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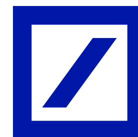

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Special Report

Four ways bond yields affect stocks

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Bond yields up, stocks down. That casual logic during this month's market turbulence seemed relatively simple. But consider that bond yields and US equity valuations saw a positive correlation in the three decades to 1997, or that inflation–expectations for which were a cause of the recent push up in yields–typically correlates with strong performance in some sectors, like industrials or materials and technology, while hurting the performance of consumer staples and health care. Things, then, are not so straightforward as "bond yields up, stocks down."

In this piece we explore four perspectives in which bond yields can affect equities and present associated trade ideas immediately after the summary page. We look at the impact from inflation, debt levels, market valuations, and on the reliable dividend paying stocks that have functioned as "bond proxies" in the last decade. The effects vary depending on the lens used.

For instance, from an inflation perspective, our analysis shows that investors should embrace firms that are relatively less capital intensive (e.g. in technology or healthcare), or firms that are capital intensive but only replace their assets over a long time horizon (e.g. telecom or cable firms).

Care should also be taken with so-called 'bond proxies', which have seen their leverage triple relative to the market. Investors have rewarded the use of debt to pay dividends, but rising yields have begun to force change and high-dividend payers have underperformed since the bond yield nadir in 2016.

A period of rising yields also demands avoiding firms with precarious refinancing situations. We identify stocks that may fall into this category. From a valuation point of view, there is no link between nominal yields and price multiples. Real yields, however, may impact multiples.

As Financials is often the most highly correlated sector with bond yields we take a closer look at the dynamics at play and find that banks are at a turning point. The growth prospects of European banks, in particular, are undervalued given the steeper forward yield curve and low deposit beta in Europe. To conclude, we suggest a number of baskets of stocks based on the entire analysis.

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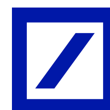

Summary on a page

- The effect of bond yields on equities is not straightforward. We look at it from four angles: inflation, debt, valuation multiples, and bond proxies.
- From an inflation perspective, the 1970s experience shows that the more capital intensive a firm is, the worse it will perform during an inflationary period, because of the increase in the replacement cost of its assets. For investors, that increases the attraction of firms that are relatively less capital intensive or firms that may be capital intensive but only have to replace their assets over a very long time horizon.
- From a debt perspective, one should see a rate rise impact firms with the largest debt burdens. Having benefited the most from a low-rate world, they have the most to suffer from rising rates. It is worrying, therefore, that the median US company has doubled its net debt, relative to ebitda since the financial crisis. But the structure of that leverage is also important, with some companies benefiting from decreasing interest expense from refinancing longer-term bonds.
- From a valuation perspective, we find that stock price to earnings multiples are sensitive to the inflation-adjusted real bond yields, rather than nominal bond yields. But the correlation is not linear. In the US, there appears to be a threshold effect, with high real rates not hurting equity multiples until a four per cent threshold is reached.
- From a bond proxy perspective, stocks that pay high dividends have become bond proxies in the low-rate world. But to keep up their capital payouts, companies have taken increasing amounts of debt. In the US, the leverage of Dividend Aristocrats has tripled relative to the market. The stock market has rewarded the use of debt to pay dividends. As a consequence, even weaker firms are also increasing their payouts. This policy is not sustainable in the long term and, indeed, since the bond yield nadir in 2016, high-dividend paying stocks have underperformed the market.
- Financials are the most highly correlated sector with bond yields and with rates on the move since their lows in mid-2016, banks are at a turning point. European banks are likely to benefit more than US banks because of the steeper yield curve in Europe, as well as lower deposit beta on the continent, which implies that a smaller proportion of each rate hike will get passed to clients.
- Deutsche Bank has constructed several long-short baskets of stocks that track the themes of rising and falling inflation and bond yields for various regions. For instance, among the top ten US stocks that benefit from rising rates are: General Motors, Fifth Third Bancorp and M&T Bank, while Kellogg, Duke Energy and Simon Property group benefit from falling inflation. European and Asia baskets are also included. A non-exhaustive list of firms with refinancing difficulties is also included.

Finally, dividend futures and certain volatility strategies are likely to benefit from a rising rate environment as they did in the pre-2008 growth period.

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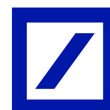

Trade ideas

Inflation trades: To identify stocks correlated with inflation metrics we turn to Deutsche Bank's long-short basket of positive inflation proxies (DBUSINFP) and negative inflation proxies (DBUSINFN) which provide risk-controlled exposure to inflation via US equities. The basket outperforms during periods of higher inflation. Each custom basket includes 45 S&P 500 ex-energy stocks with positive and negative exposure to inflation surprises respectively.

The three largest sector tilts are industrials, materials and technology, while the lowest are consumer staples, health care, and consumer discretionary stocks. The top ten stocks that benefit from rising inflation include: DowDuPont, LyondellBasell, NRG Energy, Arconic, and Fluor. The top ten stocks that benefit from falling inflation include: United Continental, Procter and Gamble, Costco, Clorox, and Kimberly Clark.

Rate sensitive trades: When looking at baskets of stocks with the most and least exposure to the ten-year US bond yield, we show that pair trades of these baskets have proven to offer sufficiently targeted exposure for those expressing a view towards higher or lower rates. In fact, when the baskets are expressed as a ratio of each other, there is a 78 per cent correlation with bond yields.

The top ten US stocks that benefit from rising bond yields include: General Motors, PNC Financial, Eastman Chemical, Fifth Third Bancorp, People's United Financial. The top-ten stocks that benefit from falling bond yields include: Kellogg, HCP, Simon Property Group, FirstEnergy, Southern.

In Europe, the top ten stocks that benefit from rising bond yields include: Societe Generale, UBS, BNP Paribas, Richemont, Adecco. The top ten stocks that benefit from falling bond yields include: Heineken, Unilever, Fresenius Medical Care, Nestle, United Utilities, Imperial Brands.

In Japan, the top ten stocks that benefit from rising bond yields (basket ticker DBHKJRLN) include Fanuc, Hitachi, and Suzuki, while the top ten stocks that benefit from falling bond yields (basket ticker DBHKJRSN) include Kao, Kikkoman and Recruit Holdings.

In Asia-ex Japan, the top ten stocks that benefit from rising bond yields (basket ticker DBHKRTLN) include South32, Tata Steel and Woori Bank, while the top ten stocks that benefit from falling bond yields (basket ticker DBHKRTSN) include Formosa Plastics, Top Glove and Hong Kong Exchanges and Clearing.

Debt refinancing trades: As interest rates rise, some companies will face higher borrowing costs. The following is a non-exhaustive list of firms with debt level refinancing risks over the next few years and an expanded list is included in this piece. In the US, Annaly, AGNC Investment Corporation, Two Harbors Investment Corporation, Michaels Companies, Navistar. In Europe: Bayer, Imperial Brands, Telecom Italia, Publicis, Axel Springer, Cemex.

Dividend futures and volatility trades: Dividend futures should benefit from the rising rate environment, just as they did during the pre-2008 growth period (2003-2008). Take, for example, Euro Stoxx 50 dividend futures. Roughly 70 per

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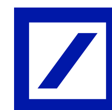

cent of the Euro Stoxx 50 dividend comes from cyclical sectors, so the negative dividend impact from a slowdown in defensives is expected to be limited.

Volatility-based derivatives can be useful as longer-dated implied volatility remained low in historical ranges during the recent equity sell-off in the US, Europe and some Asian geographies. Although, the timing of the next fundamentally driven crisis is hard to forecast, the risks appear to be rising as we move through the year. As a result, buying longer-dated implied volatility for a strategic hedge makes more sense now than for a number of years.

The inflation perspective

Higher bond yields hit stocks differently depending upon what causes the rise. If rising bond yields are a consequence of, or accompanied by, a long-awaited increase in inflation, then investors need to understand this effect as an independent force on their portfolio.

It has been some time since developed market investors have had to deal with a period of sustained inflation. A 2015 survey showed that the average age of a Wall Street trader was a full 30 years old. Two-thirds of traders had never seen a full Fed tightening cycle, a number that is higher today. For many, the inflationary experience of the 1970s is possibly as palpable as that of the Napoleonic wars--obviously important, but also quite distant.

When faced with the hypothetical question of what to do when inflation becomes an issue, the standard answer tends to be, “buy hard assets,” such as gold or real estate, instead of financial paper. That view is incomplete. Equities are financial paper but they obviously confer ownership rights on firms, which own real assets; silver futures are claims bullion; while some financial assets like TIPS hold their own during inflation. So the discussion should be framed less about ‘hard assets’ than ‘hard income’. But that begs the question of what income can be considered inflation-proof.

It is worth analysing how equities performed during the last inflationary period of the 1970s.

Figure 1: US inflation through the 1970s and 1980s (%)

Source: Haver Analytics

As inflation rose to double-digits during that decade, the return on equity for S&P 500 companies also rose steadily from 11 per cent to 15 per cent. So equity strategists often point to the 70 per cent correlation as evidence of causation between inflation and equity returns. But this relationship did not hold over longer

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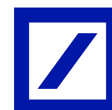

periods. The average annual return on equity during the 1970s was 12 per cent. In the 1980s, following Federal Reserve Chairman Volcker's success in taming price pressures, inflation fell to five per cent by the end of the decade. Yet the average and median return on equity for the 1980s was also around 13 per cent.

Figure 2: S&P 500 returns during a period of inflation

	S&P500 Total Returns CAGR	US CPI CAGR	Real S&P 500 Total Return	Average return on equity
1960s	9%	2%	6%	12%
1970s	6%	7%	-1%	12%
1980s	16%	5%	11%	13%
1990s	21%	3%	18%	14%
2000s	0%	2%	-2%	12%
1960-2010	9%	4%	5%	13%

Source: Deutsche Bank

In focusing on the S&P 500's performance during the inflationary period of the 1970s, an extended DuPont analysis can help. In this framework, return on equity can only increase in five ways: wider operating margins, higher asset turnover, higher financial leverage, lower interest costs, and lower corporate taxes. An examination of these factors will show why returns on equity did not budge despite substantial changes in the US economy during the 1970s inflation.

Take the first factor. Attempts to raise margins were futile during this difficult economic period. In fact, margins before interest and tax declined slightly from 11 per cent to 10.4 per cent during the decade, suggesting that attempts to pass on increasing costs to consumers were not successful.

Interest costs, as well as corporate taxes, rose slightly in the 1970s, but their effect was not substantial. A bigger driver of returns on equity was financial leverage, which increased steadily from two to 3.3 times as corporations used more debt to shore up equity returns. Capital hungry businesses were especially vulnerable as cutting dividends or equity issuance was less attractive than adding debt. Adding debt is tricky in an inflationary period as the cost of leverage is likely to rise, not only because of the general macro picture but also because credit ratings fall as debt ratios rise. Nevertheless, leverage rose.

Finally, during the 1970s, the asset turnover ratio of the largest US companies increased from 93 per cent in 1970 to over 100 per cent in 1975 before subsequently declining to 80 per cent in 1980. That hump in the middle of the decade occurred because sales immediately reflect the new, higher price level while the total value of fixed assets rose only when older machines were replaced. Once a new machine has to be purchased, the inflation of preceding years will be reflected in its higher cost, bringing down the asset turnover ratio to what it originally was, all things being equal. But for the first half of the 70s, growth in sales was faster than growth in the asset base.

The asset turnover ratio hints at something else, which is that companies with high depreciation costs – or a lot of 'hard assets' – may benefit initially from an increase in inflation, but subsequently their assets must be replaced at a higher value.

It is true that the top-three performing sectors during the 1970s were all capital-intensive businesses – energy, industrials, and materials. The oil shocks of 1973 and 1979 caused by the Middle Eastern oil embargo and the Iranian Revolution respectively are clearly hugely important drivers of the inflation shock, and

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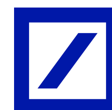


therefore the outperformance of related firms. Yet it is also true that firms in these sectors benefited from the long replacement cycle of the assets those businesses use. Indeed, many of the companies in these categories invest in capital with a 20 to 30 year time horizon. And when we track the performance of these sectors into the 1980s, we find that all three underperformed the S&P 500.

The trend towards less capital intense businesses should theoretically mean companies today are less susceptible to inflation than they have been in the past, boding well for investors. However, there is substantial variation between sectors, reflecting the rising importance of intangible assets since the 1970s.

The bottom line: the inflation perspective says, "pay less attention to bond yields than to inflation." The more capital intensive a firm is, the worse it is likely to perform during an inflationary period, primarily because of the increase in the replacement cost of its assets.

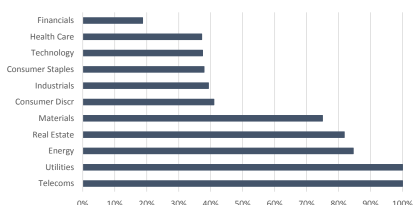
As an investor, that increases the attraction of firms that are relatively less capital intensive (such as those in the technology or healthcare sectors) or firms that may be capital intensive but only have to replace their assets over a very long time horizon (i.e. can defer capex into the future). Telecoms and cable firms can fit the bill in the US, as the following charts show.

In Europe, sector outperformance during periods of rising US inflation also centers around firms with relatively high capital expenditure profiles.[1]

Figure 3: Median capital intensity of S&P 500 firms (capex/sales)

Source: Factset

Figure 4: Proportion of S&P 500 firms that are capital intense



Source: Factset, Deutsche Bank

1 For more information, see Sahil Mahtani, "Stocks to own if inflation knocks," Deutsche Bank, 24 March 2016

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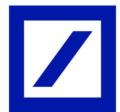
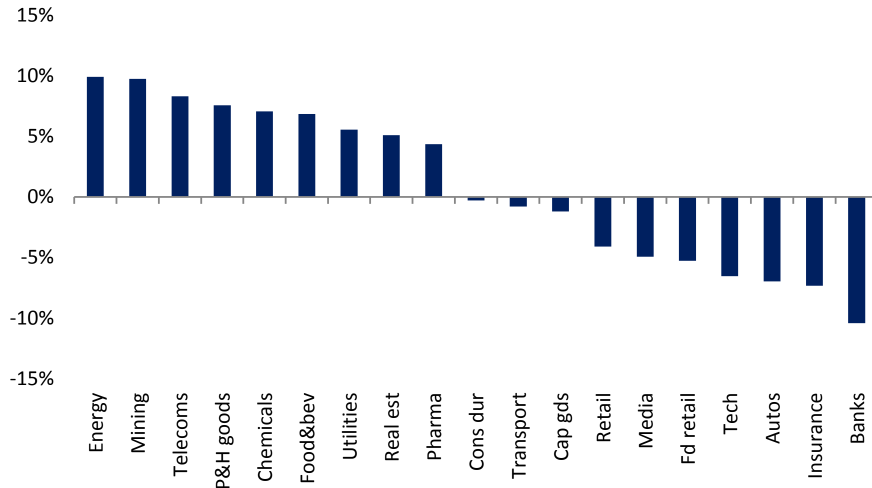


Figure 5: Relative Stoxx 600 sector performance during periods of rising US inflation over the past 20 years



Source: Deutsche Bank

The debt perspective

Rising debt levels have been one of the hallmarks of the post financial crisis years. On one level this increase in leverage has made sense. The very low interest rates on offer allow companies to decrease their funding costs. Yet, the legacy of that decision is that it leaves companies exposed when rates eventually rise. And given the depth of the corporate bond market in the US, a sudden increase in bond yields could put company refinancing in jeopardy for many firms.

Of course, long duration and hedging mitigate the risk in the short to medium term. So too will the cash piles that companies have amassed which can offset the debt load but a sustained normalisation of bond yields will inevitably be a cause for concern. The following chart illustrates why.

Figure 6: S&P 500 median net debt as a proportion of ebitda

Source: Factset, Deutsche Bank

This chart shows that American company debt has roughly doubled since the crisis, adjusted for cash, and relative to earnings. Disaggregating the figures by sector shows that every one except real estate has seen a marked increase in debt

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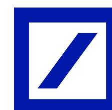


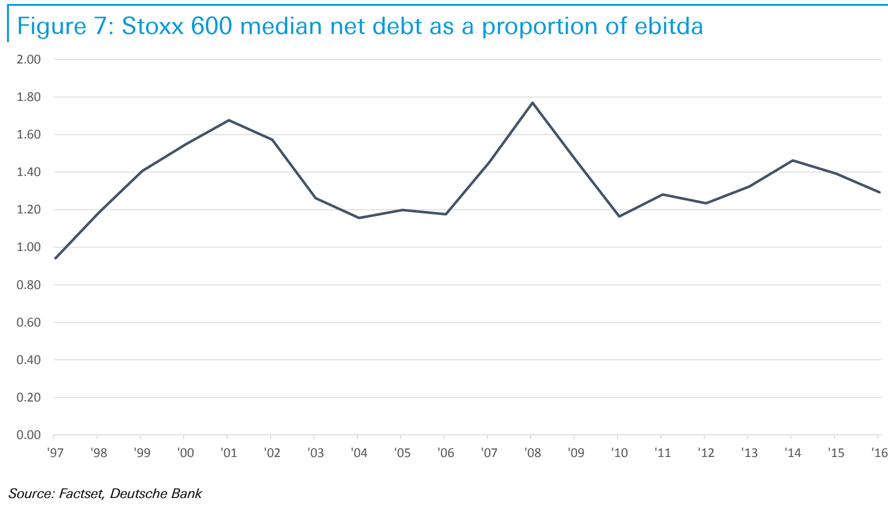
loads, while real estate itself already has the highest debt burden of any sector on this measure.

A recent Fed study found that an increase in the Fed funds rate from 1 ¼ per cent to 3 per cent by 2019 --as implied by the Fed's projections--would translate into an increase in interest payments of $2bn in 2017, $15bn in 2018 and $37bn in 2019, relative to a scenario in which the Fed funds rate stays at 1¼ per cent.[2] This implies that the interest coverage ratio (EBIT to interest expense) will decline to 4.1 by 2019 from 4.6 today.

The Fed study found that the three sectors (as defined by national accounts data) biggest affected were real estate, utilities, and energy, which would see their interest coverage ratios decline to 1.5, 2.5 for the first two respectively, and would remain negative for energy assuming energy prices stay where they are. Real estate is especially vulnerable because of the large fraction of floating-rate debt in that sector. 93 per cent of bank loans to the real estate sector are floating rate. The three sectors with the highest interest coverage ratios were education and health, retail trade, and wholesale trade.

In contrast, European companies have been more prudent. Partly, this may be attributed to the fact that the aftershocks of the 2008-2009 crisis lasted longer in Europe but also because bank lending in Europe is the more common means of accessing debt compared with the corporate bond market. In this way, the risk aversion of banks may have throttled the proliferation of debt. As the following chart shows, the net debt of the median European company is only a little higher than it was pre-crisis and is a full quarter less levered than the median American company. The only sectors that have experienced noticeable increases in their leverage are energy, healthcare, technology, and telecommunications. The other sectors have either maintained their debt levels or reduced them.

Figure 7: Stoxx 600 median net debt as a proportion of ebitda



Source: Factset, Deutsche Bank

Of course, aggregate debt statistics can be misleading without due attention to the structure of that leverage. For instance, Telecom Italia has €21.7bn in

2 Ashish Kumbhat, Francisco Palomino, Ander Perez-Orive, "The Potential Increase in Corporate Debt Interest Rate Payments from Changes in the Federal Funds Rate," FEDS Notes. Washington: Board of Governors of the Federal Reserve System, November 15 2017

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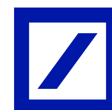


outstanding corporate bonds, of which €4.1bn, or around one-fifth of the total, is maturing over the next two years. Those bonds were issued anywhere from 2004 to 2011, with interest rates ranging from 4.75 per cent to 6.125 per cent for euro bonds, 6.999 per cent to 7.175 per cent for dollar bonds, and 6.375 per cent for sterling bonds. The possible replacement coupons when those bonds fall due will likely be significantly lower given the decline in overall rates since that period. In essence, higher borrowing costs in a macro sense are immaterial compared to the particular benefit for this particular company from refinancing more cheaply.

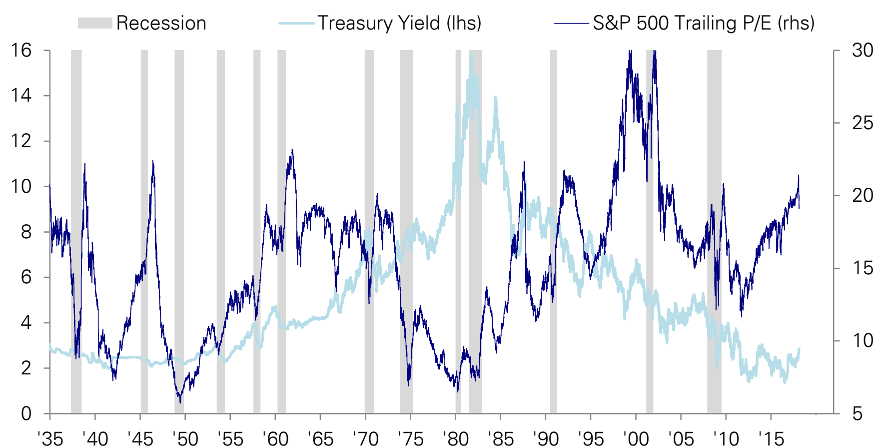
The bottom line: the debt perspective advocates paying attention to higher leverage as a site of future concerns, but also the structure of that leverage.

The P/E perspective

Most investors use some form of discounted cash flow model to value stocks. As the discount rate used is influenced by bond yields, mathematically, an increase in this yield should decrease the value of stocks.

The actual picture is more complicated. As our US strategists note, the widely held belief that higher rates are negative for equity multiples is supported by the modest negative correlation between the equity multiple and the nominal ten-year yield over the entire period from 1929.[3]

Figure 8: The long-term correlation between nominal yields and equity multiples is modestly negative



Source: Haver, Bloomberg Finance LP, Deutsche Bank

Yet, there is no fixed relationship over a long period of time. There are long sub-periods of positive and of negative correlations. During 1929-1965, the correlation of P/Es and nominal yields was positive through the Depression, the second world war, and the first 20 years of the post-war period. During 1966-1997, a period dominated by the large inflation and disinflationary cycle, the correlation was

3 See Binky Chadha and Parag Thatte, "Inflation and Equities," Deutsche Bank, 23 February 2018; Binky Chadha and Parag Thatte, "Long Cycles in the Bond-Equity Correlation", Deutsche Bank, May 2014; Binky Chadha and Parag Thatte, "Do Higher Rates Mean Lower Equity Multiples?", Deutsche Bank, September 2014

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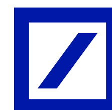

strongly negative. Since 1998, the correlation between equity multiples and rates has been strongly positive.

The modest negative correlation between rates and equity multiples over the longer sample could thus be simply reflecting the dominance of one period, that of the 1966-97 inflation cycle sub period. The "Fed Model" of comparing bond yields to earnings yields that came into prominence during the Greenspan era may have simply reflected a particular artefact of history rather than any law of finance.

The fact that there is no fixed relationship should not come as a surprise since bonds are a claim to interest and capital payments which are fixed in nominal terms while equities are a claim to the ownership of real assets. At the outset, there is little reason to think there should be a strong relationship between the two.

The reason investors assume there is a link between nominal yields and earnings yields is that the value of equities is the net present value of a future stream of cash flows discounted back at an appropriate discount rate, which is usually the bond yield plus a risk premium. It is absolutely true that all else being equal a falling discount rate raises the current price.

But all else is not equal. When treasury yields decline, inflation is likely declining as well, implying a decline in future nominal cash flow from equities. This may offset the effect of lower discount rates. Lower discount rates are therefore also applied to lower expected cash flows.

Rather it is the inflation-adjusted real bond yield that causes the most sensitivity to stocks. There are two ways that the real bond yield typically increases; each of these reasons can have a different impact on stock valuations. First, a pick-up in real rates as the result of a pick-up in growth as measured by PMI, economic output, or similar measure usually has a positive effect on valuations. This offsets the headwind of a higher discount rate. An increase in real rates, though, may not benefit equities if it is not accompanied by, or caused by, a pick-up in growth. This can occur if there is a shift in monetary policy expectations while growth is stable.

In the US, higher real rates have predominantly meant higher equity multiples. Indeed there is only one sub-period, from 1981-1986, when the correlation was clearly and strongly negative. This period corresponds to the Volcker disinflation when policy rates were tightened rapidly to levels well above those implied by the Taylor rule. During this period, the increase in the discount rate was accompanied by a growth normalisation rather than acceleration.

There may also be a threshold effect at work. As the chart below shows, during the early 1980s, real rates rose above four per cent and the correlation between real rates and equity multiples turned negative. Yet, when real rates fell below the four per cent threshold, the correlation began to bounce back.

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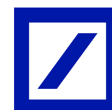
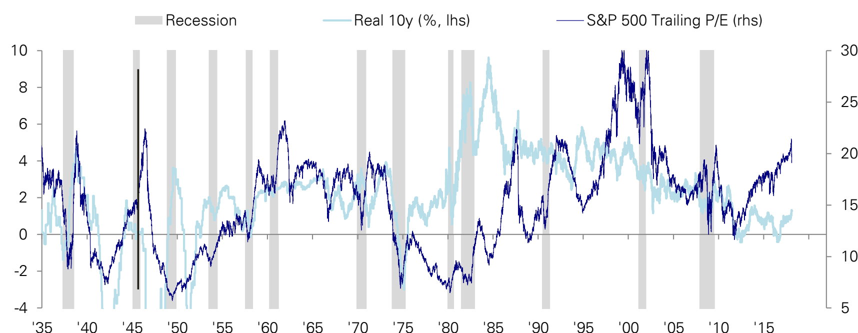


Figure 9: Higher real rates mean higher equity multiples, up to a point



Source: BLS, Haver, Bloomberg Finance LP, Deutsche Bank

In Europe, there is also a correlation between real rates and price earnings multiples. Since at least 2011, there has been a tight fit between Euro area 2-year real bond yields and the forward multiple of the Stoxx 600, as the chart below indicates.[4]

The bottom line: The P/E perspective says focus less on the correlation between nominal rates and price-earnings ratios but rather on that of real rates and the price-earnings. In the US, the threshold data may indicate that high real rates imply higher equity multiples until a four per cent threshold is reached.

The "bond proxy trade" perspective

An obvious effect of rising bond yields is that they will likely cause a roll back of the so-called bond proxy trade. This strategy has grown in popularity as bond yields have steadily fallen, particularly over the last decade. Facing falling returns on the income portion of their investment, bond investors have turned to stocks that pay reliable dividends. The climb experienced by the bond proxies was less driven by meaningful earnings growth and was more a simple re-rating driven by easy money looking for a safe home.

One way to see this effect is by examining the Dividend Aristocrats. These are stocks that have a long history of growing their dividend and they comprise a significant chunk of the market. In the US, the value of these 50 stocks comprises one-fifth of that of the S&P 500. Since the financial crisis, these stocks have outperformed the market by one-fifth. Yet, the dividends and buybacks they shovelled to shareholders have not been funded purely from operating cash flow. Since the crisis, these companies have seen their net debt more than double relative to ebitda. And relative to the rest of the market, debts have tripled.

4 Sebastian Raedler, Tom Pearce, Andreas Bruckner, "European Equity Strategy: After the drop: what is priced in for European equities?" Deutsche Bank, 16 February 2016

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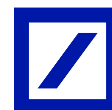
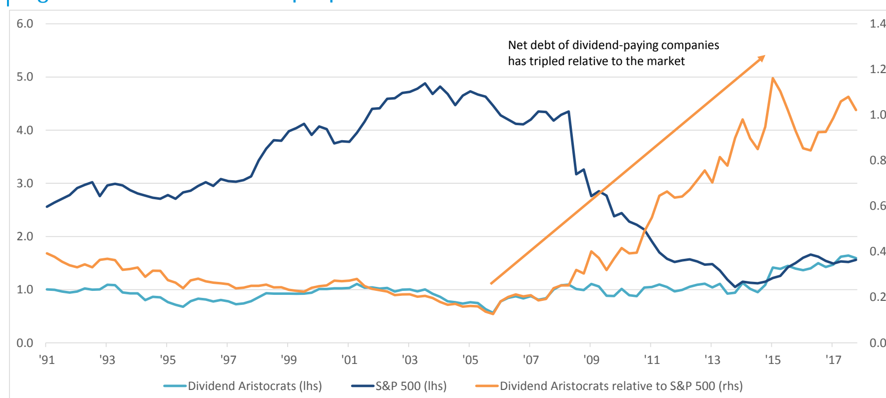


Figure 10: Net debt as a proportion of ebitda



Source: Factset. Deutsche Bank

To illustrate how the bond proxy trade has ballooned, consider that before the financial crisis, ten-year treasuries yielded about four per cent. That was two-fifths more than the dividend yield on the Dividend Aristocrats and double the broader market. Since then the gap has been squeezed. The Aristocrats now yield 2.2 per cent, only just above ten-year treasury yields before their 2018 jump.

Figure 11: The closing gap between income from bonds or dividends

Source: Bloomberg Finance LP, Factset, Deutsche Bank

If the debt of bond proxy stocks begins to be refinanced against a backdrop of rising bond yields, it will become more expensive to service. In turn, that will make their capital return policies, which have propped up stock prices, harder to justify. At the same time, if investors are finding bond yields more attractive again, these stocks could face a double hit.

The risk is not just limited to the Aristocrat stocks. Many other companies have boosted their payouts to take advantage of investors' preference for bond proxies. Just before the crisis, the average company paid out one-third of its earnings as a dividend. Now it pays half. Furthermore, the dispersion between dividend

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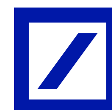
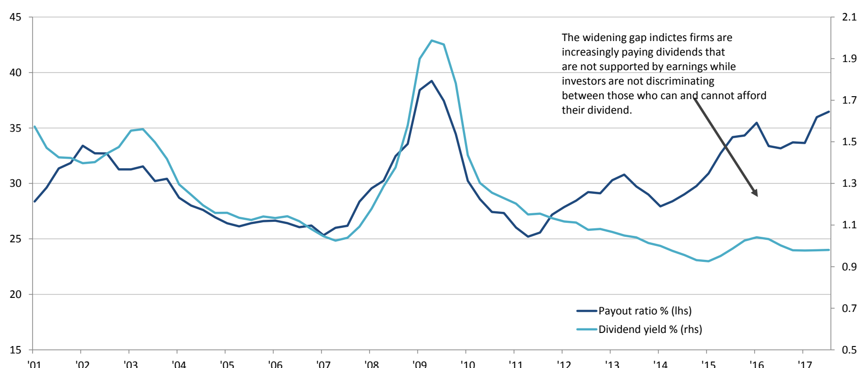


payments has stayed low, meaning companies have paid attention to their peers and increased their dividends in unison.[5]

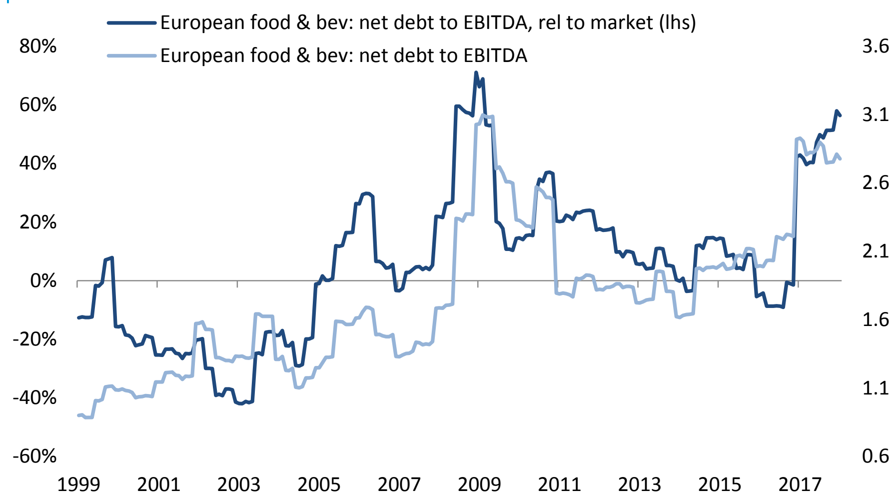
Figure 12: Dispersion of payout ratios and dividend yields of S&P 500 stocks



Source: Factset, Deutsche Bank

A similar story can be told in Europe, where the leverage of bond proxies is rising, even as their dividend coverage ratios are falling. Looking at the food and beverage sector, which includes many bond proxies, one can see that the sector's net debt to ebitda has risen to three-fifths of the Stoxx 600 from lower than a fifth in the post-crisis period. The dividend coverage ratio is down to 1.6 times. Typically this is not problematic until that number reaches a multiple close to 1, at which point firms may cut the dividend, prompting a rise in the dividend cover ratio (as with European pharma stocks in 2016). In Europe, the sector closest to 1 times is real estate, which has a forward dividend coverage ratio of 1.2 times.

Figure 13: The relative leverage of the European food and beverage sector has risen...



Source: Deutsche Bank

5 For more information, see Luke Templeman, "US equities - the dividend shakeout," Deutsche Bank, January 2018

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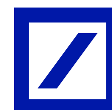
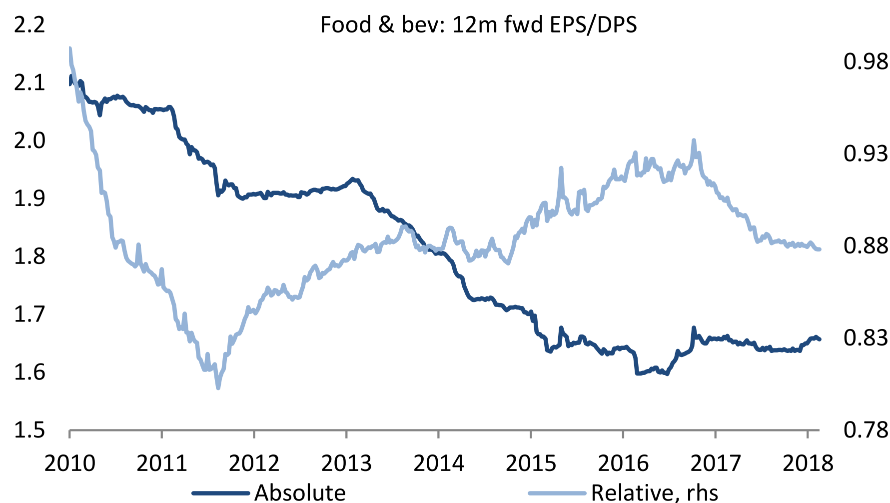


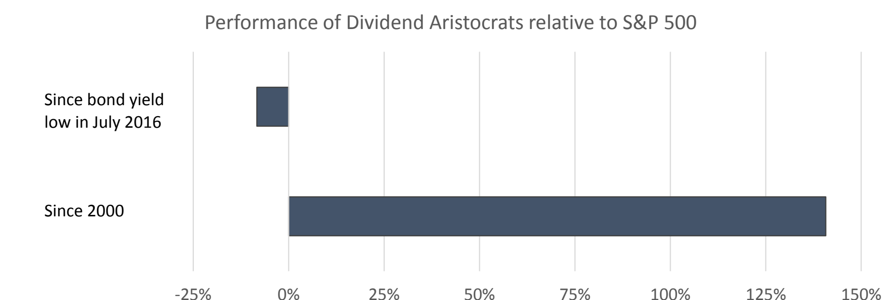
Figure 14: ...while the relative dividend cover for the sector is down



Source: Deutsche Bank

Although it is early days, this rotation away from bond-proxy stocks may have already begun. Since US ten-year yields bottomed in July 2016, the Dividend Aristocrats have underperformed the market. As bond yields rise further, it would not be surprising to see this trend continue.

Figure 15: Performance of Dividend Aristocrats relative to the S&P 500



Source: Bloomberg Finance LP, Deutsche Bank

Should the rotation away from bond-proxy stocks continue, different industries will be affected differently. Correlation analysis between bond yields and share prices shows that the most consistent bond proxies over the last five years have been food and beverage, utilities, telecoms, and personal and household goods. On the flip side, the industries that have benefited the most from rising yields include banks, other financials, insurance, capital goods and carmarkers.[6]

6 For further sector implications, see Sebastian Raedler, Tom Pearce, and Andreas Bruckner, "European Equity Strategy: After the Drop: What is Priced in for European equities?" Deutsche Bank, 16 February 2016

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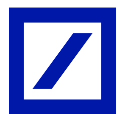
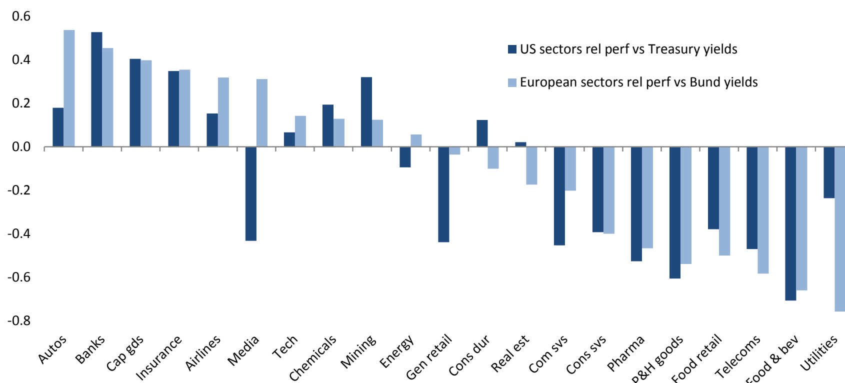


Figure 16: US, Europe sector correlations with 10-year bond yields over the past decade



Source: Deutsche Bank

The bottom line: pay attention to stocks that have become bond proxies in the low-rate world. In the US, the leverage of Dividend Aristocrats has tripled relative to the market. The stock market has rewarded the use of debt to pay dividends. As a consequence, even weaker firms are also increasing their payouts.

Financials case study

Given financial stocks are the most positively correlated with rising bond yields, it's worth examining the sector more closely.

For commercial banks, market interest rates are a primary driver of bank net interest margins. Because bank NIMs are the percentage difference between the interest income generated by earning assets (e.g. loans, securities, and so on) and the interest paid out on its liabilities (e.g. deposits, short-term borrowings, and long-term debt), their profit and loss is correlated to the level of rates.

The absolute level of interest rates is not the only important factor driving bank NIMs. Whether the curve flattens or steepens also matters, as does the composition and duration of a bank's balance sheet. For instance, if a bank's asset base is on average shorter in duration than its liabilities, then the assets will reprice to higher rates faster than its liabilities, boosting earnings. If it is the reverse, earnings will be hurt.

But the absolute level of rates does matter. In general, there is a positive correlation between the direction of interest rates and bank NIMs, as shown by the following chart of short and long-term interest rates charted against bank NIMs going back to 1955.

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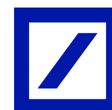
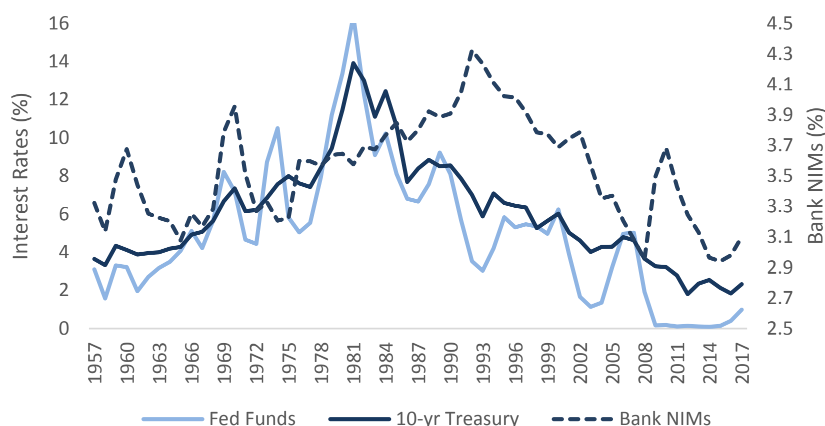


Figure 17: US bank NIMs, against the Fed Funds rate and 10-year Treasury rates



Source: Deutsche Bank

The strong relationship between higher rates and strong interest income is probably also partly driven by the same relationship that makes cyclical sectors perform well in a steeper rate environment. Higher rates are often an indicator of accelerating economic growth, and for banks, accelerating economic growth also often means faster loan growth and falling bad debts, on a largely fixed cost base.

In Europe too in recent years, banks margins and interest income have shown a correlation to interest rates.[7] Net interest margins in Europe have compressed in nearly a straight line since January 2010 but did experience two notable upticks: one after the Trichet rate hike in April 2011 and during the post-"whatever it takes" improvement in funding costs in 2013—both in line with movements in ten years bunds.

7 See Kinner Lakhani et al, "Road to Recovery--Intrinsic Value," Deutsche Bank, 14 December 2017

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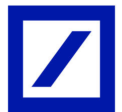
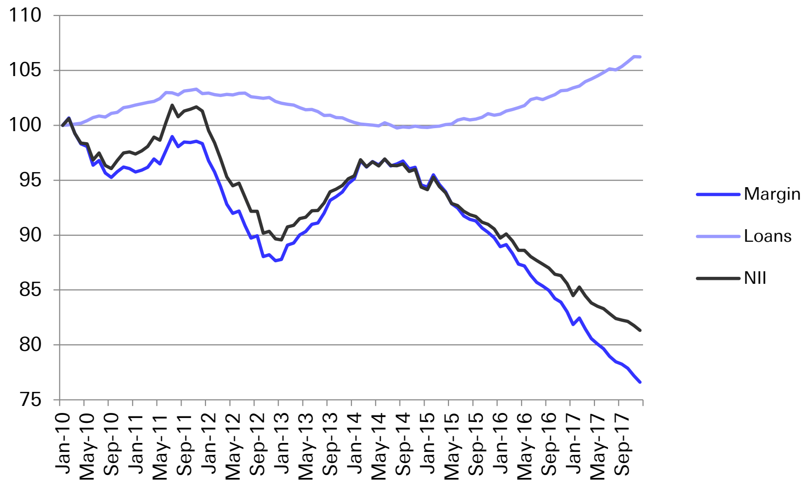


Figure 18: European bank margins and NII movements reflect changes in rates

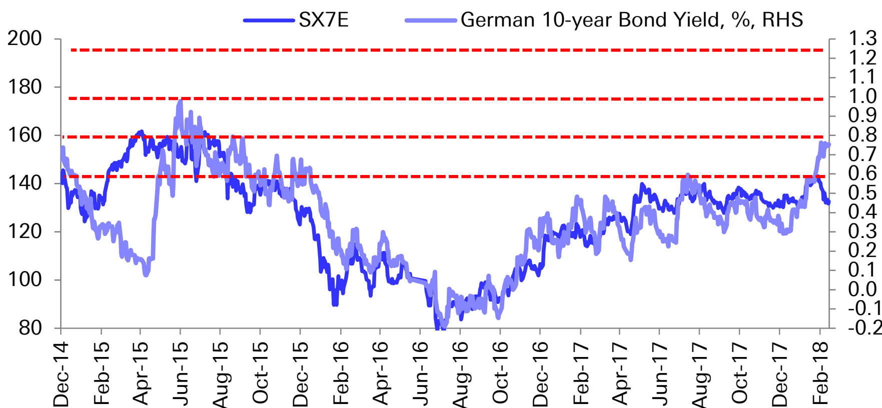


Source: Deutsche Bank

With rates on the move since their lows in mid-2016, banks are at a turning point. The post-crisis period saw a weak recovery and therefore saw central bank interventions that pushed rates to extraordinarily low levels. Banks have suffered accordingly. In the US, banks have experienced 17 per cent net interest margin pressure since 2010-2016, somewhat offset by 5.5 per cent annual growth in interest-earning assets. Japanese banks have experienced 37 per cent net interest margin pressure since 2000, less than half of which was offset by volume growth.

European banks, which have seen NIMs contract by nearly twenty basis points since January 2010, are especially likely to continue to benefit from the upward movement in rates, even more than US banks from here, for two reasons.

Figure 19: European banks trade in line with bund yields



Source: Deutsche Bank

First, the implied one-year forward rates show a steeper yield curve in European rates as against US rates. Whereas the steepness of the one-year forward treasury

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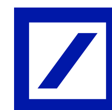
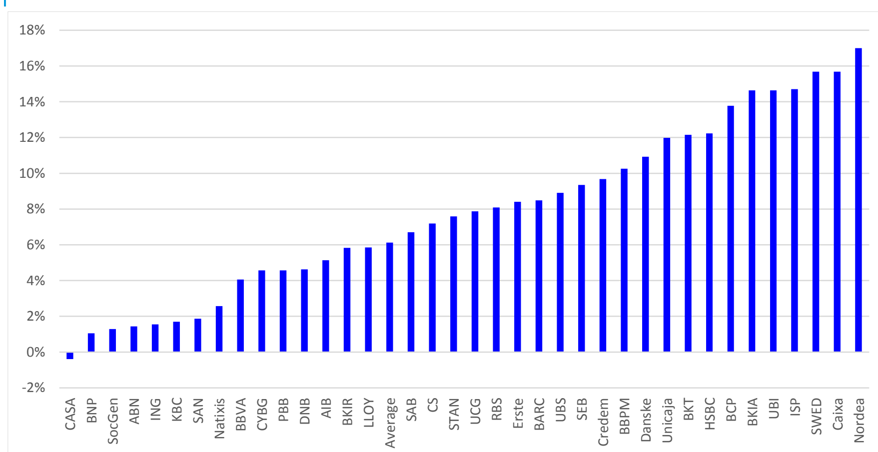


curve (spot-3 years) is 90 basis points, for bunds it is 130 basis points, implying more repricing than in the US.

Second, following three rate hikes in 2017, US banks are showing higher deposit beta, which is the degree to which deposits reprice. For the initial rate hikes, deposit beta is likely to be low in Europe, with its absolutely lower rates. This implies that a smaller proportion of each rate hike will get passed on to clients. In the US, by contrast, it is heading in the direction of 50-60 per cent. Moreover, in the US some banks are already seeing some margin pressure as demand deposits are shifting to time deposits, as the recent Fed H8 release shows.

Within Europe, the banking sectors that will benefit most are likely to be those with lower duration asset books. In Europe, banks in periphery countries are often cited as being most at risk. Yet in some ways they also stand to benefit the most from higher rates. The time it takes to reprice overall loans in Ireland, Italy and Portugal after a change in the reference rate is three months, as against seven years in France and Belgium. Banks from Spain and Portugal are on the lower end at nine months, while Germany, the Netherlands, Denmark and Austria are on the upper end at around five years. The chart below, which shows earnings per share sensitivity to a 100 basis point rate rise, makes the point.

Figure 20: Net interest income for Italian, Iberian banks rise with a 100bps rise in rates



Source: Deutsche Bank

In the US, on an earnings per share basis, the following banks are likely to benefit from a 100bps instantaneous shift in rates

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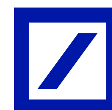
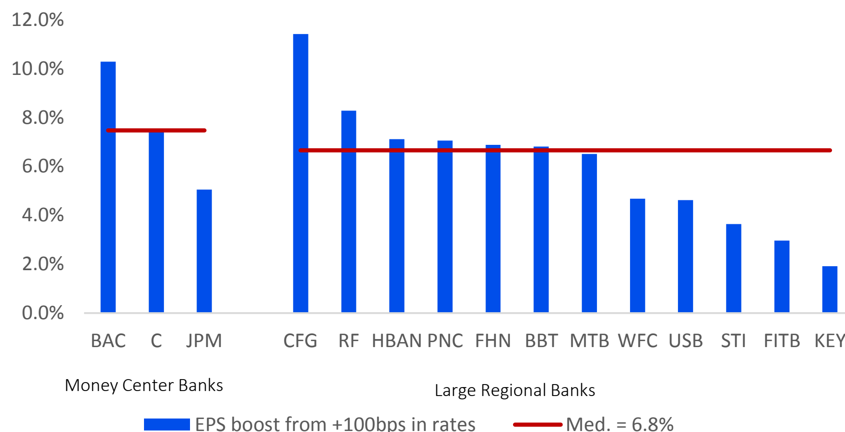


Figure 21: EPS changes for US banks from a 100 basis point instantaneous shift in rates



Source: Deutsche Bank. Data as of 9/30/17

Banks are likely to outperform even during a "rate tantrum", i.e. periods of bond markets selling off. This is true of both the US and Europe. On a three-month view, US banks outperformed the S&P 500 by around 10 percentage points through the summer 2013 taper tantrum. Likewise European banks consistently outperformed the Stoxx 600 through March 2009, April 2013, April 2015 and July 2016 episodes. The exception to this rule has been if the episode becomes a credit event or a recession, as occurred during March 2008 and August 2010—neither of which is the base case today.[8]

In Japan, an expansion of net interest income is not the main story given weak loan demand. Rather, much of the action from rising rates will happen on the bond portfolio side.

Just a few years ago, Japan's banks held domestic government securities (JGBs) equal to ten times their tier one capital. The OECD has calculated that a one percentage point parallel shift in the yield curve could cause unrealised losses of over half that capital. That said, the banks have halved their holdings of Japanese government bonds (with a duration over one year) since the qualitative and quantitative easing (QQE) program conducted by the Bank of Japan began in 2013, so the risk to banks has declined substantially. The JGB holdings of banks, postal savings, and life insurers are now 34 per cent of the total from 63.1 per cent in the same period in 2013. [9]

Because of weak loan demand, most of the proceeds from selling Japanese government bonds have moved to current accounts that banks hold at the central bank. Some banks have also increased their foreign bond holdings, buying mainly US treasuries. However, this has not insulated the banks from volatility in the bond market. Two banks, Sumitomo Mitsui Trust Holdings (SMTH) and Shizuoka, revised down their 2017 profit guidance by citing unrealised losses on foreign

8 Kinner Lakhani et al, "European banks & 'rate tantrums'", Deutsche Bank, 6 February 2018
9 Yoshinobu Yamada, "Investment strategy update: looking for the next turning point," Deutsche Bank, 21 February 2018

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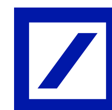


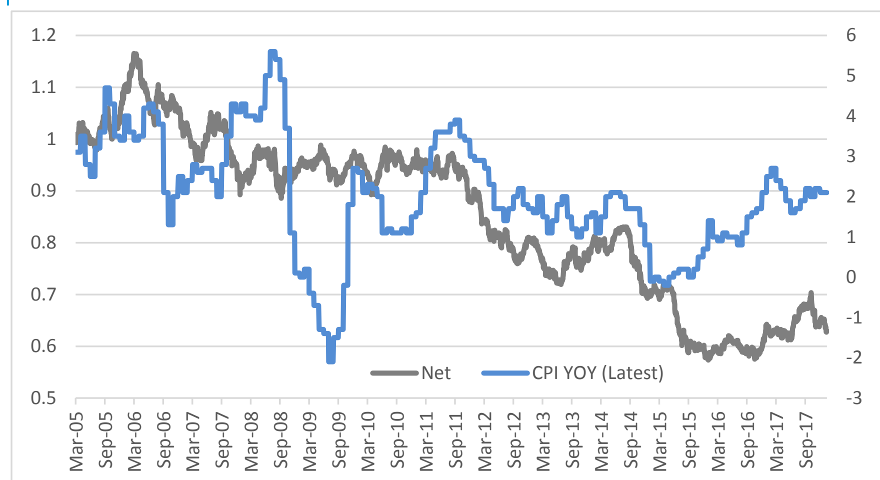
bonds. Three mega banks, MUFG, SMFG, and Mizuho, are active players in the US. They are sticking with matched deposit funding for loans. A rise in US rates would therefore be neutral for them because both loans and deposits are priced by LIBOR.

The stocks to buy and sell

1. Inflation trades

To identify stocks correlated with inflation metrics we turn to Deutsche Bank's long-short basket of positive inflation proxies (DBUSINFP) and negative inflation proxies (DBUSINFN) which provide risk-controlled exposure to inflation via US equities. The basket outperforms during periods of higher inflation, as it has done since mid-2016; it rebalances quarterly. Each custom basket includes 45 S&P 500 ex-energy stocks with positive and negative exposure to inflation surprises respectively. The inflation beta of the basket is 1.12 with very low exposure to other macro factors. Using the target risk budget of four per cent volatility, the three largest sector tilts are industrials, materials and technology, while the lowest are consumer staples, health care, and consumer discretionary stocks. A full breakdown of the stocks and their weightings is available upon request.

Figure 22: The ratio of positive to negative inflation proxies has risen since mid-2016



Source: Deutsche Bank, Axioma, Bloomberg Finance LP

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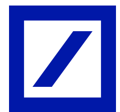

Figure 23: The top constituents of Deutsche Bank's inflation-sensitive US stock baskets

	Stocks that benefit from rising inflation	Stocks that benefit from falling inflation
1	Freeport-McMoran Inc	United Continental Holdings
2	LyondellBasell Industries	Delta Air Lines
3	Newmont Mining Corporation	Kroger Co
4	Fluor Corporation	American Airlines Group
5	Quanta Services	TJX Companies Inc
6	Tripadvisor	Procter and Gamble
7	United Rentals	Costco Wholesale Corporation
8	NRG Energy	Kimberly Clark Corporation
9	Arconic	Clorox Corporation
10	DowDuPont	Abbott Labs

Source: Deutsche Bank, Axioma, Bloomberg Finance LP

2. Debt refinancing related trades

On a more granular level, the following is a non-exhaustive list of firms with significant debt refinancing risks over the next few years, with some analyst commentary.

Figure 24: Firms with potential debt refinancing risks over the next few years

Stock	Sector	Net debt/EBITDA	Refinancing situation	Comments
Europe				
Freenet	Telcos	3.4x (1.3x adj. for Sunrise stake)	>E600m due 2020-21.	Current avg. financing costs < 2% pa
United Internet	Telcos	c1.1x	cE750m due by Aug '19.	As of 2016 annual report, may have changed following new agreement with banks in May '17
Axel Springer	Media	c.1.9x	E300m maturing 4Q18	Reorganised May '17, so maturity may have been pushed back
Kinnevik	Media	c1.0x end '18E	cE140m (SEK1.4bn) due May 2020	
eDreams	Media	2.9x	cE400m maturing in 2021	Management has said they will consider refinancing to avoid the high interest rates they currently pay.
WPP	Media	1.6x end '17E	Roughly £500m p.a.	If cost of debt up 100-200bps, extra interest only £5-10m
Publicis	Media	0.4x end '17	E700m bond maturing in 2021	2017 FCF E1.3bn, hence this is manageable
Eutelsat	Satellites	2.5x	E2.2bn over 2019-21	1-2% increase in rates = E31-62m in interest cost (6-11% of LTM EBIT)
SES	Satellites	2.9x	E2.3bn over 2019-21	1-2% increase in rates = E23-46m in interest cost (3-6% of FY16 EBIT)
Vivendi	Media	1x	E2.4bn 2018-21	Has assets to sell
Cemex	Building & Construction	4.1x end '17 (3.3x end 2018E)	1/3 of its debt in next 3yrs @ current avg rate of 6%	Not IG.
Balta	Building & Construction	2.5x end '17E	>E200m listed notes (7.75% coupon) due to mature in 2022	All analysts forecast refinanced at c3% end-'18 in line with company
Travis Perkins	Building & Construction	2.7x end '17E (lease-adjusted)	Most loan borrowings due in later than 5yrs.	c.80% of 'debt' is off-balance sheet (rental leases).
Anheuser-Busch InBev	Beverages	5.0x end '17E	$23bn (of c.$100bn total debt) in 2018-20	However, 40% is in EUR; on USD, avg. coupon 4.2% – new rate unlikely to be higher.
Imperial Brands	Tobacco	3.0x FY18 (Sept YE)	£1.9bn to Sept 18, blended coupon c3.25%; £0.8bn to Sept 19, blended coupon c7%; £1.5bn to Sept 20, blended coupon c3.75%	Market currently assuming re-fi will be at worst no more expensive (blended)
Telecom Italia	Telcos	3.0x '17E	c.32% of nominal outstanding debt over next 3yrs.	Fully covered by E3.6bn of cash/equivalents, E7bn of undrawn portion of committed facilities
JD Wetherspoon	Leisure	c.3.7x FY17	Replace all debt by end Feb 2020	From revolving facility of £820m (18E EBITDA £204m)
Bayer	Pharma	1.1x end '17E	Needs to raise €30bn plus in next 6m	€30bn = 3.5x EBITDA.
US				
Annaly	Mortgage REITS	6.6x	99% of financing is LIBOR based (company uses swaps and other hedging strategies)	Book value hit by 5.8% for every 50bps change in rates. Largely priced in
AGNC Investment Corporation	Mortgage REITS	8.1x	99% of financing is LIBOR based (company uses swaps and other hedging strategies)	Book value hit by 2.0%t for every 50bps change in rates. Largely priced in
Two Harbors Investment Corporation	Mortgage REITS	5.9x	99% of financing is LIBOR based (company uses swaps and other hedging strategies)	Book value hit by 3.2% for every 50bps change in rates. Largely priced in
Michaels Companies	Consumer Discretionary	4.5x lease-adjusted net debt to EBITDAR	$2.7bn of gross debt of which $2.25 is a variable term loan maturing 2020 at LIBOR+	1pp rise in rates decreases EPS by 9-10%
Party City Holdco Inc	Consumer Discretionary	6.2x lease-adusted net debt to EBITDAR	$1.79B in gross debt which includes $1.2B variable term loan at LIBOR+ maturing 2022	1pp rise in rates impacts annual EPS by 9%.
Navistar	Industrial	4.6x	$3.4bn of debt in the manufacturing business, of which ~29% is variable rate; $616bn in financials	Interest coverage in the manufacturing business (EBITDA/interest cost) is ~1.9x
Scientific Games Corp	Gaming	6.6x	$8.1bn of gross debt, of which $3.2 bn is LIBOR based.	Substantial divergence between EBITDA and Free Cash Flow

Source: Deutsche Bank

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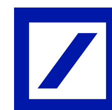


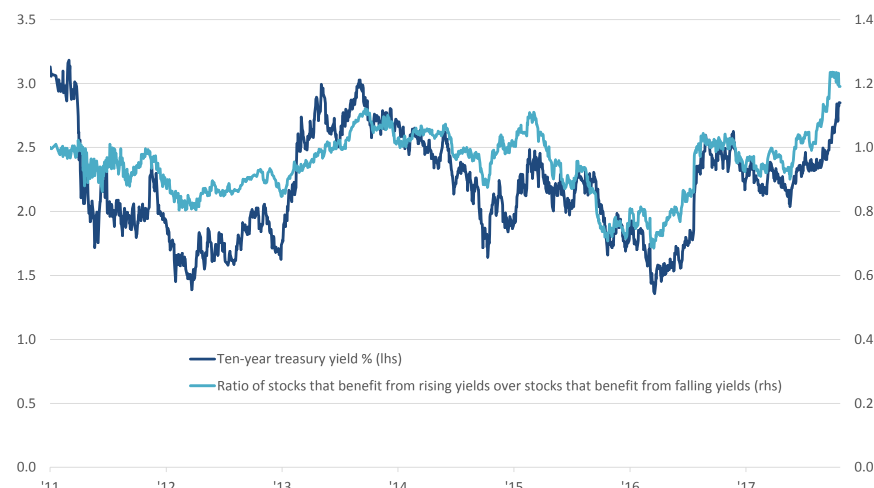
3. Rate-sensitive equity baskets

Uniformly, US rate-sensitive stocks have outperformed since bond yields began to rise in mid- 2016. This is true not just of US stocks, but also of stocks in Europe and Asia.

In the US, the two relevant Deutsche Bank baskets during periods of volatile bond yields are, first, the top-50 stocks from the S&P 500 with the highest exposure to the ten-year bond yield. The basket is focused on the consumer discretionary, financials, energy, healthcare, and IT segments and should theoretically outperform in a rising interest rate environment. The second basket carries the top-50 stocks with the lowest exposure to the ten-year yield.

Over time, pair trades of these baskets have proven to be offer sufficiently targeted exposure for those expressing a view towards higher or lower rates. In fact, when the baskets are expressed as a ratio of each other, there is a 78 per cent correlation with bond yields.

Figure 25: Rate-sensitive US stocks have recently outperformed



Source: Bloomberg Finance LP, Deutsche Bank

The top ten stocks in each basket are as follows. A full breakdown of the stocks and their weightings is available upon request.

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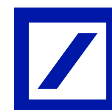


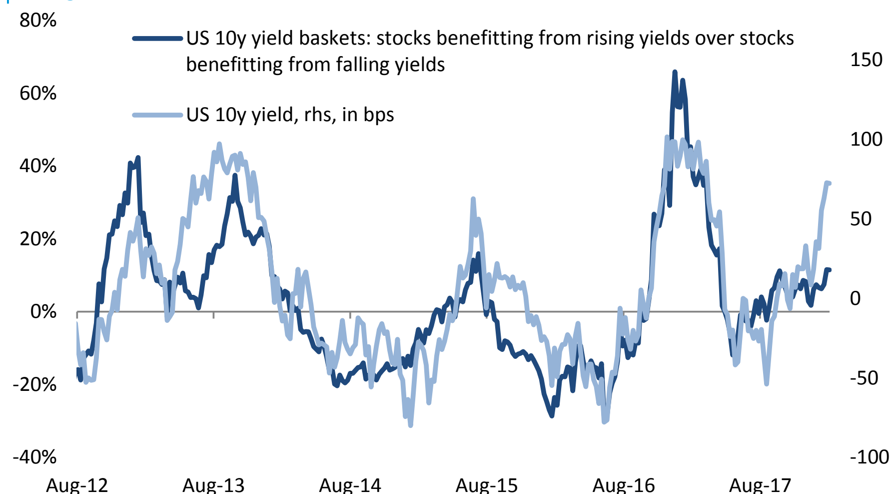
Figure 26: US stocks most sensitive to changes in rates

	Stocks that benefit from rising bond yields	Stocks that benefit from falling bond yields
1	General Motors	Sempra Energy
2	Fifth Third Bancorp	Kellogg
3	Comerica	Southern
4	People's United Financial	Ameren
5	PNC Financial	Dominion Energy
6	Textron	Duke Energy
7	M&T Bank	Alliant Energy
8	Eastman Chemical	HCP Inc
9	Zions Bancorporation	Simon Property Group
10	BB&T	FirstEnergy

Source: Deutsche Bank

In Deutsche Bank's rate-sensitive screens of European stocks, a similar effect is at work. As one might expect, given rising yields, the basket of European stocks that are historically positively correlated with bond yields outperforms the basket of historically negatively correlated stocks. Recent underperformance suggests that some catch-up for rate sensitive stocks is overdue.

Figure 27: Rate-sensitive European stocks typically outperform in periods of rising yields



Source: Datastream, Deutsche Bank

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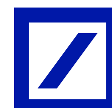


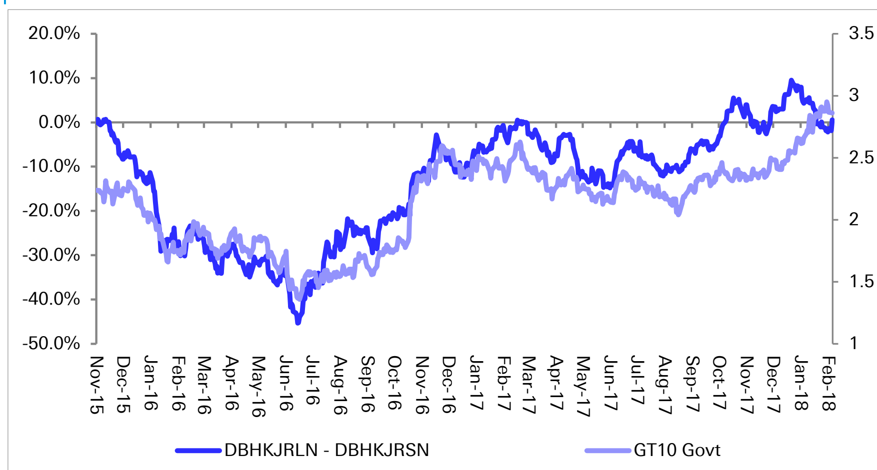
Figure 28: European stocks most sensitive to changes in rates

	Stocks that benefit from rising bond yields	Stocks that benefit from falling bond yields
1	Adecco	Heineken
2	Aegon	United Utilities
3	Societe Generale	Imperial Brands
4	BNP Paribas	Symrise
5	AXA	Fresenius Medical Care
6	Credit Suisse Group	Smith & Nephew
7	UBS	Unilever Plc
8	Richemont	Enagas
9	Randstad	Red Electrica
10	ING	Nestle

Source: Datastream, Deutsche Bank

In Japan, Deutsche Bank's rate-sensitive long-short equity basket is an equal-weighted long-short portfolio on stocks (DBHKJRLN for the long and DBHKJRSN for the short) with the greatest sensitivity to further increases in the US interest rate and inflationary environment. The basket is constructed by screening for stocks which showed statistically significant sensitivity to at least two of three key indicators (10-year US nominal interest rates, 10-year real rates, and 10-year breakeven inflation rates.) The standalone beta for each of these three factors is then calculated, with adjustments for other macro factors (beta to MSCI World, DXY, and oil). The standalone betas of these three factors are then summed and the top firms ranked.

Figure 29: Rate-sensitive Japan stocks have broadly outperformed since mid-2016



Source: Deutsche Bank

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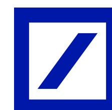


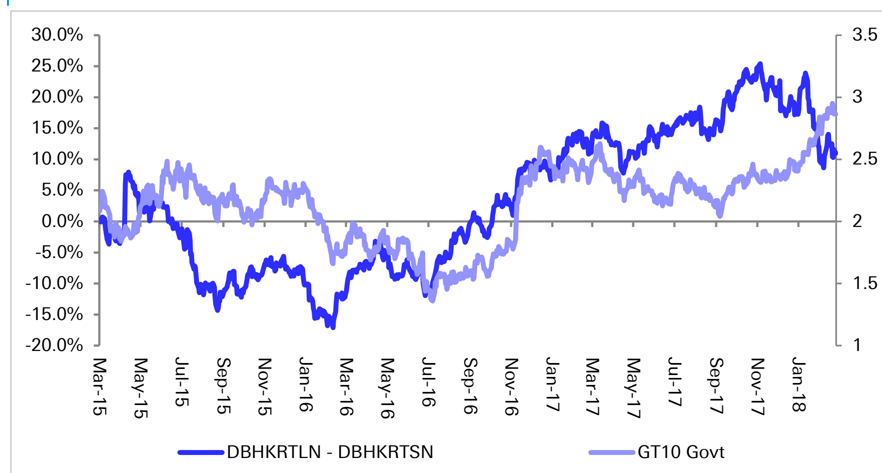
Figure 30: Japan stocks that are sensitive to bond yields

	Stocks that benefit from rising bond yields	Stocks that benefit from falling bond yields
1	SUMCO Corp	Recruit Holdings Co Ltd
2	Hitachi Construction Machinery Co Ltd	Persol Holdings Co Ltd
3	Idemitsu Kosan Co Ltd	Kao Corp
4	Komatsu Ltd	Nitori Holdings Co Ltd
5	Suzuki Motor Corp	Kagome Co Ltd
6	Ube Industries Ltd	M3 Inc
7	FANUC Corp	Welcia Holdings Co Ltd
8	Brother Industries Ltd	Tsuruha Holdings Inc
9	Sumitomo Chemical Co Ltd	Keisei Electric Railway Co Ltd
10	Ebara Corp	Kikkoman Corp

Source: Deutsche Bank

Similarly, in Asia Pacific ex-Japan, Deutsche Bank's rate-sensitive long-short equity basket is an equal-weighted long-short portfolio on stocks (DBHKRTLN for the long and DBHKRTSN for the short). The rate sensitive theme has played out reasonably well since the last rebalance in May. The longs are concentrated in financials and commodities. A full breakdown of the stocks and their weightings is available upon request.[10]

Figure 31: Rate sensitive Asia-ex Japan equities have outperformed since mid-2016



Source:Deutsche Bank

10 Please see Khoi LeBinh, Will Stephens, Elita Lai, Hemant Sambatur, Jiazi Tang, Vincent Zoonekynd, "Asia Equity Strategy: Viewfinder 2018: Second verse, same as the first," Deutsche Bank, 16 January 2018

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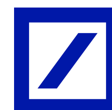


Figure 32: Asia Pacific ex- Japan stocks most sensitive to changes in rates

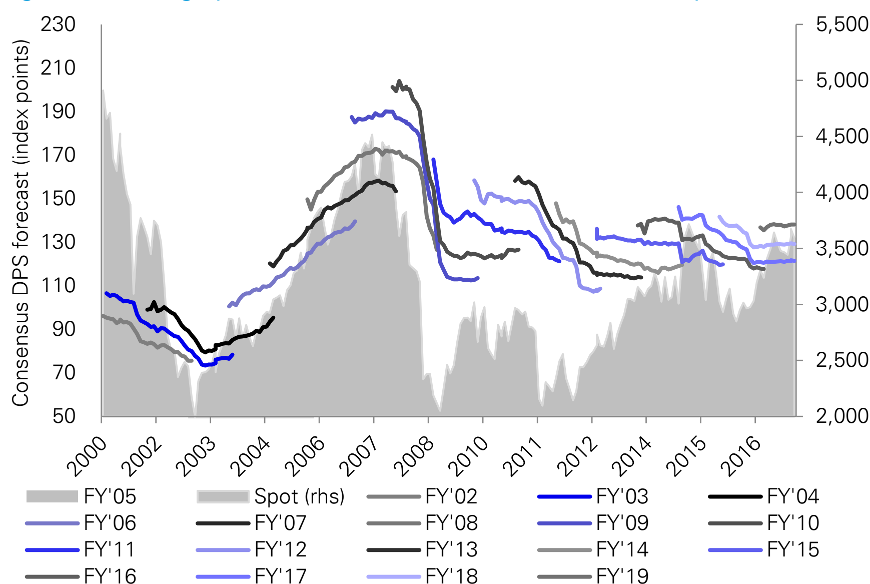
	Stocks that benefit from rising bond yields	Stocks that benefit from falling bond yields
1	South32 Ltd	Hong Kong Exchanges & Clearing
2	Sina Corp	Formosa Chemicals & Fibre Corporation
3	Woori Bank	China Shenhua Energy Co. Ltd
4	Tata Steel Limited	Westpac Banking Corporation
5	OCI Co Ltd	Formosa Plastics Corporation
6	Baidu Inc	ViroMed Co. Ltd
7	Silicon Motion Technology Corp	KIA Motors Corporation
8	Bluescope Steel Limited	Top Glove Corp Bhd
9	Kingston Financial Group	Woolworths Group Ltd
10	JD.Com	BTS Group Holdings PCL

Source: Deutsche Bank

4. Dividend future trades

Euro Stoxx 50 dividend futures will also benefit from the rising rate environment, just as they did during the pre-2008 growth period (2003-2008). Roughly 70 per cent of the Euro Stoxx 50 dividend comes from cyclical sectors, so the negative dividend impact from a slowdown in defensives is expected to be limited. If the three years before 2008 are any indication, the Euro Stoxx 50 dividend strategy increased 23 per cent, 19 per cent, and 8 per cent. A fuller description of the strategy is available upon request[11]

Figure 33: Strong upward dividend revisions were seen in the years to 2008



Source: Deutsche Bank

Aside from dividend futures, other derivatives indirectly impacted by bond yields include volatility strategies, in particular, longer-dated implied volatility. This remained low and inside its historical range during the recent equity sell-off in the US, Europe, and some Asian geographies. Although the timing of the

11 Anusha Pai & Sandeep Jain, "E-Stoxx50 Dec20 Dividend Base Case," 13 December 2007

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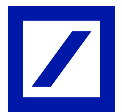

next fundamentally-driven crisis is hard to forecast, risks appear to be rising as we look at the calendar for the year ahead. As a result, buying longer-dated implied volatility for a strategic hedge makes more sense now than it has for a number of years. Furthermore, the upside to volatility levels seen in major crises is significant. [12]

12 Simon Carter, Riddhi Prasad, Risha Agarwal, "European vol lower than you might think. Tail hedges have value," 12 February 2018

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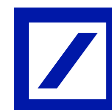

Appendix 1

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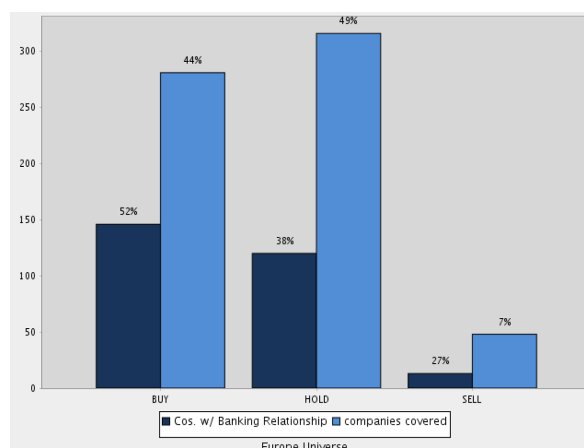

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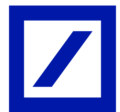

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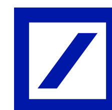

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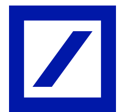

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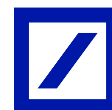

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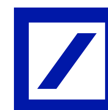

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