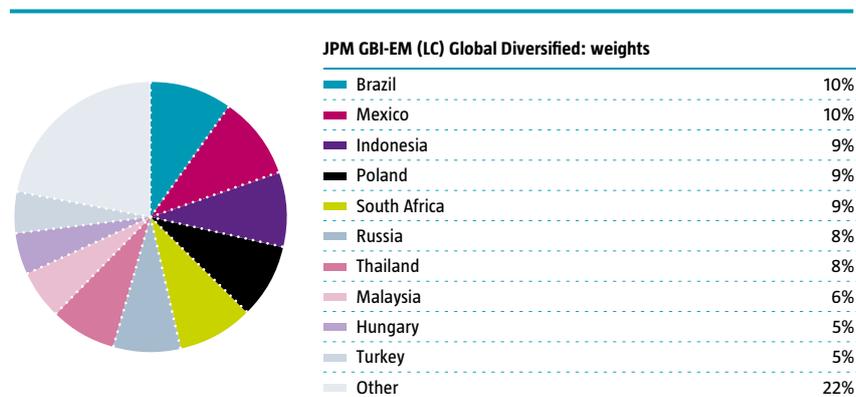
Source: ICE Benchmark Administration Limited (IBA), retrieved from FRED, Federal Reserve Bank of St. Louis & Robeco.

Note the strong correlation between US BB (high yield) and BBB (investment grade) visible in Figure 2.17. The relative expensiveness of high yield in part reflects the valuation of the US corporate bond market. By comparison, the option-adjusted spread for BB rated Euro/GBP corporate bonds is just above its 40th percentile. One needs to be careful when looking at the Eurozone valuations. Especially since Eurozone spreads are calculated with respect to German Bunds which tend to be overvalued due to ECB policy and negative net supply. Still, we believe a comparison with Bunds is a fair means for reaching a decision about allocation in the Eurozone. With respect to valuation, we think that corporate bonds are neutral compared to Treasuries. High yield is overvalued.

2.6 Emerging market debt

In this section we look at the valuation of emerging market local currency sovereign debt. The most popular index for this asset class is the J.P. Morgan GBI-Emerging Markets Global Diversified Index. The index consists of 19 countries, with country weights capped at 10%.

Figure 2.18: The emerging market local currency debt universe



Source: J.P. Morgan, Robeco

The return of the index can be broken down into a local bond return and a currency return. Generally, the local bond return is attractive for investors as the yield of the index tops that of developed markets (see Figure 2.19). The yield of the emerging market index is trading at the average level and is 5% higher compared to that of developed markets.

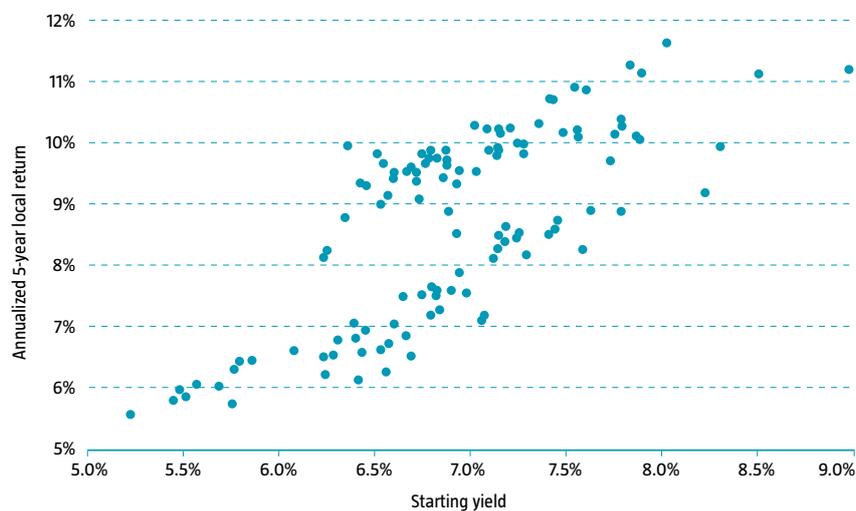
Figure 2.19: Emerging market bonds offer attractive yields compared to those of developed countries



Source: J.P. Morgan, Robeco

The lowest annualized local bond return for a five-year period is 5.6%, which is well above yields of developed sovereign bonds. Historically, the relatively high starting yield has served as an effective buffer against negative market developments.

Figure 2.20: Return on local bonds in the J.P. Morgan GBI-EM Global Diversified Index versus the starting yield



Source: J.P. Morgan, Robeco

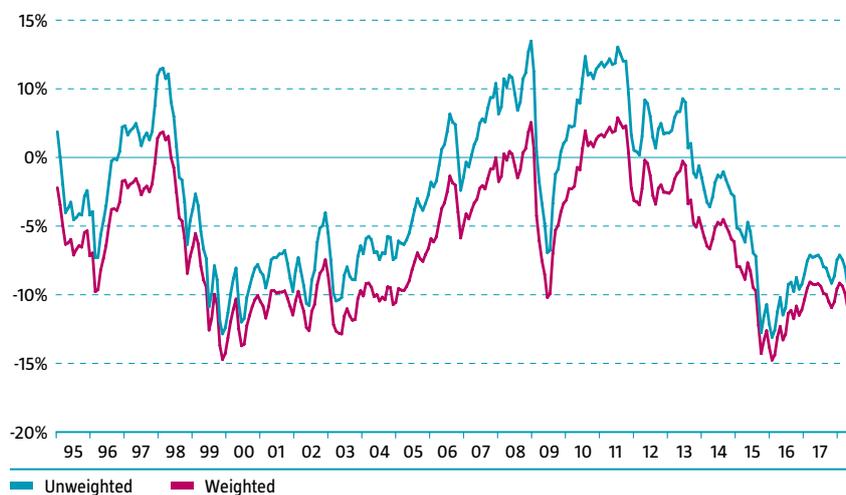
Part of the bond return will probably be lost as a result of currency depreciation. Generally, the inflation in emerging market countries is higher than in developed countries. Using the latest country weightings, the average inflation since 2003 has been almost 5% for emerging markets versus 1.7% for developed markets. According to the theory of relative purchasing power parity, one would expect investors in EMD to have faced negative currency return, which is indeed the case. The return of the GBI-EM Diversified index in USD and EUR lagged the annualized local return by 1.5% and 2.3%, respectively. This return differential

is less than one would expect based on inflation differentials. Hence the emerging market countries have shown a real appreciation versus developed countries over time. This real appreciation has largely been a function of emerging market countries catching up to developed markets in terms of GDP per capita.

Looking ahead, the inflation gap between emerging market and developed market countries is expected to narrow. The IMF expects 3.6% for emerging markets versus 1.9% for developed markets for the coming five years. Taking the IMF forecast as a proxy for the market, emerging market bonds offer a 3% real yield. We believe this is a relatively attractive starting point.

So what can we expect to happen from a currency valuation point of view? Emerging market debt issuers have had a tumultuous year so far after a strong rally in 2017. Our preferred valuation model, which is based on relative purchasing power parity, indicates this has created some value. Last year, we noted a discount to relative PPP. Based on the latest index weightings, the discount is somewhat higher than last year at 10.4% versus the US dollar. Of course, the stronger dollar, worries about trade protectionism and slowing global trade, a broader emerging market growth slowdown versus developed markets and persistent idiosyncratic political turmoil (Turkey) all justify this discount to some extent. Nevertheless, the currency component has become more attractive at the margin, especially for US dollar investors. Note that we expect the USD to weaken versus the EUR and JPY. Hence, investors in these currencies can expect less of a windfall from their investments. However, we expect them to profit from the real yield differential in bonds.

Figure 2.21: Deviation from fair value versus a trade-weighted basket based on relative PPP (in %)



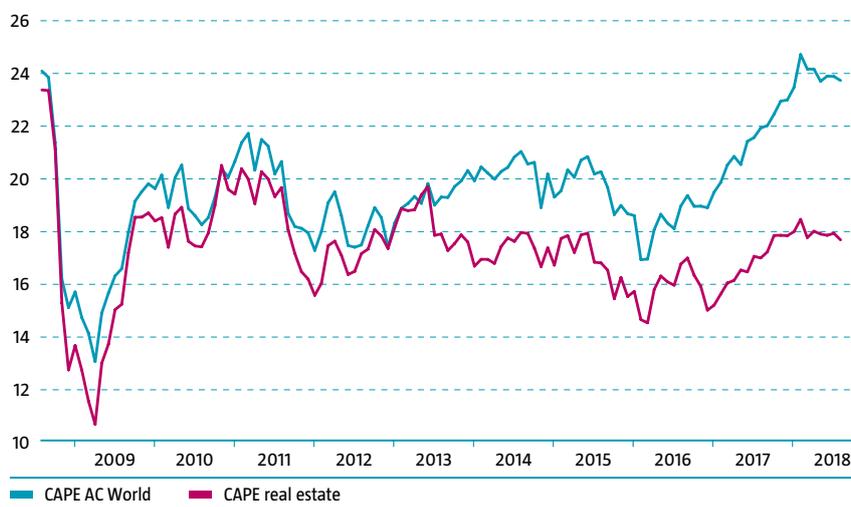
Source: Thomson Reuters Datastream, Robeco

In summary, emerging market local currency debt is still attractive in the medium term compared to other fixed income asset classes both in terms of yield and, in particular, when it comes to investments in USD.

2.7 Listed real estate

In our asset allocation framework for Expected Returns, we compare listed real estate to global equities. Listed real estate is a sector within the equity universe and hence bears many similarities to global equities as regards risk and volatility. The difference is that the interest rate sensitivity of real estate has historically been higher. We revisit our comparison based on a CAPE-like valuation metric for listed real estate to compare valuation levels with that of global equities. According to this metric, the discount on real estate has increased since last year, now at 25% up from 23.1%. The relative dividend yield has increased modestly to 1.48 from 1.4 last year, now 9.5% below the average level of the past 20 years. On a CAPE basis, relative real estate valuations have improved, but a dividend yield that is below the historical average versus global equities means real estate is not yet truly attractive. Our valuation tilt for real estate compared to equities is neutral.

Figure 2.22: Based on CAPE, real estate looks attractive compared to equities

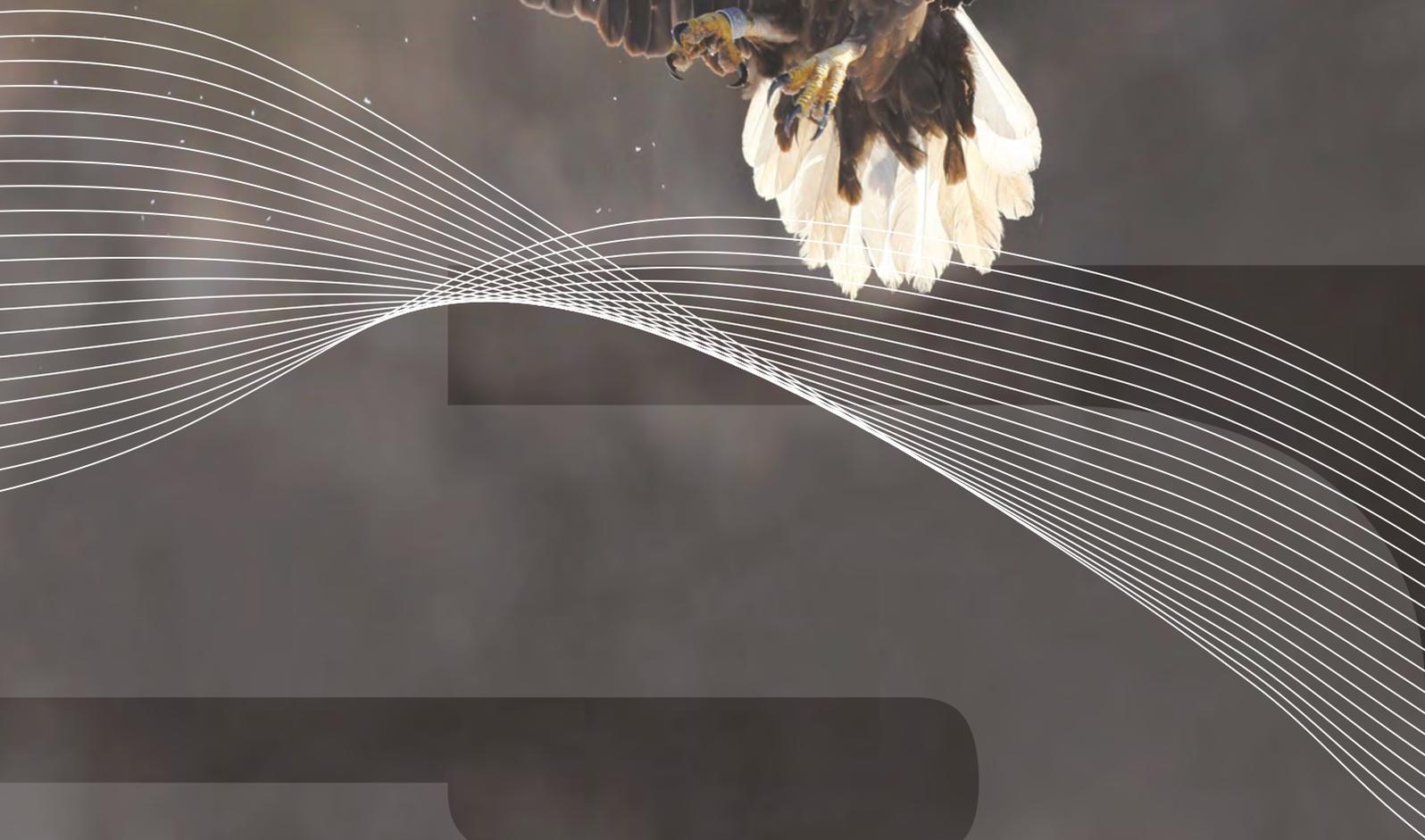


Source: Thomson Reuters Datastream, Robeco

Special topics

Long-term investors generally face long-term challenges. In this section, however, we address five questions that institutional investors may very well be facing right now or in the near future.

- Valuations across markets are stretched, but is that a reason to get more defensive right now?
- How sustainable is Italian debt?
- Are stranded assets a reason to shy away from the energy sector?
- The case for including corporate bonds in a well-diversified portfolio is being called into question. But is that justified?
- Is the US still the most desirable place to invest or should investors diversify away from it?



VALUATIONS

TIME TO GET DEFENSIVE?

In last year's publication, we shared our concerns about the valuation of the markets, and of the US equity market, in particular. Since that time, the market has set new records. Although the market has seen its first correction, addressing price concerns remains high on our agenda. "Why?" you may ask. To answer this question, we will discuss the lessons to be learned from historical data gathered in the US, as that is where most of the data comes from. How did different portfolios perform in this seemingly overpriced equity environment?

Shiller's CAPE

The CAPE, or the cyclically adjusted price-earnings ratio, is one of our favorite tools for assessing equity market valuation. The ratio was first introduced in an article by John Y. Campbell and Robert J. Shiller published in 1988. The CAPE signals when stocks are overvalued compared to their historical average. To this end, the ratio compares the latest market price, often measured by a popular stock index like the S&P 500, with past earnings. For the latter, Campbell and Shiller suggest using a ten-year average, whereby the past earnings are first inflated to the latest price level.

$$\text{CAPE}_t = \frac{P_t}{[(\text{EARN}_t + \text{EARN}_{t-1} + \dots + \text{EARN}_{t-10})/10]}$$

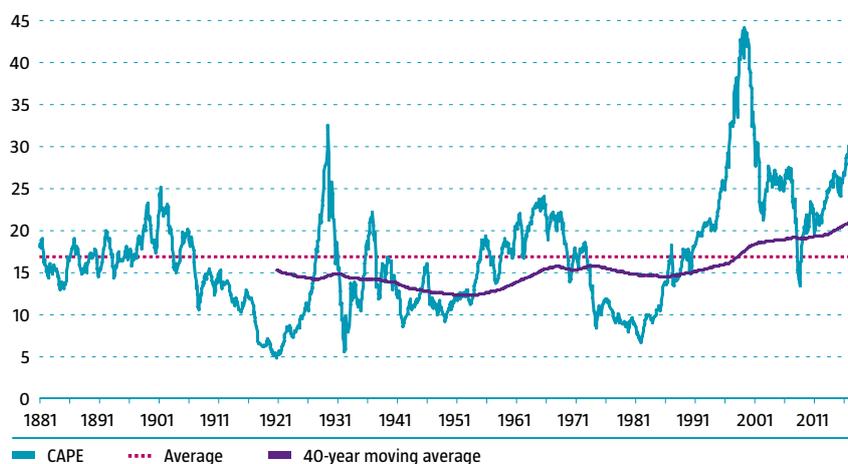
Where P_t is the price of the stock index and EARN_t is real earnings inflated to today's level.

In this way, the authors created a measure that can be used to compare the current price with a 'business as usual' earnings estimate over the course of a business cycle.

Campbell and Shiller showed that their CAPE ratio was able to explain about a third of the variation (positive or negative) in real inflation-adjusted ten-year subsequent stock market returns in the US. A low CAPE ratio can be considered a predictor of relatively high returns, while a high CAPE ratio is thought to foreshadow relatively low returns in the future. The CAPE ratio has become very popular since Robert Shiller warned of overvalued stock markets in his well-known book *Irrational Exuberance*, which was published a year before the dot-com crisis broke out. Ever since, the market has kept a close eye on the ratio and an ear out for Shiller's guidance. Though he has also had his critics, like Siegel or Damodaran. For example, Siegel points out that the CAPE may paint an overly pessimistic picture because of changes in the calculation of GAAP earnings, which have had a negative effect on reported earnings. Damodaran strongly believes that cash flows of companies drive stock prices. He shows that the price versus cash (dividends and buybacks) is much more favorable for the market than the CAPE at that time.

'The CAPE ratio has become very popular since Robert Shiller warned of overvalued stock markets in his well-known book *Irrational Exuberance*'

Figure 1: Shiller CAPE for the S&P 500

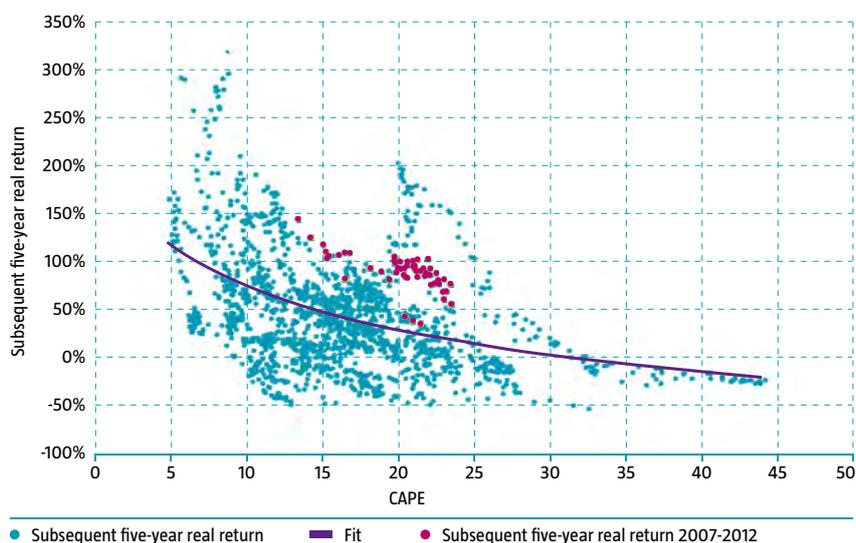


Source: R. Shiller, Bloomberg, Robeco

Since 2017, the CAPE ratio has been sending a troubling message. The CAPE reached levels only seen previously in the run-up to the Great Depression and dot-com crisis. Does that mean that we are in for a bear market? Of course, Shiller is asked this question regularly. In his response, he always stresses his concerns about the valuation, however, he also downplays the importance of the ratio. It explains one-third of the variation. There are many other aspects that play a role besides valuation.

To illustrate Shiller’s answer, we again consider a graph included in the valuation part of this publication. Figure 2 plots the subsequent five-year annualized real returns of the S&P 500 versus the CAPE ratio. We use the real return for our analysis for two reasons. First, we believe investors should be compensated for inflation. Second, as inflation has varied a lot across this sample, it is difficult to compare nominal returns in high- and low-inflation periods.

Figure 2: Relationship between Shiller CAPE and subsequent five-year real returns on the S&P 500



Source: R. Shiller, Robeco

The figure shows a weakly negative relationship between the CAPE and subsequent five-year S&P returns. Equity returns were lower when CAPE was high and were on average negative when CAPE levels were very high (>30).

Is it time for a more defensive approach?

Figure 2 offers us insight into the losses investors might suffer if history repeats itself given today’s high CAPE level. Based on this graph, the losses could be considerable. This raises the question as to whether we should reallocate a portion of our equity holdings. This is a question which seems particularly relevant for risk-averse investors. To answer it, we performed an analysis focusing on the probability and impact of a loss. Again, we adjusted our return for inflation. In our analysis, we compared three equity portfolios: market, low-risk and high-risk. Furthermore, we also looked at a balanced portfolio. This portfolio invests 70% in equities and the remaining 30% in a US 10-year Treasury¹. For our analysis, we used data from ParadoxInvesting.com that was taken from an investment universe of the 1,000 largest US listed companies to construct portfolios based on the realized three-year volatility. The portfolios varied from low-risk to high-risk. Each stock was given the same

1. We used long-term yields from R. Shiller’s database and T-bill rates from Fred’s database to derive a return proxy for the 10-year Treasury for the period 1929-1961. For the period 1961-2018, we used data from the Federal Reserve.

market weight. This approach differs from an index like the S&P 500 where the market weight depends on the market capitalization of a stock. The low-risk portfolio consisted of the 300 stocks that had the lowest volatility, while the high-risk portfolio contained the 300 stocks with the highest realized volatility. Please note that we were looking at relatively simple strategies. We took the market portfolio from the Kenneth French database. Both ParadoxInvesting.com and French derived their returns from CRSP data. Table 1 shows the results for our entire sample.

Table 1: Results for portfolios based on the US stock market and US 10-year Treasury: 1929-2017

	Market	High-risk	Low-risk	Balanced portfolio
Average geom. annual return	6.2%	6.0%	8.0%	5.3%
St.dev	18.6%	31.9%	15.9%	13.4%
Sharpe ratio	40%	32%	54%	43%
Beta	-	129%	82%	68%

Source: ParadoxInvesting.com, K. French, R. Shiller, Federal Reserve, Robeco

Overall, the low-risk portfolio had the highest Sharpe ratio. These findings are in line with the low-risk anomaly; see also Blitz & Van Vliet.

In Table 2 we focus on the downside risk of the portfolio over a period of five years. Please note that the periods we have used overlap. We assumed that an investor can enter the market in any of the months included in our research sample. A loss as big as the one experienced during the Great Crisis would have a significant impact on our analysis, as we were looking at five-year subsequent returns. In particular, the loss suffered during the crisis led to the evaporation of positive returns achieved in the five-year run-up to the crisis. For our analysis, we were most interested in how the portfolios performed in comparison to each other. We feel the outcomes offer us solid ground. The first line shows the probability of there being a negative real return within a period of five years. As expected, the probability was the lowest for the low-risk portfolio and the balanced portfolio. Notably, the probability of a loss was quite similar for the market portfolio and the high-risk portfolio.

The second line shows the average loss for the five-year periods when the portfolio was realized. In this case, we see that there was a big difference between the market portfolio and the high-risk portfolio. The average loss of the high-risk portfolio was very high – 31.8% – while the market portfolio’s average loss was 18.7%. We combined the probability and the average loss in the so-called Lower Partial Moment (LPM), where we multiplied both measures. In this way, we could compare the portfolios more easily. In particular, small losses that occur often can be as detrimental as bigger losses that occur only occasionally.

The LPM showed clear differences between the portfolios. Besides the highest Sharpe ratio, the low-risk portfolio also had the highest LPM. This was quite surprising given that the low-risk portfolio had a higher standard deviation than the balanced portfolio. Standard deviation is not the best risk measure. This was further illustrated by the biggest loss over a five-year period. In this case, we see that losses of the balanced portfolio and low-risk portfolio were more or less the same. With respect to risk, the high-risk portfolio stood out negatively as one would expect. The LPM of the portfolio was almost twice that of the market portfolio. Clearly, a high-risk portfolio is for investors with nerves of steel, especially if we consider the largest real drawdown which was almost 70%!

Table 2: Results for portfolios based on the US stock market and US 10-year Treasury: 1929-2017

	Market	High-risk	Low-risk	Balanced portfolio
Probability of a five-year real loss	20.3%	20.4%	10.6%	17.2%
Average real loss in this period	18.7%	31.8%	10.0%	11.5%
Lower Partial Moment (LPM)	-3.8%	-6.5%	-1.1%	-2.0%
Biggest five-year real loss	51.3%	69.9%	34.7%	34.9%

Source: ParadoxInvesting.com, R. Shiller, Federal Reserve, Robeco

The results of Table 2 span the entire sample. So what does all of this mean for our five-year expected returns? To answer this question, we first need to identify what kind of CAPE regime we are currently in. Figure 1 shows changes in the CAPE ratio since 1881. As we can see, the CAPE ratio has moved higher over time, reflecting a change in the markets. This should come as no surprise, as the US stock market and investor base in the US are different than they were in 1881. To capture this changing dynamic, we compared the CAPE ratio with its moving average. In this case, we took a 40-year moving average². This moving average reached 21.4 by the end of June, well above the long-term average of 16.9.

For our analysis, we distinguished quintiles, which we calculated for the deviation of the CAPE with its prevailing 40-year moving average. Given where the CAPE is today, we focused on the top quintile in Table 3. This table focuses on the downside risks of the different portfolios.

2. Using a forty-year moving average is of course an arbitrary choice. However, we feel that this period strikes a good balance between taking enough data into consideration (including multiple cycles) and being close enough to today's market.

Table 3: Results for portfolios based on the US stock market and US 10-year Treasury: 1929-2017, top CAPE quintile

	Market	High-risk	Low-risk	Balanced portfolio
Probability of a five-year real loss	57.9%	49.0%	26.7%	33.7%
Average real loss in this period	17.5%	29.8%	9.3%	9.5%
Lower Partial Moment (LPM)	-10.1%	-14.6%	-2.5%	-3.2%
Biggest five-year real loss	51.3	69.9%	32.4%	30.5%

Source: ParadoxInvesting.com, R. Shiller, Federal Reserve, Robeco

Based on Table 3 there is reason to be concerned about the current high CAPE ratio. It shows that the probability of the market suffering a real loss over a five-year period was almost three times that derived from our analysis that included all quintiles. We found similar results for the low-risk portfolio. For this portfolio, the likelihood of a loss more than doubled from 10.6% to 26.7%. Surprisingly, the probability of a loss for the high-risk portfolio was lower than that of the market portfolio in this quintile. However, note that the average loss in the market portfolio was much lower than in the high-risk portfolio, again resulting in a much lower LPM: -10.1% versus -14.6%. Table 3 also shows that the balanced portfolio performed relatively well with respect to the downside risk. The LPM moved from -2% for all quintiles to only -3.2% for the top quintile. Again, we see that the low-risk portfolio stood out positively. It performed the best across almost all metrics. However, the difference between the low-risk portfolio and the balanced portfolio was rather small.

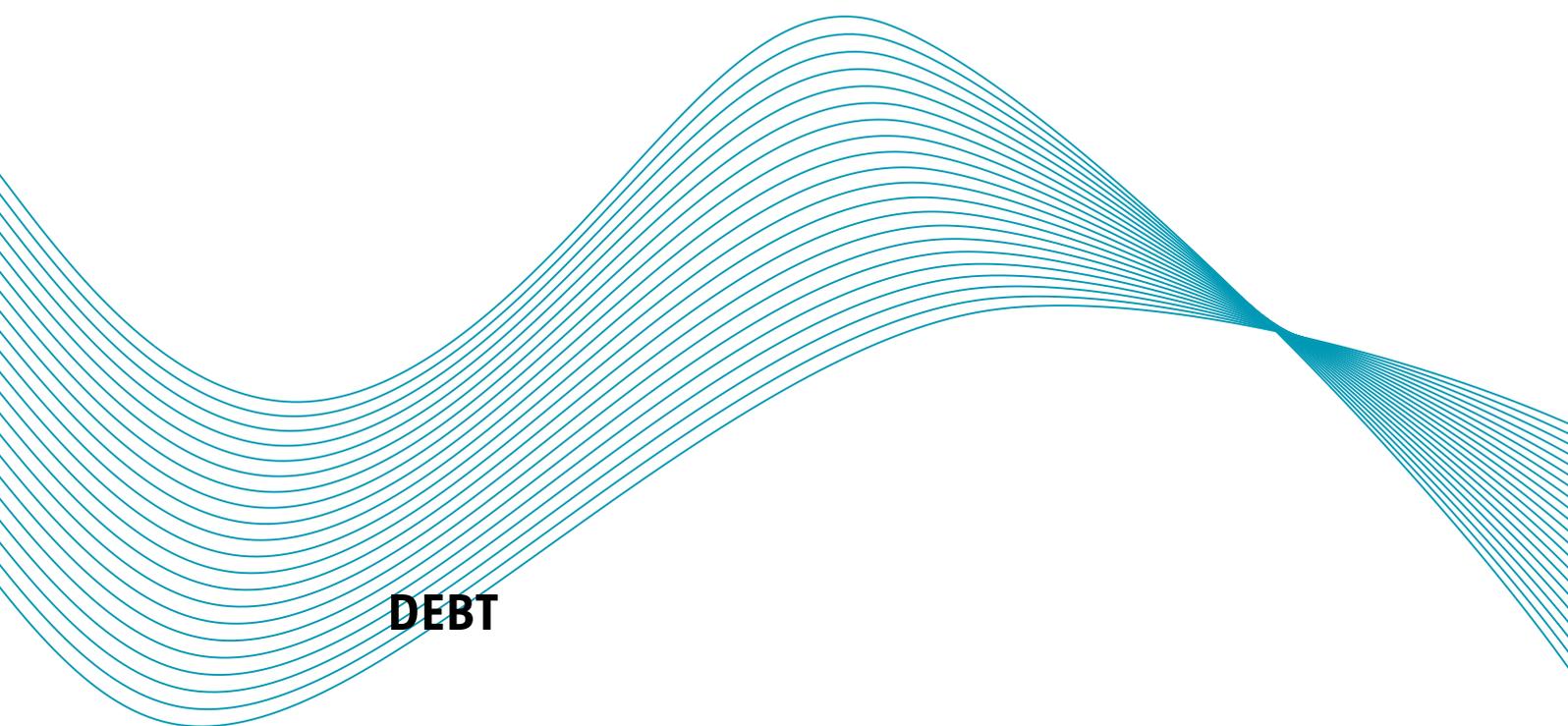
From past to present

In our analysis, we used historical data to gauge possible outcomes for the future. The outcomes were in line with our expectations. A simple portfolio, which selects stocks based on their realized three-year volatilities, offers better downside risk protection than a market portfolio. The results were better than what one would expect based on the beta of the portfolio and the relative standard deviation. Besides the low-risk portfolio, we found that the balanced portfolio performed relatively well for the top CAPE quintile. Does that mean investors should move more towards Treasuries in this CAPE regime? To answer this question, we need to look at an analysis of a broader dataset which would also include the return. However, this would go beyond the scope of this article. Instead, we have kept the focus on the downside risk. How much protection does a Treasury portfolio offer for the coming five years? The answer depends a lot on the investor's home base. We believe that a euro-based investor cannot expect much protection from investments in Bunds. The returns can be attributed to a combination of the starting bond yield, which is relatively low: 0.30%, and the future price appreciation. This appreciation is limited by how much further bond yields can fall. The most extreme yield level we found in our data sample was -63 basis points, which was witnessed in July 2016 in Switzerland. We believe this is too low a level and that a decline to 0% can already be considered an extreme event for the Eurozone. In this case, the nominal return on a 10-year Bund would be roughly 4%. This is hardly the level of protection we have witnessed in the past. For a US investor, it's a different story, as Treasuries trade at a much higher rate. With a higher yield buffer, the price has the potential to appreciate a great deal more than in the Eurozone or Japan.

A final word

When CAPE reached 1929 levels in 2018, Robert Shiller not only expressed his concerns about the valuation, but also wisely stated that markets could remain bullish for years to come. While a loss looks highly probable, it is almost as likely that returns will remain in positive territory within the five-year timespan. Our analysis confirms the validity of Shiller's concerns: high CAPE levels are followed by periods of higher downside risk. In the words of Mark Twain, "History doesn't repeat itself, but it often rhymes". Therefore, investors are well-advised to focus on downside risk for the coming five years.





DEBT

ALL ROADS LEAD TO ROME BUT FEW LEAD TO ITALIAN DEBT SUSTAINABILITY

Back in 2013, during the heydays of fiscal austerity, a now-famous controversy among economists arose relating to the benefits of fiscal belt tightening by governments. It all started when a student found coding errors and omissions in a seminal work by Harvard professors Reinhart and Rogoff (2010). Their paper was seized upon by conservative politicians in the aftermath of the GFC, as it made a case for reigning in government expenditures to reduce harmful government debt-to-GDP levels. The key finding of Reinhart and Rogoff was that when a country's ratio of public debt to GDP rises above 90%, its average annual GDP growth collapses from between 3 and 4% to -0.1%. However, the Amherst student proved that real GDP growth rates for countries with a debt ratio above 90% of GDP was actually 2.2% not -0.1%. But economists now widely accept that there is no clear threshold for public debt to GDP, so why worry about debt sustainability at all?

An interesting paper on the debt-inflation cycle by Peter Boetkke and Christopher Coyne gives an answer to this question. They quote Adam Smith: *“When national debts have once been accumulated to a certain degree, there is scarce, I believe, a single instance of their having been fairly and compleately paid. The liberation of the publick revenue, if it has ever been brought about at all, has always been brought about by a bankruptcy; sometimes by an avowed one, but always by a real one, though frequently by a pretended payment.”*

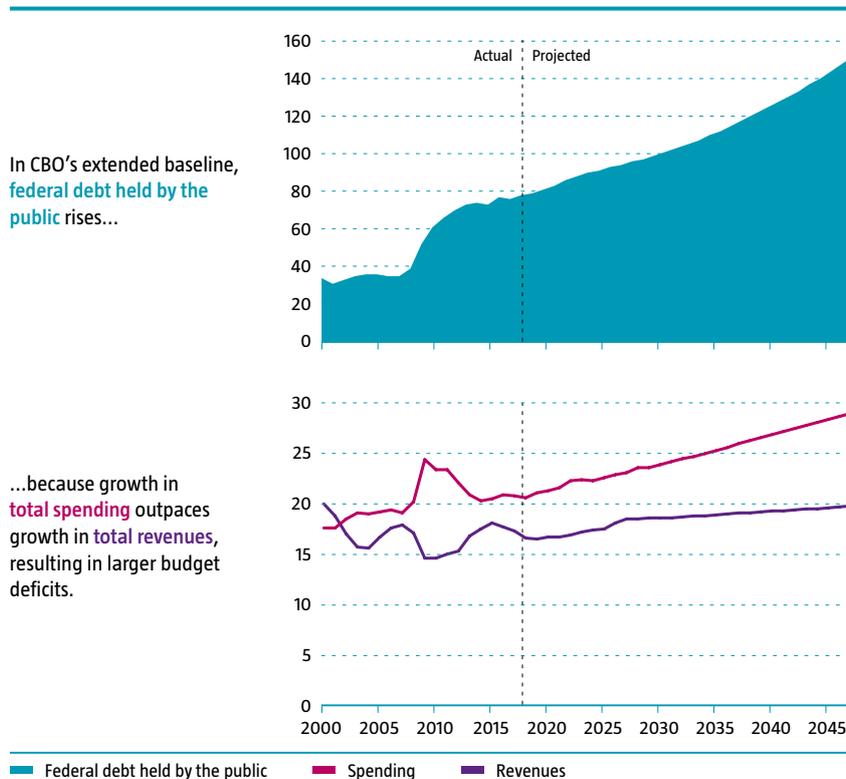
By ‘pretended payment’ he meant subsequent borrowing or printing money, ultimately leading to the monetization of debt.

Today, Adam Smith would probably add quantitative easing to the pretended payments. He called these payments a juggling trick, *“so easily seen through, and at the same time so pernicious. Almost all states, however, ancient as well as modern, when reduced to this necessity, have, upon some occasions, played this very juggling trick.”* So, there is reason to be concerned, because one day the juggling trick will invariably end.

Haven’t we learned from past mistakes?

We can assume therefore that financial markets and governments have heeded such warnings and learned from the past. So, how have governments solved the problem of increasing debt loads in more recent times? Theoretically, they have four options: grow, save, inflate or go bust. Needless to say, the preferred route is to grow out of the debt load. This is a popular political promise used recently by president Trump. The clear danger of this path is that it is wishful thinking. Growth alone will not solve the problem, especially in view of more realistic growth assumptions. See Figure 1 below.

Figure 1: Federal debt, spending and revenues. Percentage of Gross Domestic Product (GDP).



Source: Congressional Budget Office.

The extended baseline generally reflects current law, following CBO’s 10-year baseline budget projections through 2028 and then extending most of the concepts underlying those projections for the rest of the long-term projection period.

Another relatively painless way out of the debt problem is to inflate the debt. Reviewing the experiences of six industrialized nations¹ in the period 1960-2005, an interesting study by Giannitsarou and Scott concluded that debt was primarily reduced through savings: adjustments in the primary deficit (80-100%), i.e. the fiscal deficit minus interest payments. Inflation (0-10%) and GDP growth (0-20%) played a minimal role. Hence, countries have not chosen or been able to grow or inflate themselves out of their debt load in this historically limited time frame.

1. Canada, Germany, Italy, Japan, the UK and the US.

The return of John Maynard Keynes

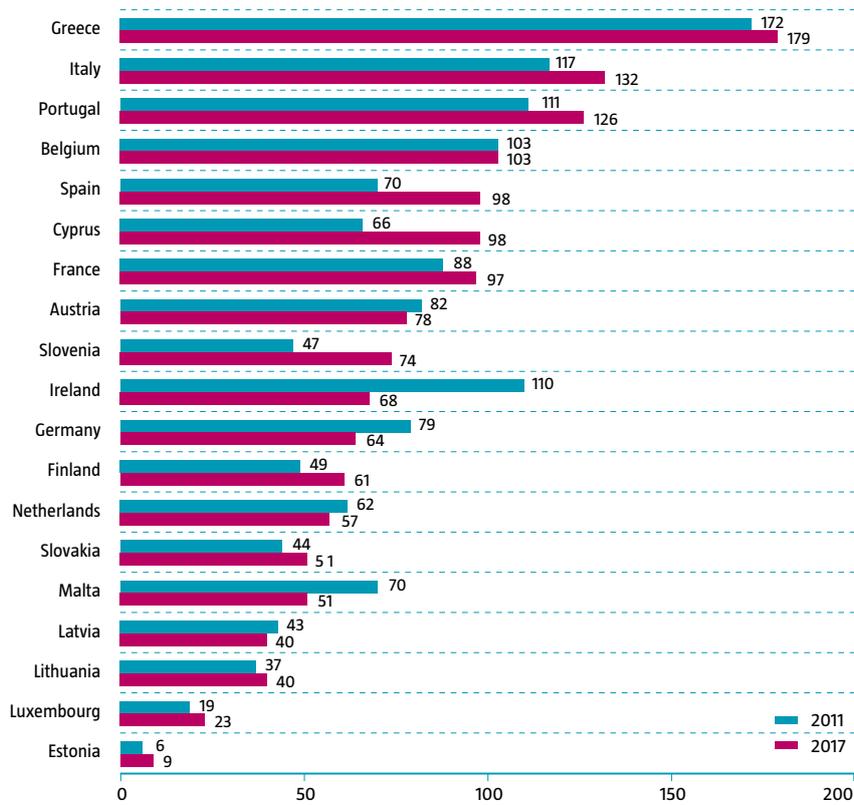
Though fiscal responsibility has been key in reducing debt loads, one wonders if the same applies today. The current debate on fiscal responsibility mirrors the famous debate between Hayek and Keynes during the Great Depression. In Hayek's view, the key to recovery was private investment. Fiscal responsibility was necessary to maintain the confidence of private investors and guarantee the long-term health of the economy. On the contrary, Keynes argued that an immediate rise in government spending should counteract the decline in aggregate demand and stimulate growth. Keynes won the argument. Even president Nixon, speaking off-camera to Howard K. Smith from ABC News on 4 January 1971, said that he was "now a Keynesian in economics."² However, Keynesian demand management eventually fell out of favor following two large oil crises that resulted in the stagflation of the seventies. Demand management had clearly lost its potency.

2. Smith was shocked at the statement, comparing it in religious terms to a Christian suddenly suggesting, "all things considered, I think Mohammad was right".

But the Keynesian recipe came back into fashion during the Great Financial Crisis. In the US, this was a deliberate policy enacted by the US government to increase expenditure in the first two years after the 2008 Lehman collapse. In Europe, the aggressive quasi-fiscal measures of the ECB have given heavily indebted states access to fresh credit and new incentives to borrow. According to Hans-Werner Sinn, former president of the German research institute IFO, the recovery has been Keynesian, despite all the talk of "austerity". A striking example of fiscal subsidy was the ECB's OMT program. OMT stands for Outright Monetary Transactions, a highly misleading name according to Sinn, as essentially it is free-of-charge credit default swap insurance – potentially at the tax payer's expense. We would go even further and say that the OMT led to a windfall. The ECB reduced both the risk of default and the borrowing costs, in particular by purchasing bonds from Eurozone states. The ECB's quasi-fiscal policies, which according to Sinn are a combination of debt mutualization and outright public international credit provision, have generally resulted in elevated public debt levels.

Japan has in the past tried the Keynesian recipe through an endless list of fiscal stimulus programs. The country's second-largest stimulus package was introduced as recently as 2013 as part of Abenomics and focused on building critical infrastructure such as bridges, tunnels and earthquake-resistant roads. The Bank of Japan was also the first central bank to undertake quantitative easing, pushing interest rates into negative territory. It recently introduced an even more aggressive tool, which was first used by the US during World War II: yield curve control. The Bank of Japan has capped the 10-year interest rate at 0% and, in effect, is setting the stage for monetization, as its balance sheet can theoretically be blown up to infinity, ownership of government is almost completely domestic and regulation can force domestic financial institutions to keep significant holdings of government debt. In our opinion, this is a clear – and extremely powerful and credible – example of Adam Smith's juggling trick. As a market participant, it seems unwise to lean into the wind when it comes to the central bank, at least in the medium term.

Figure 2: Public debt to GDP ratios in 2011 and 2017 (% of GDP)

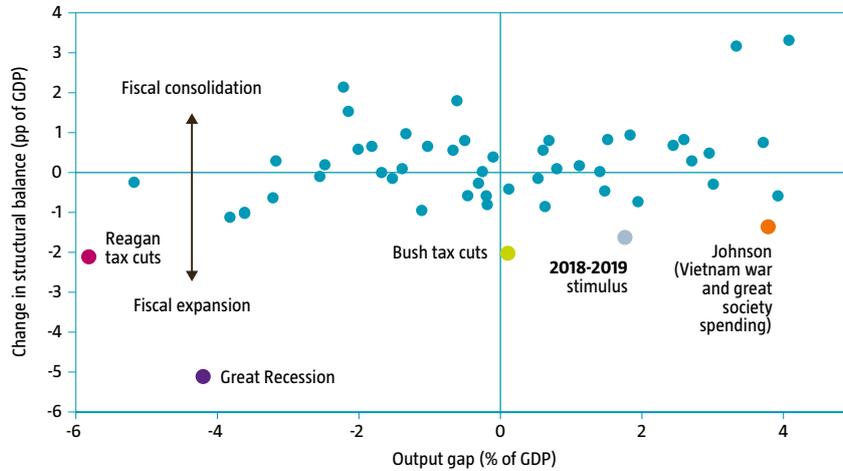


Source: Eurostat, Database Economy and Finance, Government Statistics, Government Deficit and Debt

Where we stand

The debt situation in the West’s major economic blocs is unlikely to improve in the next five years. The US is engaging in a large, unusual pro-cyclical policy experiment which in 2019 will result in a government deficit exceeding 4.5% GDP. The federal debt will continue to rise and, with an economy already at or near full employment, supply side constraints will likely push up inflation. The Fed will counteract this by keeping medium-term inflation in check. The safe-haven status of US government bonds and the depth and liquidity of its market are positive factors facilitating the increase in financing requirements.

Figure 3: Fiscal stance across the business cycle



Source: IMF

The Eurozone is nowhere near full employment and medium-term inflationary risks are low. The largest risk is the massive public debt in Italy³, which currently stands at around 133% of GDP. Around two-thirds of this is held domestically. The country has a long history of running primary surpluses, so it has tried to solve its debt problem via the traditional channel – alongside the ECB’s QE program (the juggling act). The new populist Italian government is, however, an unknown quantity. Would it deliberately enter a power struggle with other Eurozone countries by unilaterally presenting an expansionary budget for 2019 later this year, flunking EU budget rules? We expect the end result to be deflationary rather than inflationary. Italy is essentially borrowing in a foreign currency. Breaking EU rules would make it easy to mobilize financial markets against the Italian government, forcing the long-term yield spread vis-à-vis Germany to rise significantly. This would depress growth and push up government debt further. The ECB could only come to the rescue if the Italian government complies with EU rules. Failing that, an ‘Italexit’ may well be on the cards. This would lead to debt restructuring in Italy and the imposition of capital controls. As Italy is the third-largest economy in the Eurozone, an Italexit would mean a significant negative supply shock – to both the Italian and Eurozone economies. The effects of which would be highly deflationary, or in any case disinflationary, rather than inflationary.

If the Italian government complies with EU rules, albeit reluctantly, expectations are that the exceptional monetary stimulus in the Eurozone will be gradually withdrawn. Gradual monetary normalization will exert upward pressure on the Italian debt/GDP ratio, without putting longer-term sustainability at risk. With Italy toeing the line, the ECB could – given the country’s theoretically unlimited balance-sheet size – always cap Italian bond yields, in the same vein as the BoJ’s yield-curve control.

Predicting Italy's debt-to-GDP

To get a handle on how the Italian public debt dynamics could evolve in the medium term, we introduce a debt sustainability equation, sometimes called “the least controversial equation in macroeconomics”.

$$D_t = \frac{(1 + r_t)}{(1 + g_t)} D_{t-1} + PB_t$$

To clarify the terminology, D_t is the public debt-to-GDP ratio at time t , r_t is the nominal average cost of financing of public debt at time t , g_t is the nominal GDP growth rate at time t , D_{t-1} is the

public debt-to-GDP ratio at time $t-1$ and PB_t is the public budget deficit/surplus at time t (fiscal revenues minus fiscal expenditures).

Using our projections of an average budget deficit of -0.7% in the next five years, a nominal GDP growth of 2.75% and an average cost of debt of 3.08%, we can estimate a base-case scenario for the development of the debt-to-GDP ratio. We don't think the current populist Italian government will be able or willing to achieve a balanced budget in the next five years. Under these assumptions, Italy's debt-to-GDP level will increase by 0.7% annually in the next five years and reach 135.5% in 2023.

Table 1: Italy's debt-to-GDP level will increase by 0.7% annually in the next five years and reach 135.5% in 2023

Debt/GDP	132%						
Assumed deficit(+)/surplus(-)	0.7%						
	Average cost of debt						
GDP growth	1%	2%	3%	4%	5%	6%	7%
6%	-5.6%	-4.3%	-3.1%	-1.8%	-0.6%	0.7%	1.9%
5%	-4.4%	-3.1%	-1.8%	-0.6%	0.7%	1.9%	3.2%
4%	-3.1%	-1.9%	-0.6%	0.7%	1.9%	3.2%	4.5%
3%	-1.9%	-0.6%	0.7%	2.0%	3.2%	4.5%	5.8%
2%	-0.6%	0.7%	2.0%	3.3%	4.6%	5.8%	7.1%
1%	0.7%	2.0%	3.3%	4.6%	5.9%	7.2%	8.5%
0%	2.0%	3.3%	4.6%	6.0%	7.3%	8.6%	9.9%
-1%	3.3%	4.7%	6.0%	7.3%	8.7%	10.0%	11.3%
-2%	4.7%	6.1%	7.4%	8.8%	10.1%	11.4%	12.8%
-3%	6.1%	7.5%	8.8%	10.2%	11.6%	12.9%	14.3%

The white area in the table depicts the combination of interest rates and GDP growth, where Italian debt declines as a percentage of GDP based on an annual budget deficit of 0.7%. Interest costs need to be below 3% and/or nominal GDP growth needs to be above 4% to reduce debt to GDP. Given a rising interest rates environment as the ECB returns to monetary normalcy, the lack of productivity gains, a declining labor force participation and a populist government with a fiscal easing bias, an improvement in Italy's public debt sustainability is not a base-case scenario.

1. This is the average cost on outstanding Italian public debt as reported by Bloomberg. However, the effective net interest rate cost on outstanding debt is lower given that the ECB makes significant seigniorage profits on Italian debt holdings, which are partially transferred back to the Italian government. This is an indirect method of debt monetization that enhances debt sustainability.

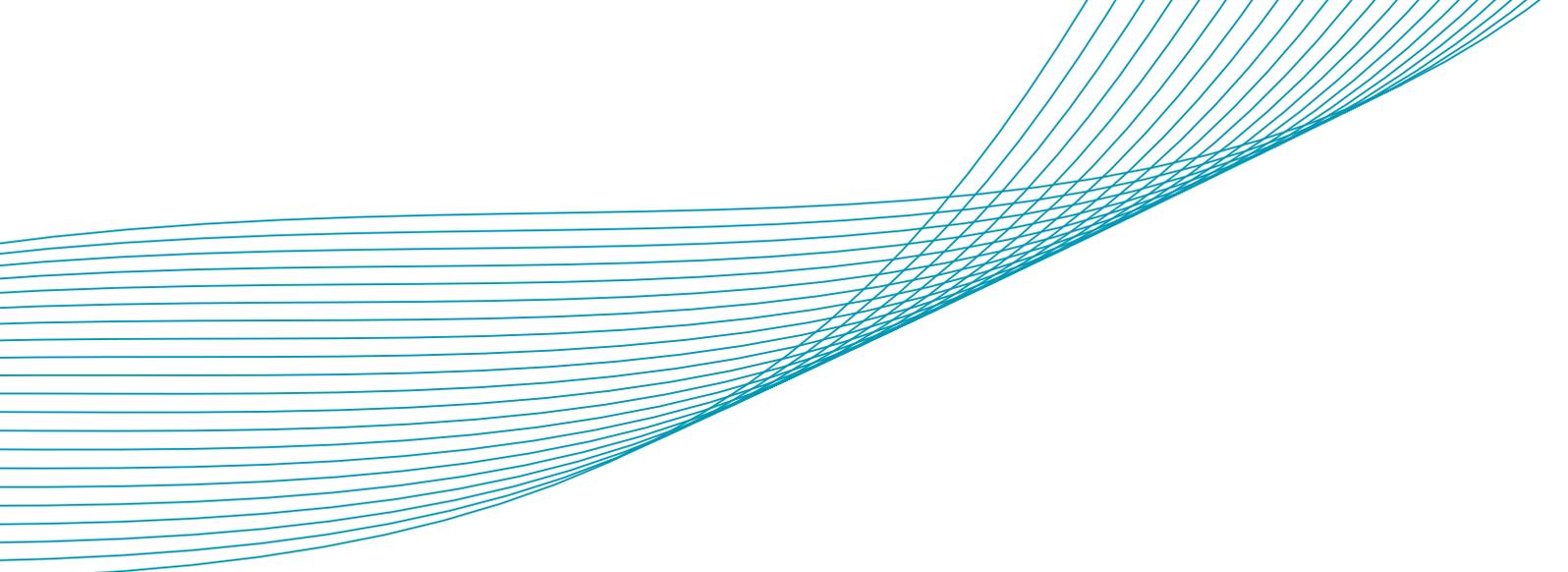
Given our analysis, we believe that the markets are likely to continue testing the credibility of the Italian government. This will discipline government spending, but the country's situation is fragile. It will be difficult for Italy to successfully perform the juggling trick on its own. However, the ECB is a powerful source that can easily pull it off. By using unconventional policy tools and continuing to subsidize part of the interest rate burden on Italian debt through profit sharing, the central bank will be able to steer Italy through troubled waters. Italy would, however, need to obey the rules drawn up by the ECB and the EU.

Japan currently lacks a convincing program to curb the growth of its massive public debt (239% of GDP in 2016). The sales tax hike from 8 to 10% in October 2019 will go ahead as planned, but its effectiveness is likely to be undermined by all kinds of exemptions born of a fear that the rate increase will spark a negative growth shock. The debt-to-GDP ratio is therefore expected to rise to 250% GDP in 2030 and could increase further on the back of disappointments concerning public health expenditures. Given the home bias of domestic investors with relatively high saving rates and the grip the BoJ has on the Japanese government bond market, debt financing still isn't considered to be a problem for the foreseeable future. It is also important to keep in mind that the Japanese government has enormous financial assets currently in the region of 120% of GDP.

Another day, another depth

Despite all the talk of deleveraging, sovereign debt ratios in the major western economies have generally continued to rise. Austerity policies have succeeded in curbing growth, but not in systematically lowering debt ratios, proving Keynes' belief that you cannot starve your way to prosperity. Post-war economic history suggests that inflation has played an insignificant role in depressing debt ratios. This will likely also be the case for the foreseeable future, as long as markets remain convinced of the ability of governments and central banks to kick the can down the road. A striking example is the situation in Japan, where the central bank has all but taken charge of the bond market and the economy is basically positioned for debt monetization. Inflationary expectations for Japan will, however, remain subdued for years to come. And Adam Smith's juggling trick will continue to be used for a while yet.





STRANDED ASSETS

OIL WILL HAVE TO BE WRITTEN OFF AT SOME POINT. BUT NOT YET!

Stranded assets are currently a big concern in the energy sector. With oil and gas reserves possibly remaining unused due to the ongoing energy transition, investors are faced with a tough question: is it time to sell these carbon-intense holdings or would that be premature? And are fears of incurring substantial losses due to an unavoidable write-down of useless stranded assets overdone? The concept of 'stranded assets' was first introduced by The Carbon Tracker Initiative in July 2011. To reduce the chance of global warming exceeding 2°C to 20% (which is currently considered a very ambitious target), the initiative set a global carbon budget. The total carbon potential of known fossil fuel reserves (of which 22% consisted of oil) actually exceeded the budget five-fold. Therefore, 80% of the reserves should be considered 'unburnable carbon', which will turn out to be stranded assets and have to be written off. This will affect not only listed coal, oil and gas companies, but also their investors.

A regulator's response

In light of the above, the ambition to curb climate change has the potential to turn into a source of financial risk that requires the intervention of regulators. The Governor of the Bank of England Mark Carney addressed this issue in his seminal speech 'Breaking the Tragedy of the Horizon – climate change and financial stability' in 2015.

As chair of the Financial Stability Board, Carney identified three types of risks for insurers:

1. Physical risks: more claims resulting from climate- and weather-related events, such as floods and storms that damage property or disrupt trade
2. Liability risks: third-party claims from parties who have suffered loss or damage due to climate change against those they hold responsible
3. Transition risks: the process of adjustment to a lower-carbon economy and the potential revaluation of a huge range of assets.

Institutional investors are also becoming increasingly aware of these risks and are taking action to limit them, for example in the case of the last two risks, by reducing the CO₂ footprint of their portfolio.

The tragedy of the horizons

In his speech, Carney introduced the concept of the 'tragedy of the horizons' (based on the well-known 'tragedy of the commons') by highlighting that the catastrophic impacts of climate change will be felt beyond the traditional horizons of most actors (beyond the business cycle, the political cycle and the horizon of technocratic authorities like central banks). The horizon for conventional monetary policy is two to three years. For financial stability, it is longer, but it does not go beyond the outer limits of the credit cycle, which lasts about a decade. By taking a passive approach and allowing the so-called 'carbon bubble' to grow, the markets could be exposed to risk levels on par with those that triggered the subprime crisis of 2007.

The horizon for climate change is even longer, which creates the dilemma, eloquently described by Australian prime minister Tony Abbott at the 2014 G20 meeting in Brisbane as follows: "We can't pursue environmental improvements at the expense of economic progress. We can't reduce emissions in ways which cost jobs because it will fail if that's what we end up trying to do."

The 2015 Paris Agreement revealed an unexpected consensus among 200 countries and determination among politicians to address the tragedy of the horizon. This, however, was overshadowed somewhat by the election of Donald Trump as US president. According to the World Resources Institute, the US was responsible for almost 15% of all greenhouse gas emissions in 2013. Trump has since vowed to withdraw from the climate accord after refusing to cooperate on its climate change mitigation goals. Nevertheless, the US intends to abide by the four-year exit process. Paradoxically, however, while global carbon dioxide emissions from energy use climbed 1.6% in 2017, in the US they actually fell for the third year in a row, by 0.5%.

Big Oil response

In 2017 Big Oil started to position itself for a low-carbon future, with the European majors leading the way. Uncertainty will remain, as there is no roadmap for the energy transition and no clear view as to how long it will take and what the winning technologies will be. One clearly identifiable trend is the Big Oil's increased investment in carbon-free energy. The oil giants reckon that oil supply will peak around 2020 and then fall 20% by 2030, fueled by the need to reduce production to meet the climate target of 2°C. To achieve this,

'With oil on its way out, the price is expected to go down over the longer term'

part of the supply will be substituted by alternative sources such as solar and wind energy. Spending on fossil fuel explorations by oil majors has fallen sharply since 2014, as illustrated in Figure 1.

Figure 1: Trend in worldwide capital expenditures in oil and gas has been broken



Source: Thomson Reuters Datastream, Robeco

Estimates of what can be burned and what needs to be left in the ground vary substantially and all of them should be used with caution. But based on IEA estimates, practically all of the oil majors' 2P reserves (proven and probable reserves) can be produced. In that case, only the so-called 3P reserves (proven, probable and possible reserves) in excess of the 2P reserves run a big risk of becoming stranded. This latter share represents only a couple of percentage points of the total value of oil majors, so the potential for it to become stranded could be considered a tail risk for oil companies as a whole. As the demand for oil continues to grow over the next five years, particularly due to emerging markets, the transition to a low-carbon economy could easily be well underway later rather than sooner, a risk to be considered by the oil majors. Estimates as to when oil demand will peak have shifted and now vary from 2023 to 2070.

So far, oil prices do not reflect a shift towards a low-carbon economy

With oil on its way out, the price is expected to go down over the longer term. But a lack of investment (e.g. in oil sands or in the Arctic) could eventually give rise to shortages, thus pushing up oil prices. So far, price behavior does not seem to be based on the transition to a low-carbon economy. Supply side problems, in Nigeria and Venezuela, for instance, and the OPEC cartel's successful rationing policies are the key factors influencing shorter-term price movements. The upside for oil prices is limited somewhat by the US shale revolution, as higher prices increase supply, illustrating the adage that the best remedy for higher prices is higher prices. These observations are illustrated in Figure 2, which compares the price of NYMEX WTI light sweet crude oil futures contracts with a maturity of 1-month and 5-year contract. The NYMEX future contracts are the world's most liquid and actively traded crude oil contracts. The figure illustrates that estimates for future oil prices (the magenta line) have been relatively stable at around 50 dollars per barrel since 2015. Investors have not changed their minds much since 2015 when the forecasted supply peak materialized.

Figure 2: Price expectations have been largely unaffected by the oil supply peak

Source: Bloomberg, Robeco

Against the backdrop of increasing global demand, this creates a dilemma for investors. Is it time to dispose of carbon holdings? Or is it too soon? And are fears of incurring substantial losses due to an unavoidable write-down of useless stranded assets overdone? At some point, the oil price has to drop significantly. Even Saudi Arabia has recently announced a plan to become carbon-neutral within a couple of decades. To quote Richard Branson, “They are going to use their deserts, fill ‘em up with solar, power their country from the sun, save themselves a lot of money. And so, as oil comes down in price, it won’t hurt as much”.

Oil is still important for the global equity benchmark

The ongoing IT rally has not succeeded in pushing Exxon Mobile, the largest of the oil majors, out of the MSCI World Index’s top ten holdings. Moreover, the energy sector accounts for more than 6% of the MSCI World Index and the MSCI All Countries Index. As movements in oil prices are essentially unpredictable in the shorter term, and so far, seem largely unaffected by the global transition to a non-carbon economy, investments in the energy sector still make sense.

To illustrate this point, we took a closer look at the role played by the energy sector in a global equity portfolio. For this purpose, we decomposed this portfolio’s returns into different drivers. For each month from January 1985 to December 2017, we divided the returns in four components: market, sector, country and specific. The last of these captures the return variation that is not explained by the other three. Our methodology was based on that of Griffin, J. and Karyoli, G.A. (1998) and updates and extends the analysis published in Dutch by our colleague Laurens Swinkels. The decomposition offers investors valuable insights. For example, the allocation among countries/regions is a key performance driver for institutional investors. One expects that part of the equity returns can be attributed to this driver. If not, it makes little sense to focus on this allocation decision. Furthermore, one can question whether it is beneficial to invest in a global portfolio as opposed to a regional or country portfolio. Particularly if the common factor is very dominant, all stocks will move more or less in parallel. In that case, investors should focus on beta in their equity allocation. The factor which is the focus of this special topic is the sector effect and, in particular, the role of the energy sector.

‘The movements in the price of oil have so far hardly been affected by changes brought about by the transition to a low-carbon economy’

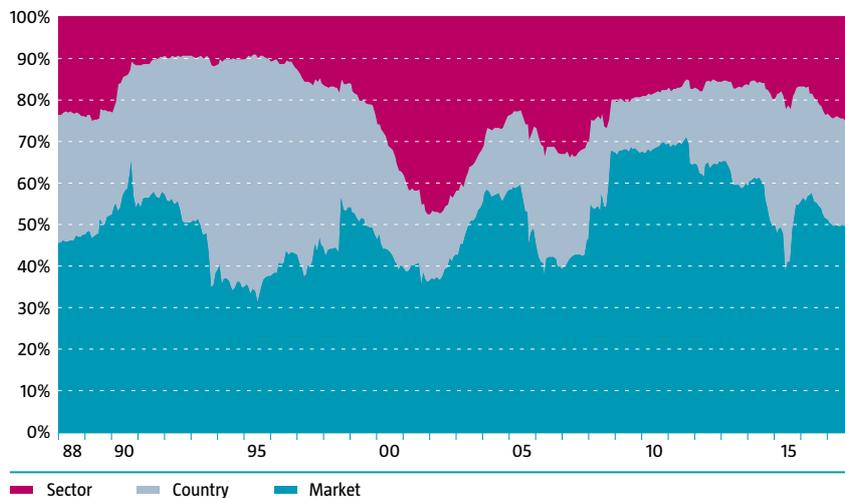
Table 1: Countries and sectors included in our analysis

Countries			Sectors	
Australia	Greece	Portugal	Energy	Financials
Austria	Hong Kong	Singapore	Basic materials	Technology
Belgium	Ireland	Spain	Industrials	
Canada	Italy	Sweden	Consumer goods	
Denmark	Japan	Switzerland	Health care	
Finland	Netherlands	United Kingdom	Consumer services	
France	New Zealand	United States	Telecommunications	
Germany	Norway		Utilities	

For our analysis, we used the country-sector index returns from the Thomson Financial Datastream database. We used the ten-sector classification from Datastream for 23 countries in the (initially) developed markets dataset. These countries and sectors are listed in Table 1.

We first constructed a global portfolio incorporating all of the above countries and sectors. The changes in the decomposition of the returns over time are shown below.

Figure 3: What drives the stock market?



Source: Thomson Reuters Datastream, Robeco

Figure 3 shows that the decomposition varies over time. For example, in the earlier years, the country component had a relatively large weight, which largely explained the equity returns at that time. This changed during the dot-com bubble. As shown in the figure, the sector component was able to explain more than 40% of the returns at that time. At the end of 2017 the decomposition almost matched the historical average with market, country and sector components accounting for 50%, 25% and 25% of returns, respectively. Next, we performed the same decomposition on a global equity index ex the energy sector. We were mostly interested in the impact on the sector component, of which the change is shown in Figure 4.

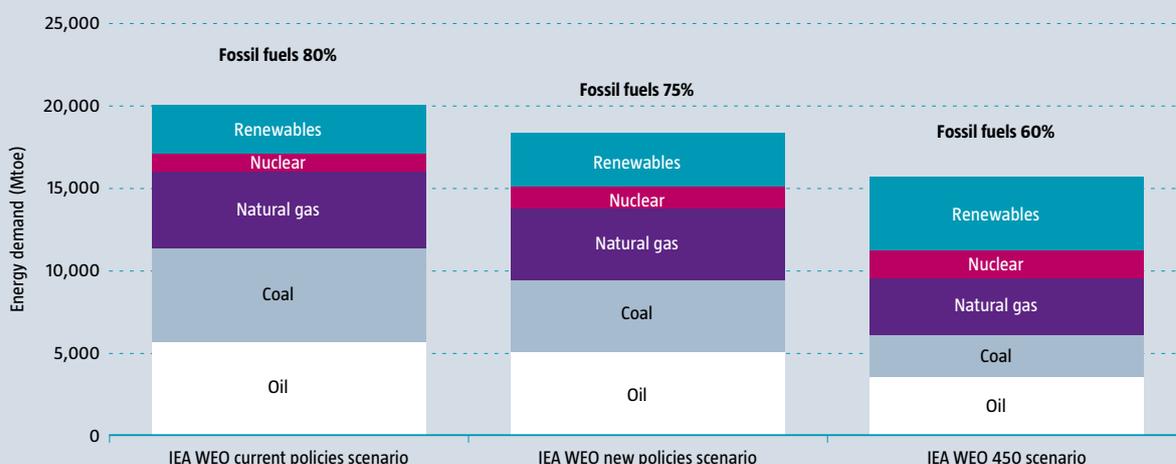
Figure 4 shows that excluding the energy sector had little impact on the return decomposition during the first several years. This is no surprise, as we had seen that country allocation was much more important in those years. Later on, it was the tech sector that had a major impact on the equity returns. After the dot-com bubble, we see that the lines in Figure 4 start to diverge. The portfolio that includes the energy sector shows a higher attribution to the sector component than the portfolio that does not. The differences may not look that significant, but remember that the weight of the energy sector is relatively small – only 6% at the end of the period. Given that this weight is relatively modest, we find the 4% drop at the end of the period fairly large.

Managing the risks of transition

We assign a low probability to the carbon bubble impacting the oil majors’ value within the timespan discussed in this publication. The supply peak is expected to take place between 2023-2070, the first year of which corresponds to the timespan covered in this publication. It is highly likely that the markets will be more concerned with the carbon bubble by then than they are today. One must be prepared. Therefore, we believe it is important to get started now. The oil majors differ greatly from each other. Companies like Shell plan to move away from carbon-intense fossil fuels and more towards carbon-friendly fuels like gas. Furthermore, companies are spending more on alternative and clean energy resources. Some of these companies will be well-positioned for what looks to be an inevitable transition. In order to assess the progress of oil majors, it is important to measure their vulnerability to the risks involved in the transition. To this end, the Financial Stability Board has instituted the Task Force on Climate-related Financial Disclosures (TCFD), chaired by Michael Bloomberg. The Task Force wants the oil majors to start using stress tests, similar to those used in the banking industry, that will cover different transition scenarios.

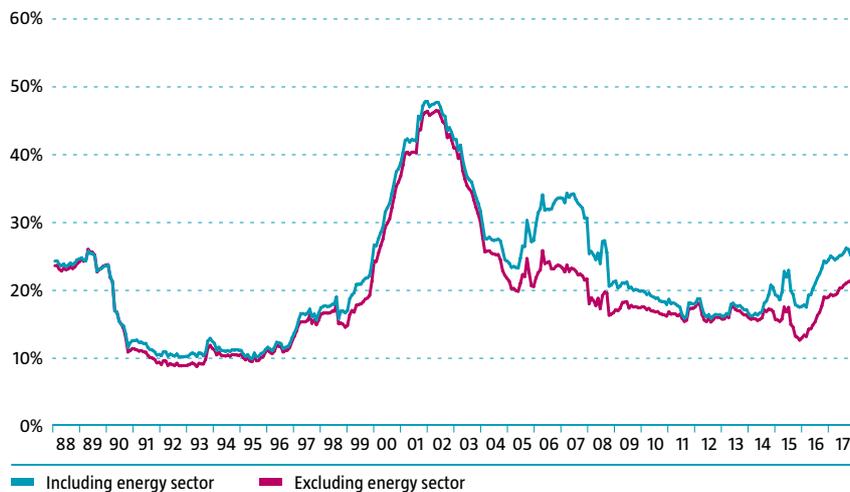
The Task Force published their guidance document for possible scenarios and recommendations in 2017. Their goal is to ensure that companies will voluntarily and consistently disclose climate-related financial risks to investors, lenders, insurers, and other stakeholders. Their initiative has the support of large asset managers and holders. As reporting is voluntary and their guidelines have been published only recently, most oil majors are not yet in compliance. This makes it very hard to judge how prepared a company is for the transition. We strongly believe that reporting on these scenarios must and will be improved. This will enable investors to differentiate more easily between companies and better assess the risks involved in the transition. Some companies will probably downplay the scenarios and lead us to believe that everything will remain ‘business as usual’. However, others will act decisively to avert the risks. Ultimately, this will make investing in the sector even more interesting. It is not only the sector that is unique – the companies themselves also differ considerably from each other.

Example of a scenario described in the FCFD guidance report – IEA World Energy Outlook (WEO) scenarios to 2040



Source: TCFD

Figure 4: Share of returns attributable to the sector component



Source: Thomson Reuters Datastream, Robeco

Our analysis shows that including the energy sector in the investment universe is appealing for active managers. It offers them more breadth in their allocation, as the energy sector truly has unique characteristics, and this was especially true in the later years included in our research sample. These unique characteristics also make the energy sector interesting for passive investors, as including the energy sector will likely help diversify the portfolio’s risks. Sovereign wealth funds in oil-producing countries where the economies are already heavily exposed to the carbon/oil price risk are a possible exception¹.

Conclusion

The worldwide ambition to limit the rise of global temperatures to no more than 2°C compared to pre-industrial revolution levels makes it plausible that some fossil fuels reserves will not be used up. It is therefore likely that a portion of oil companies’ proven reserves will have to be written off. The question also arises as to whether the ‘carbon bubble’ actually exists. As the transition to a low-carbon economy will be gradual, the global demand for oil partly attributable to the ongoing rise of emerging economies will remain strong on a five- to ten-year horizon. Furthermore, the valuation of oil majors is based on proven reserves which will be converted into actual production in the coming eight to eleven years and only a couple of percentage points of write-downs of the value of oil majors are likely. We therefore conclude that there is, as yet, no carbon bubble to speak of.

The movements in the price of oil have so far hardly been affected by changes brought about by the transition to a low-carbon economy. Rather, they have primarily been the result of a string of supply side problems, rising geopolitical risk and cartel discipline aimed at limiting production which have been insufficiently countered by shale production in the US. As the energy sector currently accounts for more than 6% of the MSCI World index, the sector is too large to be ignored by general investors on a five-year horizon. Disregarding the sector would be inadvisable as it offers interesting opportunities for active investors to add value. Over the last decade, the energy sector has added a unique risk to equity portfolios. Going forward we expect this to remain the case. Investors stand to benefit from the added portfolio diversification.

1. E.g. the Norwegian central bank (Norges Bank) advised the Norwegian government on 16 November 2017 to remove oil stocks from the benchmark index of the Government Pension Fund Global (GPFG). Unsurprisingly, the central bank’s move was welcomed by Paul Fisher, former deputy head of the Bank of England’s Prudential Regulation Authority and senior associate at the Cambridge Institute for Sustainability Leadership. The government has made it clear that it is in no hurry to take a decision, as it deems the issues raised by the central bank to be “complex and multifaceted”.





ASSET ALLOCATION

BOND. CORPORATE BOND.

What should and should not be included in strategic asset allocation is a hotly debated topic among actuaries and asset allocators. When institutional investors perform long-term asset liability management studies, their strategic asset allocation is typically not linked to the macroeconomic cycle, asset class valuations or sentiment. In September 2017, the asset manager of a sovereign wealth fund owned by the Norwegian government (the Government Pension Fund Global, also known as the Oil Fund) published a report advising the Norwegian Ministry of Finance to exclude corporate bonds from the fund's strategic asset allocation. Their main argument was that the returns on corporate bonds are merely a combination of returns on government bonds and equities, making the entire corporate bond asset class redundant. Their findings make an interesting read. In this special topic, we reflect on their arguments and discuss three reasons why corporate bonds should be included in strategic asset allocation.

The empirical relationship between corporate bonds, government bonds and equity markets

We start by empirically decomposing the returns of investment grade and high yield corporate bonds into the risk-free rate, the interest rate return and the credit spread return. We then compare the credit spread returns to returns on government bonds and equities. To analyze the credit risk premium of investment grade and high yield corporate bonds, we use monthly time series data from the Bloomberg Barclays U.S. Corporate Investment Grade Index and the Bloomberg Barclays U.S. Corporate High Yield Index. The total returns and credit spread returns (excess returns over duration-matched Treasuries) are taken from the Barclays Live website. The one-month risk-free rate has been obtained from the Kenneth French data library. The start date we use for our analyses is August 1988, since this is the inception date of the credit spread returns. The last month of our sample period is June 2018.

Panel A in Table 1 shows the total return statistics for investment grade (IG) and high yield (HY). The Sharpe ratios of 0.78 and 0.62 for IG and HY, respectively, are highly statistically significant, with t-statistics well above 3. In Panels B, C, and D, we show the breakdown of total returns into three components: risk-free rate, Treasury return over risk-free rate and excess return over Treasuries. The risk-free rate contributes 2.96% to the average total return for the 1988-2018 sample period. For IG, the interest rate return contributes 3.25% and the credit spread return 0.60%. For HY, the interest rate return contributes 2.50% and the credit spread return 2.71%. The contribution of the interest rate component for HY is smaller than for IG, due to the combination of (1) the shorter interest rate duration of HY bonds vs. IG bonds, and (2) the structural decrease in interest rates over the sample period. The interest rate components have Sharpe ratios of 0.67 and 0.59, respectively, and the average returns are statistically significant. On the other hand, the Sharpe ratios of the credit spread components are relatively low at 0.16 and 0.29, respectively, and the average returns are not statistically different from zero.

The figures in Panel D for the credit spread returns of investment grade closely correspond to those reported in NBIM 2017a, even though their sample period ends somewhat earlier. They also reveal something puzzling: the credit spread returns are relatively small and not statistically significant. Table 1 suggests that the credit spread return is not sufficiently different from zero to warrant a separate allocation to credits. However, the decomposition does not show whether the credit spread return is correlated to other common factors. Should this be the case, the credit spread return adjusted for these other factor exposures might still be statistically significantly different from zero.

The α in the following regression is the credit spread return corrected for exposure to government bonds and equities:

$$R_t^{xs\ credit} = \alpha + \beta \cdot TERM_t + \gamma \cdot RMRF_t + \varepsilon_t$$

where TERM is the government bond premium and RMRF the equity premium relative to the one-month risk-free rate. For the TERM factor, we downloaded the total returns of the Bloomberg Barclays U.S. Treasury Index and subtracted the return of the one-month risk-free rate. We downloaded the RMRF series from the Kenneth French data library. If the α is indistinguishable from zero, it implies that there is no separate credit risk premium, also when adjusted for government bond and equity factors. Another interpretation is that there is insufficient statistical evidence for a positive allocation in a mean-variance portfolio optimization; see De Roon and Nijman (2001).

Table 1: Return of US investment grade and US high yield total returns and its components: risk-free rate, Treasury returns and excess returns over Treasuries, where the Treasury bonds are duration-matched to the corporate bonds. The t-statistic relates to the statistical significance of the average return. August 1988-June 2018.

	Investment grade	High yield
Panel A: Total return		
Average	6.80	8.17
Volatility	5.17%	8.47%
Sharpe ratio	0.74	0.62
t-statistic	4.07	3.37
Panel B: Risk-free rate		
Average	2.96	2.96
Volatility	0.72%	0.72%
Panel C: Treasury return vs. risk-free rate		
Average	3.25	2.50
Volatility	4.88%	4.25%
Sharpe ratio	0.67	0.59
t-statistic	3.64	3.21
Panel D: Excess return vs. Treasuries		
Average	0.60	2.71
Volatility	3.80%	9.22%
Sharpe ratio	0.16	0.29
t-statistic	0.86	1.61

Source: Bloomberg Index Services, Kenneth French, Robeco

Table 2: Regression results of credit spread returns on RMRF and TERM for US investment grade and US high yield. t-statistics between parentheses. August 1988-June 2018.

	Investment grade	High yield
Annualized alpha	0.20 (0.34)	2.23 (1.78)
RMRF beta	0.13 (11.1)	0.35 (14.1)
TERM beta	-0.23 (-5.9)	-0.82 (-10.0)
R ²	33.0%	48.4%

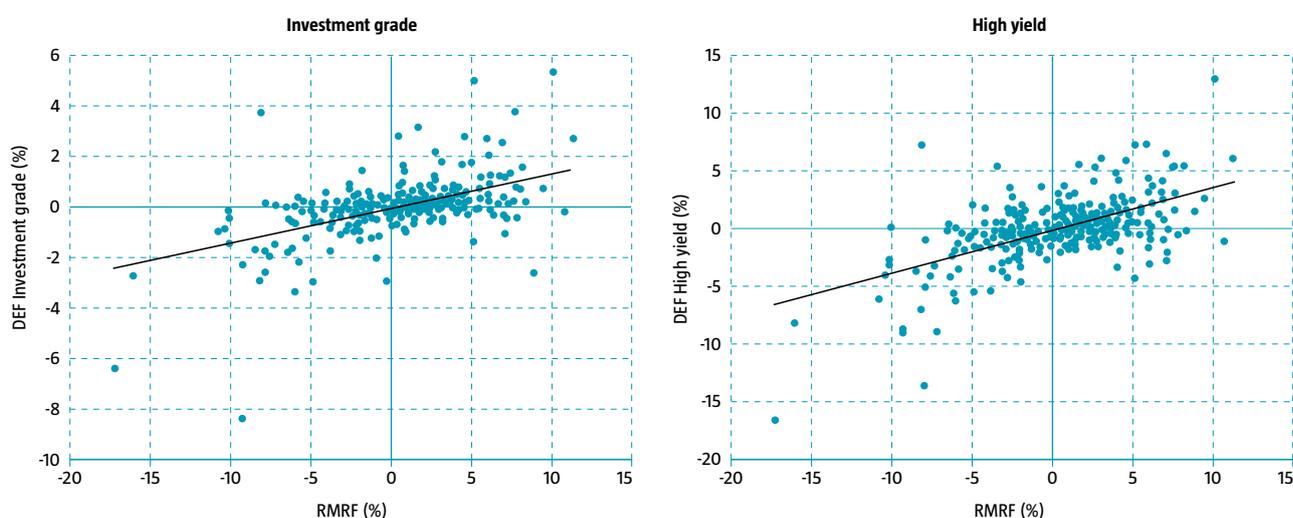
Source: Bloomberg Index Services, Kenneth French, Robeco

Table 2 shows the regression statistics. The IG results closely match those of NBIM (2017a). The insignificant alphas in these regressions lead NBIM to conclude that the credit risk premium is explained by the government bond and equity risk premiums. Their argument is that corporate bonds can be replicated by government bonds and equities, and therefore a strategic allocation to corporate bonds is redundant. However, there are at least three important reasons for not excluding corporate bonds: weak replication, reduced diversification and no harvesting of factor premiums. We discuss these three reasons next.

Reason 1: Weak replication of corporate bond returns by government bond and equity returns

The 'replication' in Table 2 only holds for the average returns, not for each month. This is indicated by the low R^2 s of the regression. For example, if we were to replace an allocation to IG corporate bonds with a 13% allocation to equities, as suggested by the regression coefficient of 0.13, it would leave $1-R^2 = 67\%$ of the return variation unexplained. The 35% allocation to equities for HY is only marginally better, with 51.6% of return variance unexplained. These can hardly be called return replications. This is illustrated in the two figures below, where we display the credit spread return on the vertical axis and compare it to the equity return.

Figure 1: Credit spread returns vs. equity returns for US investment grade and US high yield. August 1988-2017.

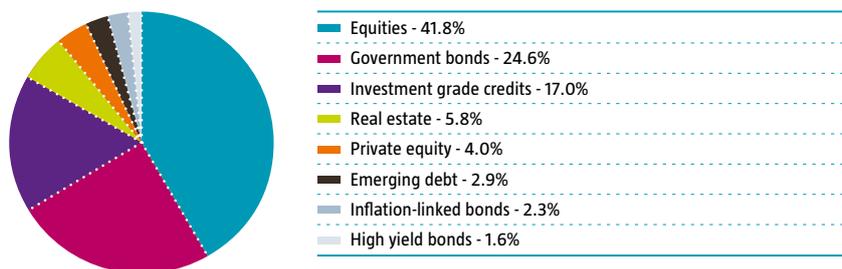


Source: Robeco

Reason 2: Excluding corporate bonds reduces diversification benefits

The market portfolio is one of the most broadly diversified portfolios. According to the Capital Asset Pricing Model, the market is the only risk factor that should price all other assets. Therefore, a portfolio that deviates from the market portfolio contains risk that can be diversified away and should not contain a risk premium. A market-capitalization weighted portfolio also has the highest investment capacity.

Figure 2 shows that at the end of 2017 corporate bonds made up close to 20% of the invested global market portfolio – compared to, for example, listed equities, with a weight just in excess of 40%. Excluding an asset class that is half the size of listed equity markets increases diversification risks relative to the market portfolio. Using the data from Doeswijk, Lam, and Swinkels (2018), we find that the tracking error of a portfolio that excludes corporate bonds relative to a portfolio that includes corporate bonds is 1.6% per annum. According to the regression results presented in Table 2, the additional risk that follows from excluding corporate bonds is not compensated by additional returns. Only if the alpha from the regression were to be negative and statistically significant might excluding corporate bonds compensate for reduced diversification benefits. Hence, the results can be expected in a reasonably efficient market and argue for the inclusion rather than exclusion of corporate bonds.

Figure 2: The global invested multi-asset market portfolio in December 2017

Source: <https://personal.eur.nl/lswinkels/>

If the regression results in Table 2 were to form a decisive argument for excluding an asset or asset class, this would have massive implications for strategic asset allocation. For example, European stocks might not systematically outperform stocks from the rest of the world. If this were the case, following the same reasoning as for corporate bonds, all European stocks would have to be excluded from the global equity portfolio.

Reason 3: Excluding corporate bonds reduces the possibility of harvesting factor premiums

So far, the empirical results have been based on returns from the market-capitalization weighted corporate bond market. As we have seen above, a correct interpretation of these results leads to the conclusion that corporate bonds should be included rather than excluded from strategic asset allocation. However, there is an additional reason why allocating to corporate bonds can be beneficial for investors. Houweling and Van Zundert (2017) present overwhelming evidence for the presence of the following factor premiums in corporate bond markets: size, low risk, value and momentum.

In Table 3, we show the same regression but using multi-factor IG and HY strategies and combining the four enhanced factors mentioned above. We estimate the alpha of both enhanced multi-factor strategies versus not only RMRF and TERM but also the equity size factor premium (SMB), the equity value factor premium (HML) and the equity momentum factor premium (MOM); all of which have been obtained from the online data library of Kenneth French. Given the high R^2 s in these regressions and the economically and statistically significant alpha, we can confidently say that the credit factor premiums are not spanned by the equity factor premiums.

Corporate bond factors explained

Size

Research has shown that stocks and bonds of smaller firms tend to outperform those of larger companies. Moreover, smaller firms issue smaller bonds, on average, and the size factor thus also earns an illiquidity premium. Van Dijk (2011) provides an overview of explanations for the existence of a size premium. He found that there is mixed evidence for a risk-based explanation. For example, some studies related the size premium to a higher default risk, while other studies found no such evidence. Houweling and Van Zundert (2013) show that small-cap bond portfolios have the same volatility as large-cap portfolios and that smaller firms actually have less leverage. Small caps do tend to have somewhat lower credit ratings and higher credit spreads. We found evidence that smaller firms tend to be under-researched, probably because it is impossible for resource-constrained fundamental investors to cover all companies.

Low risk

Research by Houweling et al. (2012) has shown that low-risk bonds have better risk-adjusted returns than high-risk bonds. The academic literature has put forward various reasons for the existence of the low-risk effect. The majority of papers focus on the equity market, but most arguments hold for the credit market too. Blitz et al. (2014) provides an overview of the explanations. Various explanations emphasize the constraints faced by many investors, such as leverage constraints, regulatory constraints or benchmarking constraints.

Value

Value investing aims to identify bonds that are mispriced versus their fundamentals. Studies have shown that stocks and bonds that are undervalued tend to outperform the market, while overvalued securities tend to underperform. The literature offers two types of explanations for the existence of a value premium:

risk based and behavioral based. For the risk-based hypothesis, one could point to the higher risk (volatility or beta) of a value portfolio, but the risk-adjusted outperformance is still statistically significant. A more compelling argument would be that the value factor tends to underperform in times when it is least convenient, i.e. in bear markets, and that investors demand compensation for this. For the behavioral explanation, the overreaction of investors is the most commonly mentioned bias: investors tend to overreact to bad news, resulting in undervalued securities, and overreact to good news, so that stocks and bonds become overvalued.

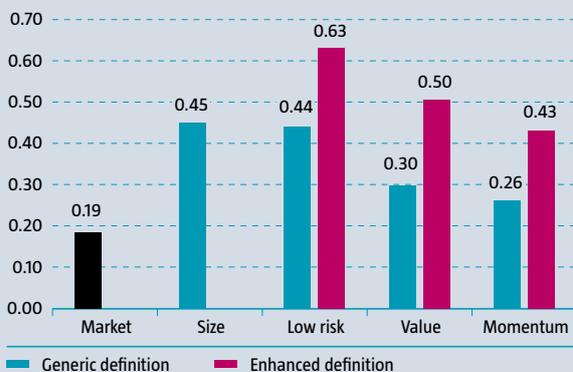
Momentum

Momentum involves investing in companies that have recently performed well. Different explanations have been put forward for the momentum effect. Jegadeesh and Titman provided an overview in 2011 and concluded that a risk-based explanation is unlikely. We confirmed this in our own research in Haesen et al. (2017), showing that corporate bond momentum losers are riskier than momentum winners. Jegadeesh and Titman (2011) argued instead that the evidence points towards behavioral explanations, including conservatism bias, representativeness bias and self-attribution bias among investors.

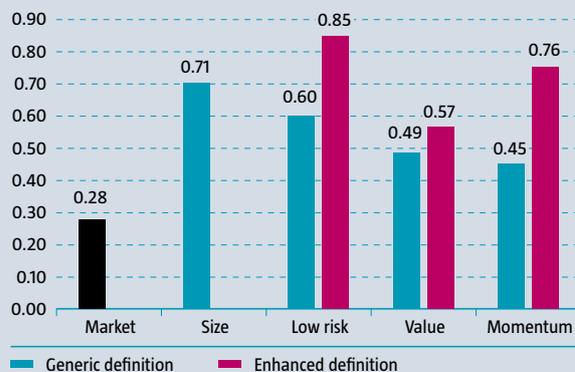
Enhanced factor definitions are even better

Rather than use the standard definitions of factors that we can find in academic literature, we use self-developed enhanced definitions for all factors to minimize the strategy's exposure to unrewarded risks and make the most of the multiple sources of information available to us, such as equity and accounting data. Our research shows that using these enhanced definitions has the potential to further improve our strategy's Sharpe ratio – see the figures below showing the Sharpe ratios of both the generic and enhanced factor definitions for the investment grade and high yield markets from 1994 to 2017.

Sharpe ratios of generic and enhanced factors
(USD investment grade Jan 94-Dec 17)



Sharpe ratios of generic and enhanced factors
(USD high yield Jan 94-Dec 17)



Source: Robeco, Barclays. Generic factor definitions as in Houweling and Van Zundert (2017). Extended sample period until December 2017. Credit returns measured over duration-matched government bonds.

Table 3: Fama-French-Carhart (FF6) alpha and statistical significance of back-tested Global Multi-Factor Credits and Global Multi-Factor High Yield strategies.

T-statistics between parentheses. January 1994-August 2017. EUR+USD universe.

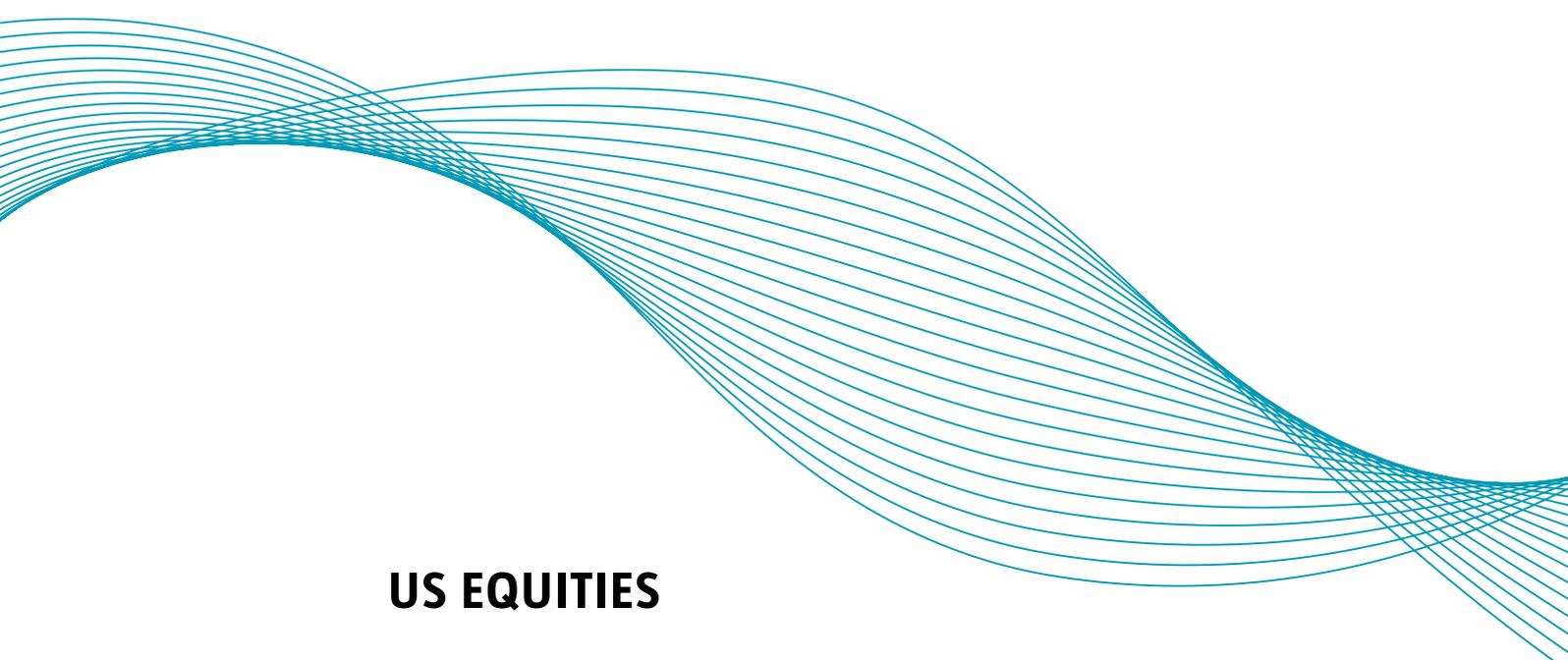
	Global Multi-Factor Credits	Global Multi-Factor High Yield
A. CAPM statistics	Portfolio	Portfolio
Alpha	1.15%	2.70%
	(3.48)	(3.92)
Beta	0.93	0.81
	(15.36)	(19.44)
Adjusted R ²	0.74	90%
N. obs	4.07	282
B. Fama-French-Carhart statistics		
Alpha	1.14%	2.86%
	(2.99)	(4.01)
Beta Mkt	0.01	-0.01
	(0.55)	(-0.47)
Beta SMB	0.04	0.07
	(3.19)	(2.36)
Beta HML	0.02	0.05
	(2.18)	(2.3)
Beta MOM	-0.01	-0.01
	(-1.49)	(-0.56)
Beta TERM	-0.01	-0.06
	(-0.4)	(-1.44)
Beta DEF	0.89	0.79
	(15.17)	(13.95)
Adjusted R ²	86%	91%
N. obs	282	282

Source: Bloomberg Index Services, Kenneth French, Robeco

Summary and conclusion

Should corporate bonds be part of the strategic asset allocation? The Norwegian Oil Fund's argument against this is that the average returns on corporate bonds can be replicated by a position in government bonds and equities. While this empirical analysis is correct, it does not lead to the conclusion that corporate bonds should be excluded from the strategic asset allocation. The replication only holds on average, excluding corporate bonds reduces diversification benefits (which is not compensated by higher returns) and allocating to corporate bonds may harvest factor premiums that are unrelated to factor premiums in equities. Hence, an investor who believes that diversification is important or that factor premiums exist should conclude that corporate bonds should be part of a strategic asset allocation.





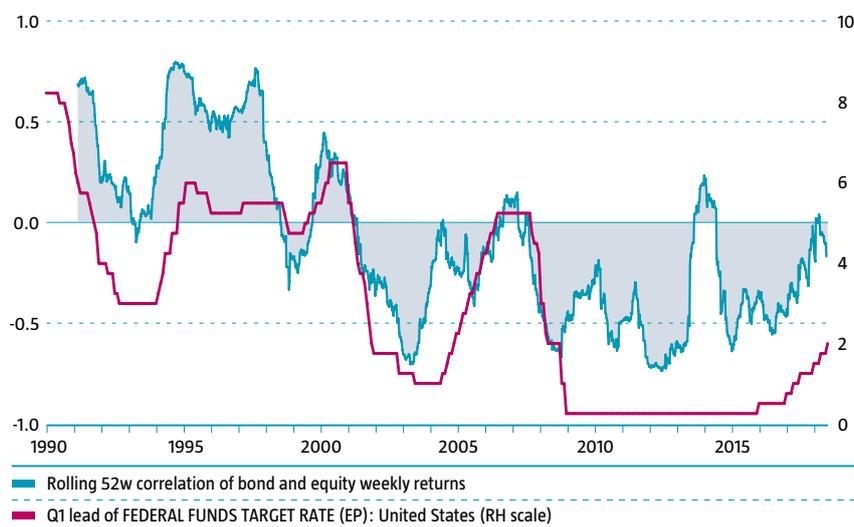
US EQUITIES

THE POTENTIAL REWARDS OF DIVERSIFYING AWAY FROM US EQUITIES

In 1953, the Dutch graphic artist Maurits Cornelis Escher made a lithograph entitled 'Relativity' which went on to become one of his most famous works. It is a stunning depiction of an architectural structure that merges three unique perspectives in one seemingly unified frame, with each inhabitant of the structure moving according to their own frame of reference. In a sense, asset markets, led by the invisible hand of the price mechanism, also reflect a strangely unified world of different views and perspectives. The market determines the price, but the perceived value of an asset critically depends on the frame of reference each investor uses. Some investors employ a strictly behavioral approach, some are efficient market followers. Some have a long horizon, some have a short one. Perspectives that, like in Escher's 'Relativity', are often perpendicular to each other.

One of the most challenging tasks for investors is to decide which of the traditional asset classes to allocate to. This decision is particularly arduous in these times, as correlations between equities and bonds have increased. As a result, bonds are no longer the perfect portfolio diversifier in this late phase of an ageing equity bull market, which started in February 2009. As the deflation scare quietly leaves the stage, investors are reminded that the bull market in sovereign bonds has been ageing for decades and that only now are we seeing signs that the bond bear is awakening from hibernation. With output gaps gradually closing, central banks are expected to finally turn off the easy money taps in the medium term, after an era of unprecedented easing. As the graph shows, correlations between 10Y bonds and equities tend to increase as a conventional central bank tightening cycle gets underway and moves towards a policy rate peak. With the Fed likely to reach this point within the next two and a half years, asset correlations of the past won't be those of the future.

Figure 1: Correlation of bond and equity returns

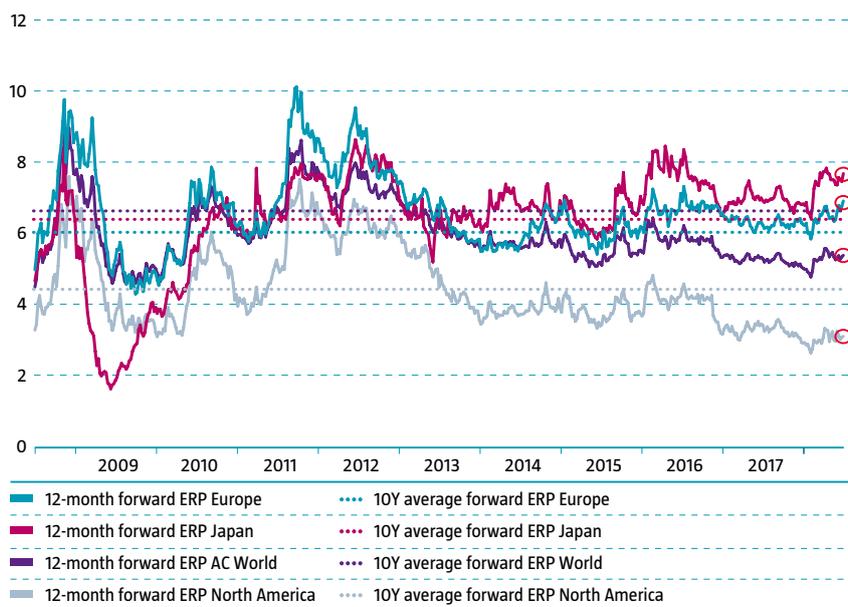


Source: Thomas Reuters Datastream, Robeco

To navigate this changing landscape, one of the tools available to investors to help with their asset allocation decisions is the equity risk premium. The equity risk premium (ERP) is both a backward-looking and a forward-looking concept. As a backward-looking concept, it describes the excess return investors have received over time from investing in equities compared to a risk-free investment (the ex-post or realized equity risk premium). As an ex-ante or forward-looking concept, it captures the excess return investors in the market want to receive, i.e. the spread between the rate of return required for holding an equity portfolio versus the risk-free rate (the ex-ante or implied equity risk premium). The ex-ante risk premium is useful because it gives investors a gauge of what the market expects from taking exposure to equities rather than sovereign bonds (which is seen as a proxy for risk-free returns) and whether investors, depending on their risk preferences and the prevailing macro-risk scenario, are likely to be compensated for taking additional risk in equity markets. It is one of the valuation tools we use in our Expected Returns framework and relevant in the search for value when bond-equity correlations are about to change. Figure 2 shows a set of forward-looking ERPs for developed regions, calculated as the 12-month forward earnings yield minus the corresponding 10-year regional bond yield. Interestingly, it shows that dispersion in developed market equity risk premiums has increased in recent years, reflecting the different views held by the market on the stock-bond return relationship

for different developed regions. Potentially, this has important consequences for asset allocation decisions. Although this dispersion will be explored in more depth later on, in general this scattering of risk premiums could be due to region-specific, time-varying risk aversion among investors.

Figure 2: Forward equity risk premiums across regions (in %)



Source: Thomas Reuters Datastream, Ro9beco

The puzzling defeat of the pessimists

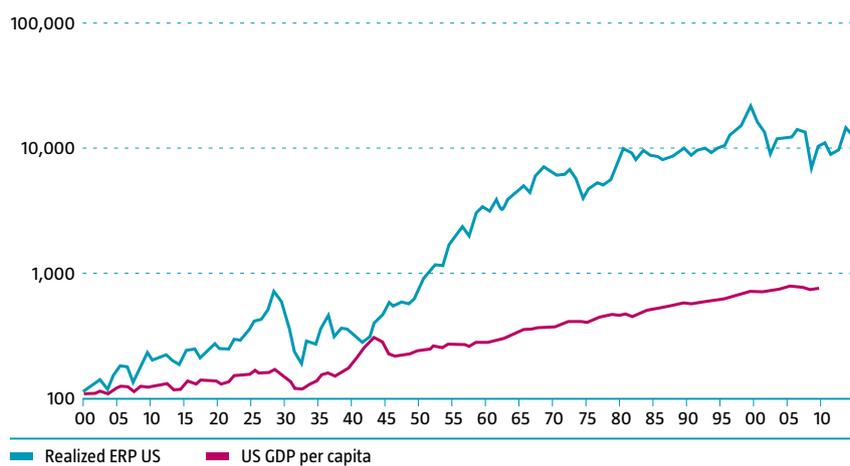
To put the ERP differences into perspective, we will first look at what history tells us about ERP. Risk aversion, a phenomenon explained by the Dutch-Swiss mathematician Daniel Bernoulli back in the 18th century, is the common preference for a certain outcome over an uncertain one with the same expected return. Consequently, risk-averse investors demand additional compensation for taking exposure in the equity market, as there is greater uncertainty (measured, for example, as annual volatility) in this market than in the safer bond market. Historically, stocks have comfortably beaten bonds and investors have earned this premium. In fact, equities have earned a geometric annualized excess return¹ of 3.2% compared to risk-free government bonds for 23 countries in the DMS database since 1900². Equities comfortably beating bonds is what DMS (2002) calls the triumph of the optimists and it echoes the message of Siegel’s “Stocks for the long run” (1994). Arguably, this triumph might even have been more than equity investors bargained for. Grossman and Shiller (1981) and Mehra and Prescott (1985) showed that historically the excess return enjoyed by equity investors has been much higher than the underlying real economic growth warrants³. To reconcile the fairly stable development in macroeconomic activity levels with such high excess equity returns, implausibly high degrees of standard investor risk aversion must be assumed⁴. Therefore, the size of the equity risk premium from an historical perspective remains a puzzle. Have equity investors just been lucky over the past 117 years or have they been compensated for non-standard, rare disaster risk too (see, for instance, Barro (2006) and Gabaix (2011))⁵? A recent interesting 2018 study by Berrada claims to have solved the equity risk premium puzzle using a model that is based not just on economic consumption growth, but also includes dividends and information risk.

1. The geometric return is used instead of the arithmetic return as investment returns are not independent of each other and it is more accurate in volatile time series. Geometric return = arithmetic return - $\frac{1}{2}\sigma^2$.
2. DMS is shorthand for Dimson, Marsh and Staunton, researchers at the London School of Economics.
3. A vast body of literature has emerged on the relationship between equity returns and economic growth based on the intuition that long-term corporate earnings growth must be equal to economic growth. If corporate earnings growth were to structurally outpace economic activity growth, this would imply – absurdly – that all economic activity becomes corporate activity. On the other hand, if corporate earnings growth were to be structurally lower than underlying economic growth, corporate activity would cease to exist in the long run, which is equally absurd. Therefore, there must be an equilibrium economic growth and corporate earnings growth.
4. Factors that drive standard risk aversion are investor horizon, wealth levels, phase of the economic cycle and one-off events that trigger regime shifts. Behavioral finance experiments increasingly illuminate the nature of risk aversion. For instance, Guiso et al. (2018) found that participants who saw a horror movie before being offered a risky bet demanded a 27% higher risk premium for taking in the risky bet compared to participants who had not seen the movie. So, the ‘fear’ emotion – even when not directly related to the financial decision at hand – influences financial risk-taking.
5. Note that sovereign bond investors had their fair share of disaster risk as well, with hyperinflationary episodes in Germany and several sovereign defaults in Argentina for which no compensation was offered by the market.

The information risk factor is especially important here. In the past, the structural uncertainty investors have faced because of ongoing changes to the rules of play caused by the actions of regulators, central banks and politicians has been part of the reason for these high-risk premiums. So, uncertainty concerning possible future states of the world creates beliefs-dependent risk aversion; a factor that previous research may have overlooked.

A closer look at the DMS data from 1900 reveals that the historical (realized) equity risk premium for US equities is 4.4%, while the World-ex US has only delivered 2.8%. One interpretation suggested by DMS in 2018 is that this illustrates the country’s status as the global economic and political powerhouse of the 20th century. US equity investors have been rewarded for the US success story as the most innovative and productive global economy. However, Madisson productivity growth data from 1900 suggests that this is debatable, with 1.83% geometric US productivity growth between 1900 and 2010 – close to the median 1.85% for the 20 countries included. Based on the Madisson data, the US growth story is not exceptional and therefore does not warrant exceptional excess equity performance on its own merit.

Figure 3: The US equity market outpaced productivity growth



Source: DMS, Thomson Reuters Datastream, Robeco

This observation again drives home the point of the equity premium puzzle: the link between the real economy and the reward for taking equity risk in the domestic market is obscure, as the equity risk premium is sizeable in the context of underlying economic activity. A strong conviction that the success of the US economy will continue is probably an inadequate reason for preferring US equities. A more compelling reason, suggested by the latest literature, would be a firm belief that the future ‘rules of play’ in the US will be more transparent and understandable for investors than anywhere else.

With the equity risk premium puzzle largely unsolved, its concept remains one of the more contentious topics in finance. For instance, which benchmark should be used for the ‘risk-free rate’ is still debated⁶. Therefore, as a 2012 CFA study noted, there is still “robust disagreement” on the subject in the investor community. A first glance at the numerous articles that have emerged from this debate is a little like looking at Escher’s ‘Relativity’ for the first time: different perspectives mingle, providing no clear sense of direction. Where do equity risk premiums come from? Some researchers have delved into the demand side, investigating the demand for a return that will compensate investors for taking the extra

‘Never in recent history has the US equity risk premium been so low compared to the equity risk premium of the global equity market’

6. Mehra (2011) suggests that the risk-free rate should be based on the duration of an investor portfolio rather than the often-used default T-bill or 10Y Treasury.

risk in equities (see, for instance, Berrada et al. 2018), while others (Ilmanen, 2011) take a supply side approach, looking for the cash flow corporates can provide to equity investors. The intention of this special topic is not to formulate the ultimate equity risk premium approach by spelling out all the different approaches and their potential drawbacks. Rather, it looks at how to use the equity risk premium to assess relative allocation to bonds and equities in the next five years from a practitioner's point of view.

A unique setting

Specifically, this special topic addresses the implications of the actual dispersion in regional equity risk premiums shown earlier. What will they mean in terms of the stock-bond trade-off for global investors in the next five years? Judging by the graph below, which compares the US ERP with the global ERP, we appear to be at a unique point in the equity cycle. Never in recent history has the US equity risk premium been so low compared to the equity risk premium of the global equity market, now at its lowest point in 33 years. To illustrate this, we compare the z-score for the US ERP with the z-score for the global ERP.

Figure 4: Deviation in the US ERP versus the global ERP (z-score)



Source: Thomson Reuters Datastream, Robeco

CONSTRUCTION OF THE Z-SCORE

We define the regional equity risk premium as the earnings yield of the regional equity index (the inverse of the P/E, or $1/P/E$) minus the corresponding 10Y sovereign bond yield. We calculated the US ERP as the S&P 500 earnings yield minus the 10Y Treasury bond yield. For the global ERP, we calculated the MSCI World earnings yield minus the Merrill Lynch global government bond yield (which has a similar duration to the 10Y Treasury bond yield). Both series are constructed in USD. Using monthly data from 1985, we subsequently calculated z-scores for the absolute difference between the US ERP and the global ERP.

What should we make of this statistically significant deviation from the mean (two standard deviations)? At first glance, this development seems ominous for US equities. Previous lows in the z-score of the US ERP versus the global ERP (which were less extreme than today's!) were seen in March 2000 and May 2006. These signaled the peak in the last two equity bull markets in the S&P 500, preceding them by 3 and 18 months, respectively.

A more benign interpretation for US assets is that 'this time is different'. The low ERP in the US may reflect lower risk aversion, or investors demanding a relatively lower return on US stocks due to the expectation of lower macro volatility resulting from a fiscally supercharged, technology-driven US economy. Do investors believe that this time is different because US business interests are safe in hands of a president who knows the art of the deal? In any case, it is striking that the US equity risk premium started the last leg of its descent right after November 2016, just as Trump took office. However, 'this time is different' has proven to be a very dangerous supposition in the world of finance. So, if this time is not different, the 'Trump Put' of lower corporate taxes and fiscal stimulus will fizzle out or trade protectionism could backfire, creating elevated macroeconomic uncertainty for US market participants. In terms of the latter scenario, the graph does reveal signs of significant complacency towards US equities. But which view is right? In order to answer this question, we need to let the data speak.

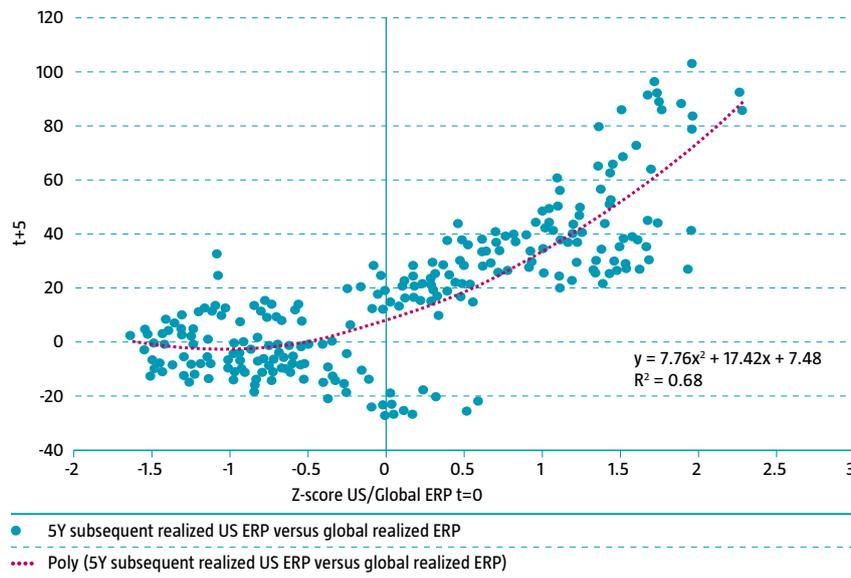
To do this, we will explore the statistical relationship between the z-score metric (which shows how far we currently are from the mean) introduced in the box and the excess equity returns that have followed. One of the lessons to be drawn from this analysis is that diversifying equity exposure away from US equities could be rewarded in the next one to three years, as compensation for taking US equity risk is likely to fall short compared to the rest of the world. However, on a five-year horizon, the results suggest the US equity market will catch up and realign with global excess equity returns. The table below thus reveals a bump-shaped relative return scenario for US equities.

Table 1: Subsequent realized equity risk premium differential US vs. rest of the world (as a percentage)

	1Y	3Y	5Y
Z-score			
-2 to -1.5	-6.89	-1.69	-0.26
-1.5 to -1	-4.70	-1.94	0.29
-1 to -0.5	1.44	0.36	-0.77
-0.5 to 0	-3.37	1.93	-0.31
0 to 0.5	2.69	2.39	2.59
0.5 to 1	1.62	4.35	5.98
1 to 1.5	4.92	6.65	8.30
1.5 to 2	7.37	10.78	11.39
> 2	15.89	15.35	17.87

Source: Thomson Reuters Datastream, Robeco

Figure 5: Subsequent realized equity risk premium differential US vs. rest of the world

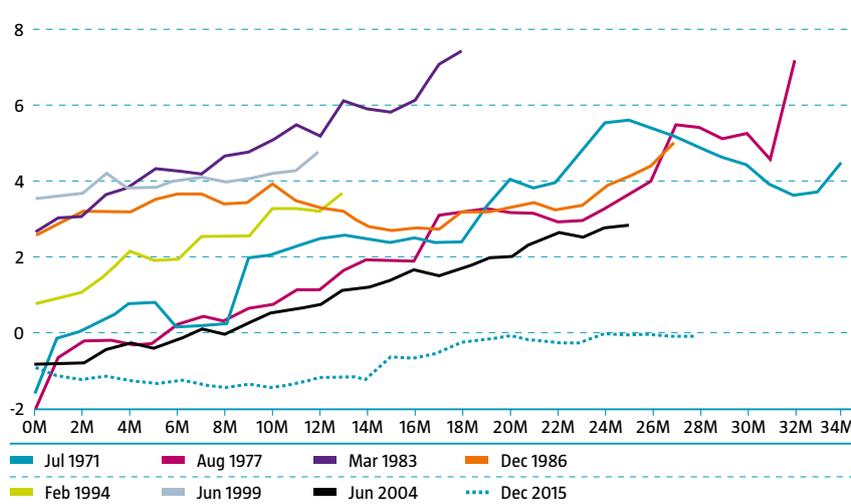


Source: Thomson Reuters Datastream, Robeco

Bump or hump?

Again, one could object that the very low relative US equity risk premium is entirely justified and that the US equity market looks expensive from a historical perspective because the current market conditions paint a very different picture than those implied by historical inferences. According to this view, this time is different and bears little resemblance to 2000 or 2006, when US risk premiums were in similar territory compared to the rest of world. After all, absolute US equity valuations measured in terms of CAPE (cyclically adjusted price earnings) are less excessive compared to 2000, US macro volatility is far lower and, unlike in 2006, a housing market bubble is now only a distant risk (US mortgage debt service is at an all-time low). Furthermore, real interest rates are much lower and buybacks are more supportive.

Figure 6: US Fed funds rate minus inflation (real rates) during Fed rate hike cycles

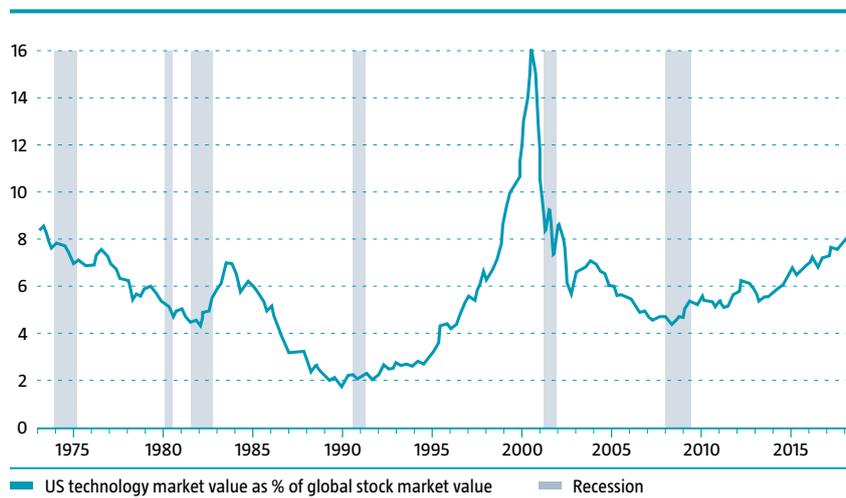


Source: Thomson Reuters Datastream, Robeco

Additionally, unlike in 2000, the overall performance of the US stock market is and will continue to be underpinned by the strong and stable real profitability of the US tech sector. In addition, the tax cuts – described by some Republicans as ‘rocket fuel’ for investment and growth – could usher in decades of prosperity. Lastly, other regions should look cheap compared to the US because of the persistent lack of structural reforms in the Eurozone, an uncomfortable leverage build-up in emerging markets and a stagnating Japan.

It would be unwise to dismiss the ‘this time is different’ stance as irrational. Firstly, the exceptionally successful US tech sector could prolong the appeal of the US stock market as technology increasingly shapes our lives and, what is more, the sector has yet to reach the heights of early 2000 as a percentage of global stock market value. Moreover, the current US administration has no incentive to curtail Silicon Valley as this would play into the hands of China. As Silicon Valley remains hard to beat, the rising profit share of the US tech sector could endure.

Figure 7: Share of US technology firms in global stock markets as a percentage



Source: Thomson Reuters Datastream, Robeco

Secondly, some of these bullish observations certainly reflect a global situation, proxying our boom-bust scenario, that is highly plausible (though less likely) in the next five years. Rocket fuel or not, an increasing market belief in the ‘Trump Put’ could rekindle animal spirits. The conviction that Trump will keep a keen eye on the stock market as a bellwether for his presidency could lead investors to believe that they understand his rules of play, lowering structural uncertainty. Thirdly, consistently low real Fed policy rates and a lack of net tightening of economic activity could cause further momentum in the US equity market. In that scenario, US equities might show a hump-shaped rather than a bump-shaped performance, with ex-ante US equity risk premiums compressed even further as the US equity market ‘melts up’ in the last leg of the bull run – similar to what happened in the late 1990s. Again, like in Escher’s ‘Relativity’, what matters here is the frame of reference.

The road to medium-term US profitability is strewn with obstacles

To explain why a bump-shaped relative US equity performance is plausible, we take a perspective that has been left unexplored: the supply approach to the equity risk premium as proposed by, for instance, Ilmanen in 2011⁷. This approach is based on the Gordon dividend growth model, which also underpins our Expected Returns steady-state framework. So we’re on solid ground.

7. Note that we have not employed the demand side approach to the equity risk premium. In recognition of the fact that the equity risk premium remains largely unsolved, we refrain from trying to explain the market-implied ERP using a factor model, as we would run the risk of model misspecification, which would lead to a larger prediction error in expected returns; see for instance Pastor and Stambough (2009).

The expected equity risk premium based on the Gordon dividend discount model takes the following form:

ERP = expected equity return - expected bond return which can be specified as
 ERP = (earnings growth + dividend yield + P/E change) - expected bond return

The inputs and results for this supply side model are detailed in the generic equity outlook section of the Expected Returns 2019-2023. The main view underpinning the supply approach is that in the next five years, the road to elevated US profitability is strewn with obstacles. A very tight labor market and emerging capacity constraints will move the Fed towards a net tightening of monetary policy to prevent the economy from overheating. Since around 80% of US profits are generated domestically, this will erode corporate profitability in the country further down the road. Higher tariffs in an age of rising protectionism will also dent corporate profit margins, especially as they limit the extent to which central banks can relax their monetary policy. In the absence of a significant boost in productivity, it would be unsurprising to see investors react to this emerging macroeconomic uncertainty by demanding higher equity risk premiums compared to the rest of world, which would lower US capital gains compared to the rest of world. This also happened before the 1991 recession in the US and the Great Recession, though strikingly not before the 2001 recession as the market was fueled by what Shiller called 'irrational exuberance'. Adding to uncertainty would be a continuation of the ongoing polarization in the US political landscape, complicating investors' understanding of the 'rules of play', analogous to the rifts in the Eurozone. As the current bull market is characterized by a wall of worries rather than exuberance, we can expect to see a classic risk-off reaction to the build-up of macroeconomic instability in the US, before it is hit by a recession around 2021.

This time might not be different in the end

Escher devoted a lot of time to mastering the art of perspective. Perspectives matter in financial market decision-making as well, especially when it comes to the relative bond-equity trade-off. Our analysis suggests that excess equity returns in the US will flatten or could even fall into negative territory compared to excess equity returns to be had elsewhere in the next five years. This means that US Treasuries will have their day and diversifying away from US equities to other regions could be rewarded. Investor horizon and path dependency remain critical factors. So, while this time might not be different in the end, the opportunity cost of diversifying away from US equities too soon – in a world where the US is still the undefeated global financial powerhouse – could be steep.

'Rocket fuel or not, an increasing market belief in the 'Trump Put' could rekindle animal spirits'

3

Expected returns 2019-2023

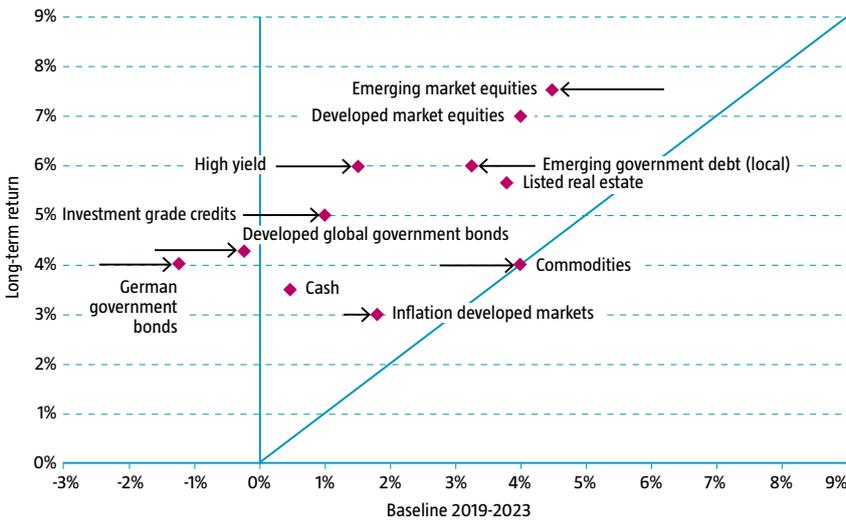
Macro

We are living in an age of transition, where predicting asset returns can be a daunting task. Our scenario analysis shows a range of potential outcomes, from a boom pushed to the limit at one end of the spectrum to a global economy drifting into a sobering stagnation at the other. The good news is that the probability of our worst-case scenario of secular stagnation has fallen from 20% to 10% since last year. The threat of recession is a recurring theme in our scenarios, but all bets are off when it comes to predicting its length and depth. It could be unremarkable, it could be full blown.

This heightened uncertainty about the business cycle should translate into higher asset-price volatility. Absolute returns for most major asset classes will be below our steady-state projection. Investors should focus on downside risk, but remain patient and reduce exposure to recession-prone asset classes only gradually, as stretched valuations and low implied volatility in equity and fixed income eventually breed volatility in both. There are still positive risk premiums to be harvested in this late-cycle environment, but investors should be aware that there are risks associated with moving down the risk curve too soon. The first few years of our five-year outlook can be described as ‘business cycle as usual’, with investors still climbing the wall of worry of the current, lingering expansion that started in 2009.

Figure 3.1 and Table 3.1 summarize our outlook for 2019-2023 for the main asset classes in our baseline scenario.

Figure 3.1: Expected returns 2019-2023 and changes in five-year expected returns (arrows)



Source: Robeco. The arrows show the changes in expectations compared with last year's estimates.

Table 3.1: Expected Returns 2019-2023 and changes in five-year expected returns (arrows)

	Returns	Medium-term influences*		Returns	Returns	Risk
	Long term	Macro	Valuation	2019-2023	2018-2022	Volatility
Bonds						
German government bonds	4.00%	-/-	-/-	↑ -1.25%	-2.25%	5%
Developed global government bonds	4.25%	-/-	-/-	↑ -0.25%	-1.50%	4%
Emerging government debt (local)	5.75%	-/-	+/+	↓ 3.75%	4.25%	10%
Investment grade credits	5.00%	=	=	↑ 1.00%	-0.50%	5%
High yield	6.00%	=	-/-	↑ 1.50%	0.25%	10%
Cash	3.50%	-/-		= 0.50%	0.50%	1%
Equity-like						
Developed market equities	7.00%	=	-/-	= 4.00%	4.00%	15%
Emerging market equities	7.50%	-/-	+/+	↓ 4.50%	6.25%	22%
Listed real estate	6.00%	=	=	= 3.25%	3.25%	19%
Commodities	4.00%	+/+	=	↑ 4.00%	2.75%	17%
Consumer prices						
Inflation developed markets	3.00%			↑ 1.75%	1.50%	

* The medium-term influences correspond with our qualitative assessment of the valuation and macro influences described in Chapters 2 and 3. Medium-term influences on equity-like asset classes are relative to developed equities. In line with the recommendations of the Dutch Association of Financial Analysts, the expected returns are geometric and better suited to long investment horizons. Returns are denominated in euros. Bond and cash returns are euro hedged, except for emerging market debt (local). The value of your investments may fluctuate and past performance is no guarantee of future results.

Source: Robeco

The second column of Table 3.1 shows the steady-state, longer-term returns for each asset class. The next column shows the effects of the current macroeconomic conditions on the returns of each asset class over the next five years (the macro tilt). The fourth column shows the impact of the valuation on the returns (the valuation tilt). In the next sections, we discuss our scenarios and the macro impact they would have on the different asset classes.

3.1 Scenarios

Henry Kissinger once started an article reminiscing about a lecture he had attended that was given by the former British PM Harold Macmillan. That lecture began with the words, "As they left the Garden of Eden, Adam turned to Eve and said: 'we live in an age of transition'." While it's not difficult to argue convincingly that we, too, are currently living in an age of transition, clearly we should not call it 'unprecedented'. When stating the truism that "Prediction is very difficult, especially about the future", we should probably also add the words 'especially now'. In theory, an infinite number of scenarios are possible. We restricted ourselves to three, which we believe are representative of an ever-changing investment landscape. As the US is currently the most important engine of the world economy, we start our description of all three scenarios by outlining the developments in that country. A basic underlying assumption in all three scenarios is that the Chinese authorities will be able to steer their economy toward a reasonable growth path, partly thanks to the increased quality of its macroeconomic policy management and partly as a consequence of the Chinese economy's centralized nature. A further important assumption made in arriving at the first two scenarios is that it is easy to overestimate the effects of trade wars on the global economy. Barring any significant escalation, the effect will be in the order of magnitude of tenths of percentage points and will therefore be of little significance over a five-year timespan. With these two reservations in mind, let's take a look at the three scenarios, starting with our baseline scenario. Our estimated ex ante likelihood of each scenario is shown in brackets.

Baseline scenario: a great expansion comes to an end (60%)

Despite gradually tighter labor markets, the Phillips curve is still rather flat. Nothing points to a worrisome pick-up in inflation. Therefore, the Fed continues slowly along its gradual tightening path, followed at a distance by other major central banks. Monetary policy slowly normalizes, though real rates remain negative outside the US in the large western economies (the Eurozone, Japan and the UK). The economy continues to grow at an average pace. Confidence is generally high, which is beneficial for corporate capital expenditures, which have so far lagged. These also receive a boost from slowly rising labor prices. Labor markets have tightened, but probably still have some – possibly underestimated – slack as a consequence of the discouraged worker effect, which is especially pronounced in the US. This is one of the reasons why wage growth has so far been timid. Nonetheless, it leads to higher consumption.

Figure 3.2: Low labor force participation rates underline discouraged worker effect



Source: OECD

Trade conflicts remain limited, and so there is very little macroeconomic impact. Rational self-interest prevails among the world’s major powers. Within the Eurozone, the economic upswing eases economic and political tensions, making it possible to clear up residual banking problems. The resilience of the Eurozone financial system gradually increases. The boom in the US is extended artificially due to additional fiscal stimulus in the run-up to the November 2020 presidential elections. This supports the USD, which also benefits from real rate interest rate differences versus other developed markets. Deregulation policies, including in the financial sector, facilitate growth in the US. The resilience of the US financial system has improved markedly since the Lehman debacle, as such modest deregulation shouldn’t be considered a systemic threat. On the contrary, it could be beneficial for the country’s growth rate. In this scenario, it won’t be difficult for the Chinese authorities to stick to their target growth rate of around 6.5%, at least during the first few years. After that, it would make sense to accept a somewhat slower rate, to avoid becoming reliant on increasing debt to fuel growth.

All good things must come to an end. The length of the current business cycle upswing, which is already above average, gradually leads to growing and eventually unsustainable imbalances. In particular, the leverage in the world economy, which is already high, continues to increase. After the 2020 elections, the US central bank is likely to become more assertive as inflation has gradually picked up and political pressure for continued dovishness decreases. The net tightening of the Fed’s policy leads to deteriorating financial conditions, which

slows down real activity. The US economy drifts into a widely anticipated mild recession and the Eurozone economy slows down at a later stage. As the financial system has been strengthened significantly post-Lehman, a financial crisis is not in the cards. The world experiences a 'normal', mild slowdown in real activity.

Boom pushed to the limit (30%)

One of the striking things about US president Donald Trump, who initially came off as erratic and unpredictable, is that he has stuck closely to his election promises on a host of issues. The US has experienced a boom as a consequence of an initial drastic, partly unfunded tax cut primarily engineered to benefit US corporations. But there is more to follow. Unfunded tax cuts are easy to engineer, but this time, they are aimed primarily at US households. Moreover, the promises to invest heavily in US infrastructure are also a topic on which broad political consensus is within reach. In the coming years, fiscal stimulus will therefore have much more impact than is now widely expected. As a result, the economy continues to grow significantly above potential, raising Trump's chances of re-election in 2020. The overly loose fiscal policy leads to further tightening of the labor market. But given the flatness of the Phillips curve, the Fed initially continues along its path of gradual tightening.

Helped by the boom in the US, Eurozone growth picks up, as well. The fiscal picture improves markedly, paving the way for monetary and political integration to deepen, politically speaking, relatively easily. The structural resilience of the Eurozone increases markedly as a consequence. In the presidential election year, the US economy is firing on all cylinders. Inevitably, inflation risk is back again. But given that it is an election year, the Fed is reluctant to act, out of fear of being accused of meddling in what is sure to be a highly contentious battle. In the Eurozone, inflation rises back to target to the relief of the ECB, which is slow to react with the lessons of Japan in mind. After the elections, it is easier from a political standpoint for the Fed to intervene in full force to counteract the overly loose fiscal policy. The ECB tightens policy, as well, but in much smaller steps. Global growth continues for a while due to the effects of the earlier loose policy mix, while inflation continues to rise. At a certain point, the Fed's tightening efforts start to kick in and predictably, these start to weigh especially heavily against highly leveraged firms. Fears of a proverbial 'Minsky moment'¹ rise markedly as corporate leverage has continued to grow. Defaults start to increase. The economy starts to deteriorate and the focus starts to shift back towards the – still high – public and private debt levels. Lending conditions deteriorate, leading to a classic slowdown in global growth.

1. According to Minsky, a period of stability encourages risk taking, which leads to a period of instability.

Stagnation (10%)

The sugar rush of the US economy comes to an end much sooner than expected. The upswing after the Great Financial Crisis has already lasted a very long time. Leverage in the private and public sector has risen to dangerously high levels. The temporary boost to the economy as a result of tax cuts which were only partially financed, has given the US government a false sense of security. Confidently, they sought trade conflicts with a range of partners. Predictably, these struck back in kind. An escalating tit-for-tat worldwide conflict ensues. Global trade begins to shrink dramatically.

The trade policy agenda was partly driven by a desire to curb the inevitable rise of China. The US administration therefore refrained from seeking a quick solution to the heightened tensions. Higher tariffs become a structural element in trade relations. The US economy suffers due to an overvalued dollar. The Fed sticks initially to its gradual tightening scenario, and then pauses as the economy starts to deteriorate. It switches to a gradual easing policy, but this proves to be too little, too late.

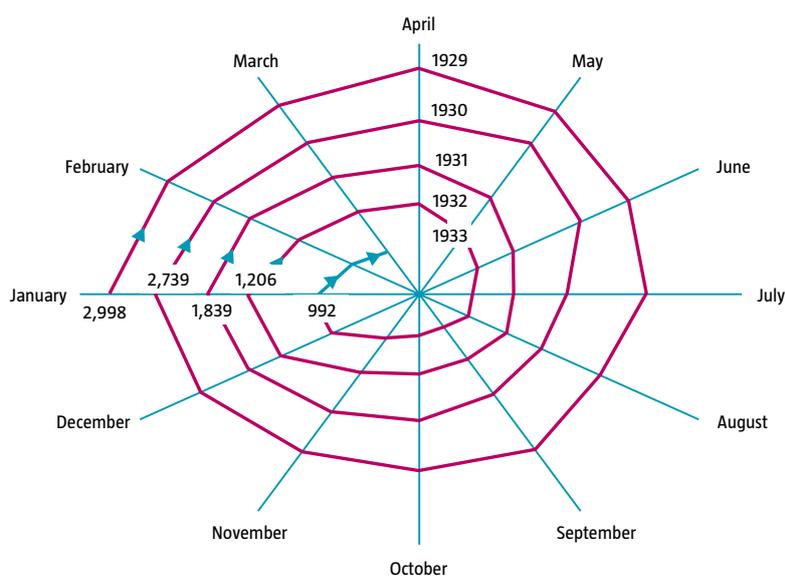
The Chinese authorities tried to mitigate the effects of tariffs by depreciating the yuan. This necessitated a reintroduction of strict capital controls to prevent domestic capital flight. The grip of the Chinese government on the economy tightens. Insufficiently ready to switch to a model of domestically led growth, the Chinese economy suffers and the economy shifts into a lower gear. *Vis-à-vis* Europe, permanent tariffs on a host of products become a structural feature of trade relations, as well. The relationship between the US and its direct neighbors is eventually beyond repair.

The US government decides to leave the WTO. Needless to say, the international environment wasn't conducive to fruitful negotiations on the future trade relationship between the UK and the EU. The UK suffers an economic downturn after a hard Brexit makes tariffs a permanent feature and UK access to the Single Market becomes problematic.

The world economy drifts into stagnation. Rising unemployment in heavy industries dependent on exports dampens effective demand. Given the instability of the environment, companies are reluctant to invest. By contrast, cost push inflation is on the rise due to the impact of tariffs and a general switch to costlier domestic alternatives as a consequence of the tariffs. Given the weakness of aggregate demand, producers are reluctant to try to pass the higher input costs on to consumers. As a result, consumer price inflation remains low and profits suffer. Elevated debt levels become, however, more and more of a problem as creditors suffer in this deflationary environment.

The economic downturn in the Eurozone pushes intra-EU tensions to the breaking point. Much depends on the actions of the European Central Bank. It intervenes vigorously, but ultimately European politicians show their true colors. With rising populism, the Eurozone faces the biggest challenge in its history. Under these grim circumstances, with clear echoes of the Great Depression of the 1930s, defaults in the global economy rise dramatically. Global liquidity dries up quickly, partly as a consequence of a fragmented global financial system due to the rise in protectionism. A downward spiral sets in.

Figure 3.3: What happened to world trade, 1929-1933 (USD millions)



Source: League of Nations' World Economic Survey 1932-1933

3.2 Cash

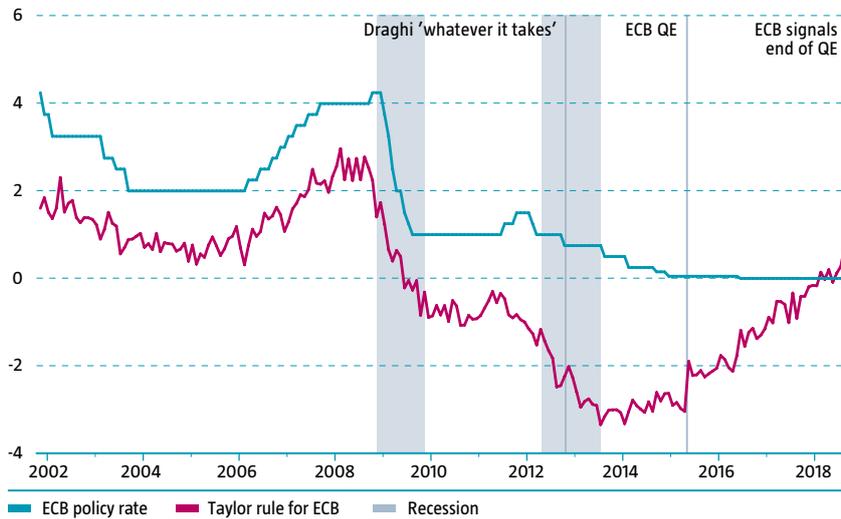
For a multi-asset investor, cash is the linchpin of the portfolio. It serves as the cost of capital for allocations to other assets, provides liquidity and is a safe haven against market turmoil and even inflation in the long run². Historically, the return on cash has quite often been negative in real terms but in developed markets, it has managed to beat inflation by an average of 0.7% since 1900. However, the current era of negative nominal interest rate policy is unprecedented.

2. Note that an unexpected inflation shock lowers real cash return in the short run, so the investor horizon is relevant here.

The return on cash is determined by the central banks' policy rates. But it is too easy to blame central banks for keeping cash rates this low for so long. Central banks do not operate in a vacuum. The global forces that have driven real cash returns down are real and are separate from monetary causes. The global savings glut, with desired savings exceeding the subdued demand for capital, de-risking in financial institutions, weak productivity, demographics and rising income inequality have all played a role. Some economists like Holston, Williams and Laubach (2017) have found that as a result of these global developments, the equilibrium real interest rate, the rate consistent with trend GDP growth and price stability, has shown a sizeable decline in advanced economies. Central banks have responded to this interplay of global economic factors by trying to steer policy and market rates towards that equilibrium rate.

The ECB pledged last June to terminate its monthly asset purchases by the end of 2018. This statement is fairly consistent with the guidance provided by our Taylor rule and suggests that the notion that central banks are swinging at the ball and missing it altogether isn't accurate.

Figure 3.4: Euro area policy rate versus Taylor rule implied policy rate



Source: Thomson Reuters Datastream, Robeco

Our version of the Taylor rule assumes that the ECB should change monetary policy in response to two deviations:

- Deviations between actual inflation and the ECB's inflation target: and
- Deviations between actual unemployment and the estimated non-accelerating inflation rate of unemployment (NAIRU)³

In early 2018, the Taylor rule began to produce positive values. In theory, positive values mean that the economy is allowing policy rates to be raised above the so-called zero lower bound. The zero lower bound is a problem because lowering nominal rates much further could lead to a bank run. As a result, policy rates are stuck close to zero, impairing the central banks' ability to kickstart the economy by implementing even lower nominal rates. The zero lower bound hampered central banks' ability to get real cash rates low enough to discourage saving. To circumvent this 'ZLB' problem, the ECB introduced unconventional asset purchase programs in March 2015 in order to push rates further down the yield curve. As the Taylor formula produces a positive value, it implies that there is no longer a case to be made for this unconventional policy, as inflation and aggregate demand have improved sufficiently, which paves the way for a return to conventional policy rate hikes. With the Taylor rule suggesting in June that the economy could even handle a modest rate hike of 25 basis points, the ECB's statement last June in Riga that it intends to stop purchasing assets by the end of 2018 was a logical and timely one. In its forward guidance, the ECB has now pledged to keep key policy rates at their present levels at least through the summer of 2019. The actual money market expectation is that the ECB will increase the deposit facility rate by 15 basis points to -25 basis points by the end of 2019. We expect the ECB to raise policy rates by at least 25 basis points in 2019, with the refi rate reaching 1% by the end of 2020. After that, the ECB will likely have to ease policy again in response to a US led recession. In the next few years, the ECB could very well stay 'behind the curve' as indicated by our Taylor rule, but this (theoretical) lack of policy tightening in advance of a US recession will also soften the subsequent recession in the Eurozone.

In our view, the Fed will continue its tightening policy in the next few years, ultimately raising the policy rate to at least 3%. Given that real equilibrium rates (or the so-called neutral policy rate) will most likely be somewhat below this level in the US, this 3% peak policy rate for this tightening cycle will amount to a net tightening of the economy and, in our view, will trigger a recession in the US, followed by other regions.

In our baseline scenario, nominal cash returns for a Eurozone-based investor will likely average 0.6% in the next five years, with real cash rates remaining deeply in negative territory at around -1.2%. This, in itself, is not extraordinary on an annual basis. In a sample of 23 countries, 18% of real cash returns since 1900 have been as low as -2.5% or even lower. US cash rates will be closer but still below historical averages as real cash returns will be around 0% over a period of five years with nominal cash rates averaging 2.1%.

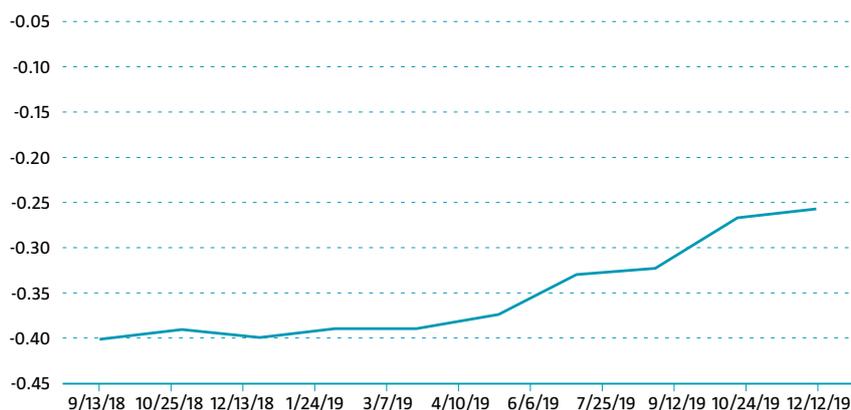
In our stagnation scenario the zero lower bound problem resurfaces in full force as nominal cash returns for a Eurozone-based investor will likely average -0.6% in the next five years, with real cash rates averaging around -1.6%. The -0.6% figure is the result of the ECB reacting to the economic stagnation and lowflation created by an escalating trade war that has brought the global economy to its knees. In this case, the ECB will even experiment with lowering the refi rate below zero to the ultimate lower bound which is estimated to be around -70 basis points⁴. This is the theoretical rate at which people will start to withdraw money from the bank as saving money at financial institutions is more expensive than storing it in cash. US investors are slightly better off with nominal interest rates averaging 0.35% over a five-year period.

3. The estimated non-accelerating inflation rate of unemployment was taken from OECD estimates and is the unemployment rate at which inflation remains steady.

4. Estimates vary; the ECB (2014) notes that the costs of moving physical cash around and storing it in vaults amounts to 1.1% of GDP, which means that -70 basis points is actually a conservative estimate for the effective lower bound.

In our boom scenario, cash is more volatile than in the other scenarios. After initially falling behind the curve (implying policy rates are lower than our Taylor rule suggests), central banks, led by the US Fed, will react to the inflation threat caused by procyclical fiscal stimulus. The Fed will hike policy rates to 4.25% at its peak, triggering a recession that is uglier for financial markets compared to the recession we expect in our baseline scenario as asset prices have inflated more and excess leverage is higher. In response, the Fed will be quick to lower rates to 0.75% again by 2023.

Figure 3.5: Euro area market deposit rate expectations (as a percentage)



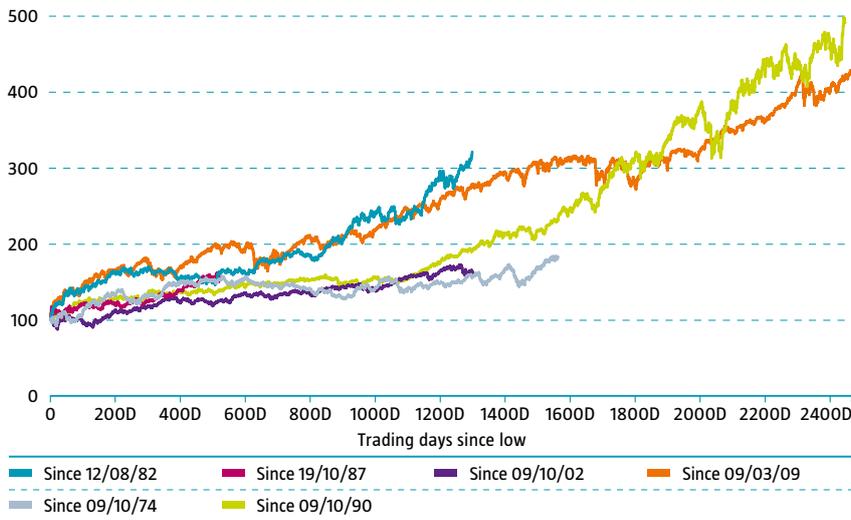
Source: Bloomberg, Robeco

3.3 Equities

Despite climbing the wall of worry for some time now, patient equity investors have come a long way. At the time of writing, we are celebrating the longest bull market of the modern era, with the S&P 500 surpassing the ‘Great Expansion’ bull market that lasted from October 1990 to March 2000⁵. After an exceptionally tranquil 2017, with implied volatility hitting new lows and global equity markets generating a 23% return, investor patience has been tested this year. Equity investors have enough things to worry about – rising interest rates, flattening yield curves and increased protectionism, to name just a few. The flattening yield curve raises fears of an outright inversion, which has proven to be a reliable indicator for a recession in the past. It reflects the question which is top of mind these days among market participants: how long can this bull market last? Given its length, surely it will die of old age soon. However, if you had judged this bull market by its age and scaled back on equities five years ago – when it surpassed the length of the average bull rally – this would have proven to be an expensive mistake. Investors would have missed out on an additional 53% of cumulative returns for the MSCI World All Country Index. To us, the best way forward is to patiently continue climbing the wall of worry without dwelling too much on the dizzying heights this bull market has already reached.

5. Some market analysts argue that this bull market is not even close to a record, calling into question the length of its run based on different benchmarks and classifications. The Russell 2000, for example, fell by more than the classic bear market definition of 20% between May 2015 and February 2016.

Figure 3.6: S&P 500 bull market lengths: a new record



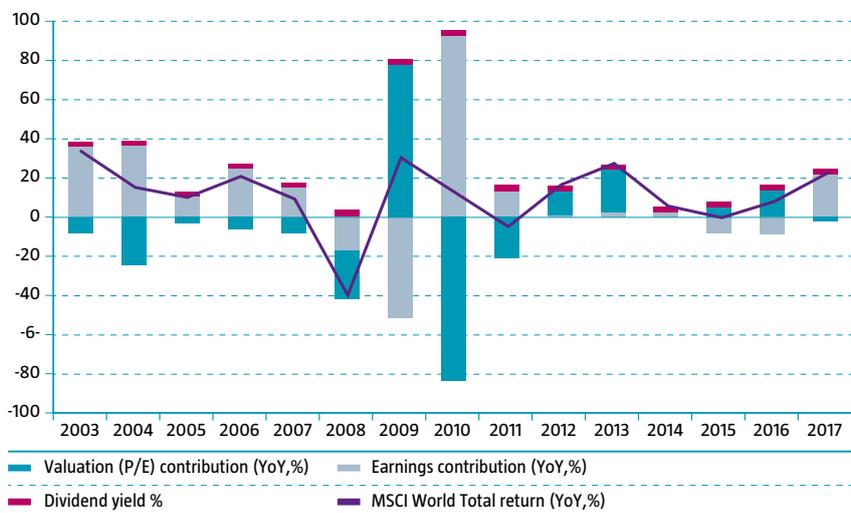
Source: Thomson Reuters Datastream, Robeco

Focus on earnings growth

Recently, cracks have started to appear in what has so far been a predominantly momentum-driven equity market. The ‘buy the dip’ mentality has lost some steam and the focus has shifted more towards corporate fundamentals. Equities with low leverage, persistent high earnings growth and high return on equity⁶ have caught up with momentum stocks. This shift towards corporate earnings seems justified from a historical perspective as the continuation of aging bull markets typically hinges on the generation of sound corporate earnings. The MSCI World return decomposition shows that last year, earnings per share growth determined the bulk of global equity returns. Multiple expansion, which indicates that price appreciation is outpacing earnings growth, is no longer the main driver of returns. The overarching themes may come and go, but within a five-year timespan (and especially given the current phase of the cycle), earnings growth and its underlying business cycle drivers are pivotal.

6. Corporate balance sheet characteristics embodied in the quality factor

Figure 3.7: MSCI World return decomposition



Source: Thomson Reuters Datastream, Robeco

Corporate earnings are in excellent shape. The US S&P 500 companies are currently posting year-on-year earnings growth of 22%. Other developed market regions are also enjoying double-digit earnings growth. Emerging markets are lagging developed markets on a trailing earnings per share basis. In the case of the US, this growth is not entirely due to the corporate tax cuts that were introduced in early 2018. The synchronized global cyclical upswing, which started in late 2016, has increased global aggregate demand and translated into higher sales- and profit-margin growth for companies around the world, most notably in the US. The key question for expected equity returns in the medium term is how resilient corporate earnings will prove to be.

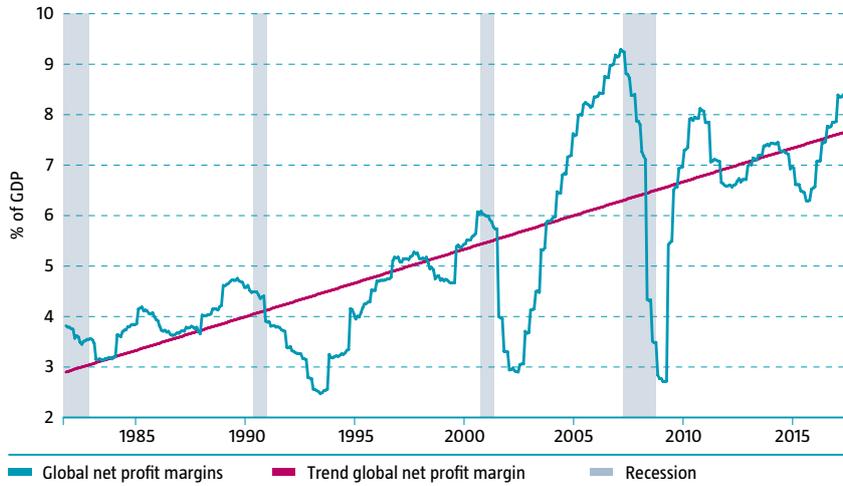
In our view, the five-year outlook for corporate earnings is far less exuberant than the most recent earnings growth of 22% (roughly four times nominal US GDP). The business cycle indicators for this expansion phase appear to have peaked in early 2018 – coinciding with a peak in global sales growth, which has since slowed down.

Profitability could remain above trend for longer

Profit margins, which form the less volatile part of earnings, have remained solid. We maintain our view that the road to sustained high profitability is strewn with obstacles, especially for the US. The first obstacle is wage growth outpacing productivity and suppressing corporate pricing power. Admittedly, the steady increase in corporate global profitability is puzzling when viewed against the backdrop of the very tight labor markets worldwide. As we explained last year, the increased negotiating power of workers that this causes should translate into higher unit labor costs for firms, but so far this has not happened. Unit labor costs in the US have remained subdued at 1.3%. As observed by Eeckhout in 2017, a steady rise in the market power of companies could account for the increase in the profit share's contribution to the economy at the expense of the labor share. Since 1980, US companies have seen their mark-ups rise from 18% above cost to 67% above cost. Thus, there is a clear trend of corporate profitability outstripping underlying productivity growth. This could be a reason why a traditional indicator that measures shifts in the profit cycle based on productivity, like unit labor cost, is now less accurate. Furthermore, as noted by Kahle and Stulz in 2017, the corporate climate has become increasingly one of winner-takes-all; where the size and profitability of a firm go hand in hand. Back in 1975, 50% of all earnings were generated by the top 109 US companies, whereas, in 2015 this was accomplished by just 30⁷.

7. The flipside of this rise in top earners is the creative destruction that is hurting low earners. These low earners risk becoming so-called zombie companies which manage to survive only because of the historically low real interest rates. The greater dispersion in earnings growth and quality could explain the higher premium the market is willing to pay for a high quality of earnings. The MSCI AC World Quality Index price-to-earnings ratio is now 9.5% above that of the MSCI AC World Index.

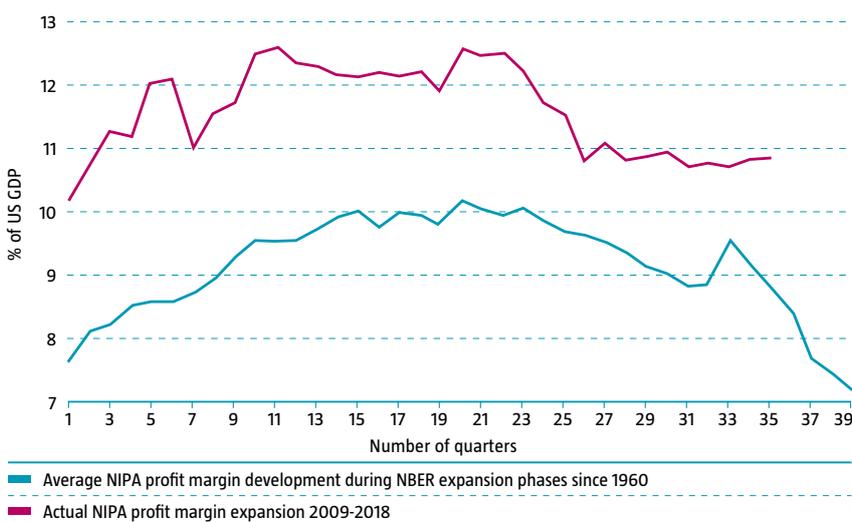
Figure 3.8: Global profitability could remain above trend for longer



Source: Thomson Reuters Datastream, Robeco

Aggregate global profitability could remain above trend for longer in the next few years, as in the last three US expansion phases corporate global net profit margins have remained above trend until the early onset of a recession. A US led global recession, which we expect to happen sometime in the next five years, but probably not before 2021, is often the ultimate stumbling block for profitability. Based on the past ten US cycles, a cyclical peak in the ISM new orders survey was followed by a recession with an average lag of 35 months (median 31). Assuming the ISM peaked in February 2018, it would be plausible for a recession to start in 2021, although we stress that predicting the timing of recessions is notoriously difficult. On average, US profit margins show a steady decline of 1.7% over six quarters before a recession hits.

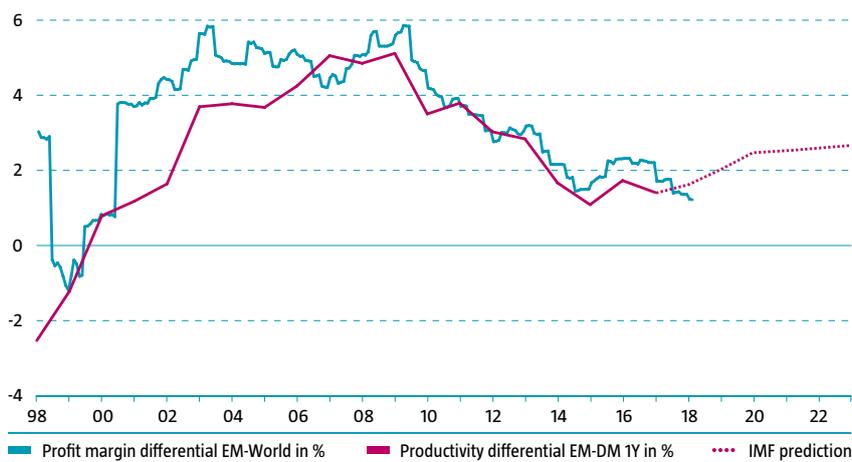
Figure 3.9: US profit margin development during expansion phases



Source: National Income and Product Accounts (NIPA), National Bureau of Economic Research (NBER), Robeco

However, as we believe the next recession will be mild in nature, global profit margins will probably not decline more than 2% below their long-term trend of 7.5% in the aftermath and will subsequently recover towards trend. How does this impact our earnings estimates? Over the next five years, we expect GDP growth in the US to average 2.0% and inflation, 2.1%. On that basis, our simple earnings regression model shows that in the US, the growth in earnings per share will be around 3.75%. This is slightly below the nominal GDP growth and thus consistent with the expectation of a modest decline in the profit share of the US economy. For developed market equities, we estimate a geometric average EPS growth of 4% in the medium term. Emerging market equities are expected to struggle to outpace developed market equities, with an estimated EPS growth of 3.75%. We think that tightening global financial conditions, bouts of US dollar strength, lingering protectionism and a slowing Chinese economy (we expect China to post a real GDP growth of 5% around 2023) will temper the catch-up effect seen in emerging market earnings growth versus their developed counterparts. Based on IMF estimates of expected productivity differentials, emerging market profit margins should rebound compared to those in the rest of world in the next five years. The risks of the consensus view, as portrayed by the IMF, on the productivity catch-up growth of emerging markets are to the downside in our opinion, as technology spillovers that drive innovation in emerging markets could be hampered by trade restrictions, as well as by a US-led recession.

Figure 3.10: Emerging markets versus developed markets – profit margins and productivity catch-up



Source: Thomson Reuters Datastream, Robeco

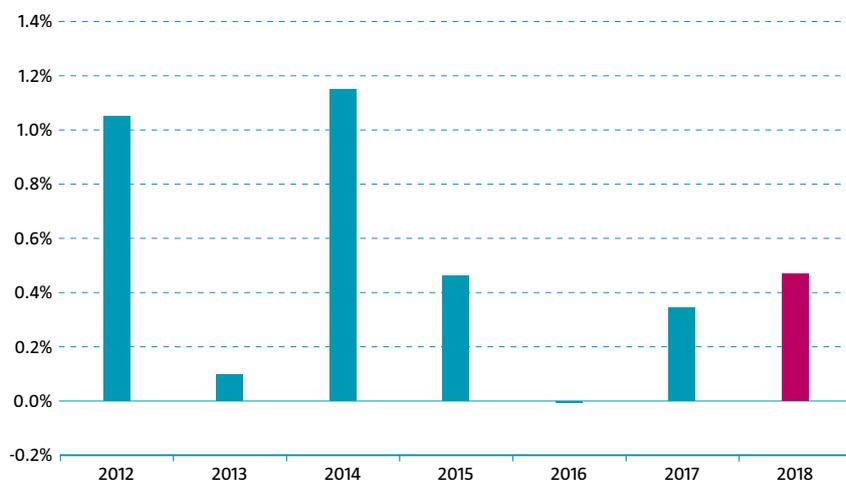
Although earnings growth is top of mind, there are other themes that should be high on the agenda of equity investors, as well.

CAPE-neutral QT?

Will the quantitative tightening and conventional rate-setting policy pursued by the Fed and ECB hurt equities over the coming years? Last year we estimated that ‘CAPE-neutral tapering’ would amount to a balance sheet reduction by the big three central banks (Fed, ECB and BoJ) of USD 500 billion per annum⁷. The sensitivity of equity returns to changes in central bank balance sheets has declined from the high levels earlier in this bull market, as earnings growth has allowed global equity returns to develop without being influenced by what is happening to central bank balance sheets. However, the sensitivity to unconventional central bank policy has not been eliminated completely, as shown by the fact that the one-year rolling average beta of quarterly G3 central bank balance sheets and quarterly MSCI World stock returns is still positive.

7. ‘CAPE-neutral tapering’ is the maximum amount of central bank balance sheet unloading that will just keep the Shiller cyclically adjusted price earnings ratio constant as estimated with a regression of central bank balance sheet changes and the change in CAPE.

Figure 3.11: How sensitive are equities to quantitative easing? One-year rolling beta quarterly stock returns and quarterly change in total balance sheet Fed, ECB and BoJ.



Source: Thomson Reuters Datastream, Robeco

The Fed will be reducing its holdings of US Treasuries by USD 30 billion a month and its mortgage-backed securities and agency debt by USD 20 billion a month by year end. With a reduction of USD 600 billion per annum, the Fed balance sheet unwind alone will already exceed levels that we consider to be neutral for global equity valuations. The central balance sheet unwind has not been a major market theme recently but, in our opinion, it is not a trivial matter, either. The ECB's reinvestment policy is as yet unknown, but in general the pace of global quantitative tightening and the associated decline in excess liquidity could be an unpleasant surprise for equity markets and contribute to lower stock valuations in the medium term.

The real threat is the Fed's net tightening policy

The subtheme that has clearly been worrying investors is the Fed's conventional policy tightening. Though we think conventional rate tightening will eventually trigger a classic recession, for the medium term, we are more sanguine than the market has been so far this year in response to rising interest rates and stretched valuations. For the longer run, i.e. five to ten years, high valuations would seem to indicate equity returns that are below the historical average, but in the medium to short term, anything could happen. Actually, our analysis based on Shiller data going back to 1880, shows that the dynamics of a high valuation regime (defined as a Shiller CAPE > 25) like the one we are experiencing today and a simultaneous modest monthly rise in long-term interest rates is positive for equity returns.

Table 3.2: S&P monthly returns for different CAPE buckets and interest rate changes

Shiller database since 1880	% monthly change long-term interest rate			
	0-10 bps	10-20 bps	20-30 bps	>30 bps
8-16.6	0.1%	-0.5%	-0.7%	-0.6%
16.6-26	1.1%	1.8%	0.0%	-1.1%
>26	2.7%	0.7%	1.8%	0.2%

Source: Thomson Reuters Datastream, Robeco

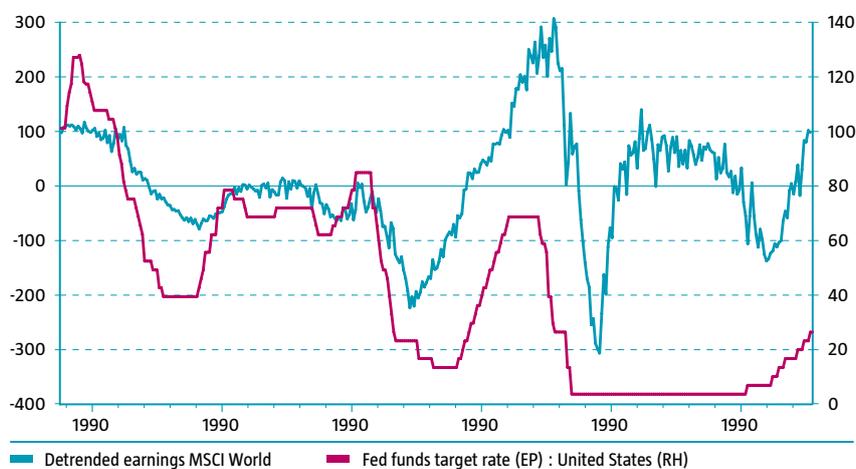
The explanation for this is that rising interest rates in high valuation regimes often reflect real economic growth surprises and earnings growth upgrades that justify elevated valuations to some extent.

In further support of our sanguine view, cyclical global earnings growth, i.e. deviations from long-term trend, have been positively correlated with the Fed rate hike cycle. In our view, as long as the Fed policy rate does not surpass what is seen as the neutral policy rate, i.e. the rate that keeps inflation and economic activity moving at a steady pace, rising interest rates could coincide with higher equity markets. High valuations, though often consistent with higher return volatility, do not spell immediate trouble for equity returns in a rising interest rate environment. However, once past the point where the Fed is actually implementing a monetary policy of net tightening, activity will be impacted and the tide for equities will start to turn in a bearish direction. Estimates for the neutral rate are in the 2.5%-3% range and the Fed policy rate will, in our view, not surpass this level before 2020.

Return composition rhymes with that of past bull runs

Equity returns in our baseline scenario will be earnings-driven, not unlike in previous late-cycle bull markets (e.g. 2004-2007). The difference is that we still have historically low real interest rates, which will initially dampen the negative impact of tighter monetary policy. However, valuations will not completely escape the gravitational pull of higher discount rates and will make a net negative contribution to total global equity returns. The resulting multiple compression will be modest, however, compared to that seen in the past. Of course, dividends will deliver a positive contribution to total returns, but global dividend yields will likely end up below our steady-state dividend yield as payout ratios will decrease. The increasing corporate awareness on ESG related issues, elevated capacity utilization rates, narrowing output gaps and metrics that reflect corporate investment behavior like Tobin’s Q, indicate that global capital expenditure can still rise further. This implies that buyback activity could slow down for some companies and investors will have to exercise patience again to harvest returns. Overall, absolute equity returns will be below historical average returns, both in local and common currency terms. We think investors in local currency and euro-based global equities can expect returns of 5% and 4%, respectively, in the next five years.

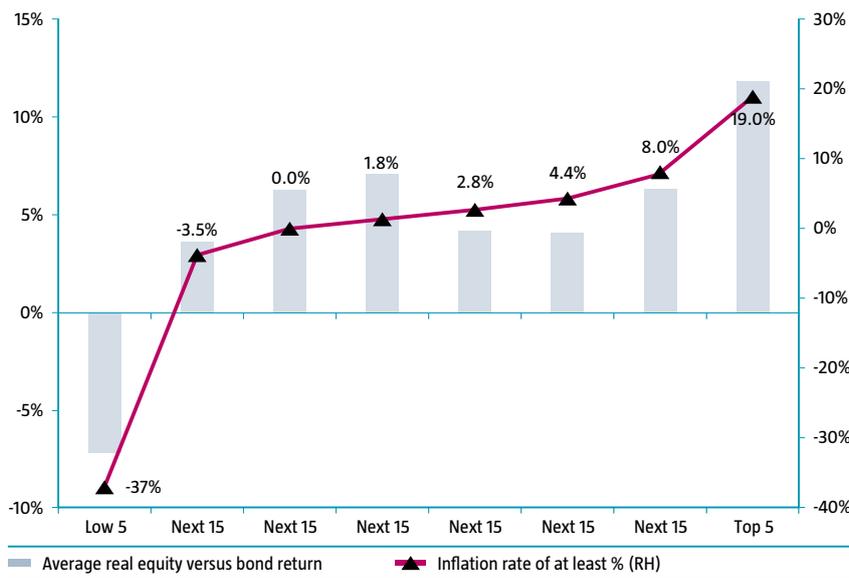
Figure 3.12: Global cyclical earnings versus the monetary cycle



Source: Thomson Reuters Datastream, Robeco

With average real economic growth likely to hover around trend in the next five years and inflation, on average, to stay close to but below global central bank targets, equities will remain relatively attractive from a strategic multi-asset point of view. In regimes where inflation averages 1.8% for developed countries, as we expect in our baseline scenario, real equity returns have in the past comfortably outperformed bond returns – as shown by DMS data going back to 1900. Given that our developed market equity return estimate in euros is 4%, equities are expected to outperform developed market bonds by 4.25% in our baseline scenario. This excess return on equities is above our relative steady-state return of 2.75%.

Figure 3.13: Real equity versus bond returns in different inflation regimes since 1900



Source: Dimson-Marsh-Staunton database (2015), Robeco

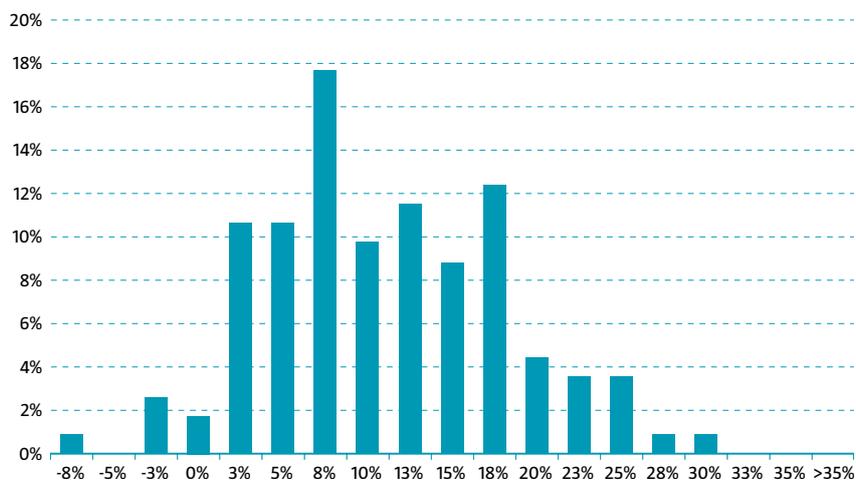
An ugly boom

Life is full of unexpected twists and turns and while ‘expect the unexpected’ sounds like a cliché, clichés exist for a reason. One of the – albeit less likely – scenarios we envisage in addition to our baseline scenario is that global growth accelerates even further from the current above-trend levels as the boom is pushed to the limit. An overly loose fiscal policy in the US, as the Fed refrains from net tightening, will push aggregate demand further, increasing the risk of the economy overheating in the first few years of our timeframe. In this situation, double-digit earnings growth continues, while companies awash with cash push buybacks to another level. Multiple expansion makes a comeback as investors start to realize the consequences of the renewed upswing. A new bullish narrative emerges, centering around the return of productivity growth, that gives the aging bull market new vigor. Eventually, however, the Fed will ‘take the punch bowl away’ by aggressively implementing a net tightening monetary policy, spoiling the equity party. Equity markets, surprised by this sudden drain of liquidity, experience a steep decline in excess of 25% ahead of the subsequent recession. Zombie companies wreak havoc with massive defaults. Liquidity in some of the newer more innovative investment structures like leveraged ETFs temporarily dries up. However, central banks respond swiftly to the inadvertent damage they have caused and the stock market recovers toward the end of our projection period. Overall global equity returns in local currency are estimated at 2.5% in this scenario. We expect euro investors to earn 1.75% as the return will be negatively impacted by currency losses.

A sobering stagnation

What if the global cyclical upswing was just a brief vacation from the quagmire of global secular stagnation? That would be a sobering discovery and one which unfortunately cannot be ruled out. In this scenario, the world comes down from the sugar rush brought about by a fiscal boost to the global economy, as returns diminish and a protracted trade war takes its toll. Notably China, one of the major global growth engines, starts to run out of gas to prop up growth and decelerates to a real growth pace of 3% as yuan devaluations are no longer a panacea. Global aggregate demand declines as wary consumers postpone purchases. Companies hesitate to pass higher input costs due to tariffs on to customers. As a result, profitability implodes and we see a recession. Equity returns suffer due to significant derating of multiples and an earnings recession. Uncertainty remains high as central banks lower policy rates to the ultimate zero lower bound of -0.5%, but fail to kickstart growth. We expect an overall negative equity return of 3% in this scenario. Note that this return has a very low unconditional probability as only rarely have average equity returns been negative (only < 3% of the time) over a five-year timeframe since 1900. The combination of historically high starting valuations for US equities and a recession that is not followed by the typical equity market recovery because monetary policy tools are exhausted could lead to this grim outcome that, as mentioned in the introduction, is to some extent reminiscent of the Great Depression.

Figure 3.14: Frequency distribution of five-year average rolling global equity returns since 1900



Source: Dimson, Marsh and Staunton database (2015), Robeco

The mild recession risk for equities

It will be hard to escape a recession in the next five years. We have therefore ‘penciled one in’ in all of our scenarios. What impact is it likely to have and what can we expect to happen to equities?

Equity markets typically anticipate recessions. Stocks tend to weaken four months beforehand, a process that continues for another 12 months after the recession begins. After that, markets start to recover again. The median total drawdown during this 16-month period is roughly 10% (see Expected Returns special 2015-2020).

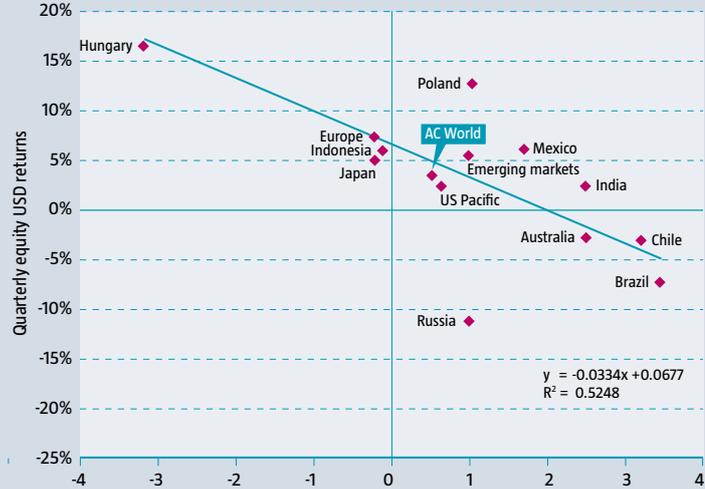
As it is nearly impossible to predict the timing of the recession and its impact on global markets over the next five years, we focus on the vulnerability of global equity markets to a flare-up of growth risks in China or the US. We see emerging risks in these regions as the biggest potential driver for the onset of a recession and have therefore made two corresponding risk metrics for both regions.

First, we looked at various growth risk factors in China proxied by copper prices, the spread between on- and offshore yuan and the deviation between Shanghai A-shares and the S&P 500, and used these to determine an aggregate growth risk proxy for China. We calculated the beta of MSCI country indices for our risk proxy. Emerging markets are particularly sensitive to Chinese growth risk and will be more prone to experience a sell-off if China is hit by a recession, although a country like India is relatively shielded.

Secondly, we looked at various proxies for growth risk factors in the US like the term spread (10Y – 3-month T bill), the Kansas financial risk metric and the three-month implied dollar-yen volatility. We specifically looked at metrics that directly tap into the financial cycle as we think these are the most likely bellwether of excessive Fed tightening for the US over the next five years. As it turns out, in emerging markets, the beta on US growth risk is also high, and India is especially prone to a sell-off if the US is hit by a recession. Europe and Japan seem more exposed to growth risks from China than to those stemming from the US.

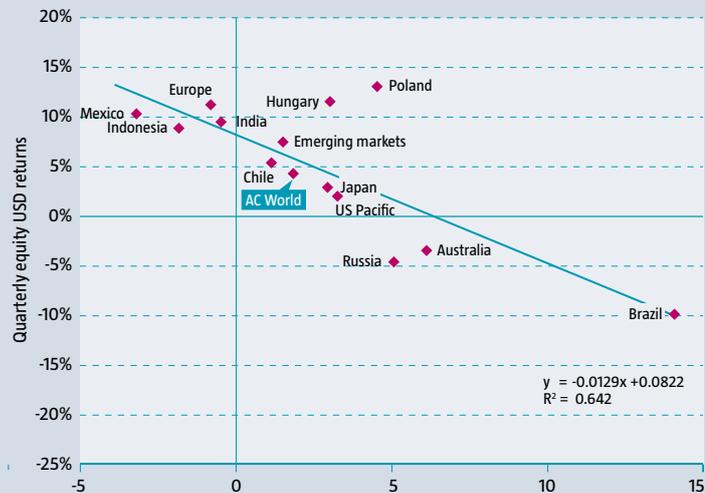
Beta sensitivities do change over time, so this analysis is not carved in stone, but it does give us a rough approximation as to how various equity regions would react if growth risks from either the US or China materialize.

Figure 3.15: MSCI country sensitivity to US growth risk



Beta of one-month rolling quarterly equity returns to US growth and financial risk proxy comprised of US term spread, three-month FV yen-dollar volatility and Kansas Fed financial stress metric.

Figure 3.16: MSCI country sensitivity to China growth risk

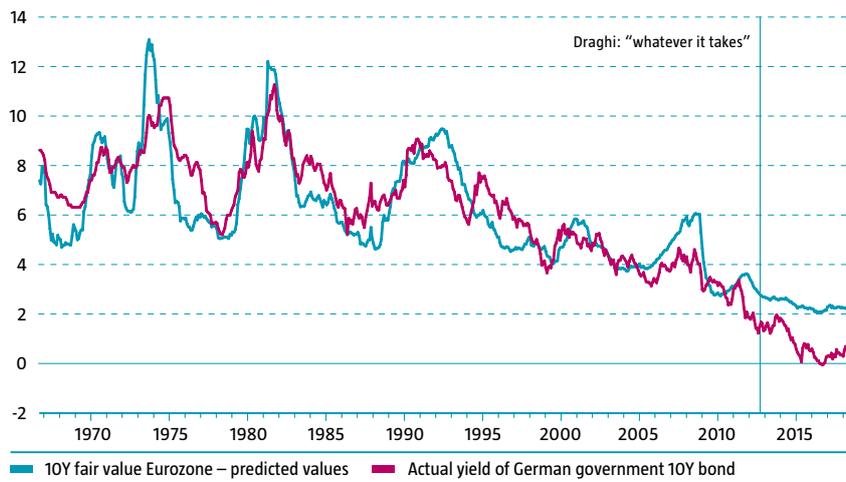


Beta of one-month rolling quarterly equity returns to China growth risk proxy comprised of CNY-USD forward points, copper prices and index deviation of Shanghai-SPX (beta).

3.4 Government bonds

Typically, yields increase when real economic growth improves or when inflation picks up. This is demonstrated in Figure 3.17, where we use the industrial production, short-term money market rates and CPI inflation to derive a fair-value estimate for German Bund yields. As we can see, this fair-value estimate provides a convincing explanation of the German Bund market yield for more than 50 years. The relationship seems to break down after Draghi's famous "whatever it takes" quote in July 2012.

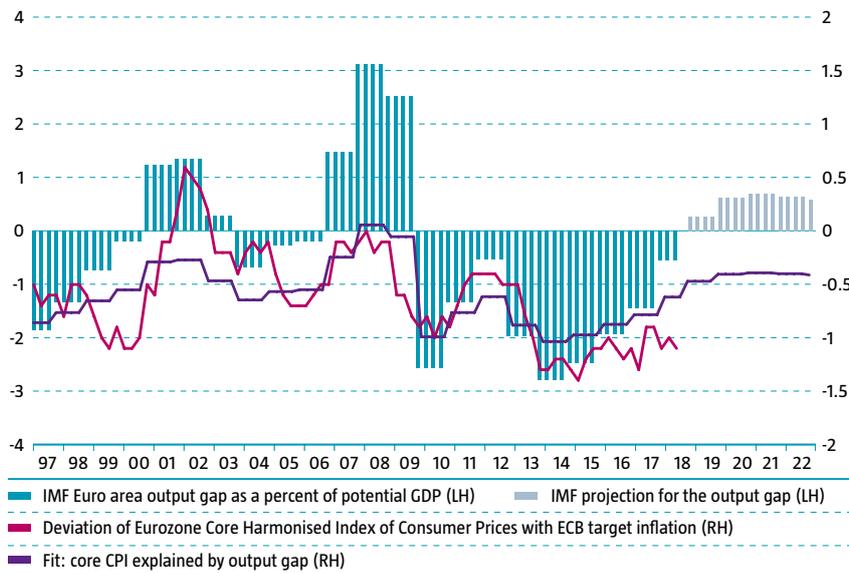
Figure 3.17: Macro factors have been an important explanation for Bund yields



Source: Thomson Reuters Datastream, Robeco

Since that time, the gap between the fair value and actual bond yields has widened. An important driver of this is the asset-purchase program of the ECB, under which it has been buying government bonds every month since March 2015. Net ECB buying has slowed down since 2018 and is expected to stop at the end of this year. This stop can be seen as a short interlude before the central bank moves from quantitative easing (QE) to quantitative tightening (QT). Such a move would reinforce the relationship between bond yields and macro factors and Bund yields could be expected to rise in this transition. Before this happens, the ECB wants to be confident that inflation is on a sustainable path consistent with medium-term price stability. The bank has been very outspoken about its mandate to maintain inflation rates below, but close to, 2% in the medium term. Headline inflation recently reached this level, but much of the increase has been due to a temporary rise in energy prices. Core inflation has been stubbornly low.

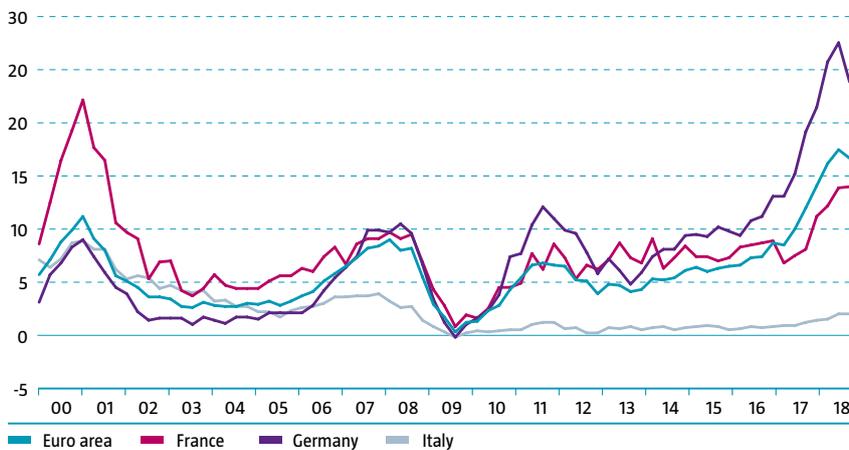
Figure 3.18: Output gap of the euro area versus Eurozone area core inflation in percentage points



Source: Bloomberg, Robeco

Figure 3.18 shows the relationship between the output gap of the euro area and core inflation in the Eurozone. A negative output gap indicates that the economy is running below potential. A large negative output gap typically coincides with rising unemployment followed by periods of low inflation. This explains the low inflation readings that followed the Great Financial Crisis and Eurozone crisis. Since then, the output gap has been closing as the economy has improved. In our baseline scenario, we expect the output gap to close further in line with the IMF projections into 2020. Using data going back to 1997, we would expect core inflation to reach 1.6% at the end of 2019. Typically, the harmonized inflation measure used by the ECB has been 0.2% above core CPI, bringing inflation close to the ECB target. Furthermore, we believe that the chances of an overshoot are realistic as the Eurozone’s labor market is becoming progressively tighter; see Figure 3.19.

Figure 3.19: Euro area: percentage of industrial firms reporting labor as a constraint on production



Source: Thomson Reuters Datastream, Robeco

Based on the inflation outlook, we don't expect the ECB to transition too fast to QT. The situation the Eurozone's bond market finds itself in is anomalous. Based on ECB estimates, the share of outstanding central government bonds held by the private sector – the so-called 'free float' – is only 10% for German Bunds. The corresponding numbers for other triple-A rated countries are also low. Most of the holdings are held by relatively price-insensitive investors such as insurance companies and pension funds, which keep government bonds on their books for matching purposes. The reason they are relatively price insensitive is because the risk models used by regulators more or less force them to retain their positions. Given these market dynamics, Benoit Cœuré showed that the effect of the ECB ending its buying program is likely to be limited. The fall in demand that ensues will be filled by relatively price-insensitive investors first. And, given the fiscal situation in countries like Germany and the Netherlands, one can expect a negative net supply of government bonds for the coming years.

So, what will drive up long-term yields? We believe it will be the short end of the curve. For now, the ECB is not willing to move: "The Governing Council expects the key ECB interest rates to remain at their present levels at least through the summer of 2019 and in any case for as long as necessary."

This forward guidance seems premature, but given the inflation outlook (see Figure 3.16) not unrealistic. However, as we argue above, headline inflation is likely to near the ECB target in the second half of 2019, making way for a normalization of monetary policy: QT. Experience with QE is scarce, but experience with QT is even scarcer. So far, the ECB has handled this process with great care. Clearly, they want to limit any negative fallout, which could derail the Eurozone economy. As we highlighted in our special topic 'All roads lead to Rome, but few lead to Italian debt sustainability', the situation in Italy is likely to remain fragile, so the ECB needs to remain cautious. The US is a good example of what can go wrong when it comes to expectations regarding policy changes. Given the shape of the economy and inflation numbers, Federal Reserve Chairman Bernanke openly discussed the possibility of tapering in 2013. His ideas were more or less in line with survey data, which showed that primary dealers were expecting a normalization to start soon. However, in the months after his announcement, the yield on 10-year Treasuries rose almost 1%. How could this happen? Bernanke's message was in line with market expectations, so why did yields rise so fast? The background to this so-called 'taper tantrum' was explained well in a speech by Fed Vice Chairman Stanley Fischer. In his speech, Fischer advocated a cautious approach when using survey data. The economic logic applied in these surveys is often at odds with market dynamics. However, as Benoit Cœuré pointed out, given the low 'free float' in the Eurozone bond market, actual market dynamics were very different in the Eurozone than in the US at that time. With regard to future QT, the ECB clearly has a much firmer grip on the market than the Fed.

Baseline scenario

What does all this mean for investors in our baseline scenario? In this scenario, economic growth and inflation developments are likely to prompt the ECB to start its normalization process in the second half of 2019. The yield curve remains steep, so any actions by the central bank affect the long end of the curve. However, as the chances of a US recession rise, the ECB is reluctant to continue its normalization. We expect that the central bank will call a halt to or even loosen policy somewhat. The recession will however be mild, limiting the negative effect on inflation. We expect the ECB to recontinue its normalization path, bringing its refi rate to 75 basis points in 2023. At that time, we expect 10-year Bund yields to reach 2.25%. Given where rates are today, this should result in a negative return on Bunds of 1.25% YoY.

Unlike the ECB, the Fed is well on its way towards normalization. The free float in the market is much higher than in the Eurozone. We expect the market to trade in line with macroeconomic developments. Like German Bunds, we have updated our fair-value model for the US. The outcome shown in Figure 3.20 shows that the gap between actual yields and fair-value yields is much narrower than for German Bunds. Furthermore, actual bond yields move in line with fair-value yields and the bond market is again driven by macro factors.

Figure 3.20: The relationship between macro factors and US Treasuries yield seems to have been restored



Source: Thomson Reuters Datastream, Robeco

The Fed raises its Fed fund rate to 3%. US Treasuries rates rise only modestly. The market is still concerned about a recession. Furthermore, the US is one of the few developed markets that offers international investors positive real rates. Therefore, we expect international demand for US paper to increase. These effects limit the rise in the 10-year yields to 3.25%. The recession brings yields down. We expect the Fed to be more aggressive in its easing stance compared to the ECB. However, as economic activity rebounds, policy normalization follows quickly. Given the relatively high starting yield of Treasuries at the onset of a recession, the rate path in this scenario is benign for Treasury returns. We expect a return for 10-year Treasuries of 2.5%, just below today's 5-year rate. Note that this is a local return; most international investors can expect lower returns. In particular, we expect the hedged return for Eurozone investors to be 75 basis points YoY in the next five years.

We do not expect the positive Treasury return to be enough to bring global sovereign bond returns into positive territory across the board. We expect a -0.25% global sovereign bond return for Eurozone investors on a currency hedged basis.

Boom scenario

The outcome in our 'Boom pushed to the limit' scenario is more positive for Bund holders. However, the return is also much more volatile. In this scenario, growth and inflation are initially higher than in our baseline scenario. As a result, the normalization process is quicker. Furthermore, the expansion phase is extended, therefore the first phase of the normalization process brings rates to more normal levels. Investors should expect the refi rate and Bunds to top 2%. Given the sharp rise in rates, investors are faced with relatively large negative returns

at first. However, the expansion phase comes to a standstill and turns into a recession. In this scenario, the recession is more severe and forces central banks to ease policy aggressively. The Bund yield is expected to decline to 1.5% at the end of the period. This fall in yields brings returns for the five-year period into positive territory: 25 basis points YoY.

Volatility is likely to be higher in the US, with the US economy firing on all cylinders. The Fed is reluctant to act too hawkish ahead of an election year. As a result, it risks falling behind the curve. The Fed continues its gradual hiking path. Yield curves steepen again, bringing 10-year rates to 4.25%. However, once the election is out of the way, we expect the Fed to intervene with full force and raise policy rates well past neutral. The yield curve flattens initially and subsequently inverts. As the economy falls into recession, inflation remains high at first. However, as the recession deepens, the Fed sees no other option than to rapidly reduce rates. This volatile rates path results in a positive return of 4.5% for Treasuries during the period. Note that returns are very negative at first. Like in our baseline scenario, international investors can expect a lower return due to currency hedging. On a hedged basis, Eurozone investors are expected to earn 3% YoY. For a global portfolio, we expect the return for Eurozone investors to be 2.25% YoY for the period on a hedged basis.

Stagnation scenario

In our stagnation scenario, growth disappoints and deflation is back on the agenda. The ECB is forced to bring down its refi rate even further to the 'ultimate zero lower bound'. In this respect, -70 basis points seems technically feasible. Bund rates drop as the ECB takes almost full control of the bond market. Yields are likely to move to levels seen in Japan: five basis point for 10-year Bunds. The fall in yields brings the Bund return to 1% for the period.

We expect the US economy to show more resilience than other developed markets. Nevertheless, inflation is likely to fall in this scenario, as is real activity. The Fed soon returns to an easing path. As economic conditions deteriorate, we expect the Fed to bring its Fed funds rate down to just above 0 basis points. The yield curve retains some of its steepness as investors expect some kind of future normalization. Unlike the ECB, the Fed is unable to gain full control of the curve. Yields fall, pushing bond returns in positive territory. We expect a 3.75% YoY return during the period. On a currency hedged basis, Eurozone investors are expected to earn a 2.5% YoY return.

For a global portfolio, we expect the return for Eurozone investors to be 1.5% YoY during the period on a hedged basis. The return is lower than in our boom scenario due to the relatively low coupon yield.

3.5 Corporate bonds

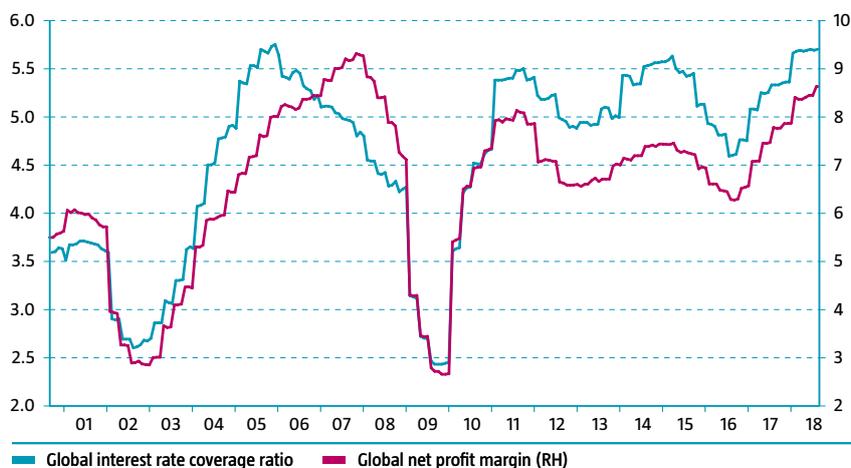
The status quo of spreads moving lower and credit investors' returns grinding higher has finally been broken. So far in 2018, the ride for credit investors this year has proven to be much rougher than it was in 2017. Year to date, credit returns have mostly been negative and spreads have widened, with global high yield spreads now at 420 basis points, the highest level since 2016. European high yield has struggled amid negative growth surprises, political instability and worsening sentiment in the region. US investment grade bonds have proven vulnerable to rising interest rates, with long dated segments of the market declining most year to date. US high yield has proved to be more stable, partly due to strong earnings growth from oil.

There is more spread volatility and dispersion in store for the credit market in the next five years as changing valuations, technicals and fundamentals will impact the various

segments of the market differently. The high correlation between credit spreads and changes in central bank balance sheets means that the credit market will be keeping a close eye on central bank policy changes. We are now transitioning from an environment where markets guess what central banks will buy to one where markets try to predict what central banks will sell. Last year, we warned that quantitative tightening (QT) would be “no cutie”. We have passed the sweet spot. Volatility is set to increase with the Fed offloading agency debt and mortgage-backed securities from its balance sheet at a rate of USD 20 billion per month and the ECB about to phase out its Corporate Sector Purchase Programme. The details of the ECB’s reinvestment policy have not yet been announced, but they will likely bring some comfort as the duration of the current ECB credit portfolio suggests reinvestments could continue at least until 2020.

Where are we in the credit cycle? Most indicators suggest we are in the mature phase of the cycle, but without the euphoria one would normally associate with this. In fact, like their equity peers, credit investors are climbing a wall of worry. One of the signs of the phase we are in, however, is that the level of covenant-lite loan issuance is still increasing. Moody’s measure of legal rights for bondholders, the covenant quality index, is at an all-time low. Among other things, this implies that a company can divest some of the collateral it holds for a bond without using the proceeds for early redemption. Low covenant quality puts recovery rates at risk if the recession, which we expect at some point in all of our scenarios, leads to defaults.

Some pundits state that US corporate leverage is unsustainably high. Our view is more sanguine. First, US high yield net leverage has been declining as a result of deleveraging in commodities-related sectors. Second, leverage is only unsustainable if debt service stalls. In our view, striking the right balance between the level of debt and the ability to service it is a key component in estimating credit risk over the next five years. Interest coverage ratios show that the ability to cover interest costs with cash flows is at an historically high level. This is the result of low coupons and the solid earnings growth of US corporates. Global interest coverage shows a high correlation with global net profit margins which we think will persist through the cycle. As explained in the equity section, we do expect profit margins to decline slightly – by a couple of percentage points – especially in the aftermath of the recession. In our baseline scenario, this will lower interest coverage, but not by enough to threaten US corporate debt sustainability.

Figure 3.21: Strong profit margins have supported interest rate coverage ratios

Source: Thomson Reuters Datastream, Robeco

In general, our baseline scenario, where inflation is close to the central bank target and real growth remains around trend in advanced economies for the next five years, is now neutral for credit markets, especially for high yield which is more sensitive to macroeconomic growth. In an expansion phase, when the ISM producer confidence index is above 50, and corporate earnings are on the rise, high yield typically outperforms investment grade. Investment grade also has a higher duration (is more sensitive to changes in interest rates) than high yield and will therefore be affected more negatively by Fed policy tightening. However, before the recession hits, we expect this return pattern to reverse as credit risks materialize and central banks cut rates.

In our baseline scenario, we expect a euro hedged return of 1% on global investment grade for the next five years. This represents an increase of 1.5% compared with last year as this is a higher duration asset class and will benefit from our higher long-term sovereign bond return expectations. We also expect to see an increase for high yield (from -0.25% to an estimated 1.5%) as this segment is more equity-like, has a relatively lower duration and is more sensitive to recession. In our boom scenario, we think global euro hedged investment grade will return 2% and outperform high yield, which will deliver 1% in this scenario.

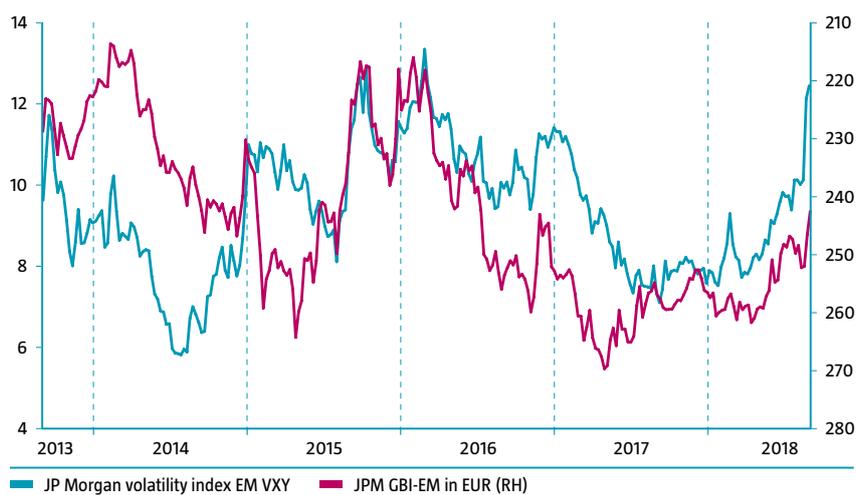
Our boom scenario initially prolongs the downward movement of credit spreads as economic activity fueled by fiscal easing encourages risk-taking. Once the illusion of perpetual above-trend growth is shattered and central banks start to bring inflation under control, high yield will start to slide as spreads widen. In this market, liquidity constraints on high yield and the knock-on effect on high yield ETFs could worsen the downturn for this segment. Although the economic recovery is expected to be fairly swift, declining interest rates in the aftermath of the recession will still be more beneficial for investment grade than high yield.

Our stagnation scenario is remarkably benign for investment grade credits thanks to central banks slashing interest rates in response to a fall in aggregate demand and the return of deflation. We expect global euro hedged investment grade to return 1.75%. For global high yield investors, this scenario is a harsh one, with the asset class barely able to break even (0% in euro hedged terms). Coupons will be unable to cover losses as default rates will rise significantly, occasionally hitting double-digit figures. Real corporate leverage increases in this deflationary environment, while earnings capacity and interest coverage falter due to a lack of corporate pricing power and aggregate demand.

3.6 Emerging market debt

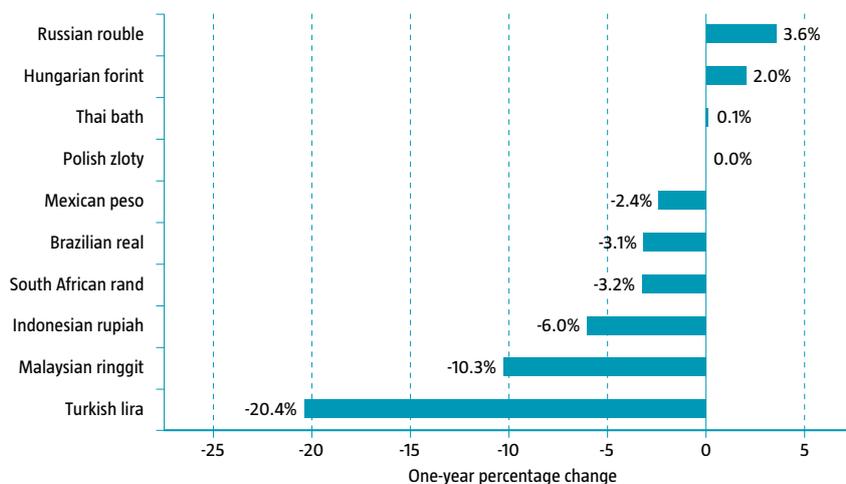
There is no free lunch in finance. Although diversification into high-yielding asset classes may seem like the answer, their appeal can be deceptive. Harvesting these attractive risk premiums is not as easy as it may seem. Local currency emerging market debt, an asset class with yields above 6%, has recently shown that its attractive yields often exist for a reason: the higher level of associated risk. In last year's Expected Returns, we noted that this particular asset class's risk-reward balance had deteriorated: "Moreover, a new wave of protectionism advanced by a defiant Trump administration would typically hurt emerging market economies." This risk has now started to materialize, with the Trump administration slapping tariffs on China and allies alike. Economies that are relatively trade-dependent, like most emerging debt issuing countries, have proven vulnerable, and sentiment towards the asset class has eroded. Political risks are also still a factor, notably in Turkey where the power consolidation of prime minister Recep Tayipp Erdogan is threatening the independence of institutions like the central bank. The JP Morgan GBI-EM Index showed a negative year-on-year return of 1.5% unhedged in euros (as at 7 August 2018). While losses in US dollar terms have been more pronounced, with a year-on-year return of -4.3%.

Figure 3.22: Change in EM FX implied volatility versus EMD index return



Source: Thomson Reuters Datastream, Robeco

The downturn in investor sentiment towards and risk appetite for local currency emerging debt is evident in the underperformance of these currencies against the euro.

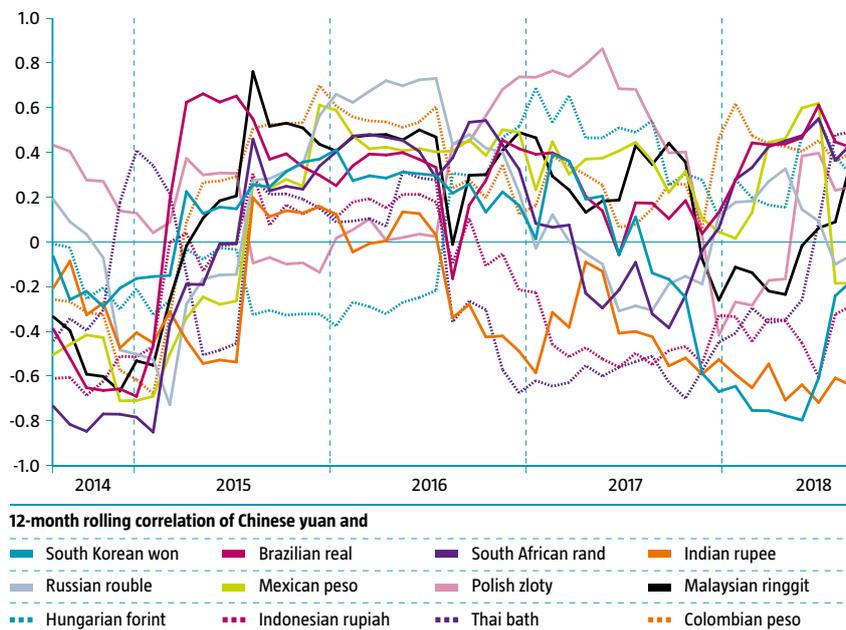
Figure 3.23: Emerging market currencies against the euro

Source: Thomson Reuters Datastream, Robeco

Currency risk remains pivotal for this type of debt as total returns are highly correlated with emerging market currencies (volatility). A basket of emerging currencies (the JP Morgan EM Currency Index) has a 60-month rolling correlation of 0.84 with the monthly returns on unhedged emerging market local currency. The long-term trend in emerging currencies is closely tied to the catch-up in productivity growth versus their developed counterparts. For instance, the currencies of countries with consistent productivity growth relative to the US tend to appreciate against the dollar over time. Moreover, measured in real terms, emerging market currencies are still trading at a sizeable discount. The key question for the long-term currency outlook, therefore, is whether the current shift towards protectionism will be short-lived or if it could structurally hamper this productivity catch-up.

As a report published in 2017 by the ECB shows, trade openness is an important factor if productivity spillovers are to shift from developed countries to emerging markets. Currency volatility in emerging markets has already diverged from the lower levels seen in G7 currency volatility recently. In trade, the gloves are off and given the retaliation strategy on both sides, protectionism is unlikely to disappear from global leaders' agendas overnight. Though China is not a constituent of JP Morgan's Emerging Market Local Currency Debt Index, the evolution of the China-US trade spat is of interest. One of the weapons China could use in a trade war would be to devalue its currency, which could spark a competitive devaluation within emerging markets. There has been no clear correlation between emerging market trade-weighted currencies and the depreciation of the Chinese yuan year to date since trade tensions began – evidence that not all emerging market debt issuers are created equal when it comes to the potential impact of an escalation in trade tensions for emerging debt issuers. The currencies of countries like Mexico, Russia and Indonesia have recently shown a negative correlation with yuan weakness, offering diversification within the emerging market debt universe.

Figure 3.24: Correlation of Chinese yuan and trade-weighted nominal EM FX



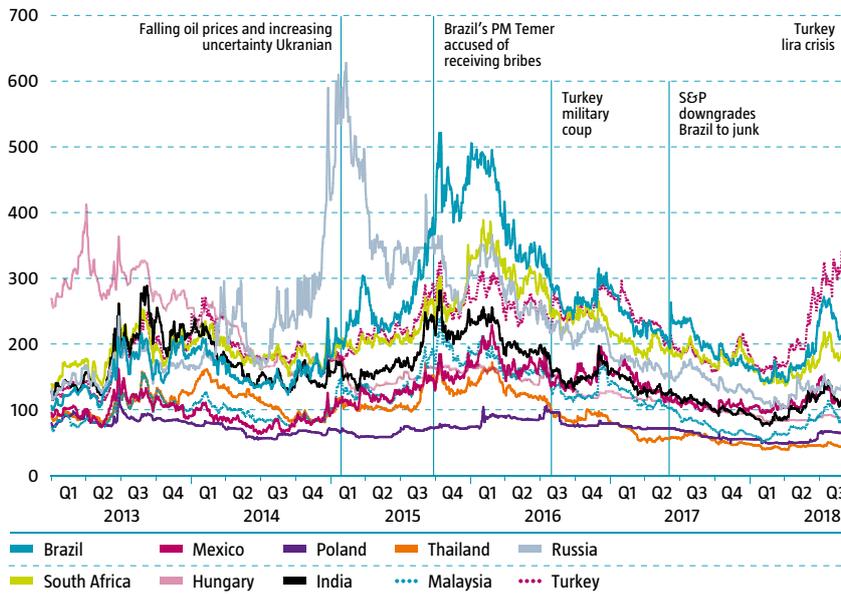
Source: Thomson Reuters Datastream, Robeco

In general, there is great potential for productivity to improve in emerging economies, but all the conditions need to be right for that to happen – something we think is unlikely to occur in the next five years. As Subramanian and Kessler showed in 2013, developing countries need policy space to restructure their economies. But this is exactly where the shoe pinches, as the Fed is set to further tighten monetary policy in the next few years and central banks in emerging markets will have to follow suit to some degree. A US-led global recession in the next five years, even if mild in nature, would not be particularly helpful in this respect, given the high growth beta of emerging market economies.

In short, the current discount of 10% for the top 10 emerging market issuers’ real exchange rates is justified and we do not expect a full mean reversion in the next five years. This results in a modest real appreciation for emerging currencies in our baseline scenario. Bouts of currency depreciation will persist in the medium term, as investors weigh and reweigh the risk-reward balance of the asset class against the opportunity cost of fixed income in the US and other developed markets. In turn, these episodes of currency weakness may translate into higher domestic inflation, creating further pressure on nominal exchange rates.

Credit risk has resurfaced recently for some emerging market debt issuers, and will remain a problem in the medium term. The good news though is that this risk is inherently more idiosyncratic than systemic, even with the potential of a recession in the medium term.

Figure 3.25: EMD issuers five-year credit default swaps (basis points)



Source: Thomson Reuters Datastream, Robeco

According to the IMF, the debt-to-GDP ratio for the top 10 local currency emerging market debt issuers will average 48.6% in the next five years. This is significantly below their developed counterparts and provides some fiscal leeway. But resilience has declined as the IMF is expecting no major uptick in current account balances as a % of GDP in the medium term, with this group of countries' average current account balance expected to hover around -0.1% of GDP for the next five years. In our view, this projection is on the optimistic side as the IMF has not factored in the likelihood of a recession in this period. It is also worth noting that FX reserves as a % of GDP have also declined for this group; a development that accelerated at the outset of the emerging market rout in early 2018. This means their resilience to withstand an external shock like a recession has dwindled. In principle, this also implies less leeway for emerging market central banks.

Figure 3.26: Average EMD local issuer FX reserves as percentage of GDP



Source: Thomson Reuters Datastream, Robeco

Taking all the above risks into account and the lower contribution of expected currency returns, in our baseline scenario we further revise down our prediction for local currency emerging market debt in euros down from 4.25% to 3.75%. We prefer emerging market debt from a fixed income perspective as we appreciate the yield pick-up it offers. But the risk-reward balance has further deteriorated due to reduced resilience and an increasing susceptibility to external negative shocks in the wake of a wave of global protectionism, the ongoing Fed tightening cycle and a gloomier outlook for productivity growth catch-up.

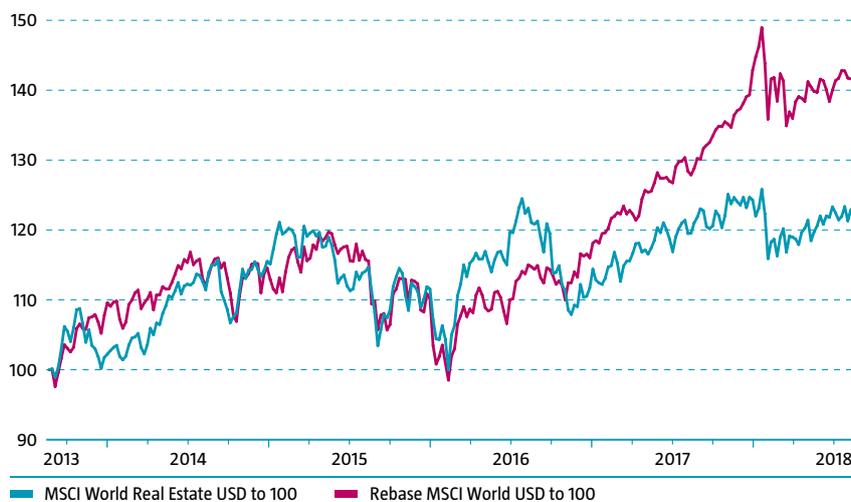
What if the global economy accelerates from current levels? In our boom scenario, all buttons to enhance emerging market productivity are being pushed, resulting in a strong appreciation of emerging market currencies. These currencies eventually trade at a premium as a weakening dollar, an upswing in global trade and reforms by political institutions pay off. Total returns are initially boosted further by credit-spread compression, as confidence among investors improves as a result of the favorable cyclical backdrop. However, the Fed is eventually compelled to pull out all the stops to contain US inflation, reducing dollar liquidity worldwide. In this scenario, if a recession hits and risk aversion for emerging markets resurfaces, emerging market debt will suffer.

Our stagnation scenario is quite benign from a duration-risk perspective, as yields on global bond markets fall to as low as 1% for 10-year US Treasury bonds. But for local currency emerging market debt, the story is more complicated. With global activity stagnating and global liquidity drying up, the contribution of currency returns to total emerging market debt returns turns very negative. This is because the market demands a steep discount to allocate to emerging market assets as this is the most vulnerable segment when it comes to an upshift in protectionism and the rupture of global value chains that we would expect in this scenario.

3.7 Listed real estate

As the world economies embarked on a cyclical upswing in late 2016, the MSCI World Real Estate Index started to lag the MSCI World Index.

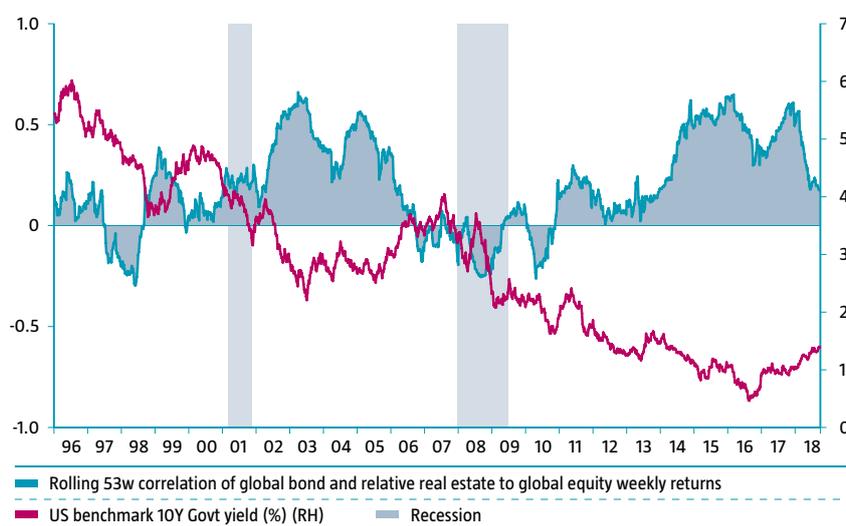
Figure 3.27: Performance of real estate has lagged the performance of equities



Source: Thomson Reuters Datastream, Robeco

Rising interest rates and higher bond yields have also played a role in the relative underperformance during this period. Recently, however, there has been less correlation between relative real estate performance and changes in global interest rates.

Figure 3.28: Correlation between real estate and equities not completely driven by capital market rates



Source: Thomson Reuters Datastream, Robeco

This is due to stronger supply discipline in the US real estate market and an increase in housing demand driven by stronger employment growth. In our view, US housing affordability will remain healthy in the next few years on the back of real wage growth. Industrial real estate may profit from the current bottlenecks in US supply chains and longer delivery times, which are supporting warehouse rents. Rental vacancy rates tend to follow higher capacity utilization rates, with the latter projected to reach a cyclical high of above 80% in the next few years.

Elsewhere, pockets of the real estate market are a potential cause for concern. Swedish property prices have skyrocketed. But as the Riksbank is set to gradually reverse its negative nominal interest rate policy in the next few years, the downward pressure caused by higher interest rates will start to be felt. In China, the housing market in the largest cities has decoupled from income growth. As Chinese policymakers continue their efforts to deleverage overheated market sectors, highly leveraged households (increasingly younger age groups) could stymie real estate price appreciation in large Chinese cities.

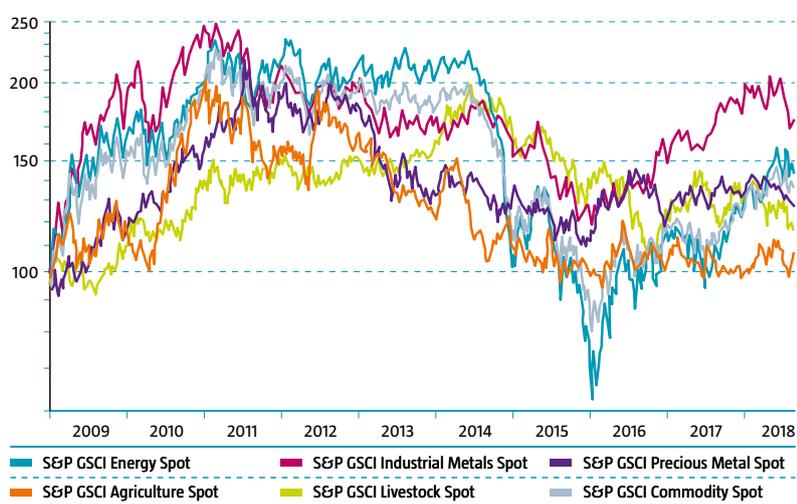
Given the diversity of constituents that make up the MSCI World Real Estate Index, different sectors will have different expected returns. In general, our baseline scenario of real activity averaging around trend and inflation drifting below – but close to – central bank targets is a fairly benign one for the overall asset class. However, as previous Fed tightening cycles have shown, net Fed tightening will hurt real estate more than equities given the latter's increased sensitivity to interest rates towards the end of the business cycle. In our view, the existing performance gap between global equities and real estate will not close completely. In a mild recession, which we expect in all our scenarios, real estate is likely to underperform relative to equities, lagging by 0.75% in euro terms and generating a euro return in the next five years of 3.25%. In our boom scenario (ISM leading indicators of around 60), real estate has historically outperformed global equities, while in our stagnation scenario – which has

a deflationary bias – the combination of increased real leverage and lower rent indexation levels could leave real estate further behind equities compared to our baseline scenario.

3.8 Commodities

Since the start of this expansion, commodities have largely missed out on the rally seen in other risky assets like equities. But a late-cycle catch-up could be in the offing, as inflation picks up, the Fed tightens monetary policy and the dollar weakens marginally in our baseline five-year outlook. Given the stage of the cycle – with around-trend growth and increasing inflationary pressures as output gaps gradually close and capacity utilization rates rise – bonds do not offer the same protection from inflationary surprises that commodities may. From a multi-asset perspective, the lack of correlation between commodities and other asset classes in a late-cycle expansion adds to their appeal.

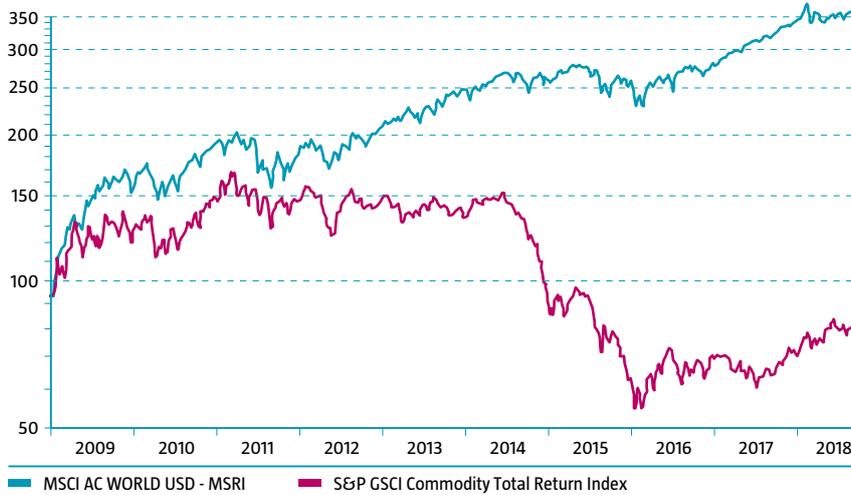
Figure 3.29: Returns from different commodity sectors



Source: Thomson Reuters Datastream, Robeco

From a return perspective, as demonstrated by Erb and Harvey in 2006, roll returns are an important component of total commodity returns. However, GSCI roll returns have made a negative contribution to total commodity index returns since this expansion began in 2009. With current commodity futures curves (like Brent oil) in backwardation (when spot prices exceed future prices), the roll return is marginally positive. However, as future curve slopes are influenced by a myriad of supply and demand factors, they are very hard to predict, and so too are roll returns on a five-year horizon. Therefore, we have chosen to take a neutral stance rather than factor a positive roll return into our total return estimate.

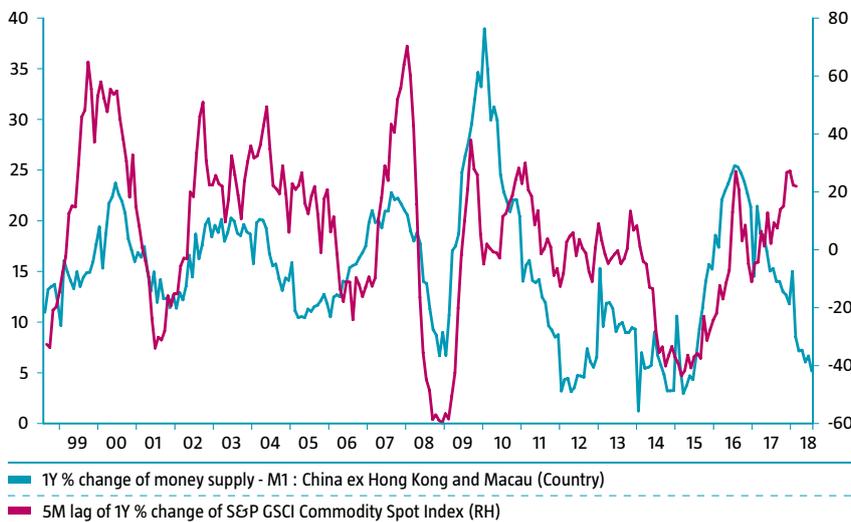
Figure 3.30: Commodity returns have lagged equities by a large margin



Source: Thomson Reuters Datastream, Robeco

Spot commodity prices remain heavily influenced by China and de-facto Chinese monetary policy, as the strong lead-lag relationship between GSCI returns and China’s broad money growth illustrates.

Figure 3.31: Monetary developments in China remain an important driver



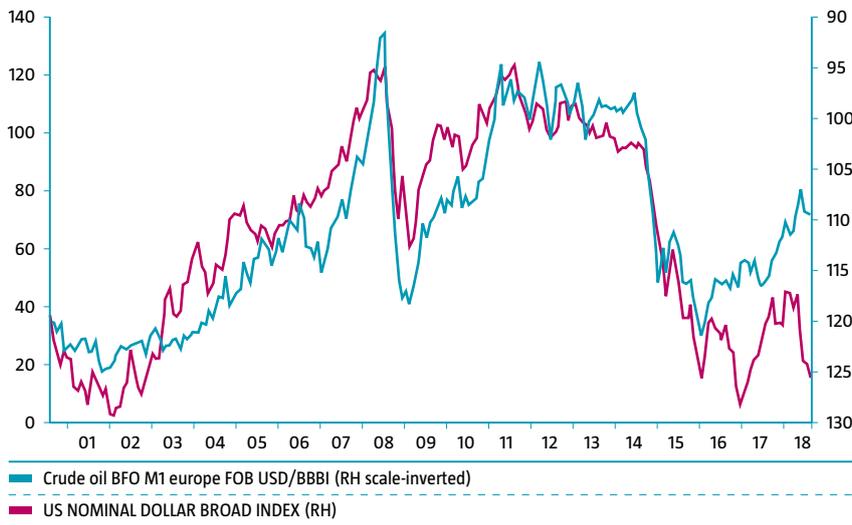
Source: Thomson Reuters Datastream, Robeco

Activity in China’s real economy should slow to 5.25% on a five-year average, which is below the official 6.5% policy growth target but up 0.75% from our baseline scenario projections last year. We think that the Chinese authorities will manage to address the trade tensions and not be inclined to tighten monetary policy excessively, even in the framework of their current deleveraging program. This more benign view of the country’s real economic activity also underpins our upgrade from 2.75% to 4% for commodity-related returns.

The outlook for oil remains pivotal for the overall GSCI. A weakening trade-weighted dollar may affect oil prices, while US shale oil production could be hampered by higher break-even levels as input costs start to rise – partly on the back of further policy tightening by the Fed. We estimate a price of between USD 60 and 80. The top end of this range exceeds the long-term market expectations (USD 63 for Brent) that are priced into oil futures’ curves.

In our boom scenario, the US economy starts to show signs of overheating. This sends oil prices above our USD 60-80 price range, as oil demand outpaces supply and oil inventories start to shrink to accommodate the positive demand shock. Eventually, the oil price and the Fed’s tighter policy stance act as an economic ‘speed bump’ in this scenario. In our stagnation scenario, the oil supply glut reappears as the global economy experiences a strong decline in aggregate demand, with real activity falling significantly below trend. In this environment, oil prices could fall well below USD 60 dollar per barrel – the bottom end of our baseline scenario range.

Figure 3.32: Dollar and oil prices closely tied



Source: Thomson Reuters Datastream, Robeco

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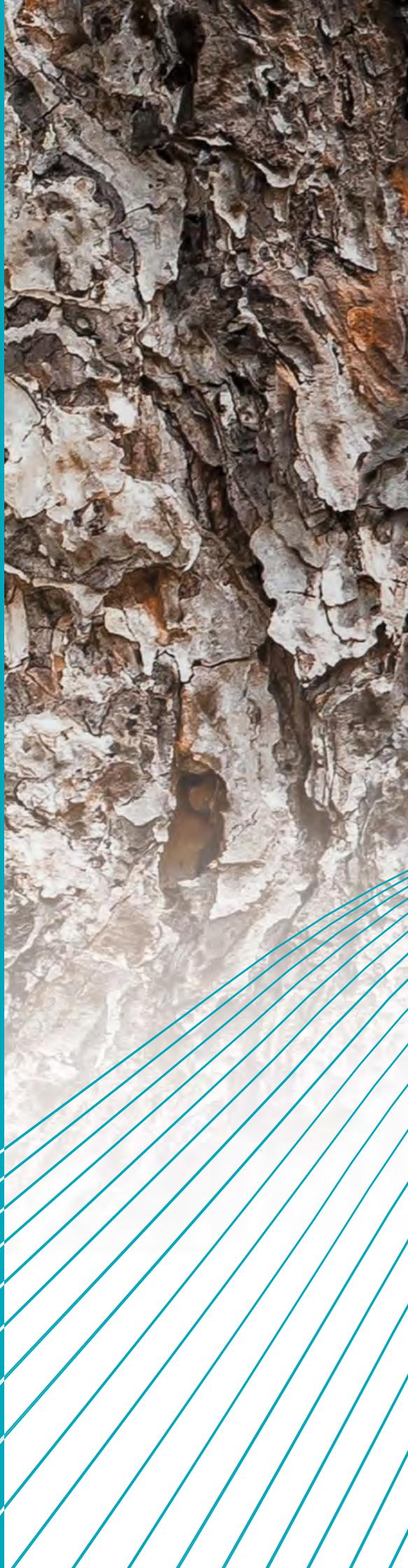
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