

Brexit impact on UK asset markets

What market moves tell us about the magnitude of exit impacts

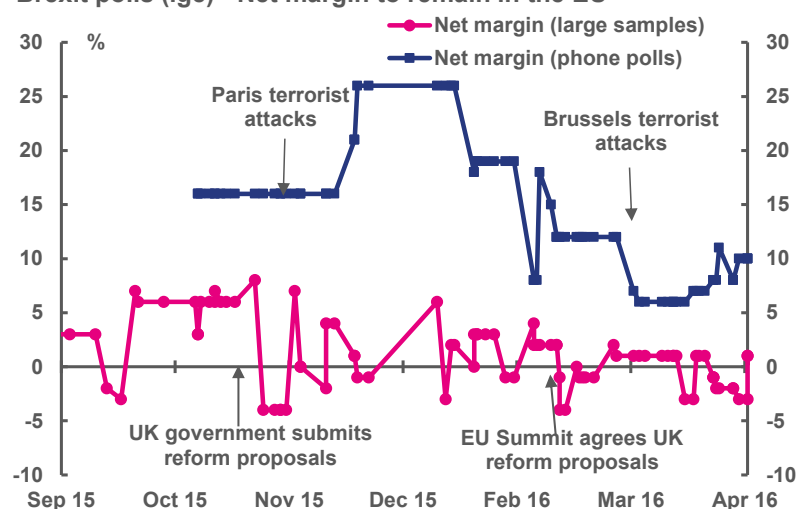
Key points

- Financial markets have increasingly focused on the upcoming European Union referendum.
- Using exogenous probabilities from polls and financial spread-betting markets, we estimate the impact of Brexit on key UK asset markets.
- We find evidence that Brexit would likely lead to further depreciation of sterling against both the US dollar and the euro. We tentatively forecast a move towards \$1.30 for sterling-dollar post Brexit.
- Bond yields exhibit less of a 'Brexit effect'. We demonstrate that this reflects the countervailing effects of expected lower policy rates and a reduced desire to hold UK gilts.
- UK credit markets post clear signs of underperformance against euro area and US counterparts as the perceived risk of Brexit rises.
- UK focused equity markets have also underperformed US stocks as fears of Brexit have grown.
- The widespread cross-asset impact of changing perceptions of Brexit risk suggests a marked impact on UK financial market volatility as the referendum outcome becomes known.

Exhibit 1

How does the probability of Brexit impact financial markets ?

Brexit polls (Ige) - Net margin to remain in the EU



Source: Financial Times (FT), combined sources and AXA IM Research

Introduction

The UK's referendum on whether to leave the European Union (EU) on 23 June continues to loom large for UK financial markets and beyond. In January, we published research forecasting, in broad terms, the likely impact of a decision to leave the EU on different asset classes¹.

In January, we suggested a decision to leave the EU would see a further reduction in Bank rate and additional quantitative easing (QE), a significant depreciation of sterling in trade-weighted terms; a broadly neutral impact for gilt yields (with a bias to a modest fall in yields); a deterioration in the equity outlook; and a material widening of sterling credit spreads.

Since January, there have been many global developments and some extreme market moves, but there has also been an increased financial market focus on the prospect of Brexit and varying degrees of conviction over the likelihood of an EU exit. This provides us with data to test whether recent market moves appear consistent with our January forecasts. In some instances it is also useful to help gauge the magnitude of the impact post referendum.

We find that currency markets and short-term interest rate markets exhibit a significant 'Brexit effect'. A simple counterfactual analysis suggests our assumption of looser monetary policy post Brexit is consistent with expectations embedded in markets. Our analysis also suggests that sterling could fall further against the dollar in the case of Brexit and we tentatively target a rate of US\$1.30. Directionally, we find a similar outcome for the euro although we are more cautious about the implied scale of sterling depreciation here. We also document evidence of a Brexit effect in credit and equity markets. However, the effect on 10-year government bond yields is more neutral. We demonstrate that this is due to conflicting drivers of bond yields: expected future policy easing against an uncertain scale of capital flight.

Finally we also note, as should be expected, that different asset classes exhibit a synchronicity in reaction to fluctuations in perceived chances of Brexit. The exception appears to be sterling-dollar exchange rate. If anything, this rate appears to move ahead of other market moves. This may reflect that sterling-dollar is a prime market for speculating on the prospect of Brexit. As such, it may have a useful signalling quality of the perceived chance of Brexit.

Our metrics

In the following note we use cross market comparisons to consider short term interest rate, currency, bond, equity and credit markets. We find evidence of a Brexit effect in most asset classes. However, in most instances we find it easier to distinguish a Brexit effect when comparing sterling and US dollar markets. In several cases comparing sterling and euro markets shows a less marked effect. In part, this may be due to financial

markets expecting a Brexit to have a negative impact on euro markets as well as sterling, making the distinction less 'clean' than in the case of UK and US markets.

In determining a "Brexit effect" we need an exogenous measure of the perceived chance of Brexit. We use two sources to gauge the perceived chance of Brexit. The first is phone polls assessing the balance of UK public that want to remain in the EU. These are different from the more often quoted headline polls and have consistently pointed to a more pronounced lead to the remain campaign. However, phone polls provided a closer indication of the surprise result to last year's UK General Election. Recent analysis has also suggested that these are likely to more accurately reflect the referendum result than online surveys, in part because of differences in how the 'don't know' vote is measured². Accordingly, we view these as a better guide to underlying voter trends and assume financial markets will too.

We also use the Paddy Power Betfair spread betting markets as a separate, objective assessment of Brexit probability. These markets vary from day to day and have traded a range that suggests a 63-73% chance of the UK remaining in the EU over the past three months. More recently the probability of remain has risen to currently stand at 79%.

Short-term interest rate markets

The outlook for interest rates has softened consistently over the past six months. While a year ago financial markets considered the Bank of England (BoE)'s Monetary Policy Committee (MPC) likely to tighten monetary policy by the end of 2016, this view has been relentlessly pushed back in recent quarters. There are several measures to gauge the interest rate outlook from financial markets (*Exhibit 2*). Our preferred approach looks at the modal distribution around short-sterling interest rate options. These suggest that markets only price one full rate hike by end-2018.

This easing in interest rates seems natural against a backdrop of slowing UK GDP growth, global turbulence and financial market uncertainty. However, we think that market measures of short term rates are being biased by a Brexit effect.

Our own interest rate forecasts envisage the BoE tightening monetary policy in the second quarter of 2017 and we forecast two hikes in 2017 **if the UK chooses to remain in the EU**. If the UK votes to leave we expect the BoE to ease policy, cutting its rate and boosting the Asset Purchase Facility (QE) target by £50-100bn. However, markets are unable to express 'conditional forecasts'. Market rates are mean variables, probabilistically weighting all outcomes to determine a single value. As such, if the market assigns a 21% chance of Brexit (using our Betfair probability metric)

¹ Page, D., "[Brexit - counting the cost](#)", AXA IM Research, 27 January 2016. This was republished in "[Brexit](#)", February 2016.

² Singh, M. and Kanagasooriam, K., "[Polls Apart, An investigation in toe the differences between phone and online polling for the UK's EU membership referendum](#)", Populus and Number Cruncher Politics. March 2016

then the current market outlook reflects a 79% chance of a set of interest rate moves if the EU remains in the UK and 21% chance of a different set of assumptions if it leaves.

We derive an implied assumption for monetary policy if Brexit occurs using our rate forecasts assuming the UK remains in the EU, market derived expectations of future rates, and an estimate of the probability ascribed to exit. These are shown in *Exhibit 2* below.

Exhibit 2

Short term interest rates

Year	Forecast (AXA-IM)	OIS	Short sterling	Modal	Imp'd rate* Brexit 21%
2016	0.50	0.45	0.39	0.60	0.34
2017	1.00	0.62	0.60	0.70	-0.70
2018	1.00	0.70	0.78	0.85	-0.06
2019	1.25	0.84	0.97	-	-0.39

Source: Reuters, Bloomberg and AXA IM Research
 * Average of OIS, short sterling and modal

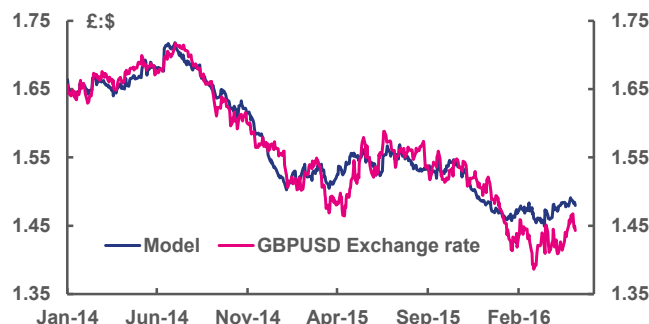
The implied Brexit rates are consistent with the BoE cutting the policy rate significantly in the event of Brexit. The market appears to consider it likely that the BoE adopts negative interest rates. We consider it unlikely that the MPC would lower rates below zero. Instead we expect the MPC to supplement rate cuts with additional QE (our forecast is for a further £50-100bn).

Sterling currency markets

The pound is often one of the more sensitive asset classes to political uncertainty. Over the short-run, we can model movements in sterling against the US dollar using short-run fundamentals. *Exhibit 3* illustrates our preferred model based on short-run interest rate differentials, a measure of global risk and oil prices.

Exhibit 3

Sterling: US\$ short-term fundamentals model
 Cable and model
 (2-year interest rate differences, S&P and oil)



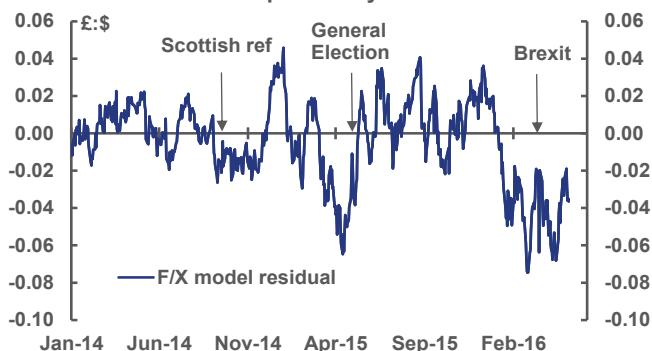
Source: Datastream and AXA IM Research

Our model accounts for the majority of the day-to-day movement in sterling-dollar over normal periods. *Exhibit 4* shows the residual of this model. This illustrates when something not explained by interest rate differentials, global risk and oil prices is impacting the currency. We illustrate how significant periods of sterling underperformance (to our fundamentals model) has occurred in times of political uncertainty including the

Scottish referendum, last year's General Election and now Brexit.

Exhibit 4

Deviation from model reflects political uncertainty
 GBPUSD variation unexplained by fundamentals



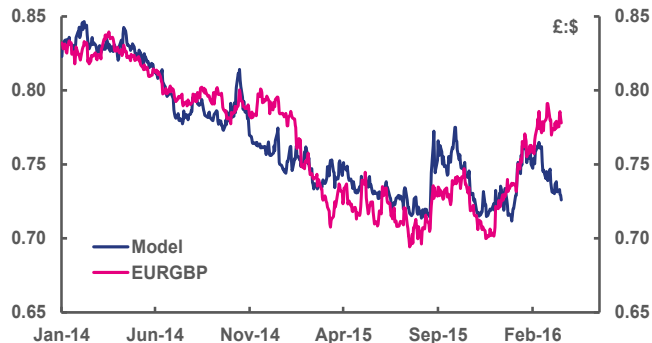
Source: Datastream and AXA IM Research

We can begin to estimate the impact of Brexit on sterling by extrapolating the underperformance of sterling versus our fundamental model, based on a 21% chance of exit for the remaining 79%. To our minds, this gives a partial estimate of the impact of sterling. One must additionally account for the likely impact of the change in policy rate outlook as described in the section above.

Accounting for both factors, we infer markets suggest a material depreciation of sterling:dollar in the event of Brexit. Using this, we infer markets pricing sterling falling to \$1.30 if the UK chooses to leave.

Exhibit 5

A similar pattern is apparent in euro:sterling
 Euro and model
 (2-year interest-rate differences, S&P and oil)



Source: Datastream and AXA IM Research

We undertake a similar exercise for euro-sterling. Our a priori is that the implied sterling drop from this model will not be as great as against the dollar, in turn suggesting that Brexit would likely see euro depreciation against the dollar too. Yet this is not the case. Our model suggests sterling has seen a larger deviation from fundamentals than the dollar. Extrapolating this result for a full Brexit, sterling should fall by more to the euro than dollar (implying a modest appreciation of the dollar to the euro).

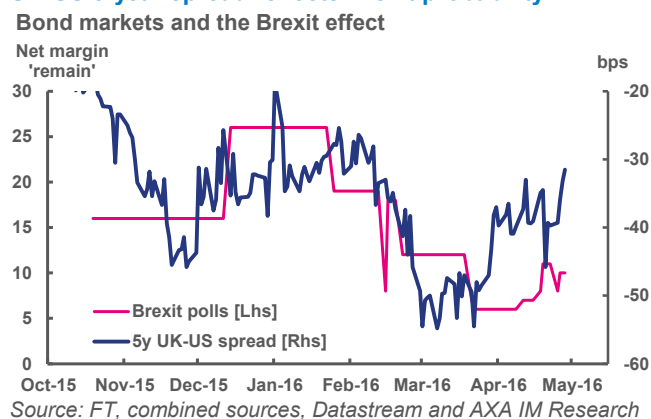
Yet we are wary of the conclusion that sterling would depreciate by more to the euro than the dollar. We note that our short-term euro-sterling model is not as well specified and we are less confident with the precision of our residual estimates for the euro. *Exhibit 5* suggests that sterling is likely to fall further against the euro on

Brexit, but we remain of the view that the euro is likely to soften versus the US dollar on Brexit as well.

Bond markets

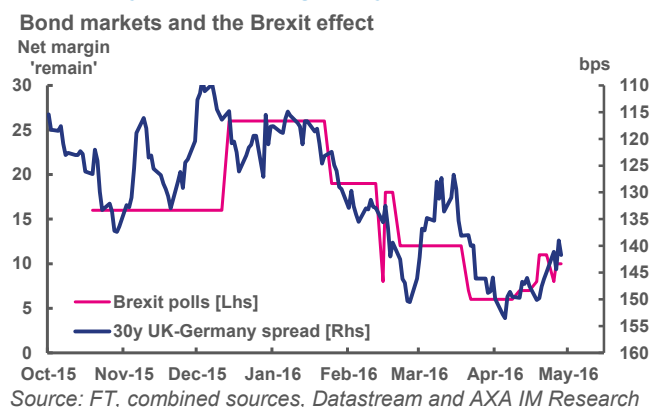
We state that the Brexit impact on bonds should be 'more neutral' than for other asset classes. We recognise the risk that gilt holders (including the overseas owners that currently own 35% of gilts outside of the Bank of England holdings, up from 30% at the start of 2007) may become more nervous about gilt holdings following Brexit. Yet we contend that demand for sovereign, domestic-currency issue bonds of one of the world's oldest international borrowers is likely to remain firm and in a world of low interest rates, relatively small yield increases should attract relatively large inflows. Moreover, gilts should benefit from the expected easing in monetary policy – particularly additional QE – that we envisage if the UK were to leave the EU. Our forecast is that (implicitly for 10-year bonds) these two opposing drivers are likely to broadly neutralise each other.

Exhibit 6
UK-US 5-year spread reflects Brexit probability



We test this theory by looking at different sectors of the curve. *Exhibit 6* illustrates how the difference between 5-year UK gilt and US Treasury yields is positively correlated to the probability of remaining in the EU (as measured by Brexit phone polls). The five year portion of the curve is more sensitive to the outlook for short-term rates. As the prospect for Brexit rises (lead for remain shrinks) the likelihood of lower UK policy rates drives the UK-US 5-year spread lower.

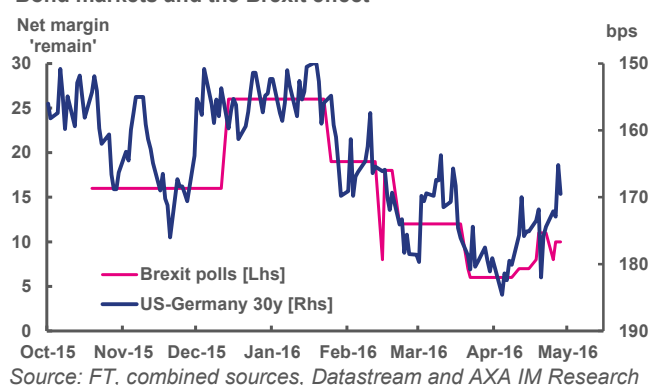
Exhibit 7
UK-GE 30-year spread negatively correlated



By contrast, the longer-end of the curve is much less sensitive to prospective interest rate changes. *Exhibit 7* shows that the 30-year UK-German (GE) spread is **negatively** correlated to Brexit fears. We infer that beyond the short-term impact of an interest rate effect, gilt yields are being negatively affected (pushed higher) – foreign owners are demanding greater compensation to hold UK bonds as the perceived risk of Brexit rises.

Brexit probability explains a significant portion of the movements in the UK-GE 30-year spread. But we note it has much less explanatory power for the UK-US 30-year spread (although remains statistically significant). It is likely that the gilt-bund spread would see a more pronounced Brexit effect as a vote to leave the EU would likely lead to both gilt selling pressure and also some bund buying pressure (assuming safe-haven demand for bunds after a vote to leave). This is illustrated in *Exhibit 8* by comparing US and German long-end spreads: again the euro asset outperforms as the prospect of Brexit rises.

Exhibit 8
US-GE 30-year spread also negatively correlated
Bond markets and the Brexit effect



Again the UK-US provides a 'cleaner' comparison, suggesting that the rise in gilt yields associated with international investor fears may not be large at the long-end.

The 10-year bond spread sits somewhere between the other two maturities and over the past six months has shown no statistically significant relationship between perceived Brexit probability and 10-year spreads. The gilt-Treasury spread is positively signed, the gilt-bund spread is negatively signed. This provides some evidence that first the impact of Brexit on bond yields is likely to be more neutral and second, in the case of UK-US, that Brexit is more likely to be associated with a modest dip in yields.

Credit markets

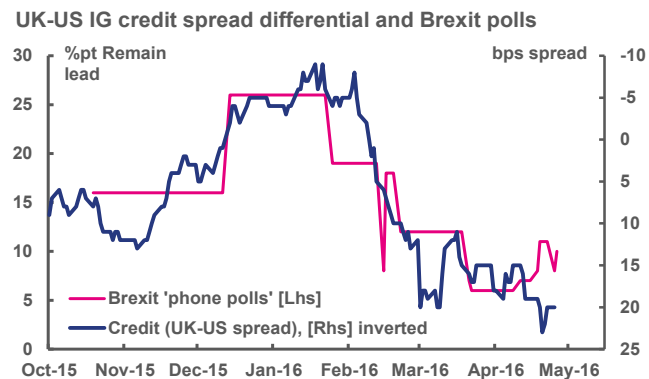
We conduct a similar analysis to test our assessment for credit markets. In January we stated that

"... the initial reaction to Brexit is expected to be a material move wider, with sterling investment grade (IG) credit index widening by as much as 100bps ..."

Exhibit 9 illustrates Brexit probabilities and sterling-US dollar credit spreads. Once again, the movement in credit

spreads appears to move in harmony with shifts in the probability of Brexit (an increase in the probability of Brexit/fall in lead for the remain is associated with a widening of UK IG spreads relative to US).

Exhibit 9
UK-US IG credit spreads and Brexit probability



Source: FT, combined sources, Bank of America Merrill Lynch and AXA IM Research

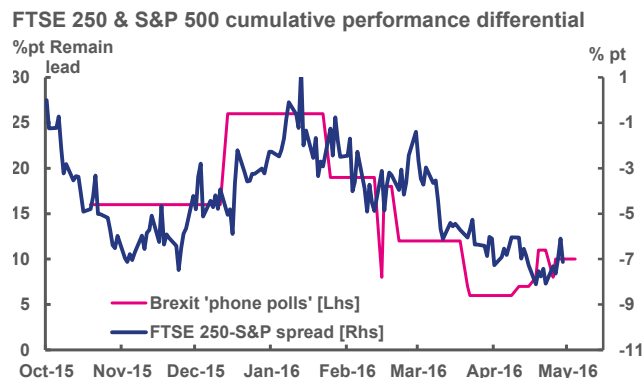
A similar move can be seen comparing sterling and euro credit spreads, with spreads widening from mid-January to end-February, consistent with the deterioration in the polls over that time period. The widening was more pronounced against euro spreads (35bps at most), but has subsequently retraced so the total move in spreads is a widening of around 20bps (compared with 25bps in the US). This is also consistent with outperformance of euro versus sterling yields particularly given the euro index's materially shorter duration (5 years versus 8 years).

Equity markets

We also expected a mixed reaction in UK equities with some sectors (notably those with large non-euro foreign earnings) to benefit from Brexit, but on balance considered the "equity outlook to deteriorate post Brexit". In our analysis, we considered the prospect of Brexit as something that was likely to see a reversal of the outperformance of the FTSE 250 over the FTSE 100. This is certainly something that we have seen over the period under consideration. So far this year, the FTSE 100 has fallen by 1.4% compared with a 2.9% fall in the FTSE 250. However, with resources rebounding heavily across this period it is difficult to ascribe this outperformance solely to Brexit.

Rather, we use the FTSE 250 as more reflective of the underlying domestic economy and compare it with movements in the US S&P 500 and Eurostoxx 50. *Exhibit 10* illustrates that FTSE 250 has outperformed the S&P 500 in periods when remaining in the EU has seemed more likely and underperformed as those perceptions have slipped. This suggests that a vote to leave the EU would have a more negative impact on UK equities than US.

Exhibit 10
FTSE 250 & S&P 500 cumulative performance difference



Source: FT, combined sources, Datastream and AXA IM Research

Conclusions

The past five months have seen many developments in financial markets. One such development has been an increasing focus on the upcoming UK referendum on whether to leave the EU on 23 June. We have looked at trying to isolate this impact on financial markets, using polls and other measures as exogenous estimates of the probability of Brexit.

We conclude that, as expected, sterling appears likely to depreciate further, against the dollar and the euro, in the event of an EU exit. Moreover, we estimate that sterling is likely to fall to \$1.30 against the US dollar following such an event. However, our methodology suggests an even sharper depreciation to the euro. This goes against our forecast that the euro would also likely depreciate against the US dollar in the event of Brexit. We are insufficiently confident in our euro-sterling model to change this assumption.

In bond markets, we demonstrate that the perceived risk of Brexit is having both an impact on expected policy rate outlooks and on longer duration assets reflecting a perceived increase in the risk of holding such assets. At the 10-year area of the curve these contrary drivers broadly cancel each other out.

Credit markets also appear to be dependent on the perceived risk of EU exit. Sterling IG credit has underperformed US and euro area credit as the prospect of EU exit has increased.

Finally, our analysis points to underperformance of the domestically focused FTSE 250 against the S&P 500 as the likelihood of EU exit rises.

The UK's decision about whether to leave the EU has attracted much focus in terms of the likely economic cost this would impose on the UK economy. We suggests that this would also likely have a marked impact on financial markets.

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