UK referendum on EU membership:
The risks of Brexit

The implications of the UK voting to leave the EU

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Executive summary

As the UK prepares to decide whether or not to continue its membership of the European Union, investors globally are considering the risks and opportunities should the UK decide to leave.

In this report, we discuss the risk of Brexit and the potential impact on the UK economy both in the near term and further out should the UK vote to leave. We also consider the likely reaction by markets for sterling, equities and bonds.

The analysis and evidence presented is intended to inform investors and not to persuade voters or influence the outcome of the upcoming referendum.

Key findings include:

- **The EU is the UK's biggest trading partner, while the UK is also a very important export destination for the EU.** Both sides need to maintain a strong trade relationship, but this is at risk should other elements of the negotiations be prioritised ahead of trade. Brexit could offer the UK the freedom to negotiate trade agreements with third parties, but it may have to lose access to parts of the single market, and would almost certainly be outside the customs union.
- **Foreign direct investment is an important source of financing for the UK.** The UK has a large exposure to Europe and vice versa. Should Brexit cause the UK to lose access to the single market, it could cause capital inflows to slow or even reverse. The existing stock of assets and liabilities is very large, and is likely to have a huge impact on markets in a disorderly scenario.
- **EU membership is often blamed for the UK's perceived migration problem, yet most immigrants tend to come from non-EU countries.** From an economic standpoint, EU migrants arrive ready to work, pay taxes, and ease the burden of an ageing population. Limiting migration in a Brexit scenario would almost certainly lower the UK's trend growth, and increase the burden on the exchequer.
- **The UK's contribution to the EU's budget does not represent a significant saving should the UK decide to leave the EU.** At just 0.2% of gross national income, the saving would barely put a dent in the UK's fiscal black hole. Moreover, if the UK chooses to follow the path of Norway or Switzerland, some subscription costs may also be required.
- **Should the UK vote for Brexit, the near-term impact on the economy is most likely to be stagflationary[1] compared to our baseline forecast.** Uncertainty would hit both foreign sourced and domestic investment, while we forecast UK consumers to cut spending as confidence is dented. Sterling is likely to depreciate further which would help boost the contribution from net trade, but the overall impact would be lower growth and higher inflation**. We forecast that a benign Brexit scenario would cause GDP to be 0.9% lower and CPI inflation to be 0.6% higher by the end of 2017 compared to our baseline forecast. The Bank of England is forecast to keep interest rates lower for longer in this environment.**
- **There is a one in four chance that the loss in confidence leads to much larger capital outflows, causing the pound to plummet, and for the Bank of England to raise interest rates to defend the currency.** The UK's huge twin deficits highlight the economy's imbalances and leave it highly vulnerable to a balance of payments crisis. The impact on the economy would be more severe than our Brexit scenario – stagflationary initially, but then very deflationary in years to come.
- **The long-term impact on the UK economy will be determined by how much access to the single market the UK manages to retain, how migration flows are impacted by government policy, and how much the UK government manages to save in subscription costs.** Most studies offer a range of scenarios concluding that the most likely outcome would be lower long-term potential growth compared to remaining in the EU.

[1] In other words, having lower growth and higher inflation compared to our baseline forecast

- **Restrictions on EU migration could cause the UK labour market to become less flexible to demand, raising the likelihood of more pronounced wage, inflation and interest rate cycles.** A more cyclical economy would not only make recessions more frequent, but international investors could demand a discount on UK assets given the higher volatility of expected returns.
- **A Brexit scenario is likely to cause sterling to fall further.** Having already seen its sharpest depreciation since the financial crisis in recent months, our analysis shows that a further fall is likely under Brexit. However our analysis also suggests that sterling could rebound should the UK vote to remain, as many investors have already started to hedge their sterling exposure.
- **The outlook for UK equities is mixed under Brexit.** The UK's large-cap index has a large proportion of its revenues coming from outside both the UK and EU. Should sterling depreciate, these companies would see the sterling value of profits rise, and would therefore benefit. The mid and small-cap indices have more exposure to the UK and EU, and could underperform as a result.
- **The outlook for bonds is also mixed under Brexit.** Credit could see wider spreads as investors demand a higher premium against the risk of lower growth and higher default risk. Meanwhile gilts are likely to see higher domestic demand from safe haven flows.

A vote for Brexit will also have wider implications for the rest of the European Union with the loss of a large liberal member state. Moreover, the UK government will struggle to recover from such a result, while Scottish nationals will probably push for another vote for separation. It could take decades before we learn the true costs and benefits from Brexit, but in the meantime, investors seem ready to take precautionary action.

Introduction

The UK's referendum on its EU membership could re-define its relationship with the biggest single market in the world, and profoundly affect the UK economy for decades to come. Many aspects of Brexit will remain highly uncertain, but most investors will begin to consider how best to prepare and react should the UK vote to leave the EU.

When the UK joined the European Economic Community (EEC) in 1973 it was a growing regional organisation with the aim of forging economic co-operation and integration, including a common market and customs union.

Prime Minister Edward Heath said: *"It is going to be a gradual development and obviously things are not going to happen overnight. But from the point of view of our everyday lives we will find there is a great cross-fertilisation of knowledge and information, not only in business but in every other sphere. And this will enable us to be more efficient and more competitive in gaining more markets not only in Europe but in the rest of the world."* 43 years later, the UK is about to decide whether it wants to remain in a club that has grown and morphed into a political project, which is now skewed in power towards a fragile and fraught monetary union.

Perhaps the UK had misunderstood the objectives of the European project from the start, and should have seen the signs when the UK's application to join the EEC was refused in 1963 and 1967 because French President of the time Charles de Gaulle doubted the UK's political will. Former UK Chancellor Lord Nigel Lawson is a key spokesperson for the leave campaign and argues that the European Union (EU) is no longer the economic club he originally voted to join, but primarily a political construct with the key goal of ever-closer union. He also argues that the decision of whether to stay or leave is largely a political one, although admits there would be some economic consequences[2].

On the 20th of February, British Prime Minister David Cameron announced that he had successfully negotiated a new settlement for the UK and European Union along with announcing the date of the UK's referendum on its EU membership – due on the 23rd of June. The new deal includes:

– An opt-out from ever-closer union, to be included in future amendments to EU treaties

– Safeguards for non-euro members from Eurozone led changes

– Reduction in welfare entitlements for new EU migrants (seven-year ban)

– Greater effort to complete the single market in areas like services, digital and energy markets

– A bigger role for national parliaments in blocking proposed EU legislation (red card system).

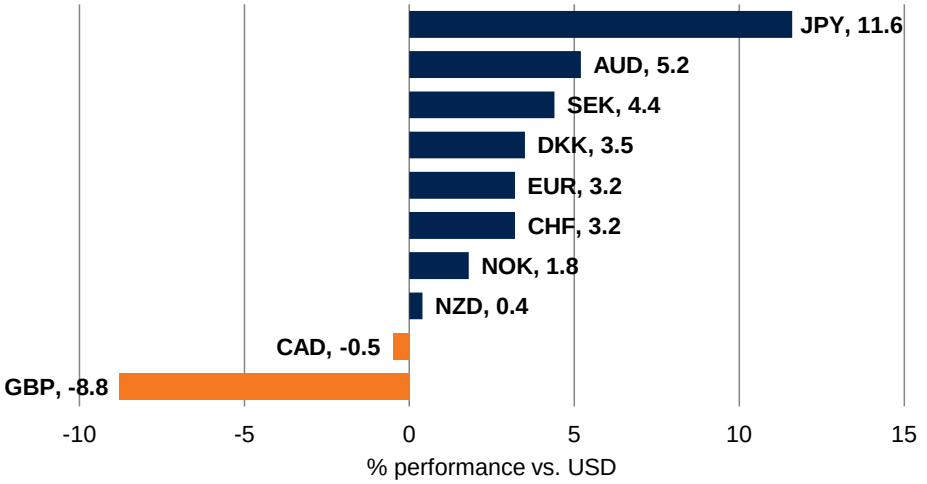
With the new deal, Cameron and the government officially recommended the UK to vote to remain in the union, although several significant cabinet members have publically opposed the government's position and have begun to campaign to leave the EU. Most notably, the Mayor of London – Boris Johnson – has started to campaign for Brexit.

The announcement of the referendum date not only triggered the start of campaigning, but increased media coverage of the debate. The debate has naturally drawn the attention of investors globally and the prospect of Brexit appears to have already dented sentiment. For example, the British pound has been the worst performing currency in the G7 since the start of November 2015 – down 8.8% against the US dollar (see chart 1 on next page).

Uncertainty in the run-up to any major political event is normal, but due to high uncertainty around the UK's future relationship with Europe in the event of a vote to leave the EU, investors, companies and households are likely to be cautious.

[2] See Schroders TalkingPoint: The Brexit Debate: In or out?

Chart 1: Spectacular underperformance of sterling



Source: Bloomberg, Schroders Economics Group. Performance taken from 2 November 2015 to 7 April 2016.

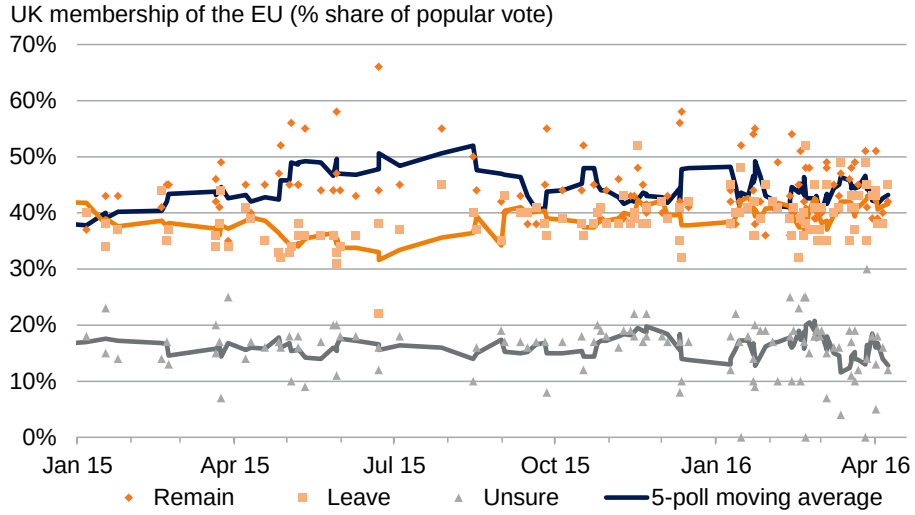
In this note, we discuss the risk of Brexit and the potential impact on the UK economy both in the near term and further out should the UK vote to leave. **The analysis and evidence presented is intended to inform investors and not to persuade voters or influence the outcome of the upcoming referendum.**

Likelihood of Brexit rising

Opinion polls suggest the public is split evenly on the referendum question, although recent momentum has been towards 'leave'. Meanwhile, betting markets suggest the probability of Brexit is far lower at around 34%.

Opinion polls on the referendum have narrowed over the past month. The 'remain' campaign's lead has fallen by around ten percentage points to just a single point using our simple five-poll moving average (chart 2). Polling analysts have noticed a significant pattern in polling data in that polls conducted online seems to be biased towards leaving the EU, but polling conducted by telephone seems to be biased the other way. However, regardless of the methodology and past biases, over the past month, almost all of the polls have swung towards leave, signalling a shift in the country's mood. Approximately 13% of those polled are undecided, who in the past tend to vote for the status quo; however, given how tight polling is and the direction of travel, a Brexit result is now a very real possibility.

Chart 2: Opinion polls suggest marginal lead for remain



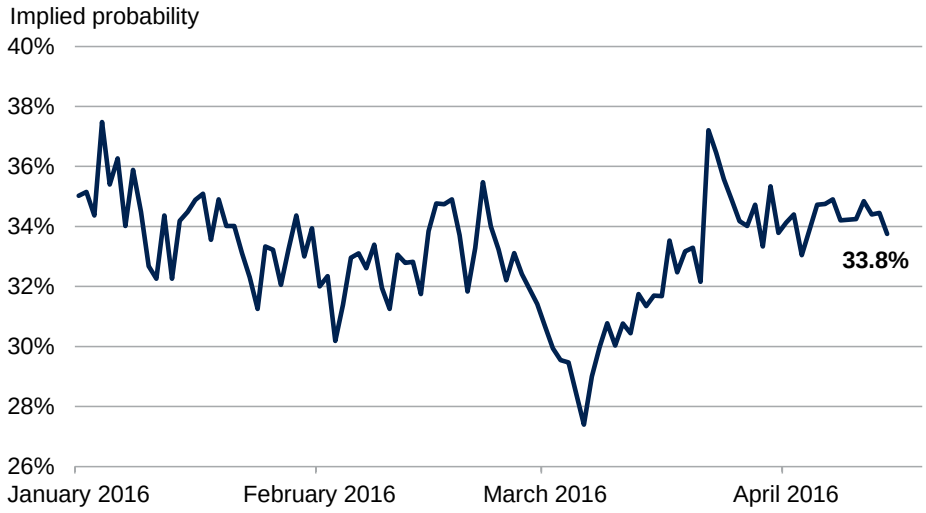
Source: ComRes, ICM, ORB, YouGov, BMG Research, Survation, Ipsos MORI Panelbase, Pew Research Centre, Norstat, Populus, TNS-BMRB, Opiniom, Greenberg Quinlan Rosner Research. Schroders Economics Group. Last survey conducted 10 April 2016.

Opinion polls remain valuable, but are not as reliable as they used to be, especially after poor calls on the last general election and the Scottish independence referendum. Betting exchanges, which have outperformed polls of late, suggest that the implied probability of the UK voting for Brexit is much lower at 33.8% (chart 3).

Arguably, betting exchanges offer a more accurate picture as probabilities are based on market pricing and real money taking positions, compared to simple opinion polls where those polled may choose not to be truthful.

It is worth mentioning that the probability of Brexit spiked up following the terrible terrorist attacks in Brussels, just as it did in November after the Paris attacks. The public's reaction has not yet been captured by opinion polls due to the delay in getting those results; however, bad news out of Europe, be it migration, terrorism or even political disagreement, seems to galvanise support to leave the EU. As spring arrives and the flow of migrants from the Middle East rises again, we could see further swings in opinion polls and betting odds towards Brexit.

Chart 3: Book makers suggest a lower chance of Brexit



Source: Oddschecker.com. Schroders Economics Group. 14 April 2016.

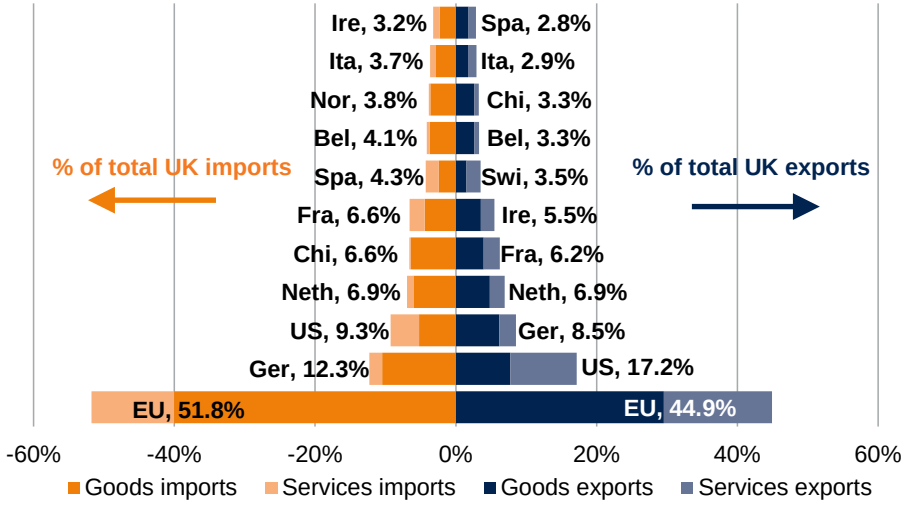
UK's trade relationship with the EU

The EU is the UK's largest trading partner, although the UK is also a crucial market for the rest of the EU.

In order to assess the risk to the UK economy, we need to consider the UK's economic relationship with the EU. The UK makes up 15% of EU GDP, 17% of the EU's domestic demand, but only 12.7% of the EU's population. As one of the richest member states, the UK's contribution to the single market is substantial.

One of the key arguments against leaving the EU is the risk to the UK's trade relationship with its largest trading partners. Between 2012 and 2014, 44.9% of the UK's exports in goods and services headed to the rest of the EU (chart 4). Delving into exports to individual countries, the top destination is the US (17.2%) followed by Germany (8.5%), the Netherlands (6.9%) and France (6.2%). Only 3.3% of exports head to China, a top target for the current government, although exports to China are still more than those to Italy or Spain.

Chart 4: UK's top trade partners (2012 – 14 average)



Source: ONS, Schroders Economics Group. 14 April 2016.

In terms of imports, again, the rest of the EU is the biggest source of imports, with 51.8%. Germany is the top source of imports with 12.3%, followed by the US (9.3%), the Netherlands (6.9%) and China (6.6%).

When exports and imports are combined and put into the context of the UK economy, we find that the UK runs a 3.2% of GDP trade deficit with Europe, but partly offsetting this is a 1.3% of GDP trade surplus with the rest of the world (chart 5). Strictly from the trade relationship, we could conclude that net trade with the rest of the EU has a negative impact on the economy; however, this would not be accurate as this only captures the value added, and ignores the additional benefits from jobs, investment and spending associated with the trade relationship.

Chart 5: UK net trade with EU and rest of the world (goods and services)

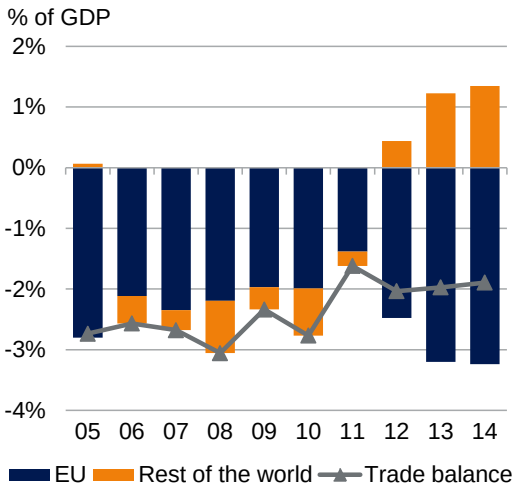
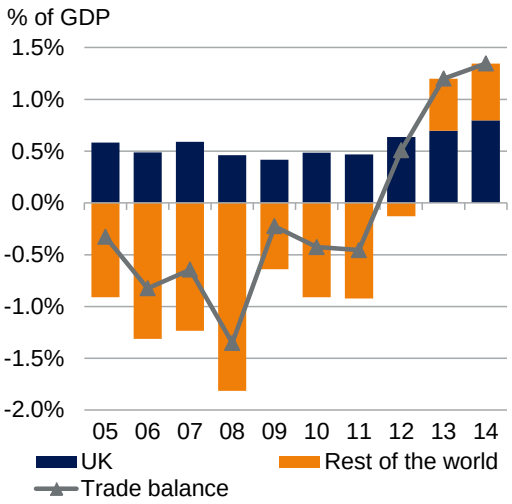


Chart 6: EU net trade with UK and rest of the world (goods only)



Source: ONS, Eurostat, Schroders Economics Group. 14 April 2016.

Looking at the relationship from the perspective of the rest of the EU we find that although only 10% of EU exports (goods) go to the UK, almost two-thirds of the rest of the EU's trade surplus in 2014 is thanks to its trade with the UK (chart 6). This highlights the importance of the UK as a market for the rest of the EU.

UK's capital relationship with the EU

One of the biggest immediate impacts from a Brexit vote is expected to be the slowdown and possible reversal of foreign direct investment. The UK's language, time-zone and access to the single market make the UK an attractive location for many multi-nationals.

In addition to trade, investment flows are equally important in assessing the potential impact from Brexit. Europe has historically been a key source of foreign direct investment (FDI) for the UK averaging about 3% of GDP; however, flows have been understandably weaker since the global financial crisis and the European sovereign debt crisis (chart 7), and are barely positive at present. Meanwhile, inward flows from around the world have followed a similar pattern, but have remained more robust in recent years. In 2014, inward FDI from the rest of the world was worth 1.3% of GDP, compared to just 0.3% of GDP from the rest of the EU.

If the UK were to leave the EU, then we could see lower FDI flows in the future, partly due to regulation (investment restricted from either side) but also due to possible reduced access to the EU's single market. The latter may not only impact EU FDI, but also FDI flows from the rest of the world.

In addition to FDI flows, the stock of existing investments could be at risk. FDI investment is classified in the national accounts as investment in companies where the share of ownership exceeds 20%. This distinguishes stickier long-term investments from short-term portfolio flows. In examining the stock of existing investment, we find that investors in the rest of the EU own FDI assets worth 34% of UK GDP (shown on chart 8 as UK liabilities in direct investments). In addition, EU investors own an additional 57% of UK GDP worth of equities and bonds (portfolio investments). Investors in the rest of the world own even more than EU investors, but they too could decide to sell holdings if the outlook for those investments were to change materially.

The impact from international investors selling holdings in UK companies would probably lower their valuations at best, and at worst force the entire shut-down of operations. The former would not have much of an impact on GDP as this would be a transfer of assets, but the latter would cause GDP to fall along with job losses and subsequent negative secondary effects. For portfolio investments, equities being sold would cause prices to fall, although it would only be a transfer of holdings again. The impact on bond markets, however, would be more powerful, as the fall in bond values results in higher interest rates for corporates and the government. The combined impact of selling across both direct and portfolio assets would also result in net selling of sterling, which is why we have already seen sterling underperform in recent months.

Chart 7: Inward FDI flows

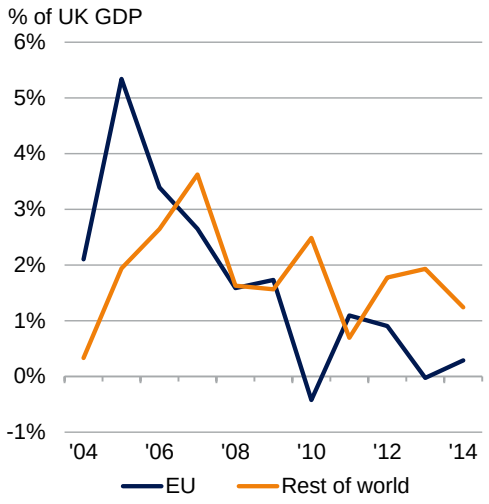
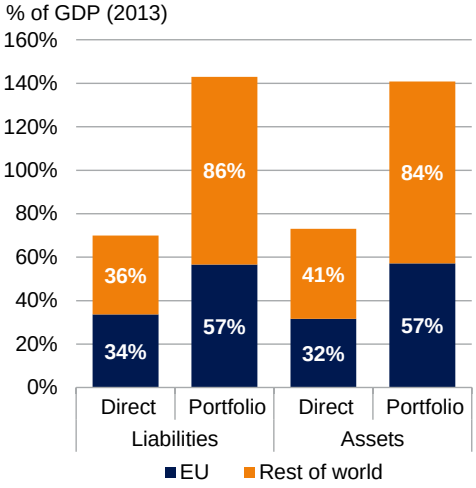


Chart 8: Geographic split of UK international investment position (IIP)



Source: ONS, Schroders Economics Group. 14 April 2016.

Migration – the UK's non-crisis

Migration has been at the heart of the Brexit debate from the start, as many have argued that migration cannot be controlled while the UK is a member of the EU. Despite tough talk on migration, little has been done to reduce it, especially the net flows of non-EU migrants.

When the pollsters asked the public *"what would you like to see David Cameron seek to change in the UK's relationship with the EU?,"* 52% of respondents said *"Greater control of borders and immigration from EU"* followed by 46% *"Limits on benefits EU migrants are eligible for"*.[3] In 2010, the current government had promised to lower net immigration to *"…the order of tens of thousands each year, not the hundreds of thousands every year that we have seen over the last decade"*. However, the UK saw a record number of migrants arrive in 2015, despite the government clamping-down on bogus student entry and restricting visa access.

Migration has always been top of the agenda for eurosceptics who argue that the UK cannot control the number of migrants while it is part of the EU's free movement of labour. In theory, this is correct. If the entire population of Italy, Spain or any other country decided to relocate to the UK, they would be free to do so. In reality, despite the government's promise to lower immigration, the data suggests it has not been very successful.

Chart 9 highlights that while the EU is a significant source of inward migration, non-EU migration is the largest source, and has been in every year for at least the past decade. The government could therefore have cut migration by more than half if it really wanted to (chart 10). Indeed since 2005, there have been 2.1 million net immigrants to the UK from non-EU countries compared to just 1.2 million from the EU.

Chart 9: Migration (EU vs. non-EU)

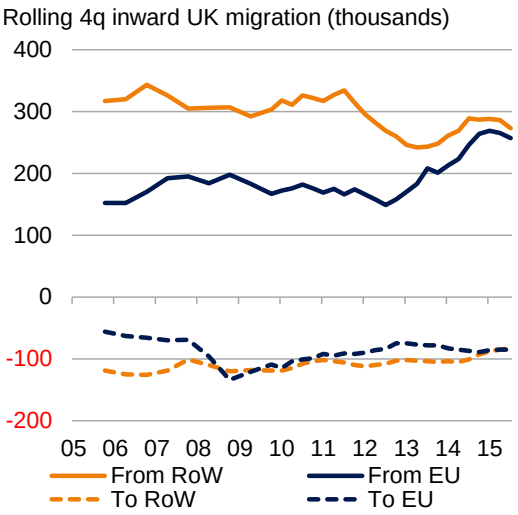
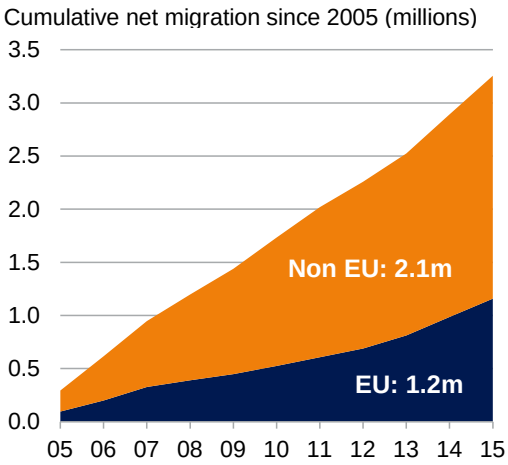


Chart 10: Long-term migration



Source: ONS, Schroders Economics Group. 14 April 2016.

EU migration is the UK's big non-crisis. It has contributed to a perceived problem which politicians have attempted to capitalise on, but is in fact not a major concern and from an economic standpoint has brought benefits. This is especially the case as EU migrants tend to arrive to work, pay taxes, and ease the burden of an ageing population.

[3] YouGov poll, 20 – 24 November 2015.

Membership costs – big savings?

Cutting the UK's contribution to the EU's budget is a significant argument in favour of Brexit. However, the overall contribution is relatively small compared to the size of the UK economy, and when the benefits of payments to the UK are considered. The UK's contribution is also small compared those made by other member states.

The subscription cost to being an EU member has been a hotly-debated topic, and is the second most important factor for leaving behind migration according to pollsters. Eurosceptics argue that the UK could spend the money sent to the EU better at home on public services. Europhiles argue that the cost is small, and is easily recovered by the benefits received from EU membership.

Based on national contributions data published by the European Commission for 2014, the UK made a total gross contribution of €20.4bn (approximately £16.5bn), but deducting the UK rebate and the justice and home affairs (JHA) adjustment (€6.1bn), took the UK government's contribution to €14.3bn (£11.5bn). However, the UK then received payments for agriculture, regional development, R&D investment etc. worth €9.1bn, taking the UK's net contribution to €4.9bn (£4bn or £61.92 per capita).[4]

The net cost to the UK has been rising in recent years as illustrated by chart 11, where the contribution used to range between 0.1% – 0.2% of gross national income (GNI), but has recently risen to range from 0.3% – 0.4%, with 2014 showing an unusual decline. In any case, the scale of these costs is hardly going to result in a significant saving for the UK economy (note, the cost savings to the exchequer would be larger, but only at the expense of the private sector firms in receipt of EU payments).

Chart 11: UK net operating budget position with the EU

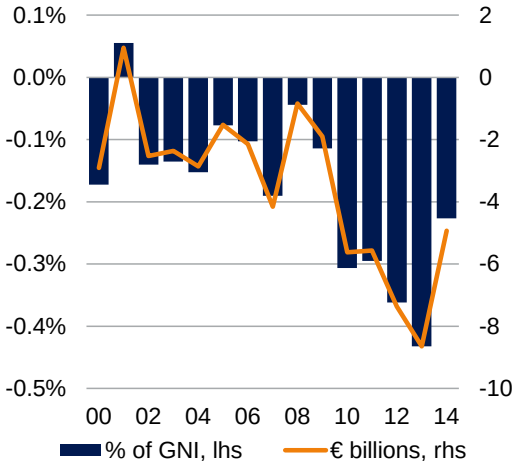
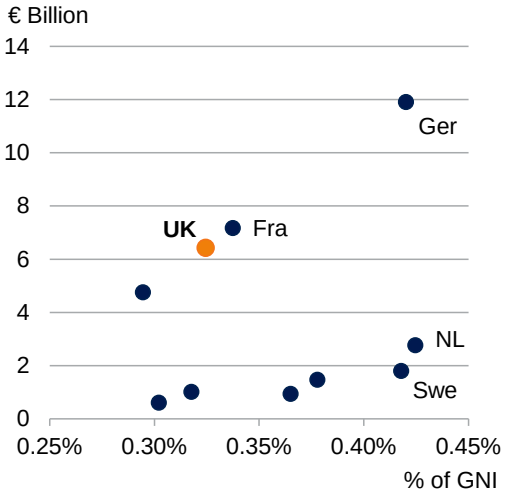


Chart 12: Comparison of contributors to EU budget (net, 2010 – 14 average)



Source: European Commission, Schroders Economics Group. 14 April 2016.

Compared to other member states, the UK was the third highest contributor in cash terms on average between 2010 –14; however, as a share of GNI it was only the seventh highest, well behind the top three of Germany, the Netherlands and Sweden (chart 12). This makes it difficult for the UK to argue that it should pay even less towards the cost of the EU if it wants to maintain its access to the single market.

[4] Note, the OBR's published figures of £13.4bn gross contribution and £8.7bn net contribution differs as it excludes EU payments to the UK's private sector, and is calculated for the financial year 2014/15, rather than just 2014.

Assessing the near-term economic impact of Brexit

A vote for Brexit is likely to adversely impact the confidence of households, companies and international investors. The impact on the UK economy is likely to be lower GDP growth and higher CPI inflation, along with keeping interest rates lower. However, there is a one in four chance of a more severe outcome resulting in a balance of payments crisis.

Numerous studies have recently been published on the potential impact of Brexit on the UK economy. To begin with, we will focus on the short-term impact (2016 and 2017), before considering the long-term impact.

In the near term, if the UK votes to leave the EU in June, a negotiation will begin between the EU and UK as to the terms of its exit. These negotiations will last at least two years, but more likely take even longer, especially as both France and Germany have major elections in 2017. During this period of uncertainty, we expect the Brexit vote will have an impact on three areas which we have modelled and compared to our baseline forecast which assumes a 'remain' result:

1. Uncertainty over the UK's access to the single market is likely to reduce net FDI inflows and slow domestic investment.
2. Households are likely to raise precautionary savings as reports of potential job losses start to escalate. We assume this will slow household consumption in real terms.
3. We assume sterling will fall by 12% on a trade-weighted basis, with a larger fall against the US dollar than the euro.

All three modelled shocks cause growth to slow as shown in chart 13. The biggest drag comes from growth in investment, which also causes a slowdown in employment and wage growth compared to our baseline forecast. Household consumption not only slows due to a higher savings rate, but also due to lower real disposable income caused by slower employment and wage growth. In addition, higher inflation due to the depreciation in sterling causes a loss in purchasing power in real terms.

Chart 13: UK GDP forecast

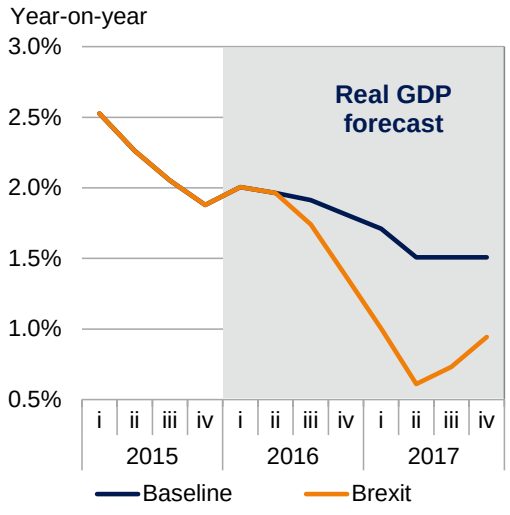
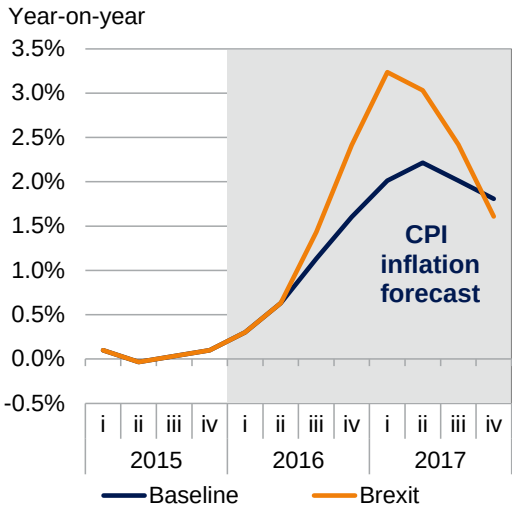


Chart 14: UK inflation forecast



Source: Thomson Datastream, Schroders Economics Group. 24 March 2016. Please note the forecast warning at the back of the document.

Due to the government's self-imposed fiscal targets, we assume the government will have to trim government consumption slightly to counter the impact of weaker tax revenues. Finally, we do not assume any first round effects from a vote to leave the EU on UK net exports as the UK would not actually leave for at least two years. However, we do assume a second order effect. The assumed depreciation in sterling should cheapen UK exports to foreign markets, and therefore boost demand and

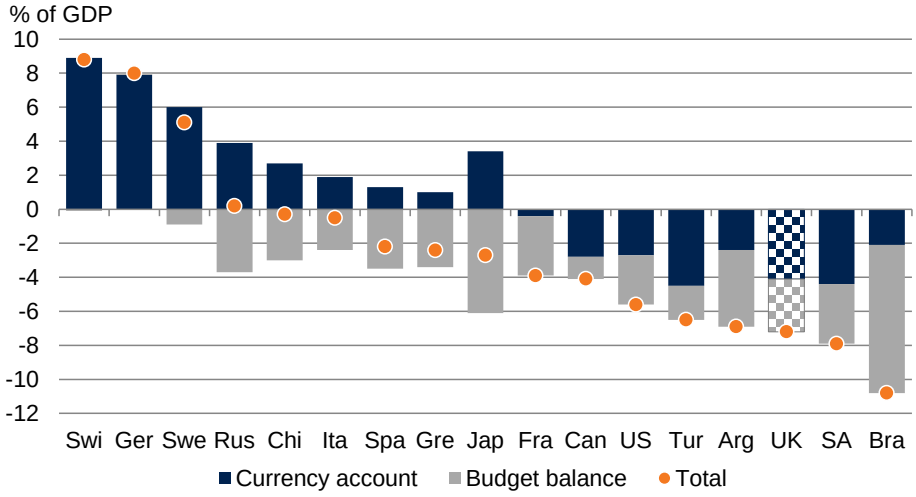
exports. Conversely, the fall in the UK's purchasing power would lower UK demand for imports compared to domestically produced goods. Therefore net trade is forecast to slightly offset the negative impact from slower investment, consumption and government spending.

The modelled depreciation in trade-weighted sterling is expected to increase import prices, causing inflation to rise to over 3% (CPI measure) before falling back as base effects reverse (chart 14). During this period, the Bank of England is unlikely to raise interest rates. Slowing growth should leave the Bank more concerned about domestic deflationary pressures building over the medium-term than the short-term shock from higher import prices.

Despite the adverse results of the simulation compared to the baseline forecast, this is a reasonably benign outcome given the scale of the shock a Brexit vote represents. In our view, there is around a 25% probability of a more severe shock, which results from the UK's huge economic imbalances where large amounts have been borrowed to fund the UK's arguably mediocre growth.

The UK's current account deficit hit a new record of 7% of GDP in the fourth quarter of 2015, while the government is likely to run a budget deficit of around 4% of GDP. According to the consensus amongst economists and collected by Bloomberg, the UK is expected to run twin deficits (fiscal plus current account) totalling 7.2% by the end of 2016. On this measure, the UK more closely resembles troubled emerging markets such as Turkey, South Africa and Brazil, rather than its European counterparts (chart 15). Even Greece appears to be healthier when comparing deficits.

Chart 15: UK's twin deficits closer to that of troubled emerging markets



Source: Bloomberg poll of economists for 2016, Schroders Economics Group. 7 April 2016.

Being highly reliant on overseas capital makes the UK very vulnerable in the event of a global downturn, or in this case, in the event of a significant shock which could cause capital inflows to slow or even reverse. The UK's large portfolio liabilities (see chart 8 earlier) could easily be subject to selling if sentiment was to worsen. As Bank of England Governor Mark Carney recently stated, a possible departure represents *"…the biggest domestic risk to financial stability"* for the economy. The central bank recently raised the bar for banks to pass this year's stress test, sighting the risk of a credit crunch associated with a Brexit.

In a more severe scenario, the pound could fall more sharply, and may even force the Bank of England to raise interest rates in order to defend the currency by discouraging capital outflows. Recent examples of currency runs include Brazil and Russia in 2014–2015 – with both respective central banks forced to raise interest rates sharply, contributing to deep recessions in the aftermath.

Overall, we forecast that in the event of a vote in favour of leaving the EU, UK GDP would be 0.9% lower, and inflation 0.6% higher than our baseline forecast by the end of 2017. However, we warn that there is about a one in four chance of a more severe outcome where a balance of payments crisis unfolds.

Of course, this type of analysis is highly uncertain and while the magnitude of the shocks we have outlined can be questioned, we are confident in the direction and impact of these shocks compared to our baseline forecast.

Life after Europe – the long-term impact of Brexit

Major studies on the long-term economic impact of Brexit suggest that a wide range of outcomes are possible, but most tend to lean towards lower GDP growth. Determinants include the UK's future trade arrangement, the government's reaction to migration, and how much the authorities are able to save in subscription costs.

The long-term outlook in the event of Brexit is far more uncertain than the immediate negotiating period. There are so many factors to take into account that modelling a most likely single scenario would be impossible. Many studies published already avoid this by offering a range of scenarios, which in turn result in a range of estimates for the impact on GDP. These studies on the whole have a median estimate that is negative for growth, but the ranges do include the possibility of some positive outcomes (see Box 1).

Box 1: A summary of studies on the impact of Brexit

The following is a summary of the headline results from a number of influential studies on the impact of Brexit on UK GDP:

- The National Institute for Economic and Social Research (2004) estimates that Brexit would cause GDP to fall by 2.25%
- The Centre for Economic Policy Research (2013) has a range between -1.77% and -1.24% to GDP
- The Institute of Economics Affairs' (IEA) prize-winning paper forecasts an impact in the range of -2.6% to +1.1%, with a central view of a gain of 0.1% in GDP (2014)
- Open Europe (2015) estimates the impact to be between -2.2% to +1.6% by 2030. However, the study suggests that politically acceptable scenarios narrow the range to -0.8% to +0.6%
- Oxford Economics (2016) estimates the impact to range from -3.9% to -0.1% by 2030 in absolute terms. The impact on GDP per capita is estimated to be between -2.8% to +0.1%
- A PwC report sponsored by the Confederation for British Industry (2016) estimates the impact to be between -5.4% to -3% by 2020. In the more optimistic scenario, per capita GDP would still be 0.8% lower compared to remaining in the EU
- The Centre for Economic Performance (2016) estimates the long-run impact to be between -9.5% to -6.3% to GDP

Beyond studies on Brexit, the Confederation of British Industry estimated in 2003 that EU membership had added 4-5% to UK GDP since it joined. In addition, both the Centre for Economic and Business Research and the National Institute for Economic and Social Research estimate that between 3.3 – 4 million jobs rely on exports to the EU. These are not dependent on membership, but would likely be impacted by Brexit. Links to the studies can be found in the bibliography at the back of this document.

The impact on the UK is likely to depend on three key factors:

1. **The degree of EU market access the UK is able to retain along with how many of the 50+ trade agreements with other parts of the world would remain.** Tariff and non-tariff barriers could be applied which would make UK goods less attractive to the rest of the EU. Moreover, access to the services market would also need to be negotiated, especially as it is a large portion of UK exports. A scenario where the trade relationship remains as close as possible to the current situation would not only safeguard current trade patterns, but also protect the foreign direct investment that relies on the UK having access to the single market.
2. **Whether the UK government decides to take a liberal or populist approach to the deal offered by the EU**. If the UK reciprocates with counter tariffs and barriers to trade, then it would simply be increasing the cost on UK consumers and businesses that rely on EU imports. This may appear to

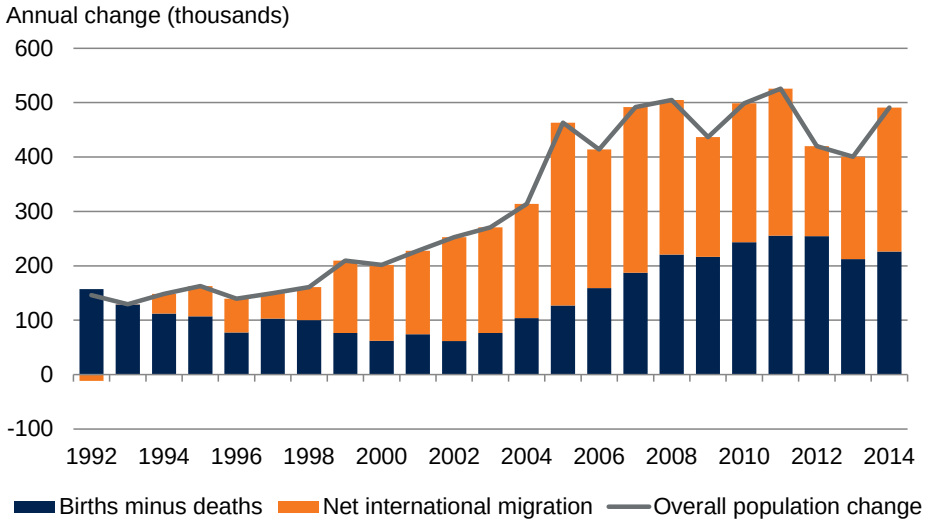
be attractive from the perspective of tilting competition in favour of UK manufacturers, but it ultimately raises costs for end users. A liberal government would not only minimise trade barriers, but it would also not seek to limit immigration – another long-term contributor to UK growth, whereas a populist government may seek to limit migration numbers.

3. **The EU's influence on the UK through regulation and subscription costs.** Being outside the EU does not necessarily mean no associated costs. Many countries still pay subscription costs (albeit less than EU members), and are subject to EU rules and regulations. Minimising these would be beneficial, assuming the UK government does not replace those regulations with even more burdensome ones.

We return to the possible alternative arrangements for the UK's trade relationship with the EU in the next section, but it is worth considering the importance of the government's response to migration post-Brexit. As highlighted in charts 9 and 10 earlier, non-EU immigration has been as important – if not more so than EU immigration – as a contributor to total immigration over the past decade. If Brexit was to spur populist restrictions on immigration, then there will be a negative impact on long-term potential GDP growth.

In 2014, 54% of the UK's population growth was due to net inward migration, with the rest caused by births and deaths. This share has been as high as 76% in 2002, but has averaged 49% since 2000 (chart 16).

Chart 16: Contributions to UK population growth



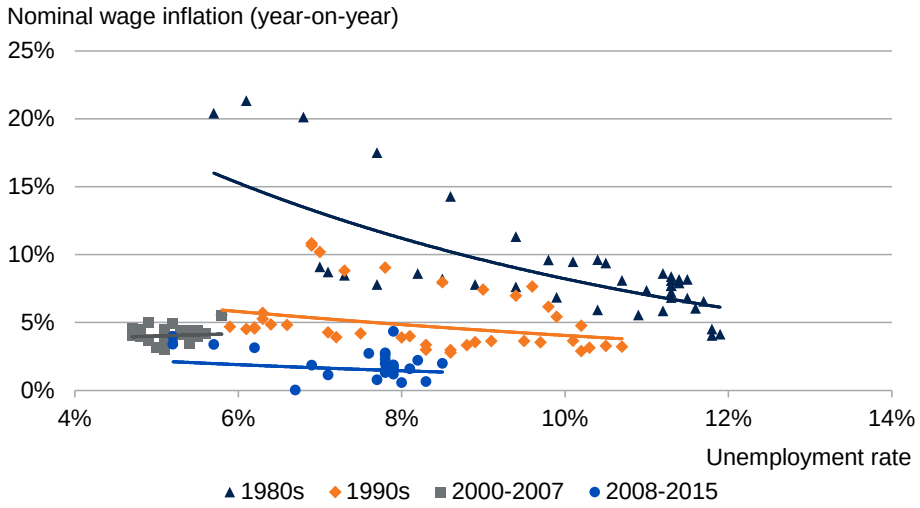
Source: ONS, Schroders Economics Group. Updated 7 April 2016.

The Office for Budgetary Responsibility (OBR) estimates that between 2016 and 2021, the UK's potential growth rate will average 2.26% per annum. Aside from hourly productivity growth, net migration is the largest contributor to potential growth at 0.34 percentage points. In addition, because most migrants arrive at a working age, immigrants make a positive contribution due to their higher labour force participation rate. The OBR estimates that this is worth an additional 0.08 percentage points. Therefore, if a populist government was to cause net migration to fall to zero, based on the OBR's estimates, the UK would see potential growth fall by just under one fifth. Of course, a populist government may even encourage existing migrants to leave, which would at least temporarily have an even larger negative impact.

As the above chart shows, the health of the UK economy can impact net inward migration flows. Data from around the financial crisis showed a significant slowdown in inward migration, and even some outflows. This flexibility, which can mostly be attributed to EU migrants, has meant that the supply of labour in the economy has in the past expanded when demand has been strong, but also contracted when recessions have struck. Economists often use the Phillips curve framework to explain the relationship between unemployment or slack in the labour market and inflation, with a typical relationship showing a trade-off between the two. Our analysis of different periods of the UK's Phillips curve (chart 17) highlights how the increase in migration between 2000 – 2007 has dampened the inverse relationship between nominal wage growth and the unemployment rate compared to other periods such as the 1980s and 1990s (in fact, the 2000 – 07 period saw an upward sloping curve). Since the financial

crisis, the Phillips curve has steepened again, but our base case scenario of remaining in the EU would flatten the Phillips curve once again. However, should the added flexible supply of labour disappear as migration flows are restricted, then we would expect to see a steeper Phillips curve, probably more similar to the shape seen in the 1980s.

Chart 17: UK historical Phillips curve analysis



Source: ONS, Schroders Economics Group. 7 April 2016.

The implications of more sensitive wages to changes in unemployment would suggest more volatile business cycles, including inflation, and therefore interest rate cycles and currency fluctuations. Equilibrium or terminal interest rates are likely to be lower in a Brexit scenario in the long term in order to adjust for lower potential GDP growth, however, the increased volatility of interest rate cycles will increase the discount investors apply to UK assets due to the greater uncertainty of returns over shorter time horizons. The return of regular boom and bust cycles would probably also result in higher long-term structural unemployment.

Alternative models to EU membership

There are a number of existing models that the UK could follow, but none entirely satisfy those campaigning for Brexit, and all have their drawbacks. The UK may be forced to go it alone to get a better long-term deal, but the pain during transition may prove to be too much.

A starting point for most research on this topic is to look at how other affiliations/memberships work, and consider the advantages and disadvantages as a model for the UK. Let us start with the European Economic Area (EEA), which includes Norway, Iceland and Liechtenstein (along with the EU). EEA members enjoy full access to the single market, along with free movement of capital and persons. However, EEA members are outside of the customs union, meaning that all trade in goods is subject to customs procedures, with companies having to prove the origin of the components of their exports. Compared to the UK's current arrangement, this would substantially raise the cost of exporting to the EU. EEA members are bound by existing EU rules and must implement any new regulations related to employment, health and safety, transport, the environment, along with any other product-related edicts. Moreover, EEA members have almost no influence or say in the creation of EU legislation. Finally, EEA members still pay a fee (approximately 90% of the UK's current contribution per head).

An alternative would be a looser arrangement in the form of membership of the European Free Trade Association (EFTA) – which is dubbed the "Swiss option". EFTA originated in the 1960s as an alternative to the deeper European Communities and eventually evolved to become the EEA, but Switzerland decided not to follow the likes of Norway and Iceland, leaving it as the last EFTA-only member. Rather than the dynamic (or automatic) status of EEA members, which evolves with the EU in terms of trade access and rules, the Swiss option is static, whereby changes on either side require bi-lateral negotiations. Switzerland has no right to the single market and is also outside of the customs union, but has managed to negotiate over 100 individual trade agreements with the EU, giving it only partial access to goods markets, and limited access for services.

This option may appear attractive, but it is not without its costs. Switzerland pays less in fees than EEA members (approximately 40% of the UK's current contribution), but is still subject to many EU rules based on desired market access. There is no free movement of capital, but free movement of labour is a requirement. It is worth adding that the Swiss situation is always evolving and is not necessarily stable. For example, a majority of Swiss voted "against mass immigration" in a referendum in February 2014, going against the bi-lateral agreement with the EU. The European Commission says it is studying the exact outcome but European Commission Vice-President Viviane Reding states that the result of the referendum could jeopardise Switzerland's access to the single market.

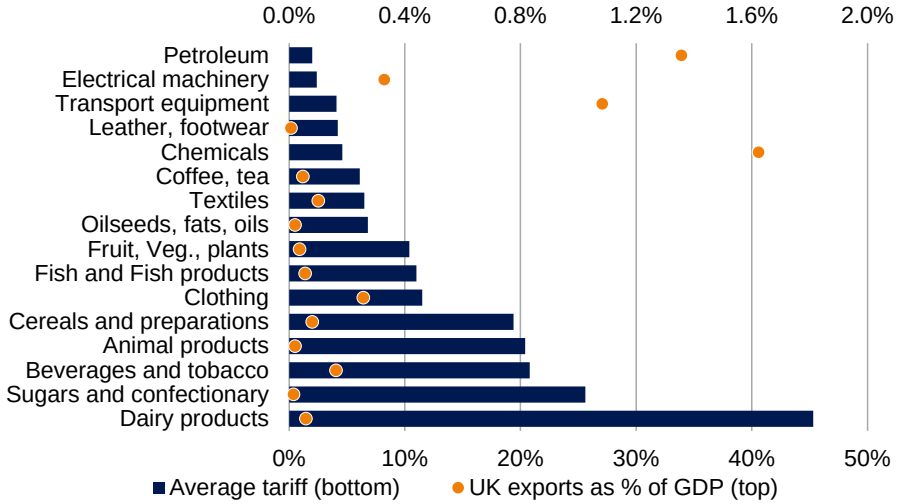
A more recently developed relationship exists between Turkey and the EU in the form of a customs union, originally designed to motivate Turkey to reform itself and eventually seek accession to the European Union. The agreement gives Turkey partial access to the single markets for industrial goods and process agricultural goods, without the need for customs checks. However, many other goods are not covered, and services are excluded. As a member of the customs union, Turkey must align its external tariffs with those of the EU, limiting its ability to negotiate with non-EU countries. Turkey also faces some EU regulation for the markets it has access to, although Turkey pays negligible fees for the access it receives. In reality, those fees will be more than offset by EU funds in the future as Turkey moves closer to EU membership. Turkey has no free movement of capital, and very limited movement of persons.

Looking at the three available options so far, all have drawbacks for eurosceptics. One of the main arguments for voting for Brexit is the return of sovereign powers, which would make the EEA option almost impossible. Under EEA, the UK would lose a huge amount of influence and power in exchange for a limited reduction in the cost of membership. The EFTA option offers more flexibility, but seems too costly once the burden of bi-lateral negotiations are considered along with the long-term uncertainty the process would create. The customs union is most appealing from a trade perspective, although services would still be excluded, and freedom to establish third party agreements would not be allowed.

Of course, the UK does not have to follow the template for any of the above and could establish its own relationship. The starting point for negotiations could be a customs union, ideally with wider access to goods and service markets. Some EU regulation to exporting firms (as opposed to all firms) would be acceptable, along with a small subscription cost. On migration, perhaps preferential treatment for EU citizens in a points-based system could be agreed, which could still be very generous given the UK's need for skilled workers.

If after the negotiation period the UK does not accept the offer made by the EU, then a unilateral withdrawal would occur, and a definite break in relations. The UK would probably be subject to World Trade Organisation (WTO) minimum thresholds, with tariffs and quotas applied. EU tariffs can be as high as 45% on dairy products, or 21% on beverages and tobacco. Chart 18 illustrates the average tariff applied to a range of product categories along with the value of UK exports of these products to the EU as a share of UK GDP. For example, the chemicals industry, which exports just over 1.6% of GDP to the EU, would face average tariffs of 5%.

Chart 18: Average EU tariff and UK exports to EU by product category



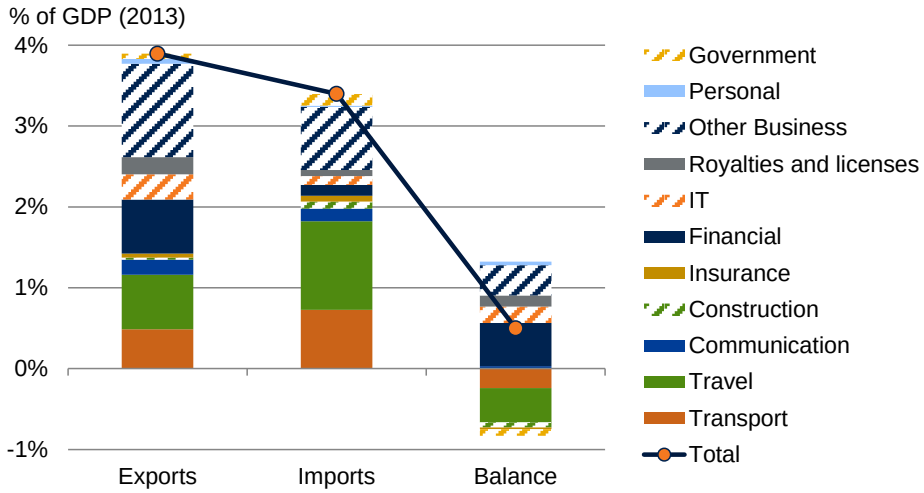
Source: WTO, ONS, Schroders Economics Group. 6 April 2016.

Agricultural tariffs are very taxing. More than 90% of UK beef and lamb exports go to the EU, worth £80 million annually. Car exports would face a 10% tariff, which would be applied to the UK's £10.2 billion worth of exports to the EU (2015).

WTO status would also mean restrictions on trade in services. UK services exports were worth 3.9% of GDP in 2013, against imports that were worth 3.4% of GDP. The balance of trade in services shows that the UK tends to be a net exporter of financial services and IT services, but a net importer of travel services and transport services (chart 19).

The initial move to a WTO relationship would be a significant macroeconomic shock, but it does not have to be a permanent outcome. Canada has negotiated one of the most far-reaching trade agreements with the EU, giving it access to many industrial and product goods markets, with many tariffs being phased out over time. There is no reason to believe that the UK could not agree something similar (or better). The problem is the time it might take to reach such an agreement. Canada took seven years to conclude its negotiations, although given that most UK exporters already adhere to EU rules and regulations, it should be a quicker process. However, still being outside the single market (with single product regulations) and not in a customs union is an inferior outcome to the UK's present situation.

Chart 19: UK trade in services with rest of EU



Source: Eurostat, Schroders Economics Group. 6 April 2016.

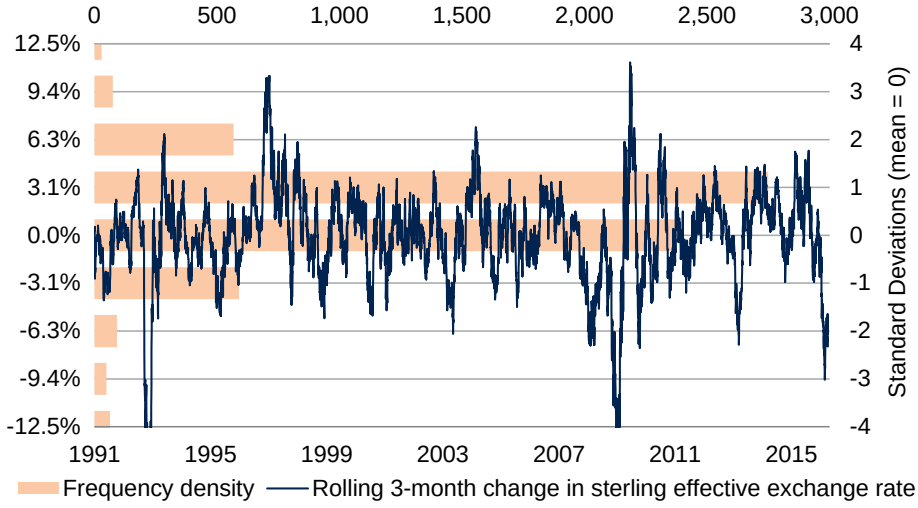
Implications for financial markets

Investors seem to have started to consider the impact of Brexit on their portfolios. Evidence suggests that Brexit fears have already caused sterling to depreciate, but there is plenty of scope for a larger fall. The outlook for equities is mixed, with the large-cap index benefiting from having geographically diverse revenues compared to the small-caps index. For gilts, we expect a higher inflation premium coupled with international investors divesting to cause the curve to steepen.

The underperformance of sterling in recent months suggests that investors have already started to hedge their portfolios as the likelihood of Brexit increases. According to the Investment Association (a UK trade body), UK investment funds suffered net outflows of £862 million in January and February, with property funds seeing their largest monthly outflow since November 2008 (although this has to be considered against a backdrop of wider market volatility). Moreover, 13% of global investors surveyed by the Merrill Lynch Fund Managers' Survey saw 'Brexit' as the largest 'tail-risk' to the global economy over the coming year – up from 8% in February, and not mentioned in January. In this section, we consider the risk to sterling, UK equities and bonds.

As highlighted by chart 1 earlier, sterling has fallen against every other G7 currency since the start of November 2015. Indeed, the fall in GBP is not only significant against its peers, but also historically. Sterling has just experienced its largest three-month drop in trade-weighted terms since the end of 2008 – the height of the global financial crisis (chart 20). In fact, the latest decline is almost a three standard deviation event (0.3% probability) and is the third worst fall since 1991, behind the aforementioned 2008 depreciation, and the notorious collapse of 1992, as sterling fell out of the European Exchange Rate Mechanism (ERM). Sterling investors will be asking whether sterling is now cheap, or whether the recent depreciation is the start of a greater decline yet to unfold.

Chart 20: Largest three-month fall in sterling since 2008

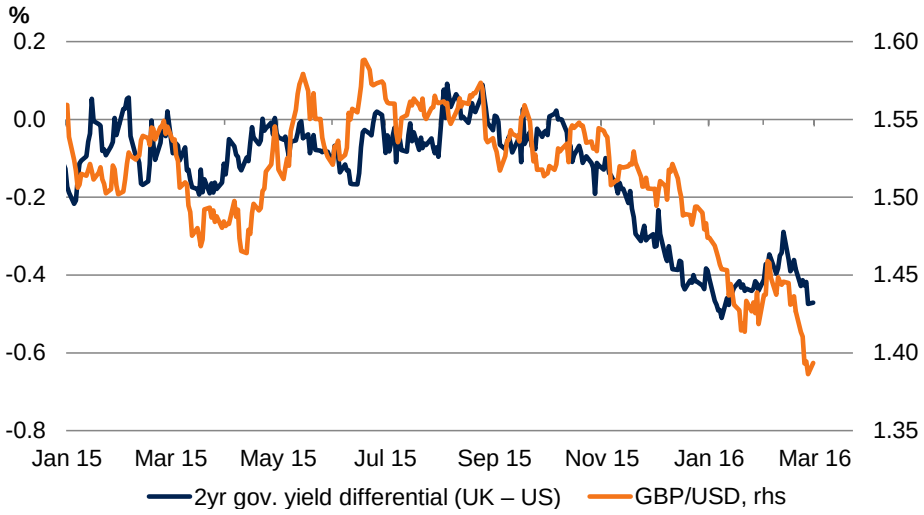


Source: Thomson Datastream, Bank of England, Schroders Economics Group. 6 April 2016.

The scale of the depreciation in sterling has surprised us, but not the direction of travel. The UK's large imbalances as shown in chart 15 earlier meant that sterling was always vulnerable to a correction over the medium term. However, in the short term, currency movements have historically had a strong relationship with the expectations of investors for interest rates, or associated monetary tools (such as quantitative easing). Expectations of future interest rate rises in the UK have certainly been pared back in recent months, which is understandable against a backdrop of relatively high global uncertainty. However, those expectations have fallen faster than for those in the US, which helps explain much of the underperformance of sterling. That is not to say that Brexit concerns are not having an impact. When we compare sterling's performance against relative interest rate expectations (as measured by relative

2-year government bond yields) we find that about a 4% drop in GBP could be attributed to political risk (chart 21).

Chart 21: Gilts rally drives down sterling



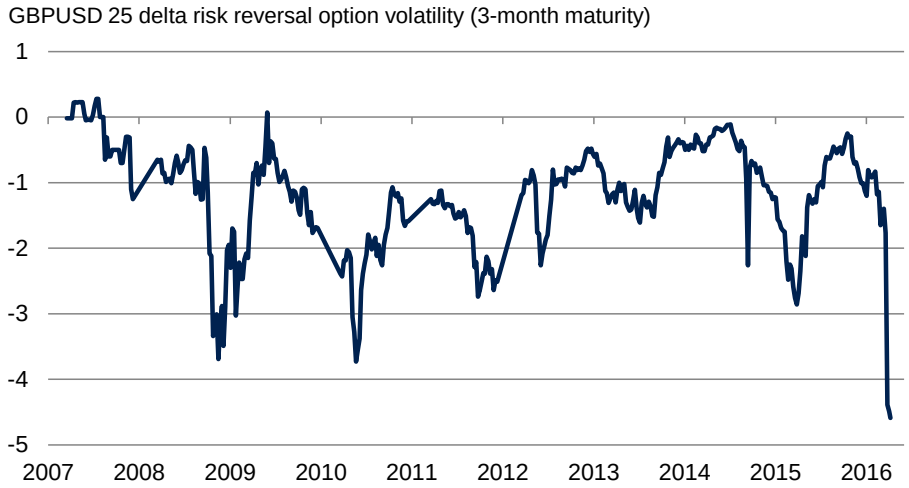
Source: Thomson Datastream, Schroders Economics Group. 6 April 2016.

Disentangling the drivers of sterling's recent slide is certainly difficult. Since our Brexit scenario assumes that the Bank of England would keep interest rates lower for longer, we could argue that some investors have also priced this into their interest rate expectations. This suggests the impact so far on sterling would be larger than the 4% estimated above.

How far could sterling fall? Some suggest that further falls are likely to be limited ahead of the referendum as many investors have already hedged their sterling exposure. Another indicator that highlights nervousness around sterling is the cost of hedging upside risk versus the cost of hedging downside risk using options contracts. The difference between the two – known as the 'risk reversal of options volatility' – shows a drop to a record low, which suggests a much larger increase in demand for hedging depreciation risk and appreciation risk (chart 22).

In our view, sterling could depreciate further ahead of the referendum as polls gyrate and more investors look to hedge positions. In the event of a vote to remain in the EU, sterling would probably rebound and appreciate by between 5 – 10% on a trade-weighted basis. In the event of a vote to leave the EU, we expect a 10 – 15% depreciation on a trade-weighted basis, but we also warn that there is a risk of a more disorderly Brexit scenario, leading to a larger depreciation (20%+).

Chart 22: Sharp increase in demand for hedging GBP depreciation risk

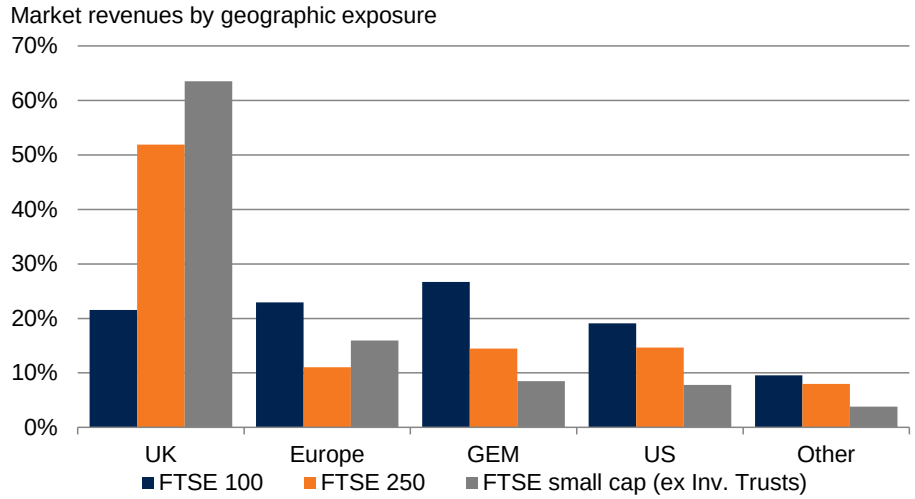


Source: Bloomberg, Schroders Economics Group. 6 April 2016.

The outlook for UK equities is more mixed than that for the pound. Although denominated in sterling, many companies listed in UK markets receive a substantial share of their earnings from overseas markets, which means they would benefit from an expected depreciation in the currency. Not only would the sterling value of profits rise through translation effects, but overseas demand for the goods and services could also increase as the competitiveness of those companies improves. Of course, if those revenues are generated from activities in Europe, then concerns over access to the single market could hit sentiment towards those stocks.

Taking a closer look at the geographic exposure of the UK's large-cap (FTSE100), mid-cap (FTSE250) and small-cap indices, we find that more than half of the FTSE100's revenue is generated outside the UK and Europe (chart 23). This suggests that the index could outperform in a Brexit scenario. The FTSE250 and small caps indices both have more than 50% of their revenues generated in the UK and Europe, and so we expect those to underperform. It is worth mentioning that from Europe's perspective, only 6% of the MSCI EMU (eurozone only) equity index revenues emanate from the UK.

Chart 23: Large-cap stocks offer more diversification in the event of Brexit



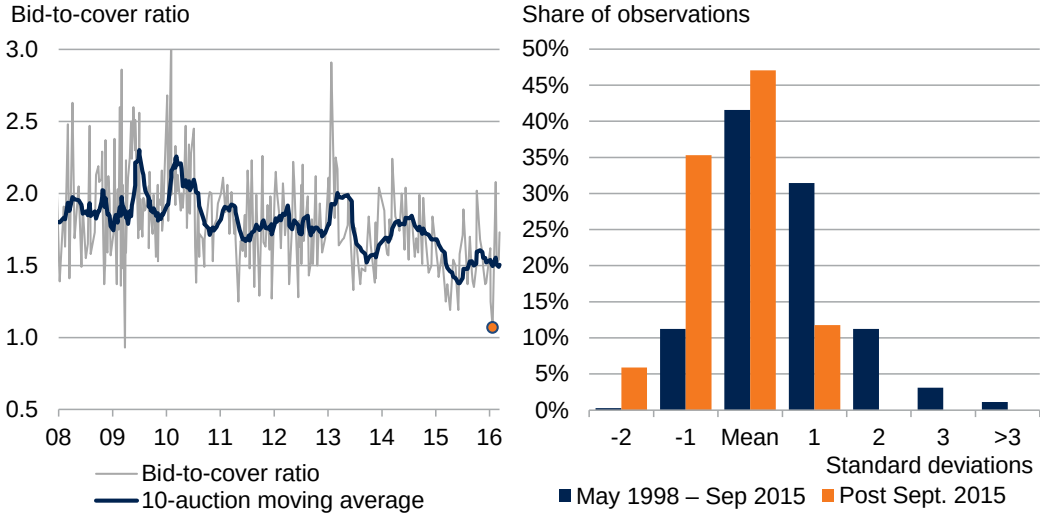
Source: FactSet, Schroders. 6 April 2016.

Like equities, the outlook for bonds is also complicated in a Brexit scenario. Corporate credit spreads[5] could widen as investors seek a greater discount to compensate for lower future growth and higher default risk. For government bonds, we expect increased domestic demand for the safe haven asset, but may also see lower demand from international investors, who tend to cluster around the 10-year gilt. Taken together with the higher rate of inflation forecast caused by the depreciation in sterling, we would expect to see the gilt yield curve steepen up to the 10-year mark. Bonds with longer-term maturity would still enjoy strong demand from UK pension funds.

So far, we have seen very little evidence of Brexit concerns moving gilt markets. The gilt yield curve has been largely unchanged in shape in recent months. However, where there has been a noticeable impact has been in primary market, or at gilt auctions. The bid-to-cover ratio is essentially a measure of demand for a given bond at auction. If the ratio falls below one, then the auction is deemed to have failed, as there would not be enough bids to sell all of the bonds on offer given the coupon. Since 1998, only one auction has ever failed (in 2009), but on 20 January, the UK's Debt Management Office almost saw its second failure. The auction had a bid-to-cover ratio of just 1.07, which was the second lowest on record (chart 24). Since then, demand has been stronger, but average demand since around September 2015 has been noticeably weaker. Chart 25 shows how the distribution in the ratio has shifted left (lower demand) since September compared to previous history. This does seem to suggest that Brexit concerns may have reduced demand for gilts, in primary markets.

[5] The difference in yield between a corporate bond and the equivalent government bond.

Charts 24 & 25: Demand for conventional gilts waning at auction



Source: UK Debt Management Office, Schroders Economics Group. 7 April 2016.

Predicting markets is difficult at the best of times and so readers would be wise to appreciate the significant risk around the above analysis.

Conclusions and wider implications

Brexit is likely to lead to a stagflationary outcome for the economy during the period of negotiations compared to remaining in the EU. In the long term, a range of outcomes is possible, but the most likely results in lower growth. Brexit would also have wider political ramifications for Europe and the UK as a union.

The close economic links forged over decades of co-operation and commerce will be painful to unravel if the UK votes for Brexit, and the government at the time decides to trade off access to the single market for greater sovereignty. In the near term, we forecast a stagflationary outcome in a Brexit scenario with real GDP 0.9% lower, but CPI 0.6% higher by the end of 2017. However, in our view, there is a one in four chance of a disorderly scenario resulting in balance of payments crisis, causing a more severe negative shock for the economy.

Without greater clarity over what Brexit means, it is too difficult to forecast the long-term impact on the UK economy post-Brexit, but studies that have been published lean towards a negative outcome compared to remaining in the EU. Limiting immigration would lower trend GDP growth, although per capita growth may not be affected to the same extent. Meanwhile, the loss in FDI would reduce long-term investment and would adversely impact productivity growth and therefore standards of living.

The UK is an important trade partner and investment destination for the rest of the EU and so Brexit would also have a negative impact on Europe, albeit far smaller than the impact on the UK. A bigger worry would be the loss of a large member state with liberal free-market tendencies. Protectionists and those that support state interventionist measures would not only gain ground if the UK leaves, but may even take control at a time when Europe crucially needs liberal structural reforms if it is to survive as a political and economic project. Many in Europe fear that the UK would not be the last member state to depart once a path out of the union is established. This may incentivise the rest of the EU to take a tough negotiating stance with the UK in order to set an example.

Politically for the UK, not only would Prime Minister David Cameron be at risk of losing his job, but the Scottish question would almost certainly return. The government in Scotland is promising to push for another independence vote if Scots vote to remain, but the rest of the UK forces the union to leave the EU. Whether Scottish independence is even economically viable given the fall in global oil prices is a topic for another day, but it is certainly another factor investors are thinking about.

For investors, many have already started to hedge the risk in their portfolios by selling sterling, which we believe still faces downside risks if the UK votes to leave. We expect domestically-focused and heavily EU-exposed stocks to underperform in a Brexit scenario, but more international stocks to outperform as international earnings are lifted by weaker sterling. As for bonds, credit spreads may widen as investors seek a larger credit-risk premium, but government bonds may underperform at the 10-year maturity – the most popular point in the curve for international investors. Domestic investors may choose to hold more gilts as a safe haven asset, and so we expect curve steepening, which would also be consistent with higher inflation from the expected depreciation in sterling.

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