

# Limbo Lower

**Asset allocation** in a low rate environment





# Executive summary

The combination of an ageing demographic, unconventional monetary policy, and increased financial market regulation post the global financial crisis has left real interest rates globally in a structurally lower regime. Like a limbo stick that has shifted down, lower real rates implies the capital markets line across all asset classes has shifted down leaving expected returns structurally lower. In order to achieve their target returns investors need to do more than just move out the risk spectrum. Investors now need to work harder, think smarter, and be more unconstrained than ever before in order to achieve the expected returns they are targeting. Navigating the lower limbo stick will require more flexibility, more nimbleness in asset allocation decision making and a greater focus on downside risk management.



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# Introduction

In 2007, 10 year bond yields in Australia were 6.3%. Two years later they were 5.6%. Two years after that they were 3.7%. Today, they are even lower. Like a limbo stick, interest rates have stepped lower.

Our contention is that a key driver of this shift down in interest rates, occurring globally not just in Australia, is a decline in real interest rates. Moreover, this decline is more than just a cyclical response to weaker economic growth and lower inflation. This move down is a structural phenomenon that will be with us for some time. This shift will, therefore, require investors to change the way they invest in order to meet their future target returns.

In short, investors need to:

- be more unconstrained in their investment guidelines
- be more flexible and more nimble in their asset allocation
- look at a broader investable universe
- combine directional or linear positions with relative value trades
- and increase the focus on downside risk management.

Traditional, long-only, investing is no longer sufficient. As Alexander Ineichen (2007) wrote:

*"Long-only investing is like playing golf with only a 7-iron.<sup>1</sup>"*

Navigating the lower limbo stick requires dexterity, flexibility, and nimbleness using the full suite of tools available.

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1 Ineichen, Alexander. (2007)

# The evidence of lower real rates

**Table 1:**

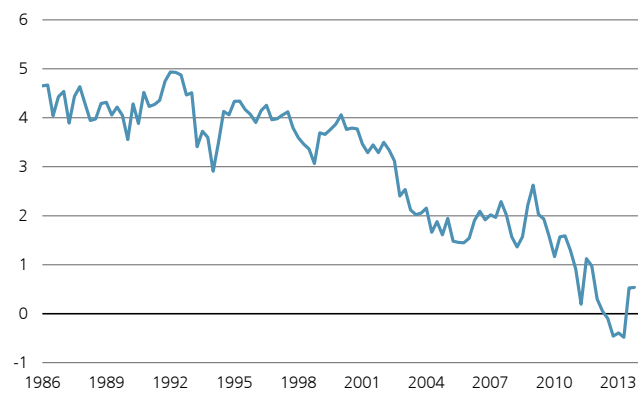
Real interest rate	1990-94	1995-99	2000-04	2005-09	2010-14
USA	1.9	2.5	2.6	1.3	0.6
Japan	1.5	-0.2	0.0	0.3	-0.2
Germany	3.0	2.1	2.1	2.0	1.9
UK	3.3	3.9	3.8	2.4	1.6
Canada	2.1	4.0	3.3	2.1	1.7

Source: Orphanides, 2014

Table 1 shows the evolution of real interest rates through time for various markets. As can be seen, for most markets, real interest rates have been declining for several decades.

This decline can be seen more clearly in Chart 1 which shows a time series of the global weighted real interest rate. The sharp rise in the middle of 2013 reflects the market speculation about the timing of withdrawal of monetary stimulus by the Federal Reserve and is now colloquially known as the "taper tantrum". This reaction by markets in May of that year confirms the role "unconventional" monetary policy has played in putting downward pressure on real interest rates.

**Chart 1: Global weighted real interest rate (%)**

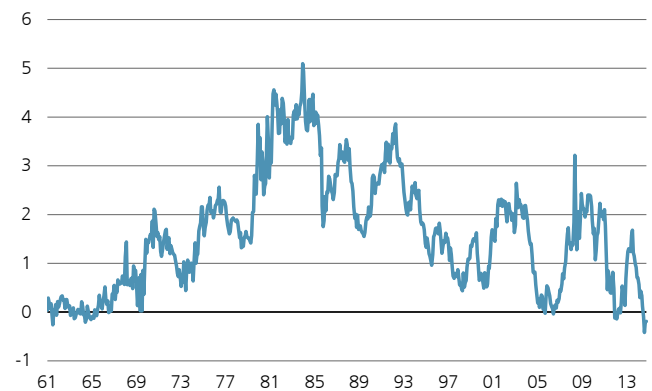


Source: Mervyn King, Daniel Low (2014)

Chart 2 shows that the term premium has also been in decline and is currently below zero in the US. Whilst there is a structural decline evident in the term premium, there is also a cycle. The term premium tends to fall when investors are in a risk-taking mood. The recent decline

leaves the term premium at levels not seen since before the 1960s. Despite this low level, the term premium is not sufficiently low enough to generate an implied rate forecast anywhere near where real interest rates are currently sitting. Inflation plus the 10-year term premium implies a real 10-year rate around 2.0%. Current market pricing has it around zero. One interpretation of the current pricing in the bond market is that participants are expecting real interest rates to stay abnormally low for a very long time.

**Chart 2: US 10-year bond premium (%)**



Source: New York Federal Reserve

Growth theory models stipulate that an important determinant to identifying the real interest rate in an economy is the growth in potential output. In steady state, this is equal to the sum of the rate of growth of labour productivity and the rate of growth in population. So in assessing the likely trend in the real interest rate, projections of these two elements is essential.

**Table 2:**

United States	Nominal cash rate	Inflation	Real interest rate	Real output growth	Population growth
1876-1913	5.5	0.0	5.5	4.3	2.0
1914-1939	3.2	1.6	1.6	2.1	1.2
1940-1964	1.5	3.4	-1.8	4.5	1.5
1965-1989	7.0	5.2	1.8	3.5	1.0
1990-2014	3.2	2.1	1.1	2.5	1.0

Source: Orphanides, 2014

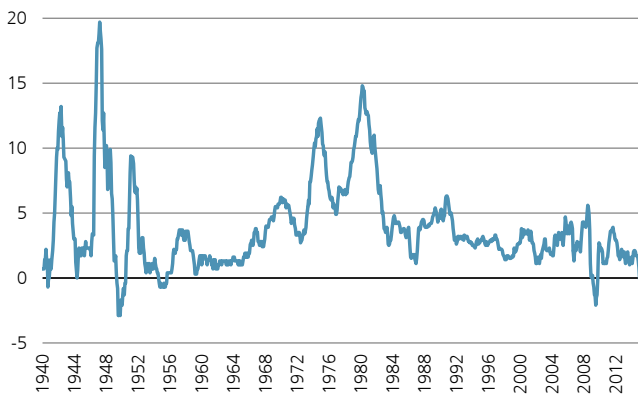
Table 2 uses data just for the US. It shows the breakdown of nominal yields into its inflation and real rate components and then shows the growth in output and population.

What is interesting about these data is how the real rate has shifted through different regimes through time. Real rates were at their highest in the first period, 1876-1913. This was a period of great prosperity as high output growth combined with high population growth, low inflation and low volatility.

The real rate then shifts down sharply in the second period (1914-39) as population growth falls from an average rate of 2.0% to 1.2%.

Most interestingly, in the third period (1940-64) the real rate turns negative as the nominal rate falls below the rate of inflation. As history suggests, this is quite an unusual situation. Years of military spending during World War II left the UK and US governments heavily indebted. Deleveraging was desperately needed and so a deliberate strategy was undertaken by the central banks to ensure nominal bond yields were kept lower than the rate of economic growth. As a result, inflation spiked to levels well above historical averages, peaking at 19.7% in March 1947 (Chart 3).

**Chart 3: US CPI (yoy%)**



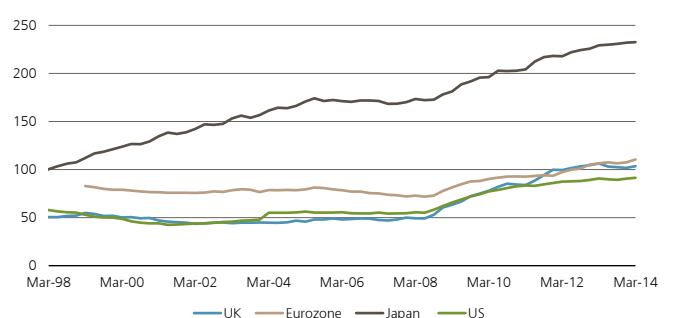
Source: Bloomberg

Policy makers supported the deleveraging effort through a range of "unconventional" administrative actions. This included a 1951 swap of marketable short-dated bonds into non-marketable long-dated bonds, regulation Q (a ceiling on interest payments from long-term demand deposits), controls on international capital flows and a ban on the private ownership of gold.

The result was a real interest rate that averaged -1.8% over the period. At such low rates, government debt borrowing becomes cheaper, saves taxpayers money and improves the creditworthiness of the government. Between 1940 and 1970, the US and UK governments both reduced their debt burden by about 30-40% of GDP per decade. Between 1946 and 1974, the US debt-to-GDP ratio fell from 121% to 32%.

We find ourselves in a very similar situation today where real rates are again negative, or very close to it. Once again we find ourselves confronting a policy of financial repression. Governments the world over are struggling to come to terms with rising public sector debt levels. Chart 4 shows general government debt levels have doubled for the major economies in the past 15 years. The combined public debt of the G7 economies alone has grown by close to 40 percentage points to around 120% of GDP since the start of the 2008 financial crisis. In the United States, the official debt level is 100% of GDP, but it increases to 650% when entitlements such as Social Security, Medicare, and Medicaid liabilities are included<sup>2</sup>.

**Chart 4: General government debt (as% of GDP)**



Source: Datastream, UBS Global Asset Management

Of course the two main differences between the financial repression of post WWII and today's financial repression is that back then inflation was high so it was easier to achieve negative real yields. Today, inflation is low. Back then, demographics were helping the economy; today they are a hindrance. Back then, fiscal and monetary policy was broadly aligned, working in concert to create aggregate demand. Today they are at odds leaving aggregate demand wanting.

Deleveraging can take 20 years or more to resolve<sup>3</sup>. It took 15 years for the private sector to deleverage in Japan. Given the historic differences, it may take a lot longer for today's "unconventional" policies to work. This means financial markets could be correct in anticipating a period of low real interest rates for some time to come.

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3 Reinhart and Rogoff (2012)

# Drivers of lower real rates

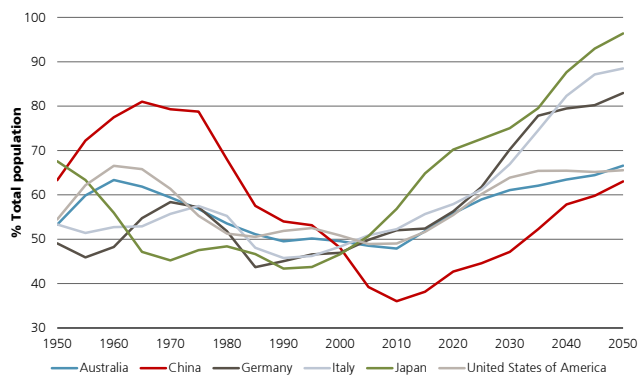
Broadly speaking there are three key drivers of lower real interest rates—ageing demographics, unconventional monetary policy, and new regulations.

## 1. Ageing demographics

Recent research has shown that as a population ages, the real level of interest rate it demands declines<sup>4</sup>. Chart 5 shows the total dependency ratio—that is the ratio of older people to younger people in a population—across a number of different countries. As can be seen, the ageing of populations is a phenomenon affecting many major economies.

The rise in the dependency ratio is the result of a combination of an increase in life expectancy and a slowdown in the birth rate. Together, these two factors are driving a decline in the growth rate of the working age population. In the 1950s, about 9% of the G8 population was age 65 and older. In 2010, the percentage increased to 16%, and over the next 20 years, the United Nations projects that age group will grow to 26%. Of the G8 countries and the BRIC countries, only India has a birth rate that remains above the replacement rate, but just barely at 2.4.

**Chart 5: Total dependency ratio (population above and below working age)**



Source: IMF, UBS Global Asset Management

As Rob Arnott (2015) wrote, demographics matter greatly to an economy:

*"A greater presence of children hurts GDP growth by a small amount. But a greater presence of senior citizens hurts GDP growth by a significant amount".*

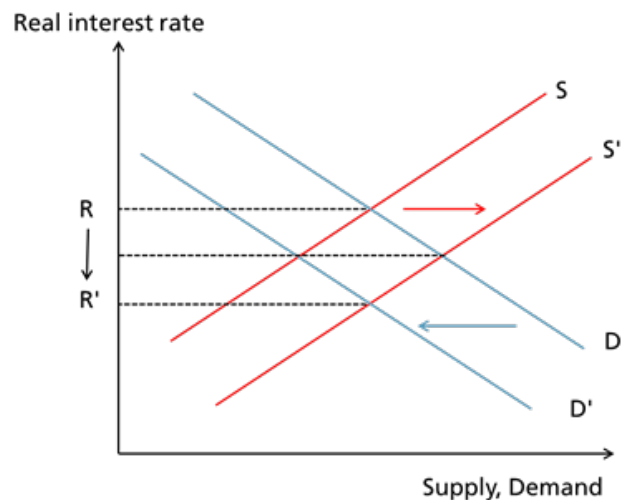
Ageing demographics puts downward pressure on real interest rates through two main channels—by increasing the supply of savings and by decreasing the demand for investment as productivity declines. The rise in life expectancy adds a third dimension by increasing the demand for longer-dated bonds by defined benefit pension plans that need to match longer-dated liabilities.

4 Ikeda and Saito (2012)

When the ratio of the working-age population to the total population declines, the number of wage earners relative to the number of persons who consume is expected to decline. According to the permanent income hypothesis this situation encourages households to consume less and save more in order to smooth out the level of per-capita consumption in the future. This increases the supply of savings in the loanable funds market and generates downward pressure on real interest rates.

The demand for savings to fund investment also declines with an ageing population. A decline in the working age population means that labour becomes more scarce than capital. This leads to a change in factor prices as fewer people need to be equipped with capital and so leads to an increase in the capital-labour ratio. This reduces the marginal product of capital and so reduces the demand for investment (loanable funds). This is possibly a key reason for why investment in Japan has been so low for so long.

**Figure 1:**

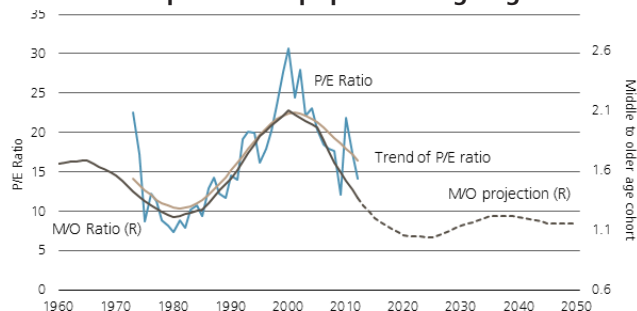


Source: UBS Global Asset Management

Chart 6 shows the price/earnings (PE) ratio for the US S&P500 against the M/O ratio, which is the ratio of middle aged to older cohorts in the population. It can be seen that as a population ages it sells down risky assets and moves into safe assets. This increases the demand for bonds and puts downward pressure on risk asset prices. This represents a shift in portfolio preference of households.



**Chart 6: US equities and population ageing**



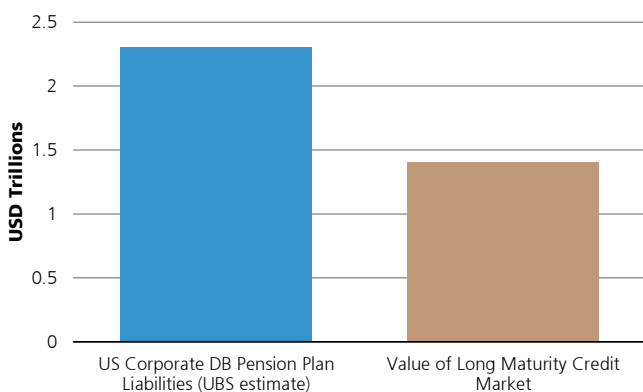
Source: Bank of America/Merrill Lynch indices, United Nations, UBS Global Asset Management, data as at 3 September 2012. Note: The M/O ratio is the ratio of population aged 35-49 to population aged 60-69.

This shift in preferences is a key driver behind corporate activity in the last few years. Corporates are rewarded more by shareholders to distribute income than to invest and generate growth. Hence the incentive for companies to invest has fallen, putting downward pressure on real interest rates.

The third channel through which demographics is putting downward pressure on real interest rates is by increasing the liability duration for defined benefit pension plans.

Bank of America Merrill Lynch estimate that a one year increase in life expectancy equates to a 7-9% increase in additional liabilities for a typical defined benefit pension plan<sup>5</sup>. This increases the demand for longer dated bonds.

**Chart 7: Longevity increases liabilities**



Sources: UBS Global Asset Management, US Federal Reserve; as of September 30, 2014

Chart 7 shows the current value of corporate defined benefit pension liabilities in the US against the value of the long maturity credit market. There is currently \$2.3 trillion in liabilities against \$1.4 trillion in available bonds.

The mis-match between demand and supply is made even worse as more companies move to a liability-driven investment (LDI) framework.

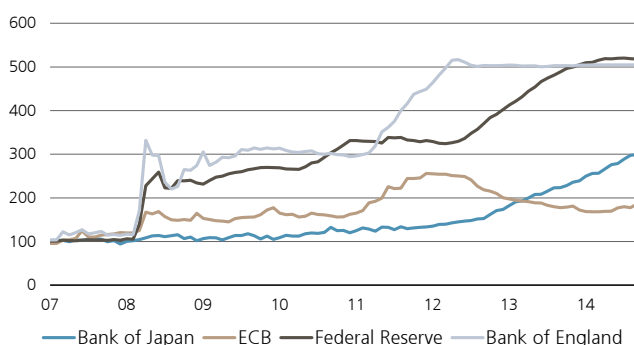
The impact on real interest rates from an ageing population will be larger in circumstances where reforms result in a substantial shift towards funded pension schemes. In the US, new pension regulations and new reporting rules have made pensions much more sensitive to their funded status, that is, the ratio of pension assets to liabilities. US pensions must now be fully funded or committed to amortising any underfunding over a seven year period. Assets and liabilities must be valued on a mark to market basis and there is pressure to reduce the asset-liability gap risk. This means that as the funding status gap closes, pensions are incentivised to hold safer, liability hedging assets—typically bonds.

## 2. Unconventional monetary policy

The second driver of lower real interest rates is financial repression.

Financial repression favours debtors and punishes savers. This is a global phenomenon—the UK, the US, Europe, Japan, Sweden, Denmark, and Switzerland, are all using a form of unconventional monetary policy to buy financial assets and pump liquidity into the financial system. Eighty-three percent of the world's equity market cap is currently supported by zero interest rate policies. The aim of such a policy is to push the real interest rate low enough to discourage saving. In 2014, it was estimated that 1.4 billion people were experiencing negative real interest rates<sup>6</sup>. The US Federal Reserve is now the single-largest owner of US government debt. The Bank of Japan is the single-largest holder of equities in the Japanese Nikkei index. In Switzerland, ten year bond yields have been pushed into negative territory for the first time ever.

**Chart 8: Central Bank Balance Sheets (Index Jun-07=100)**



Source: Bloomberg

The problem is inflation is so low that it is proving difficult to get nominal yields lower than inflation. The presence of deflation in some parts of the world makes the task harder still. Policy makers have had to push nominal yields into negative territory in order to get real interest rates down.

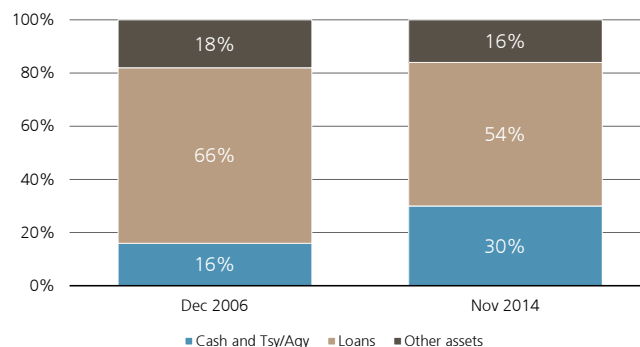
The emergence of negative bond yields has been particularly evident in Europe, where the threat of deflation is greatest. In the presence of deflation, even a negative nominal yield may leave the real yield positive.

## 3. Regulation

The third driver of lower real interest rates is regulation.

As a result of Basel III and Solvency 2 banks are adding to their stock of high quality liquid assets. Bank capital ratios are now higher than at any time since World War II.

**Chart 9: US bank balance sheet breakdown**



Source: JP Morgan, UBS. Note: loans include commercial and industrial loans, real estate loans, other loans and leases, and interbank loans.

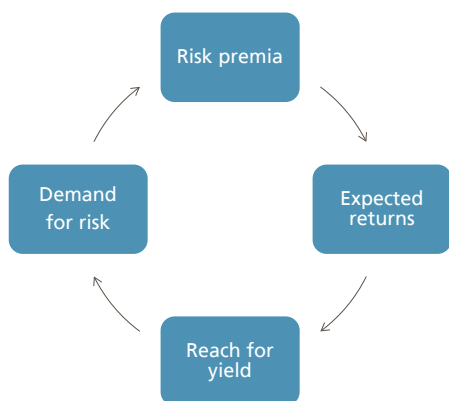
As the chart illustrates, loans and other assets have fallen to 70% of US bank balance sheets from 84% prior to the global financial crisis (GFC). The highest quality and most liquid assets are sovereign bonds, whose price is subsequently being bid up as a result.

This new regulatory environment is also having an indirect effect on real interest rates. By increasing the cost of capital for banks, leveraging bank balance sheets has now become a more costly exercise. It is leverage from the banking system that generates growth in an economy. Less leverage means less growth which means lower real interest rates.

# Consequences for investors

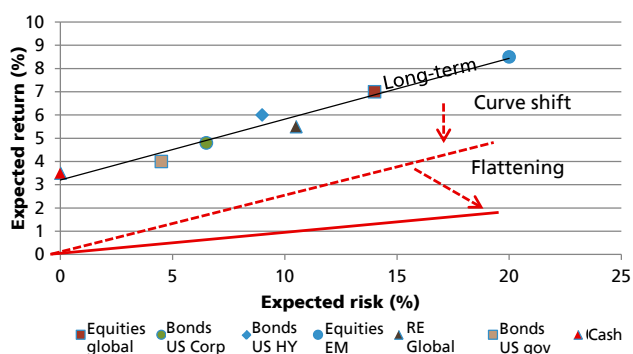
As illustrated in Figure 2, lower real interest rates are generating a self-fulfilling cycle of lower risk premia, lower expected returns, increased demand by yield-hungry investors, increased demand for risk putting further downward pressure on risk premia.

**Figure 2:**



Lower interest rates have the effect of shifting the capital markets line (CML) down and so lowering the expected return for all assets along the risk spectrum. To achieve the same target return, investors move out the risk spectrum, resulting in a flattening in the CML. This flattening is equivalent to a decline in the term premium in the bond market and represents eager investors grab for more yield—they move out to longer-term assets from short-term holdings and demand less compensation in the process.

**Chart 10: Consequences of suppressed risk-free rate**



Source: UBS Global Asset Management. Return and risk expectations are no guarantee for future results. The chart is based on UBS internal risk-return estimates.

**Table 3**

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Equity funds	588	452	-210	219	225	1	82	581	200
Bond funds	119	100	-171	674	505	282	851	187	223

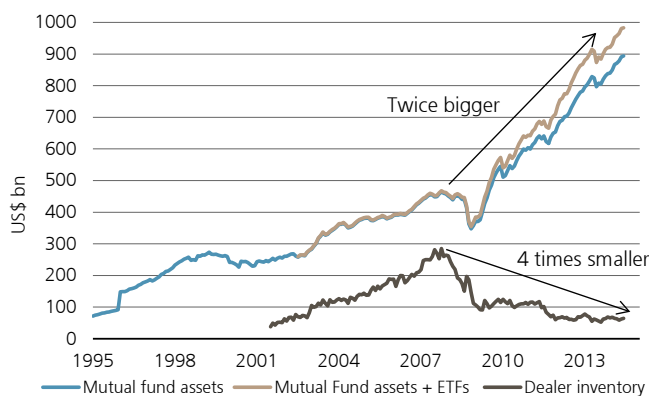
Source: ICI, EFAMA, J.P. Morgan. Amounts in USD billion per year represent net inflows and include global Mutual Fund and ETFs. Mutual Fund flows are from ICI and EFAMA. 2014 YTD flows are estimated as of August. ETF flows are from Bloomberg Finance LP.

Lower expected returns increases the reach for yield even more by investors. Table 3 below shows that contrary to expectations, rather than getting a rotation out of bonds and into equities as yields fall, the reach for yield has driven an increase in demand for both bonds and equities. Flows into both asset classes have been positive in every year since 2009.

Some risks are now higher for investors and these are not being fully priced in the market. Certainly, liquidity risk in the bond market has increased as a result of the new regulations. This is particularly the case with high yield credit, where non-traditional buyers have been heavy participants. According to a study conducted by Deutsche Bank, household holdings of corporate bonds have increased from 14% of all corporate bonds outstanding prior to the financial crisis to 30% currently<sup>7</sup>. These buyers tend to be more return-sensitive and very sentiment driven. The new regulatory environment means when the rush for the exit from high yield comes, the exit door will be narrow because there is now a smaller inventory of high yield bonds on investment bank balance sheets.

It is estimated that since the GFC, banks have cut their inventory of credit by 75%. This has occurred at the same time as the size of the global bond market has more than doubled in size (Chart 11).

**Chart 11: Global bond market**



Source: Mutual Fund IG +HY Assets from Haver Code (ICBACOR@ICI and ICBAHYB@ICI), ETF Flow from Internal ETF File (Bloomberg Tickers) and Dealer Inventory from New York Fed (<http://www.newyorkfed.org/markets/gdsd/search.html>)

According to Deutsche Bank, primary dealers now hold only around \$50 billion of U.S. corporate bonds on their books compared with \$300 billion before the crisis. In 2005 the U.S. corporate credit asset universe was worth around \$9 trillion, of which 5% was on dealers' inventories. These assets are now worth around \$12 trillion, of which less than 1% is on dealers' inventories.

And it is not just the inventory of credit that dealers are cutting back on. After doubling between 1990 and the early 2000s, the share of Treasuries held by dealer banks was stable at around 15%. Following the financial crisis this share has plummeted to about 4% currently.

Shrinking liquidity could push up the cost of trading, widen bid-ask spreads and make it harder for investors to close out positions. As a result, it has the potential to amplify volatility in what is traditionally considered a "safe-haven" asset class.

A second consequence for investors relates to the impact that lower real interest rates have on market-based valuation measures of the equity market. In the dividend discount model, a lower interest rate regime implies a higher fair value as future cash flows are discounted back at a lower rate. So it is not surprising then that as lower real interest rates have pushed conservative investors further out the bond risk spectrum, it has also driven more risk-seeking investors further into the equity market. This in turn is driving the crunch lower in risk premia and therefore lower expected returns from the equity market.

Another consequence of the lower real interest rate environment relates to correlations. As previously mentioned, contrary to expectations of a great rotation out of bonds and into equities, the reality has proven to be very different. This observation confirms that correlations between risk and safe assets are no longer as stable as they once were.

# The end game

The downward spiral of lower real interest rates, driving expected returns lower, driving an even greater demand for risk assets has the final effect of just making every asset class more expensively priced. Moreover, the factors behind the decline in real interest rates are long-term and structural in nature suggesting a switch to a higher real interest regime is unlikely in the near to medium term.

So how should investors respond to this?

Achieving a target return is still possible, investors just need to think smarter and look further for alpha.

First, investors need to be as unconstrained as possible and therefore have as wide an investable universe as possible. Constraining investment managers in their field of expertise and the use of the tools to execute is not optimal in this environment. The choice of benchmark is crucial in this regard as benchmarks are not risk free starting positions. The only true risk-free starting position is cash.

Traditional approaches to asset allocation have involved taking long-only equity positions against a defined industry benchmark. This view was supported by the notion that market timing does not work, that long-term investors need to be fully exposed to market risk premia at all times, and that equities outperform bonds in the long run.

Some of these investment heuristics are currently being challenged. If Grinold and Kahn (2000) are correct and the benefits of active asset allocation are a function of both the investment managers' skill and the number of independent decisions the manager takes, then finding managers with investment skill and then constraining them cannot be efficient.

Investors need to be flexible, taking beta risk when it is attractive but also blending it with relative value positions when beta risk is unattractive. Having the flexibility to take

long and short positions creates a wider opportunity set for investors, particularly in an environment where many asset classes look full-valued.

Investors also need to be more focussed on downside risk management. An environment of lower expected returns and higher volatility means risk management is just as important as return management. We know from behavioural finance theory that all investors are loss averse—they do not equate equally volatility on the downside to volatility on the upside. Achieving sustainable positive absolute returns in a low expected return world is, in large part, the result of managing downside risk wisely. The result, when successful, is an asymmetric-return profile.

In practice, this means being nimble, flexible and liquid enough to take risk off the table when key events are approaching or when the risk is no longer being rewarded.

Of course, the increase in flexibility of the investment manager needs to be accompanied by an equal increase in the role of risk management within the investment process. Moreover, in a world where correlations are no longer static, the benefits of diversification need to be actively monitored and sought out at a risk factor level. This implies that risk management can no longer be an exogenous after thought appended onto the investment process. Risk management must become fully integrated taking a critical role in all aspects of the investment decision-making process - from the design of the trade, to the construction of the portfolio, to the monitoring of the fund.

In our mind, the shift down in real interest rates is a structural adjustment, which means it is here to stay for a little longer. This means that investors need to evolve. We need to think smarter and look further for investment ideas. Flexibility and nimbleness are the key to navigating a lower limbo stick.

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