OECD publishing

THE ECONOMIC CONSEQUENCES OF BREXIT: A TAXING DECISION

OECD ECONOMIC
POLICY PAPER

April 2016 **No. 16**

© Victoria Kalinina/shutterstock.com

OECD
BETTER POLICIES FOR BETTER LIVES

The Economic Consequences of Brexit: A Taxing Decision

This paper has been prepared by:

Rafal Kierzenkowski

Nigel Pain

Elena Rusticelli

Sanne Zwart

With contributions from:

Christine Arriola

Dorothee Flaig

Jean-Marc Fournier

Gabor Fulop

Frank Van Tongeren

Authorised for publication by Catherine L. Mann,
Chief Economist and G20 Finance Deputy

BETTER POLICIES FOR BETTER LIVES

The *OECD Economic Policy Paper Series* is published on the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of the Organisation or of the governments of its member countries.

Series: *OECD Economic Policy Papers*
ISSN 2226583X

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

© OECD 2016

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of OECD as source and copyright owner is given. All requests for public or commercial use and translation rights should be submitted to *rights@oecd.org*. Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at *info@copyright.com* or the Centre français d'exploitation du droit de copie (CFC) at *contact@cfcopies.com*.

TABLE OF CONTENTS

Abstract 5
Executive summary 6
Introduction 8
In the near-term, a series of negative shocks would hit economic activity 10
Uncertainty has already begun to have a negative impact on the economy 10
Trade would be hit when the UK formally exits the EU 14
Quantifying the near-term effects of Brexit 18
Heightened uncertainty would hit financial conditions and confidence 18
A substantial shock to trade would start to feed-through from 2019 19
In the longer-term, supply side shocks would result in considerably greater costs 24
Trade would fall further 24
Foreign direct investment would decline as the UK becomes a less attractive destination 24
Lower immigration would lower labour force growth 25
A loss of skills would reduce technical progress 28
Further deregulation could have some positive effects 29
Quantifying the longer-term effects of Brexit 30
Additional reforms in Europe would offer benefits for the UK 34
Conclusion: comparison with other studies 34
Bibliography 35

Tables

1. Possible post-Brexit arrangements with the European Union 16
2. Length of Free Trade Agreement negotiations, examples 17
3. Decomposition of the near-term trade shock 20
4. Assumptions for longer term scenarios 31
5. Comparison of recent studies on the impact of Brexit on the United Kingdom 35

Figures

1. Since EU membership in 1973, UK living standards have risen more than in peers 9
2. Global economic power of the United Kingdom is greater through the European Union 9
3. People's voting intentions are neck and neck 10
4. Brexit risk has begun to affect financial markets in the United Kingdom and the euro area 11
5. Uncertainty about Brexit has led to capital outflows and a weaker sterling 12
6. Economic policy uncertainty is increasing 13

7. Brexit generates an important interest in the United Kingdom and beyond 14
8. The United Kingdom and the European Union are important trade partners 15
9. UK exports of financial services are large 16
10. Corporate bond spreads are correlated with policy uncertainty and equity volatility 18
11. Near-term effects of Brexit on real GDP in the United Kingdom and the European Union 22
12. Financing of the large UK current account deficit requires substantial inflows 23
13. The United Kingdom is an attractive destination for foreign direct investment (FDI) 24
14. Immigration from the European Union is rising 25
15. European Union immigrants are well attached to the job market and have good skills 26
16. Immigration is an important driver of employment and GDP growth in the United Kingdom 27
17. Immigrant households make a positive net contribution to public finances 28
18. Estimated gains to the level of labour productivity from reforms related to managerial quality 29
19. Regulation of network industries is low in the UK, leaving little scope for further reductions 30
20. Longer-term effects of Brexit on real GDP in the United Kingdom 33
21. Longer-term effects of Brexit on UK net worth 34

Boxes

Box 1. Four areas of the new settlement for the United Kingdom in the European Union 8
Box 2. Quantification of trade effects when the United Kingdom formally exits the European Union 19
Box 3. Calibration of the near-term effects of Brexit 20
Box 4. Calibration of the longer-term effects of Brexit 31
Box 5. An illustration of economic benefits from continuous EU membership 34

ABSTRACT/ RÉSUMÉ

The Economic Consequences of Brexit: A Taxing Decision

Membership of the European Union has contributed to the economic prosperity of the United Kingdom. Uncertainty about the outcome of the referendum has already started to weaken growth in the United Kingdom. A UK exit (Brexit) would be a major negative shock to the UK economy, with economic fallout in the rest of the OECD, particularly other European countries. In some respects, Brexit would be akin to a tax on GDP, imposing a persistent and rising cost on the economy that would not be incurred if the UK remained in the EU. The shock would be transmitted through several channels that would change depending on the time horizon. In the near term, the UK economy would be hit by tighter financial conditions and weaker confidence and, after formal exit from the European Union, higher trade barriers and an early impact of restrictions on labour mobility. By 2020, GDP would be over 3% smaller than otherwise (with continued EU membership), equivalent to a cost per household of GBP 2200 (in today's prices). In the longer term, structural impacts would take hold through the channels of capital, immigration and lower technical progress. In particular, labour productivity would be held back by a drop in foreign direct investment and a smaller pool of skills. The extent of foregone GDP would increase over time. By 2030, in a central scenario GDP would be over 5% lower than otherwise – with the cost of Brexit equivalent to GBP 3200 per household (in today's prices). The effects would be larger in a more pessimistic scenario and remain negative even in the optimistic scenario. Brexit would also hold back GDP in other European economies, particularly in the near term resulting from heightened uncertainty would create about the future of Europe. In contrast, continued UK membership in the European Union and further reforms of the Single Market would enhance living standards on both sides of the Channel.

JEL classification codes: C54, E24, E44, H12

Keywords: Brexit, European Union, uncertainty, risk premia, confidence, trade, FDI, skills, immigration, deregulation.

Les conséquences économiques du BREXIT : les coûts d'une décision

L'adhésion à l'Union européenne a contribué à la prospérité économique du Royaume-Uni. Les incertitudes entourant l'issue du referendum ont déjà commencé à affaiblir la croissance britannique. Une sortie du Royaume-Uni de l'UE (Brexit) conduirait à un choc négatif majeur pour l'économie du pays et aurait des incidences pour tous les membres de l'OCDE, en particulier en Europe. Dans une certaine mesure, le Brexit équivaudrait à un impôt sur le PIB, imposant un coût durable et croissant sur l'économie, qui ne serait pas encouru si Royaume-Uni restait dans l'UE. Ce choc serait transmis par le jeu successif de différents canaux. Sur le court terme, l'économie britannique serait affectée par le durcissement des conditions financières et l'affaiblissement de la confiance puis, après sa sortie officielle de l'Union européenne, par le relèvement des obstacles aux échanges et les conséquences précoces des limitations à la mobilité de la main-d'œuvre. À l'horizon 2020, le PIB serait plus faible de 3 % qu'autrement (en cas de maintien dans l'UE), équivalent à un coût moyen de 2250 GBP par foyer (en prix actuels). Sur le plus long terme, les effets structurels s'affirmeraient par le biais de trois canaux : les capitaux, l'immigration et un progrès technique moindre. En particulier, la productivité du travail serait pénalisée par une baisse de l'investissement étranger direct et par l'accès à un volume de compétences plus limité. Le manque à gagner en termes de PIB se creuserait avec le temps. En 2030, selon le scénario de référence, le PIB serait inférieur de plus 5 % qu'autrement – et le montant de l'« impôt Brexit » atteindrait alors 3200 GBP par ménage (en prix actuels). Les conséquences seraient encore plus marquées dans le scénario le plus défavorable, et resteraient négatives y compris dans le scénario favorable. Une sortie du Royaume-Uni de l'UE entraverait également le PIB dans d'autres économies européennes, notamment sur le court terme, en raison des incertitudes politiques sur l'avenir de l'Europe. À l'inverse, un maintien du Royaume-Uni dans l'Union européenne et la poursuite des réformes du marché unique amélioreraient les niveaux de vie des deux côtés de la Manche.

Classification JEL : C54, E24, E44, H12

Mots-clés : Brexit, Union européenne, incertitude, primes de risque, confiance, commerce, IDE, compétences, immigration, dérégulation.

The Economic Consequences of Brexit: A Taxing Decision

Executive summary

Since becoming a member of the European Union (EU) in 1973, GDP per capita in the United Kingdom (UK) has doubled, outpacing other affluent non-EU English-speaking countries. The referendum on EU membership of 23 June 2016 could lead to a UK exit (Brexit), which would have persistent adverse consequences on economic activity in the UK, and would result in negative near-term spillovers elsewhere, particularly in the rest of the EU.

Opinion polls suggest that the outcome of the referendum is particularly uncertain. Financial markets have increasingly begun to price in the risk of Brexit. Economic uncertainty has also risen and started to hurt confidence and business investment, weakening UK growth.

Were Brexit to happen, the shock would be transmitted through several channels, the intensity of which would depend on policy developments and the time horizon considered. In some respects, Brexit would be akin to a tax, imposing a persistent and rising cost on the economy over time.

Near term: Brexit is assumed to be followed rapidly by negotiations to withdraw from the EU, suggesting the possibility of a formal exit in late-2018. This would be followed by new trade negotiations with the EU over 2019-23 and possibly by measures to reduce immigration. The following channels would operate:

- Heightened economic uncertainty would reduce confidence, holding back spending decisions, and tighten financial conditions by lifting risk premia, thus increasing the cost of finance and reducing its availability.
- A danger is that large capital outflows, or a break in inflows, might threaten the financing of the record-high current account deficit of 7% of GDP.
- After leaving the EU, the UK would lose unrestricted access to the Single Market, and preferential access to 53 non-EU markets. UK trade would then initially be governed by World Trade Organisation rules, leading to higher tariffs for goods and to other barriers in accessing the Single Market, notably for financial services. Bilateral UK-EU trade would contract.
- Concluding a Free Trade Agreement with the EU, similar to the one between the EU and Canada, would provide a partial offset for UK trade by 2023. Yet, the costs of accessing the Single Market would still be higher than they are now after that time.
- The UK would also continue to face additional barriers on third-country markets to which preferential access was lost as a result of EU exit. Negotiating new trade treaties would take time.
- Immigration accounts for one-half of UK GDP growth since 2005, with more than 2 million jobs created. Curbs to the free movement of labour from the EU and, more importantly, a weaker UK economy after exit, would gradually reduce the incentives for economic migration to the UK and would be a cost to the economy.
- Brexit would generate a financial shock beyond the UK, magnified by the appreciation of other currencies against sterling.
- By 2020, these effects could shave off over 3 percentage points of UK GDP, with costs equivalent to GBP 2200 per household. The GDP loss in the reduced EU would be around 1 percentage point.

Longer term: Brexit would continue to generate substantial structural changes in the economy, reflecting the new relationship with the EU and new policies over 2024-30. The following channels would materialise:

- Access to the Single Market is important for foreign direct investment (FDI). Brexit would cut FDI inflows, notably from the EU, resulting in lower UK business investment and a decline in the capital

stock over time. This, in turn, would negatively weigh on trade, innovation and reduce managerial quality.

- Trade and investment are important drivers of long-term GDP growth. Brexit would result in lower openness and innovation, weakening technical progress and productivity in the UK.
- Long-term GDP growth would be further reduced through a smaller pool of skills, stemming from lower immigration and reduced FDI, reducing managerial quality.
- The UK labour and product markets are amongst the most flexible in the OECD, which suggests that EU regulations are not an important barrier. Nonetheless, it would be possible to pursue further regulatory liberalisation, although this would be challenging since regulations are comparatively low and the gains would be limited.
- Fiscal savings from stopping net transfers to the EU budget are likely to be 0.3-0.4% of GDP per year, which is a relatively small amount. Lower GDP growth would weigh on the fiscal position significantly, limiting the scope to use the net EU budget savings to relax fiscal policy.
- By 2030, in a central scenario, UK GDP would be over 5% smaller than if the UK had remained a member of the EU. The costs would then be equivalent to GBP 3200 per household (in today's prices). In a more pessimistic scenario these would be even higher, at GBP 5000 per household. In the longer term, the impact on the remaining EU countries would be small given the relatively low UK share in global trade and the scope for other policies to offset the shock.
- In addition to the decline in output, the cumulative effects of the different shocks from Brexit also reduce the real stock of net assets the UK has available to provide future returns and meet future commitments. UK net worth is over 4% below baseline (in today's prices) by 2030 in the central scenario.

Alternatively, remaining in the EU, coupled with further reforms of the Single Market, could boost trade and foreign direct investment in all EU members, including the UK. The effects would be even larger if the EU were to successfully conclude new free trade and investment agreements with the rest of the world.

Impact of Brexit on the United Kingdom through channels and over time

Difference in real GDP relative to the UK staying in the EU

	Scenarios	Outcomes		Channels						
		GDP (%)	GBP cost equivalent per household	Risk premia	Confidence	Trade	FDI	Skills	Immigration	Deregulation
Near term: 2020		-3.3%	-2200	x	x	x			x	
Longer term: 2030	*Central*	-5.1%	-3200			x	x	x	x	x
	Optimistic	-2.7%	-1500			x	x	x	x	x
	Pessimistic	-7.7%	-5000			x	x	x	x	

Source: OECD calculations.

Introduction

The new agreement with the EU has paved the way for the upcoming referendum in the UK about EU membership. In January 2013, the Prime Minister promised that the UK government would negotiate more favourable arrangements for continued membership of the EU, and subsequently hold a referendum as to whether the UK should remain in the EU or leave. This commitment was confirmed after the Conservative party won a parliamentary majority at the general election in May 2015. The new settlement for the UK in the EU was concluded at the European Council meeting of 18-19 February 2016, and the referendum was set for 23 June 2016. The agreement covers four areas: economic governance, competiveness, sovereignty, and social benefits and free movement of people (Box 1). It includes new opt-outs from further integration, and by acknowledging the special status of the UK, it confirms the existing differentiated integration of Europe.

Box 1. Four areas of the new settlement for the United Kingdom in the European Union

1) Economic governance: safeguarding the rights and competences of non-euro area countries. Non-euro area countries cannot create obstacles to a further deepening of the euro area, but discrimination between countries participating in the euro area and those that are not is prohibited, and any difference of treatment must be based "on objective reasons". Legal acts linked to the functioning of the euro area are to respect the internal market, not discriminate in trade between member states, and respect the competences, rights and obligations of non-euro area countries. Non-euro area countries (and those not participating in the banking union) will not contribute to emergency and crisis measures to safeguard the financial stability of the euro. Supervision, regulation and resolution of financial institutions and markets of non-euro area countries are a matter of their own authorities.

2) Competitiveness: strengthening the Single Market and taking concrete steps towards better regulation. This implies lowering administrative burdens, especially on small and medium sized enterprises, repealing unnecessary legislation, and pursuing an ambitious policy on trade. Progress on reaching these objectives will be assessed regularly.

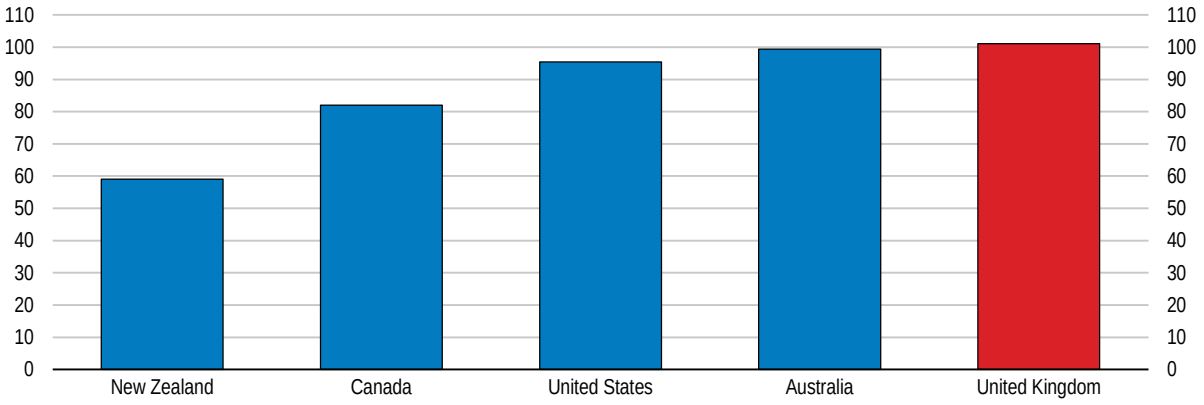
3) Sovereignty: recognising that the UK is not committed to further political integration into the EU. Moreover, if national Parliaments representing a qualified majority of 55% object to a draft legislative act (so-called "red card"), then consideration of such an act should be discontinued (unless the draft is amended to accommodate the concerns). The respect of the principle of subsidiarity (which implies that decisions should be taken as closely as possible to the citizen) is reinforced.

4) Social benefits and free movement of people: responding to exceptional inflows of workers from other EU countries. Measures include the creation of a safeguard mechanism (so-called "emergency brake"), which can be invoked when migrant inflows undermine the sustainability of the social security system, create serious and persistent difficulties in the job market, or put excessive pressures on public services. In particular, access to in-work benefits would be limited for new workers for a total period of up to four years from the start of employment (in a graduated way). The duration of the application of this safeguard mechanism is seven years. Other measures to contain immigration include the indexation of child benefits to the standard of living in the country where the child resides and steps to prevent sham marriages.

Membership in the EU has contributed to the economic prosperity of the UK. Since 1973, when the UK joined the EU, UK GDP per capita doubled, increasing more than in other non-EU English speaking countries over the same period, including in the United States (US) (Figure 1). Domestic policies partly explain this strong performance, but geographic proximity and unrestricted access to the largest market in the world are undeniably important factors as well. For smaller countries with competitive markets the benefits could be even larger. For example, Ireland, which also joined the European Union in 1973, had a near quadrupling of its GDP per capita.

Figure 1. Since EU membership in 1973, UK living standards have risen more than in peers

Real GDP[1] per capita, percentage change between 1973 and 2014



StatLink http://dx.doi.org/10.1787/888933350972

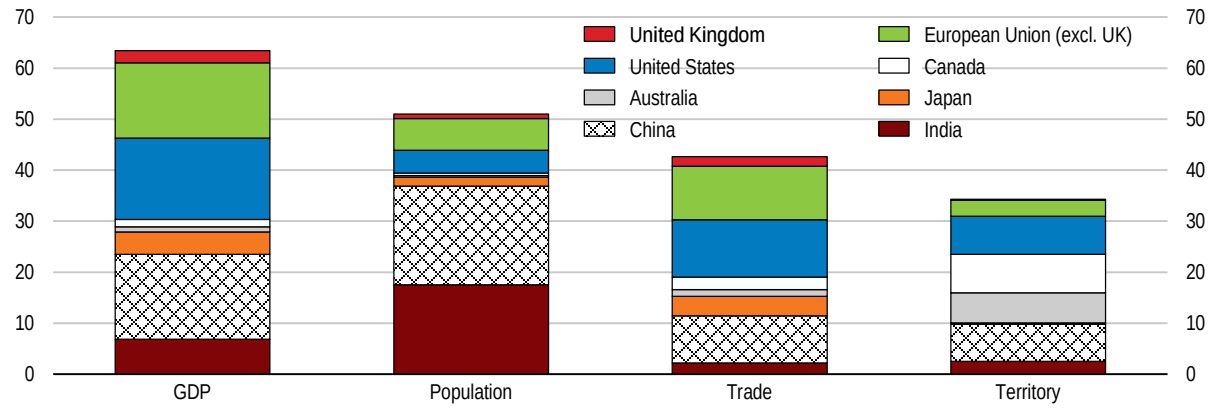
1. In constant purchasing power parities.

Source: OECD (2016), *OECD National Accounts Statistics* (database), April.

A multipolar world implies that the UK is economically stronger as an EU member, and in turn contributes to the EU strength. Several economic indicators suggest that the global influence and bargaining power of the UK are greater when combined with those of other European economies (Figure 2). The EU has the largest proportion of world GDP and trade, closely followed by the US and China. However, after the withdrawal of the UK, the EU share would be smaller than those of the US and China for GDP, and behind the US for trade. The UK's proportion of world GDP is broadly comparable to that of Canada and Australia combined, whereas trade is similar to their average. The EU's shares of global population and territory are small, and the UK represents less than 1% of each.

Figure 2. Global economic power of the United Kingdom is greater through the European Union

Percentage share of world total[1]



StatLink http://dx.doi.org/10.1787/888933350988

1. Data for GDP adjusted for purchasing power parity (PPP) refer to 2014. Data for population refer to 2013. Population figures for Canada and the European Union refers to 2012. Data for trade (i.e. sum of exports and imports of goods and services) refer to 2014. Trade data for the United Kingdom and the European Union exclude intra-EU trade. Data for territory refer to 2015.

Source: IMF (2015), *World Economic Outlook Database*, October 2015, International Monetary Fund; OECD (2016), *OECD Population Statistics* (database), April; and World Bank (2016), *World Development Indicators* (database), April.

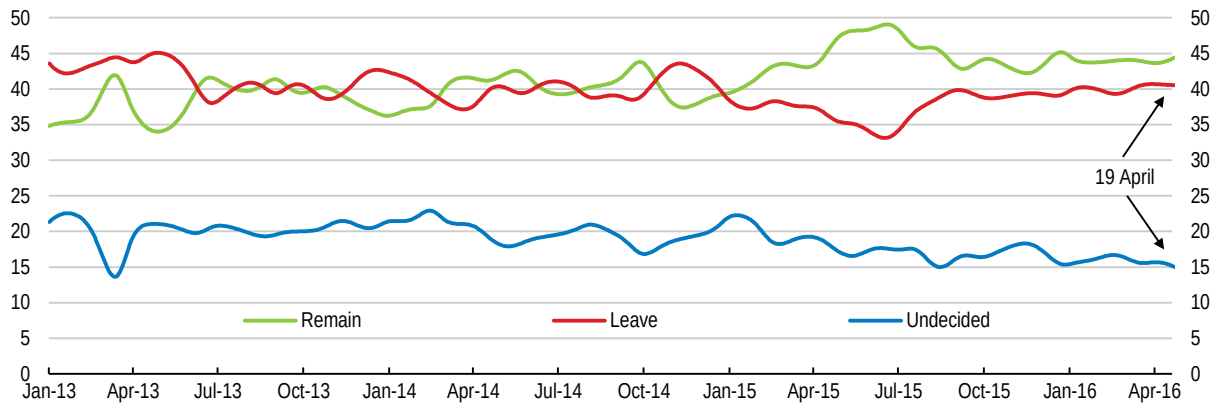
In the near term, a series of negative shocks would hit economic activity

Uncertainty has already begun to have a negative impact on the economy

Opinion polls increasingly suggest that Brexit is conceivable. The weighted average of recent polls from major agencies shows that public opinion is split (Figure 3). Since mid-2015, "leave" voting intentions have been gaining ground and the lead of "remain" voting intentions has been falling gradually, with the proportion of undecided voters being broadly unchanged. Uncertainty about the predictive power of these polls, however, is considerable as the official campaign has started only recently (on 15 April).

Figure 3. People's voting intentions are neck and neck

Weighted average of available opinion polls, percentage

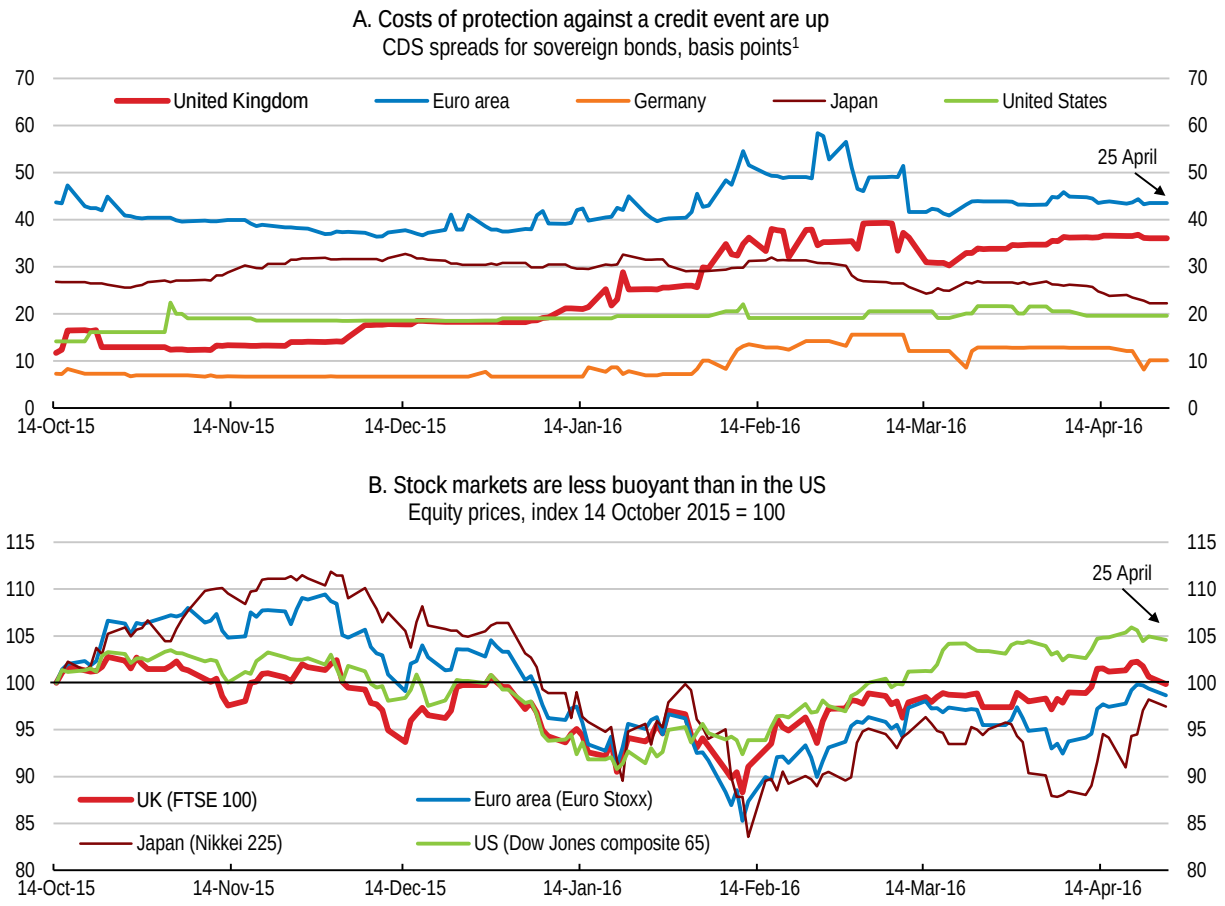


StatLink http://dx.doi.org/888933350998

Source: Polling agencies and ECO calculations.

The risk of Brexit is increasingly reflected in financial asset prices. The cost of insuring UK public debt against sovereign default has been rising since 14 October, when the President of the European Commission first warned about only limited progress in negotiations with the UK. CDS spreads remain low relative to the financial crisis period, but their increase since mid-October is significant and higher than for peers (Figure 4, Panel A). CDS spreads have also edged up in the euro area. For the UK, the rise reflects investors' fears rather than a genuine risk of sovereign default following Brexit, given the Bank of England's ability to act as a lender of last resort. Equity prices in the UK and the euro area have rebounded less than in the US, but remain resilient as many listed companies are global (Figure 4, Panel B). Some of the recent weakness in sterling (Figure 5, Panel A) could also be attributed to Brexit fears, as it appears more depreciated than interest rate differentials and global risk sentiment might suggest. The cost of three-month currency options spiked three months before the referendum, on March 23, and remains high, implying that investors expect further depreciation in case the referendum would result in Brexit (Figure 5, Panel B). A vote for exit would undoubtedly generate additional uncertainty and lead to a marked deterioration in financial conditions for some considerable time.

Figure 4. Brexit risk has begun to affect financial markets in the United Kingdom and the euro area

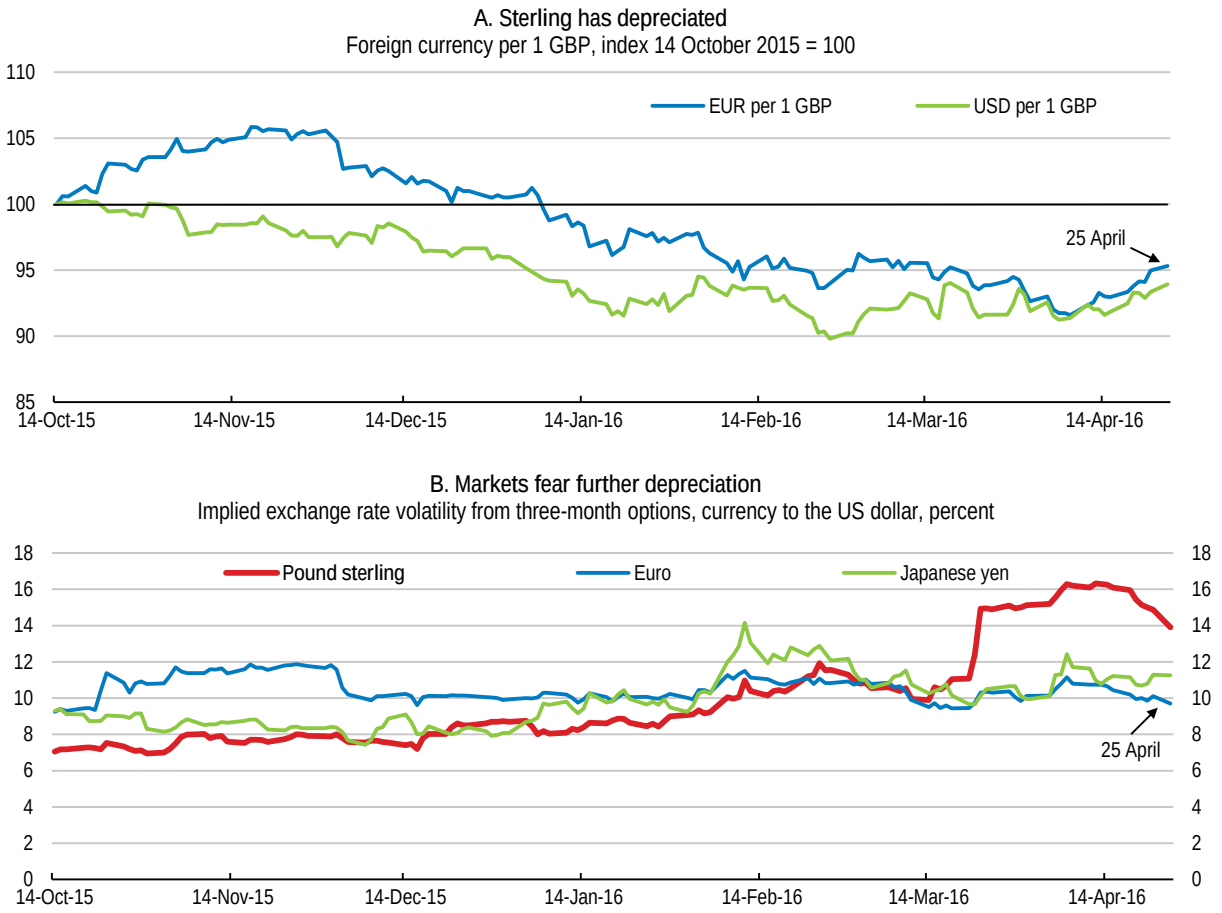


StatLink http://dx.doi.org/888933351004

1. Five-year senior debt, mid-rate credit default swap (CDS) spreads for sovereign bonds.

Source: Datastream.

Figure 5. Uncertainty about Brexit has led to capital outflows and a weaker exchange rate

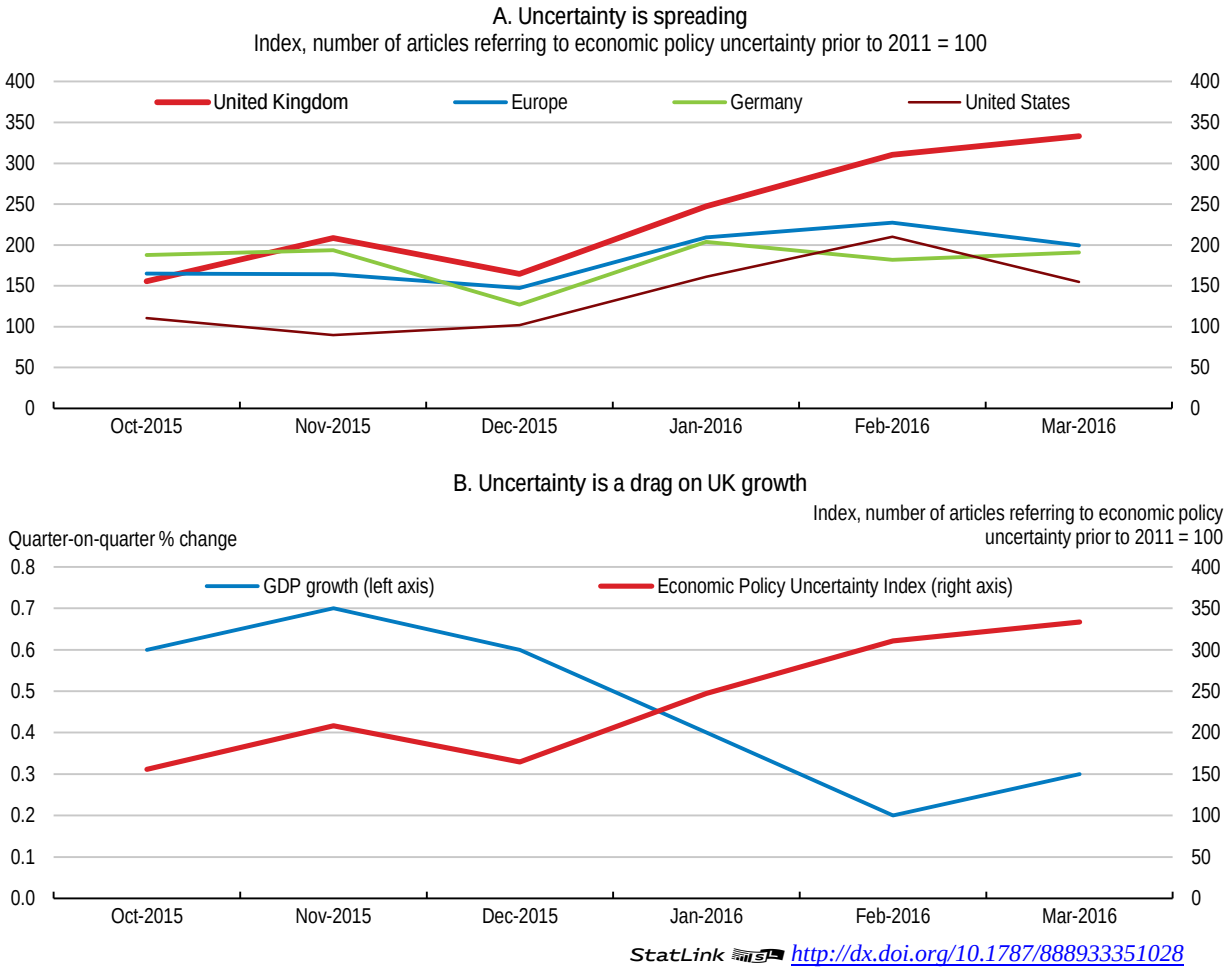


StatLink http://dx.doi.org/10.1787/888933351019

Source: Datastream.

Uncertainty about the referendum has begun to hold back UK growth, and concerns are rising in European economies. Businesses have started to defer investment projects, with UK business investment declining by 2% in the last quarter of 2015. Some recent surveys of chief financial officers of the UK's largest companies indicate rising risk aversion, soaring uncertainty over business conditions, falling hiring decisions, and reduced capital spending intentions, with the UK's upcoming EU referendum considered to be the top risk to business prospects. Economic policy uncertainty has been growing over the recent months, more in the UK than in the EU, which has occurred in parallel to an easing in monthly estimates of UK GDP growth by the National Institute of Economic and Social Research (Figure 6). The immediate consequence of a "leave" vote would be greater uncertainty, and a significant impact on growth (see below). The number of Google searches for "Brexit" has recently spiked and remains high, and the geographical distribution of searches suggests that Brexit is a concern mainly in other EU countries (Figure 7).

Figure 6. Economic policy uncertainty is increasing[1]



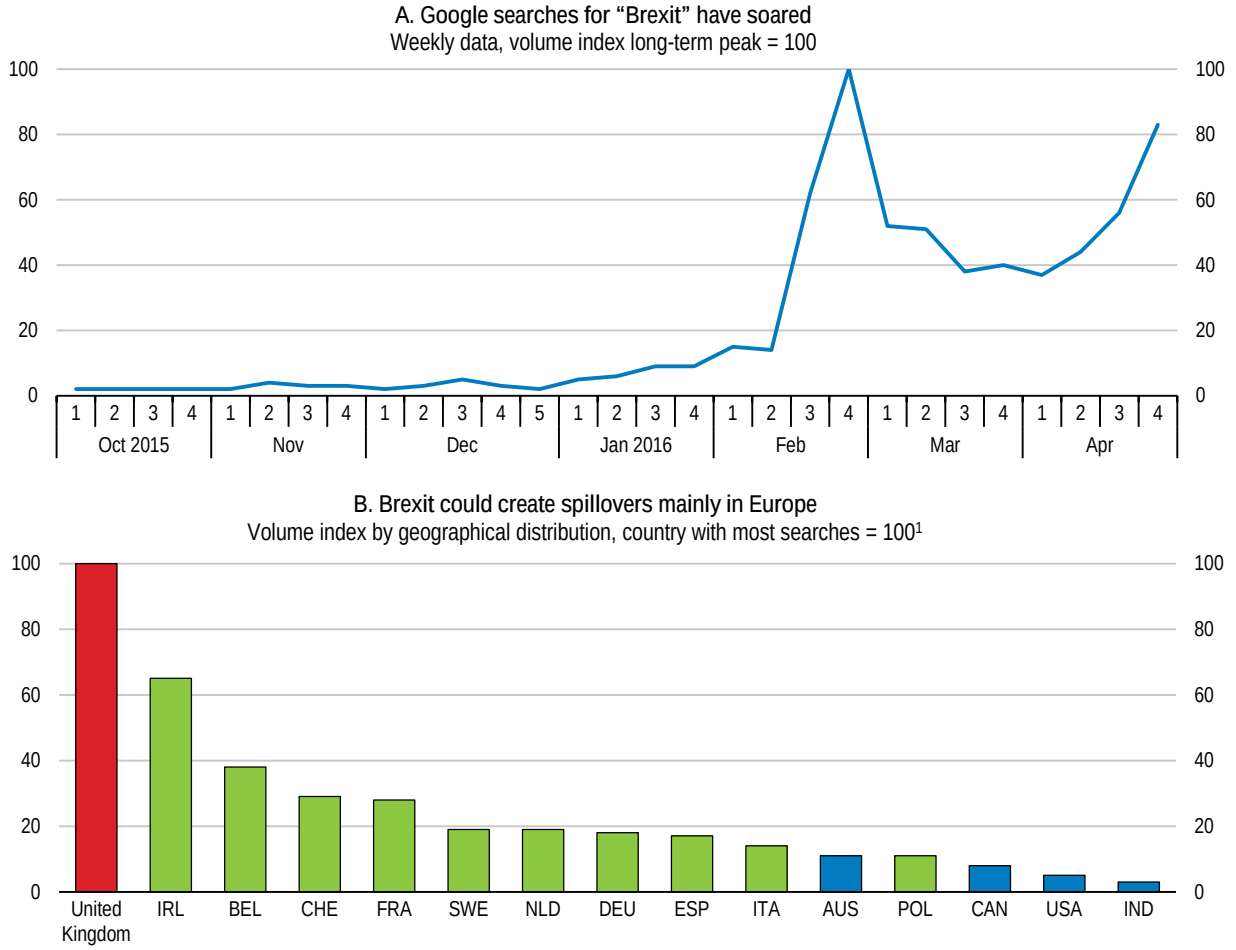
http://dx.doi.org/10.1787/888933351028

1. The newspaper-based Economic Policy Uncertainty Index is constructed based on articles from two newspapers per country: The Times of London and Financial Times for the UK; Le Monde and Le Figaro for France; Handelsblatt and Frankfurter Allgemeine Zeitung for Germany; Corriere Della Sera and La Repubblica for Italy; and El Mundo and El Pais for Spain. The European-wide index, is calculated as an unweighted average across all 10 European newspapers. The number of newspaper articles containing the terms uncertain or uncertainty, economic or economy, and one or more policy-relevant terms are counted and then scaled by a measure of the number of articles in the same newspaper and month. Newspaper-level monthly series are standardised to unit standard deviation prior to 2011. The country-level index is calculated as an unweighted average of the standardised newspaper-level monthly series, which is then normalised to a mean of 100 prior to 2011.

Source: NIESR (2016), "April 2016 GDP estimates", *Press Release*, National Institute of Economic and Social Research; and www.policyuncertainty.com.

Figure 7. Brexit generates an important interest in the United Kingdom and beyond

Google searches for "Brexit" since October 2015



StatLink http://dx.doi.org/10.1787/888933351033

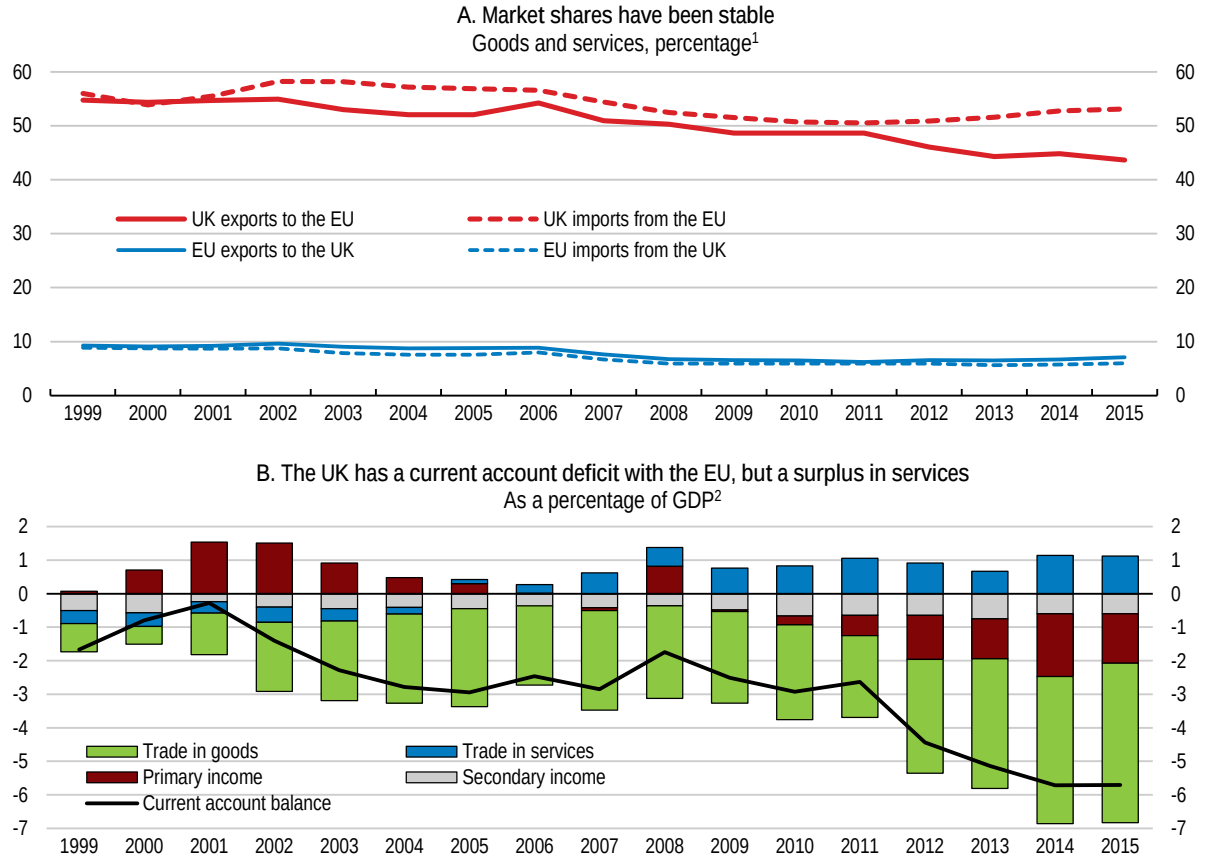
1. Adjusted for population size.

Source: Google Trends.

Trade would be hit when the UK formally exits the EU

The EU remains the main trade partner of the UK and the financial sector benefits from direct access to the Single Market, which has strengthened the comparative advantage of the City. Exports to EU countries account for about 12% of UK GDP and about 45% of total UK exports, and for imports the EU is even a more important partner (Figure 8, Panel A). Some 3 million jobs are linked to exports destined for the EU. The UK has a deficit in goods trade *vis-à-vis* the EU, but a surplus in services (Figure 8, Panel B), in particular in financial services. Financial services accounted for 7% of UK output and 4% of employment in 2015. Exports of financial services amount to slightly more than 2.5% of GDP for the UK, against about 0.5% of GDP in EU peers (Figure 9, Panel A). The EU is the destination of some 40% of UK financial exports, down from around 50% in 2000. However, the UK financial industry remains dependent on the EU market, as the absolute size of UK exports has risen. Indeed, UK overall exports of financial services took off in the 2000s (Figure 9, Panel B), although statistical changes reduce data comparability over time. The EU absorbs around 45% of Swiss exports of financial services, despite the absence of passporting rights for its banks (see below), but Switzerland negotiated a favourable agreement when it was planning to join the EU in the early 1990s.

Figure 8. The United Kingdom and the European Union are important trade partners



StatLink http://dx.doi.org/10.1787/888933351045

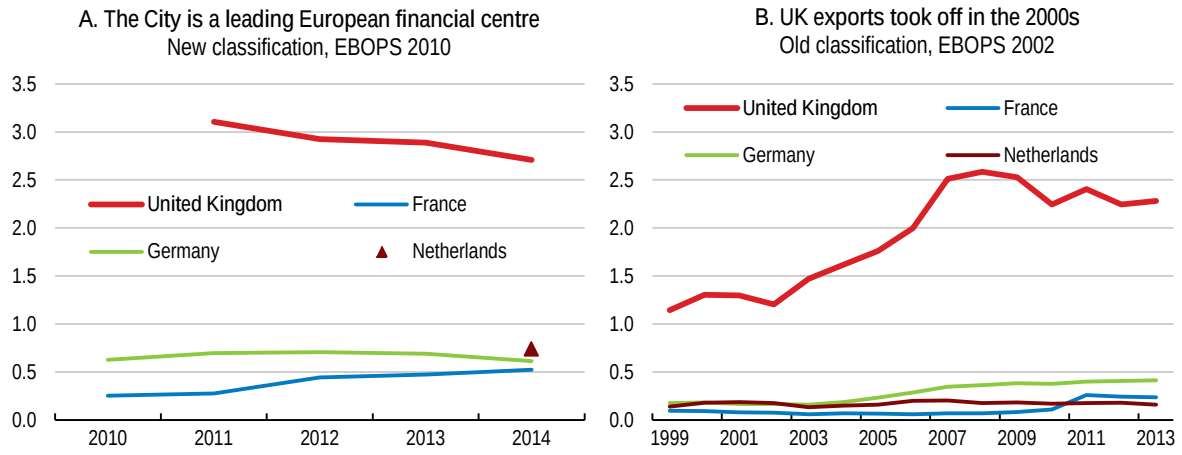
1. European Union excluding the United Kingdom.

2. The balance on primary income shows net primary income flows between resident and non-resident institutional units. Primary income captures returns for the provision of labour and financial assets and renting of natural resources. The balance on secondary income captures further redistribution of income through current transfers, such as by governments or charitable organisations. Whereas primary income affects national income, secondary income, together with primary income, affects gross national disposable income.

Source: ONS (2016), "Balance of Payments: Oct to Dec and annual 2015", Office for National Statistics, March; and Eurostat (2016), *Annual National Accounts* (database), April.

Figure 9. UK exports of financial services are large

As a percentage of GDP



StatLink http://dx.doi.org/10.1787/888933351053

1. EBOPS: extended balance of payments services (classification).

Source: OECD (2016), "Trade in services by partner country", in *OECD International Trade and Balance of Payments* (database), April.

Negotiating a new trade agreement with the EU is likely to be complex. Possible arrangements vary from remaining a member of the European Economic Area (like Norway) to a full exit by renouncing all EU rules and regulation (Table 1). The various possibilities have different impacts, but even among proponents of Brexit there is no consensus about the preferred arrangement. In addition, negotiations with the EU would take time, although the exit should be arranged two years after the UK formally expresses its desire to withdraw. Between the formal exit and reaching a new agreement, trade relations would be governed by the Most-Favoured Nation (MFN) rules of the World Trade Organization (WTO).

Table 1. Possible post-Brexit arrangements with the European Union

Arrangement	Example	Characteristics
European Economic Area (EEA)	Iceland, Norway and Liechtenstein	- contributions to the EU budget - free movement of goods, capital, services and people - outside the EU Customs Union - very limited influence on regulation
European Free Trade Association (EFTA)	Switzerland	- contributions to the EU budget - requires trade agreements with individual EU countries and across industry sectors - no passporting rights for banks - outside the EU Customs Union - very limited influence on regulation
Customs union	Turkey	- tariff-free access to most of the EU Single Market, except for financial services - adoption of EU external tariffs for non-EU trade - very limited influence on regulation
Free Trade Agreement		- mostly tariff-free Single Market access, but compliance needed with EU standards and product regulations - no full access for services and no automatic passporting rights for banks
World Trade Organization - Most-Favoured Nation		- trade with the EU subject to the EU's common external tariff

Source: OECD compilation.

None of the possible arrangements with the EU clearly stands out. Membership of the European Economic Area (EEA) would ensure free movement of goods, capital, services and people, but the UK would have only limited influence on regulation and it would still need to pay contributions to the EU budget (its net contribution would probably be halved). This type of partnership has been for smaller countries (Iceland, Liechtenstein and Norway). The UK could seek a more "symmetric" agreement to reflect its size, but Brexit would undermine its bargaining position and other EU countries could be less prone to compromise to preserve the unity of the Union. Also, an EEA-type arrangement implies free movement of people while the UK after exit would likely seek to have tighter controls in this area (Box 1). Further restrictions could possibly be introduced right after formal withdrawal from the EU in late 2018. An alternative would be to seek only European Free Trade Association (EFTA) membership, akin to Switzerland, but in this case the UK would lose the banking passport which gives access to the EU to its banks, it would need to negotiate trade agreements with individual EU countries, and it would still be required to abide by EU standards and product regulations. Membership of the EU Customs Union and arranging a Free Trade Agreement (FTA) with the EU would both reduce access to the Single Market, but the UK would still need to comply with a wide range of EU regulations. A "full" Brexit would be consistent with independence from EU rules, but access to the Single Market is reduced most when trade is based on the MFN regime of the WTO.

Trade between the UK and the EU would become more costly. Administrative costs related to customs controls would rise for any of the arrangements with the EU. Compliance costs related to rules of origin obligations and conformity assessments would also increase, leading to trade diversion outside the EU over time. However, other than for the MFN approach, goods trade would remain relatively barrier free. Under MFN rules, maximum-tariffs are applicable on more than 95% of the value of good exports, with an average tariff of around 3%, but cars (10%) and tobacco (more than 70%) would face substantially higher tariffs. Services are usually exempt from import tariffs, but laws and regulations can (and do) restrict access via non-tariff barriers, and the UK would face greater difficulties in exporting financial services to Europe.

Trade agreements with non-EU countries might be less advantageous and take a long time to conclude. With formal withdrawal from the EU, the current 36 FTAs of the EU covering 53 non-EU countries would no longer be applicable for the UK. New FTAs might be less advantageous than with the EU, with the bargaining position of the UK weaker than that of the EU as a whole (see Figure 2). The UK would be able to set lower tariffs on some import products, most notably food, which would reduce prices, but making this move unilaterally would undermine its negotiating position. The time needed to negotiate recent FTAs was at least 3 years (Table 2). The overall process could probably take longer than negotiations with the EU due to the large number of countries involved, with negative implications on trade, and could require additional resources.

Table 2. Length of Free Trade Agreement negotiations, examples

Negotiation	Time (years)
Switzerland – China	4
EU – Korea	4
EU – Mexico	4
US – Australia	3
EU – Canada	5 (not yet in force)
EU – Switzerland	10

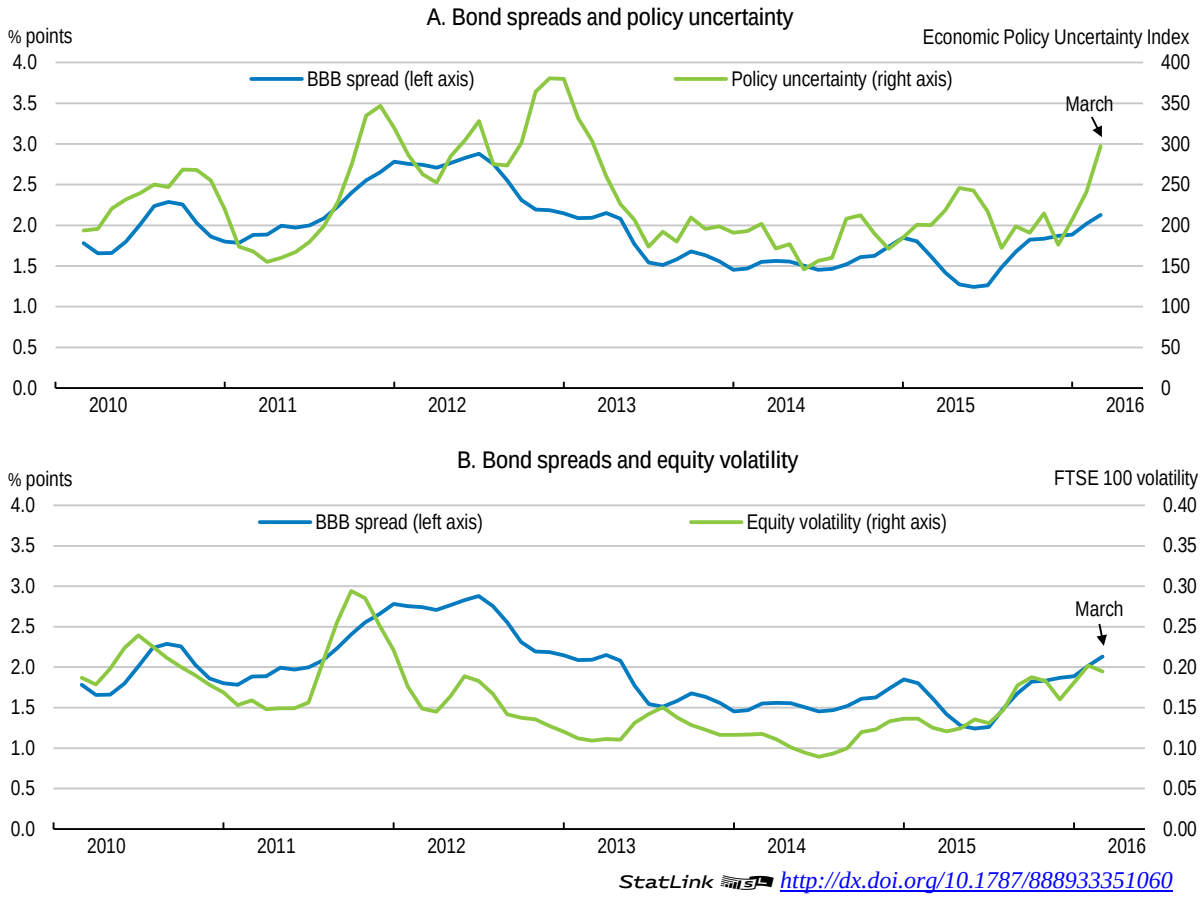
Source: OECD compilation.

Quantifying the near-term effects of Brexit

Heightened uncertainty would hit financial conditions and confidence

A vote for Brexit would lead to considerable uncertainty in the near term, further lifting risk premia and hurting confidence. The aftermath of a vote for leaving the EU would result in considerable additional volatility in financial markets and an extended period of uncertainty about future policy developments. Moreover, negotiations over UK withdrawal from the EU would need to take place over 2016-18, followed by trade negotiations with the EU in 2019-2023, which is likely to contribute to enhanced uncertainty for an extended period. Past experience indicates that greater uncertainty, whether reflected in the Economic Policy Uncertainty Index for the UK or greater stock market volatility, would be associated with higher corporate bond spreads (Figure 10). Uncertainty would also depress asset prices, reduce the availability of bank credit and increase its cost for the private sector. A hit to confidence could also lead households and businesses to postpone their spending decisions temporarily. These shocks would affect the UK and would be transmitted to other countries, mainly in Europe. As the euro area crisis and the global financial crisis have shown, adverse financial shocks in one country can quickly spread to others.

Figure 10. Corporate bond spreads are correlated with policy uncertainty and equity volatility



http://dx.doi.org/10.1787/888933351060

1. All data are three month moving averages, ending in the current month. The corporate bond spread is the spread between 10-year BBB corporate bonds and the 10-year government bond rate. Policy uncertainty is measured by the Economic Policy Uncertainty Index.

Source: OECD calculations based on Datastream and www.policyuncertainty.com/.

A substantial shock to trade would start to feed-through from 2019

Even as the initial shock to financial conditions slowly starts to ease, trade would be hit in 2019 when the UK is assumed to exit formally from the EU. Departure from the EU would be a source of considerable further disruption in the next few years, in itself keeping uncertainty relatively elevated. Given the complexity of the task, it is highly unlikely that the current trading arrangements that the UK has with the EU, and the countries with which the EU has separate agreements, would have been successfully replaced by the end of 2018. Hence, trade with the EU and other countries would initially revert to a WTO MFN-basis (Box 2). This would raise the tariff and non-tariff barriers facing UK exporters. In addition, the ending of the EU-wide passporting rights of UK-based financial services companies would be a considerable extra obstacle. Subsequently, a new FTA with the EU, which is assumed to occur by 2023, would reduce the barriers facing UK exporters, but not eliminate them entirely. The reduction in trade would not only have a direct negative impact on economic activity, but also hold back the overall economic dynamism of the UK economy. Shocks originating in the UK are calibrated (Box 3) and simulated with the National Institute Global Econometric Model (NiGEM).

Box 2. Quantification of trade effects when the United Kingdom formally exits the European Union

The impact of trade shocks was analysed with the OECD's METRO model (OECD 2015), assuming two distinct stages:

- **When the UK loses preferential access to the EU market, it faces the EU's Most Favoured Nation (MFN) tariffs.** The UK, in turn, imposes MFN rates on its imports (assumed to be equal to the EU's current bound MFN rates). Similarly, the UK faces MFN treatment in all other export markets and in turn imposes import tariffs. MFN tariffs are approximated using bound rates of the World Trade Organization. This underestimates the true amount of border barriers where there are existing import quotas and complex mixed tariffs. Trade costs in financial services between the UK and the EU are allowed to increase by 20%, which is a conservative assumption as some studies suggest that exports of financial services to the EU could fall by half following the loss of passporting rights for banks (Capital Economics, 2016).

- **Subsequently, when the UK negotiates a Free Trade Agreement (FTA) with the EU, it goes back to the current zero-tariff regime for trade with the EU, but continues to trade with other countries under MFN rules as before.** Since the UK is no longer capable of influencing EU standards and regulations regulatory regimes are likely to diverge over time. This leads to new trade costs on goods, as the UK is assumed to achieve only one-half of the cost savings from the common market when concluding the FTA with the EU (estimates based on OECD (2011)). The UK would also face rules of origin obligations in a new EU-UK FTA. Those are approximated as an increase of export costs equal to 10% of the tariff reductions achieved when entering the FTA (following Petri and Plummer, 2016). In addition, trade costs in financial services between the UK and the EU are assumed to drop from 20% to 10%, leaving them higher than prior to EU exit. No other barriers on services are modelled. This is very likely to lead to an underestimation of the ultimate slowdown in services trade. FTAs between the UK and other countries are not treated as finalised as priority is given to an FTA with the EU.

Real exports would initially drop by 8% if the UK were to lose its preferential access to the EU market and its FTA's with third countries (Table 3). The EU-UK MFN would decrease all trade between EU and UK, but MFN restrictions *vis-à-vis* other countries then change the effect. This is because restrictions imposed by other countries are partly larger than those imposed by the EU. If subsequently a new FTA between the UK and the EU27 were negotiated that would re-install previous free market access, and some of that loss would be recuperated, but UK exports would still see an overall decline of some 6.5% relative to the current situation.

Trade would be lower for all main categories of goods, hampering the functioning of value chains. The trade reduction in intermediate inputs has a particularly negative effect, as semi-finished products and components typically cross borders to be further processed and combined with domestic produce before being exported for the next stage and eventually reaching the final consumer. Not only would UK producers supply less intermediates to the EU, the reverse is also true: imports of intermediates from the EU into value chains in the UK would fall by more than 9% in the UK MFN scenario, and this would only partially be offset in the event of a new FTA between the UK and the EU 27. EU-UK value chains would thus become less tightly knit and production costs would increase. The result of less than full recuperation of EU markets is partly due to the assumption of slightly diverging regulatory regimes. Hence, new trade costs related to non-tariff measures and rules of origin would have to be incurred by UK exporters.

Table 3. Decomposition of the near-term trade shock

	MFN rules for trade with the EU and other countries	FTA with the EU and MFN rules for trade with other countries
Total UK exports	-8.1%	-6.4%
Intermediates		
UK exports	-8.4%	-6.4%
UK exports to the EU	-5.8%	-3.1%
UK imports from the EU	-9.4%	-6.3%
Final private consumption goods		
UK exports	-8.2%	-6.9%
UK exports to the EU	0.9%	-5.9%
UK imports from the EU	-9.7%	-5.6%
Capital goods		
UK exports	-6.1%	-5.6%
UK exports to the EU	6.4%	0.3%
UK imports from the EU	-1.1%	2.2%

Source: OECD calculations.

Even when an FTA with the EU is in place, trade would be significantly lower in several sectors. Detailed sector-level analysis reveals that food and agriculture (-7%), chemicals (-9%), metals (-11%) and transport equipment (-12%) would see the largest negative impacts on production. Services, which together account for more than 80% of employment in the UK, would witness a contraction of between -2% (business services) and -6% (financial services). Part of that drop is due to a complementarity between services and manufacturing: services are necessary to enable manufacturing and trade in goods, and when production shrinks, so does services activity. The scenarios are likely to underestimate the importance of potential new barriers to services trade, as only barriers to financial services are incorporated in the analysis.

Note: F. Van Tongeren, D. Flaig and C. Arriola, from the OECD Trade and Agriculture Directorate, prepared this Box and related calculations.

Sources: OECD (2015), METRO version 1 model documentation, Trade and Agriculture Directorate, OECD; OECD (2011): Dee, P. , J. Francois, M. Manchin, H. Norberg, H. Kyvik Nordås, F. van Tongeren , The Impact of Trade Liberalisation on Jobs and Growth: Technical Note, Paris, *OECD Trade Policy Working Papers*, no 107. ; Petri, P. and M. Plummer (2016) , The Economic Effects of the Trans-Pacific Partnership: New Estimates, The Peterson Institute, working paper no. 16-2; Capital Economics (2016), *The economic impact of 'Brexit'*, February 2016.

Box 3. Calibration of the near-term effects of Brexit

Financial market shocks are assumed to be of a magnitude similar to those observed during the acute phase of the euro area crisis in 2011-12, but much smaller than during the financial crisis in 2008-09. An equation linking corporate bond spreads, the Economic Policy Uncertainty Index (EPUI) and stock market volatility is estimated for the UK since 2010. From April 2016, the bond spread is generated by adding a two standard deviation shock to the EPUI and a two standard deviation shock to stock market volatility, relative to a baseline where stock market volatility and policy uncertainty are set to their average values in 2014-15. As a result, the corporate bond spread is 100 basis points above the baseline in the latter half of 2016 and 150 basis points above the baseline in 2017. Broadly reflecting the calibrated shock above, the investment and equity risk premia are raised by 50 basis points in the first half of 2016, 150 basis points over 2016H2-2017 and 100 basis points in 2018. Also, the wedge between bank borrowing and lending rates for the household and corporate sectors is raised by 100 basis points over 2016H2-2017. Finally, the term premium on government long-term bonds is raised, initially by 20 basis points in the first half of 2016 and then by 50 basis points over in the rest of the simulation period. After 2018, these financial shocks are allowed to fade gradually, although not completely, since formal exit from the EU would itself be an additional source of uncertainty and additional risk. UK investment and equity risk premia are assumed to still be 70 basis points higher than otherwise by 2023, although the shock to credit conditions is allowed to fade earlier by 2021.

The exit vote can also be expected to hit confidence, leading UK households to undertake additional precautionary saving. Higher saving would add to the negative impact on consumption from the decline in activity and lower asset prices. To take this effect into account, a shock is applied raising the ex-ante saving rate by a little over 1 percentage point in the latter half of 2016.

The aftermath of a vote to leave would also be likely to raise sterling risk premia, leading to an additional sharp exchange rate depreciation. The impact of this depreciation is likely to be more limited than in the past, but at the margin it would be likely to reduce the overall impact of the other forces acting on the UK economy, whilst adding to challenges in other economies, especially in Europe. A 10% depreciation of sterling against the US dollar was assumed to occur in mid-2016, with all other bilateral exchange rates held unchanged. The depreciation was assumed to be persistent, but to gradually fade over the simulation period. On average, the sterling effective exchange rate is around 6% below baseline in 2017 and 4% below baseline from 2018 onwards, implying an appreciation of euro relative to sterling and a permanent decline in the nominal effective sterling exchange rate.

The UK decision to exit could add to centrifugal forces in other parts of Europe and reinforce uncertainty about the future of the Union and the Single Market. The resulting uncertainty could lead to more difficult financial conditions in other European countries. To illustrate the possible magnitude of such factors, investment and equity risk premia and the spread between household borrowing and deposit rates were widened in all European Economic Area (EEA) countries. The shocks applied were between one-quarter and one-third of those in the UK, with risk premia rising by 50 basis points at their peak and the interest rate spread by 25 basis points. No shocks were applied directly to either term premia or to the household saving rate. The risk premia shock was held at 25 basis points over 2019-23.

For trade, a two-stage approach was adopted. The trade effects of the UK leaving the EU were obtained by the OECD's METRO model (Box 2) and were fed into the National Institute Global Econometric Model (NiGEM) macro model for the world economy.

The reduction in UK trade openness would also start to have costs for the overall economic dynamism of the UK economy, reducing competition and the inflow of new ideas and products. OECD estimates by Egert and Gal (2016) imply that a four percentage points decline in trade openness reduces total factor productivity by 0.8% after five years (and by 1.2% after 10 years). In the NiGEM near-term scenario the impact on productivity of the sharp fall in trade (Box 2) was modelled as a decline in labour-augmenting technical progress building up to 1.6% by 2023.

Withdrawal from the EU could also provide scope for the imposition of tighter controls on inward migration. This would reinforce the endogenous effects on economic migration coming from a weaker UK economy and labour market. Net inward migration is assumed to decline by 84 000 per year over 2019-2023, with around 75% of this reflected in the labour force.

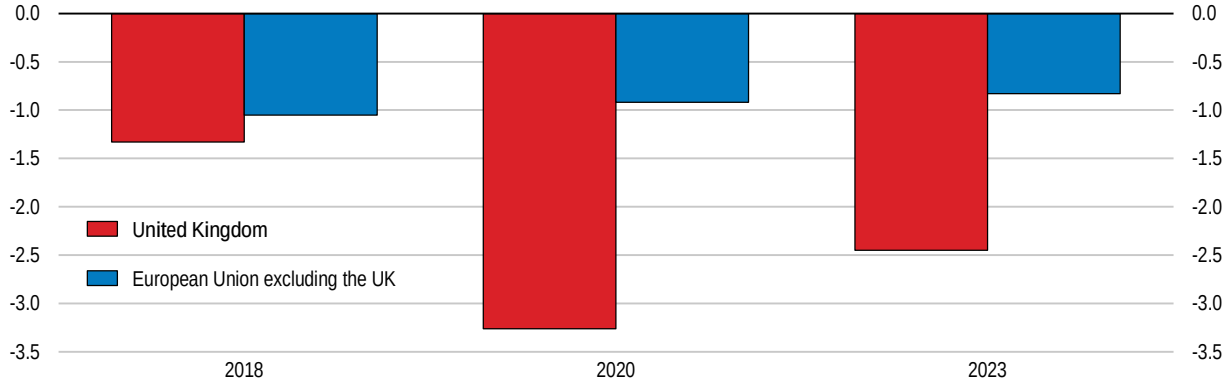
All other model assumptions were the same as without a Brexit. The NiGEM model was run in backward-looking mode, reflecting a judgment that in a period characterised by considerable uncertainty, businesses and households would be unlikely to behave as if the future was known with certainty. All shocks were assumed to persist at their 2023 levels thereafter for the purposes of model solution, but this assumption has no effect on the initial impact of the shocks up to 2023. Monetary policy was left exogenous (although the depreciation of sterling changes monetary conditions), and the budget targeting rule was left unchanged, implying that the UK government reacts to the various shocks by attempting to maintain its announced budget path. The consequences of relaxing these assumptions are discussed in the main text.

Source: Egert, B. and P. Gal (2016), "The quantification of structural reforms: A new Framework", *OECD Economics Department Working Papers*, forthcoming.

Brexit would generate a large negative shock to the UK economy, which would spillover to other European countries. Assuming fixed interest rates at the zero lower bound, UK GDP growth would be reduced by 0.5 percentage point in both 2017 and 2018. The onset of the trade shock in 2019 adds to these costs considerably, with GDP growth reduced by 1.5 percentage points that year. These shocks would be larger still without the depreciation of sterling included in the scenario, although the impact of such a change may be weaker now than in the past. By 2020, real GDP would be more than 3% below the level it would otherwise have been in the absence of Brexit (Figure 11), equivalent to a cost of GBP 2200 per household. By 2023, even as the risk premia shocks fade, and the economy begins to adjust to the large trade shock, helped by a long-lasting depreciation of the real effective exchange rate, real GDP would still remain around 2.5% lower than otherwise.

Figure 11. Near-term effects of Brexit on real GDP in the United Kingdom and the European Union

Difference from baseline, per cent



StatLink http://dx.doi.org/10.1787/888933351079

Source: OECD calculations.

The real exchange rate decline reflects the adjustment required to help restore external balance in a situation in which exports are reduced. However, the UK terms of trade deteriorate sharply, with export prices declining, as exporters try to improve global market share, and import prices pushed up sharply by the depreciation of sterling. Lower exports and investment and the real exchange rate decline hit import volumes substantially, with a decline of over 9% by 2020. At its peak in 2020, the UK unemployment rate would be around 1.5 percentage point above baseline. Business investment would be especially hard hit, declining by over 10% by 2020. Equity prices would also be strongly affected, initially declining by around 15%.

The negative shocks would raise the UK budget deficit substantially. The deficit would increase by around 0.9 percentage point of GDP on average per annum over 2019-21 (in the absence of a fixed budget target), more than offsetting the possible net fiscal savings from the ending of EU membership in these years. This decline reflects the impact of lower activity on tax revenues and the costs of higher unemployment. The UK could temporarily receive some additional revenue from tariffs on exit, by imposing multilateral MFN rates on all trading partners, but these are likely to be limited, at around 0.3% of GDP, and decline considerably once the UK concludes a new FTA with the EU by 2023. Thus there appears little scope to use the EU budget savings to relax fiscal policy substantially for an extended period, unless there is a decision to adjust other taxes and spending, or to raise the size of the overall budget deficit.

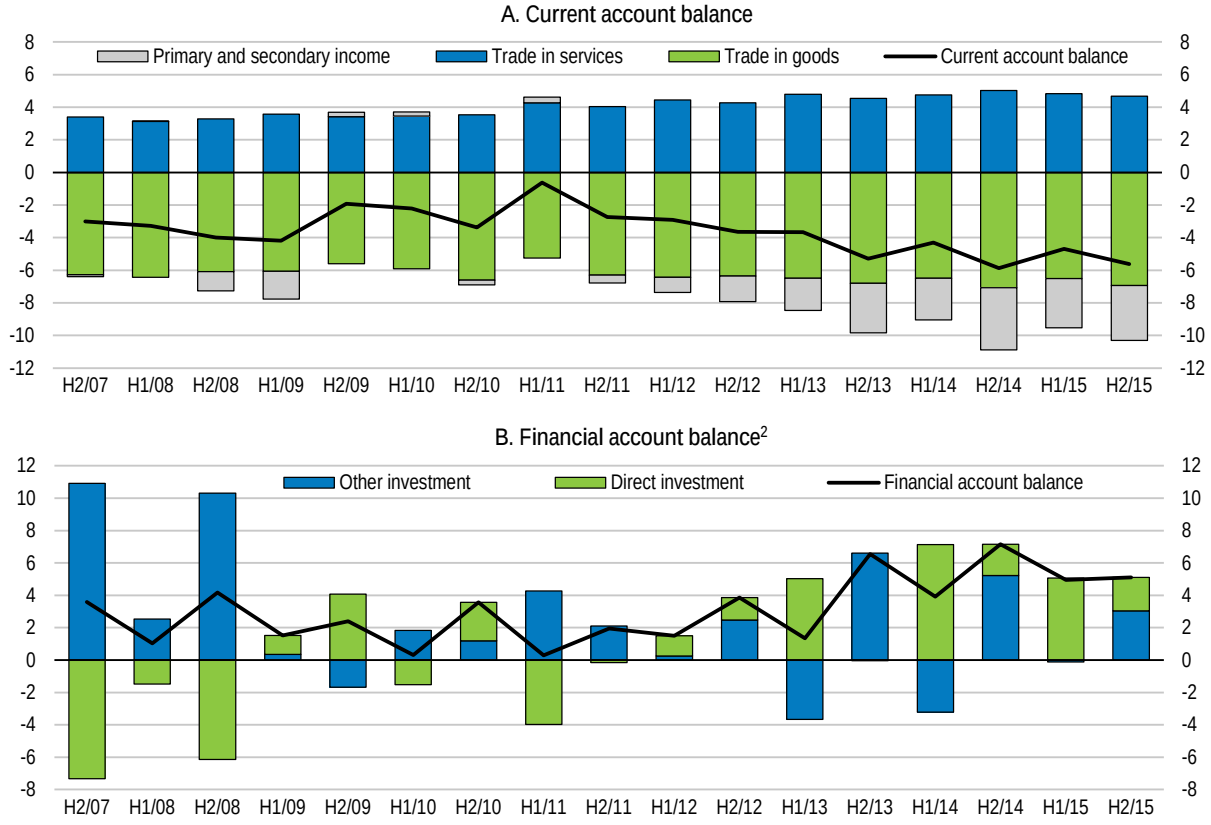
With shocks of between one-quarter and one-third of those in the UK, the GDP of the reduced EU would be little affected in 2016, but would fall by close to 1% by 2020 (Figure 11, Panel B). Even as the impact of higher risk premia in these economies starts to fade, the sharp decline in UK import demand remains a sizeable drag for some economies. A larger sterling depreciation against domestic currencies would magnify the negative impact on other European economies, as would any deeper confidence shocks in those economies. On the other hand, a euro depreciation could help to offset some of the negative impact, but at the expense of magnifying the negative effects on output in the UK.

Centrifugal forces within countries and within the reduced EU are not quantified fully, but would be a major downside risk. Following the UK decision to exit, there could be doubts about the future of the Single Market, and more broadly, of the EU. The UK itself would also face the possibility of a break up, with political leaders in Scotland having indicated that they would seek a new referendum on Scottish independence. Such developments would tighten financial conditions further. An actual break up, either of the EU or the UK, would lead to considerably greater financial turbulence and a much larger decline in investment and output.

The large current account deficit, which exposes the UK to a sudden stop, and debt refinancing issues are additional risks in the event of Brexit. The current account deficit was around 5.5% of GDP in the second half of 2015 (Figure 12, Panel A), and reached an unprecedented level of 7% of GDP in last quarter. It was financed significantly less by direct investment in the second half of the year (Figure 12, Panel B), creating important risks if there were to be sudden and large capital outflows. Moreover, refinancing of government debt could also come under greater stress than assumed in the near term scenario. Public debt is close to 90% of GDP (Maastricht definition), about a quarter of it is held by foreigners, and the average maturity of public debt is long (slightly above 15 years). In January 2016, the auction of five-year UK government debt nearly failed, and there is a risk that foreign investors could shun UK government debt following a referendum outcome in favour of Brexit. The banking system could also be subject to capital flight, and although it is has stronger capital and liquidity buffers than before the crisis, the Bank of England has announced that it will offer additional liquidity support for banks just before and after the referendum. If these risks were to materialise, they would aggravate the loss in GDP.

Figure 12. Financing of the large UK current account deficit requires substantial inflows

As a percentage of GDP[1]



StatLink http://dx.doi.org/10.1787/888933351084

1. Figures refer to half-yearly data that is calculated as an average of two quarters.

2. Other investment includes portfolio investment, financial derivatives, trade credit, loans, currency and deposits and other assets and liabilities as well as reserve assets.

Source: OECD (2016), *OECD Economic Outlook: Statistics and Projections* (database), April and ONS (2016), "Balance of Payments: Oct to Dec and annual 2015", Office for National Statistics, March.

In the longer term, supply side shocks would result in considerably greater costs

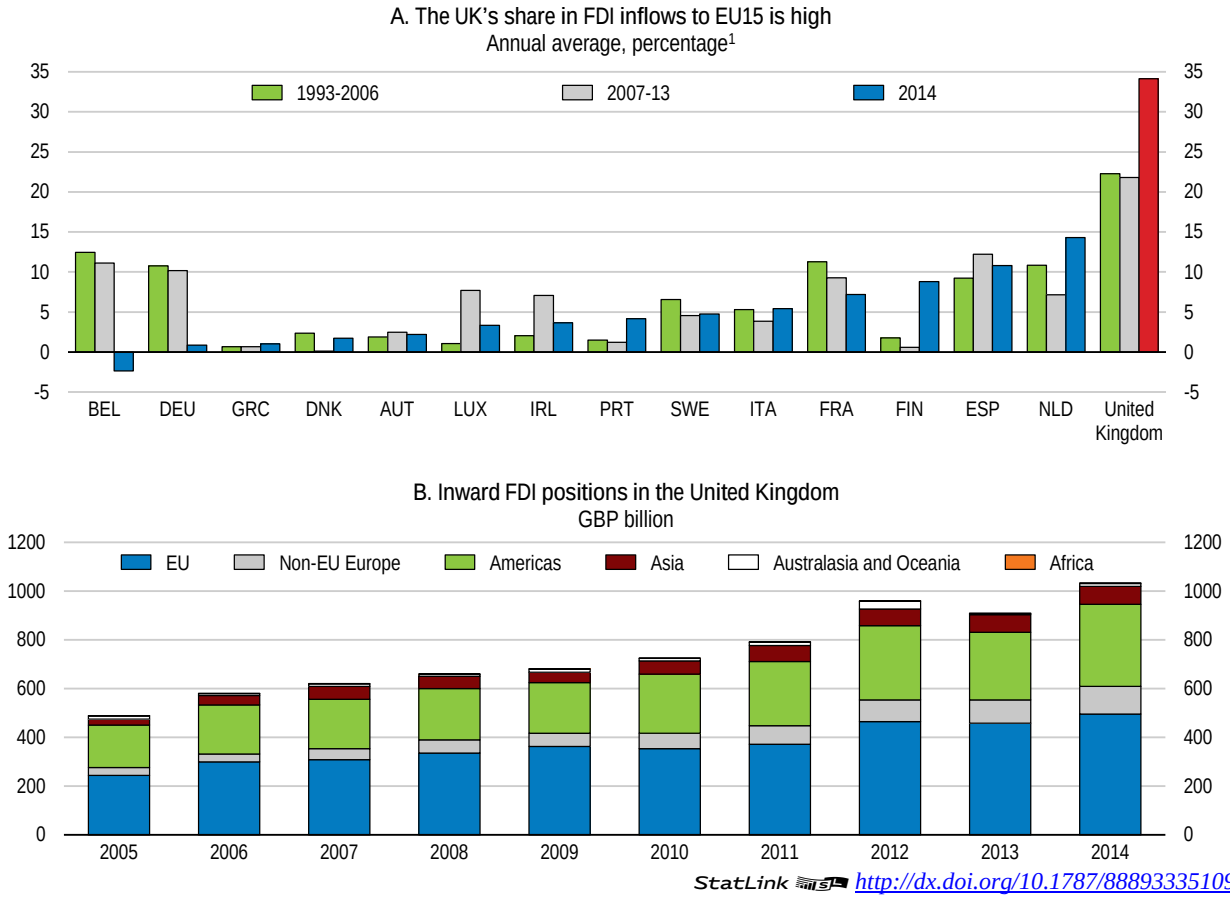
Trade would fall further

The negative effect of Brexit on trade would grow over time. Regulatory divergence would increase steadily, resulting in increasing trade costs. Some trade relations with overseas companies would be hampered. A gradual loss of export-oriented inward foreign direct investment, especially in manufacturing and financial services, would further hit export capacity.

Foreign direct investment would decline as the UK becomes a less attractive destination

The UK is the most attractive destination for FDI in the EU, partly owing to access to the EU internal market. The UK accounts for the largest share of FDI inflows into the EU (Figure 13, Panel A). FDI positions in the UK of both EU and non-EU investors have steadily increased over time (Figure 13, Panel B), and both groups cite the Single Market as fairly or very important for the UK's attractiveness for FDI, on top of its structural advantages, such as flexible labour and product markets. The large FDI inflows have contributed to greater trade integration of the UK with the EU and strengthened its comparative advantage in many sectors.

Figure 13. The United Kingdom is an attractive destination for foreign direct investment (FDI)



StatLink http://dx.doi.org/10.1787/888933351093

1. EU15 refers to Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom.

Source: UNCTAD (2016), *Foreign Direct Investment* (database), United Nations Conference on Trade and Development, April and ONS (2015), "Foreign Direct Investment, 2014", Office for National Statistics, December.

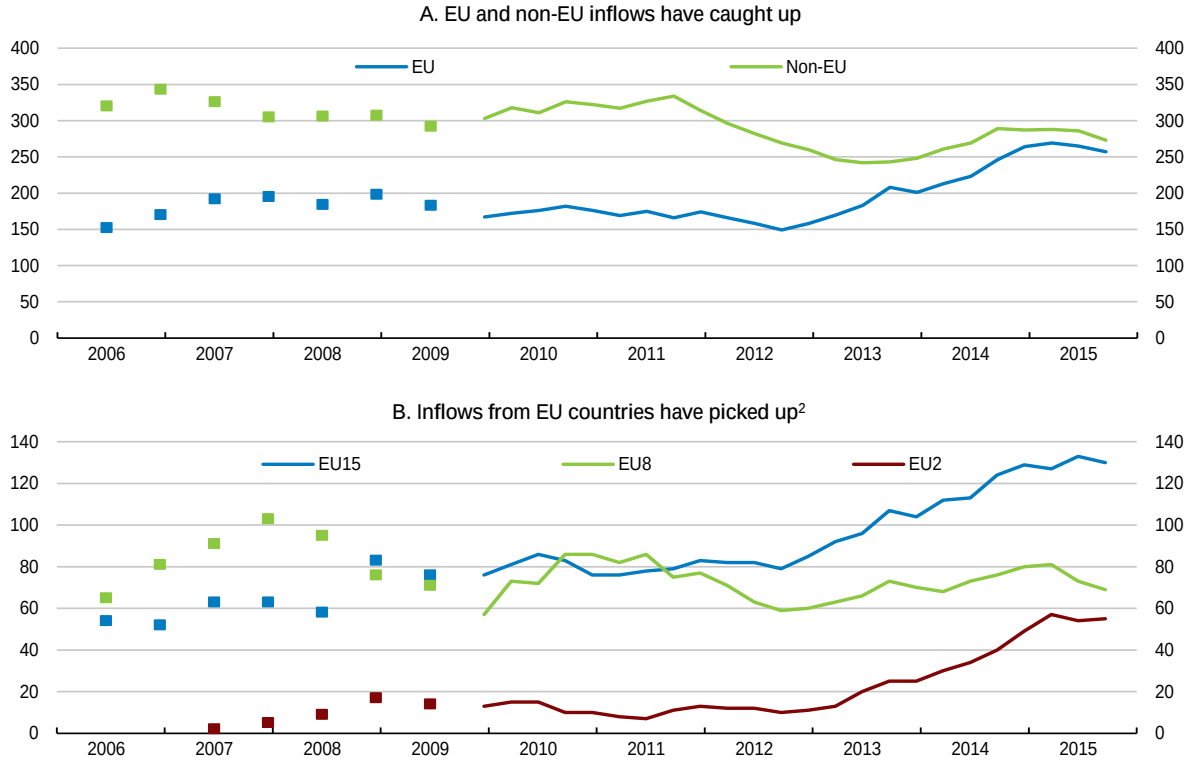
Brexit would make the UK less attractive for FDI. If access to the Single Market was lost, lower FDI inflows would seem unavoidable, reducing the inflows of new ideas and knowledge into the UK. This would weaken fixed investment, reduce export capacity and hit innovation and productivity (technical progress) over time. Managerial quality would also decline, given the evidence that management quality is higher in foreign multinationals in the UK than in domestic firms, damaging organisational efficiency and further hitting overall productivity. Some FDI inflows could be diverted to EU countries as the UK would become less attractive for both EU and non-EU clients. Foreign companies in the goods sector could prefer to invest in EU countries in order to ensure access to the Single Market and have certainty about trade relations with non-EU countries. The same could happen to FDI in the financial sector if the possibility of exporting financial services to EU countries is reduced due to a loss of passporting rights. Some financial institutions have already indicated that they will reconsider the size of their UK presence after a choice for Brexit.

Lower immigration would lower labour force growth

Since 2006, the number of annual immigrants arriving in the UK has been fluctuating around 500 000. Immigration from the EU has been rising to the level of immigration from non-EU countries (Figure 14, Panel A), driven by migrants from longstanding EU members (EU15) (Figure 14, Panel B), perhaps owing to relatively weaker labour markets in many of these countries. The removal of the transitional restrictions for Bulgarian and Romanian workers at end-2013 has also led stronger inflows from these countries (EU2). Immigration from countries that acceded to the EU in 2004 (EU8) pushed up inflows during 2006-08, but has been rather stable since.

Figure 14. Immigration from the European Union has been rising

Inflows of migrants to the United Kingdom in thousands[1]



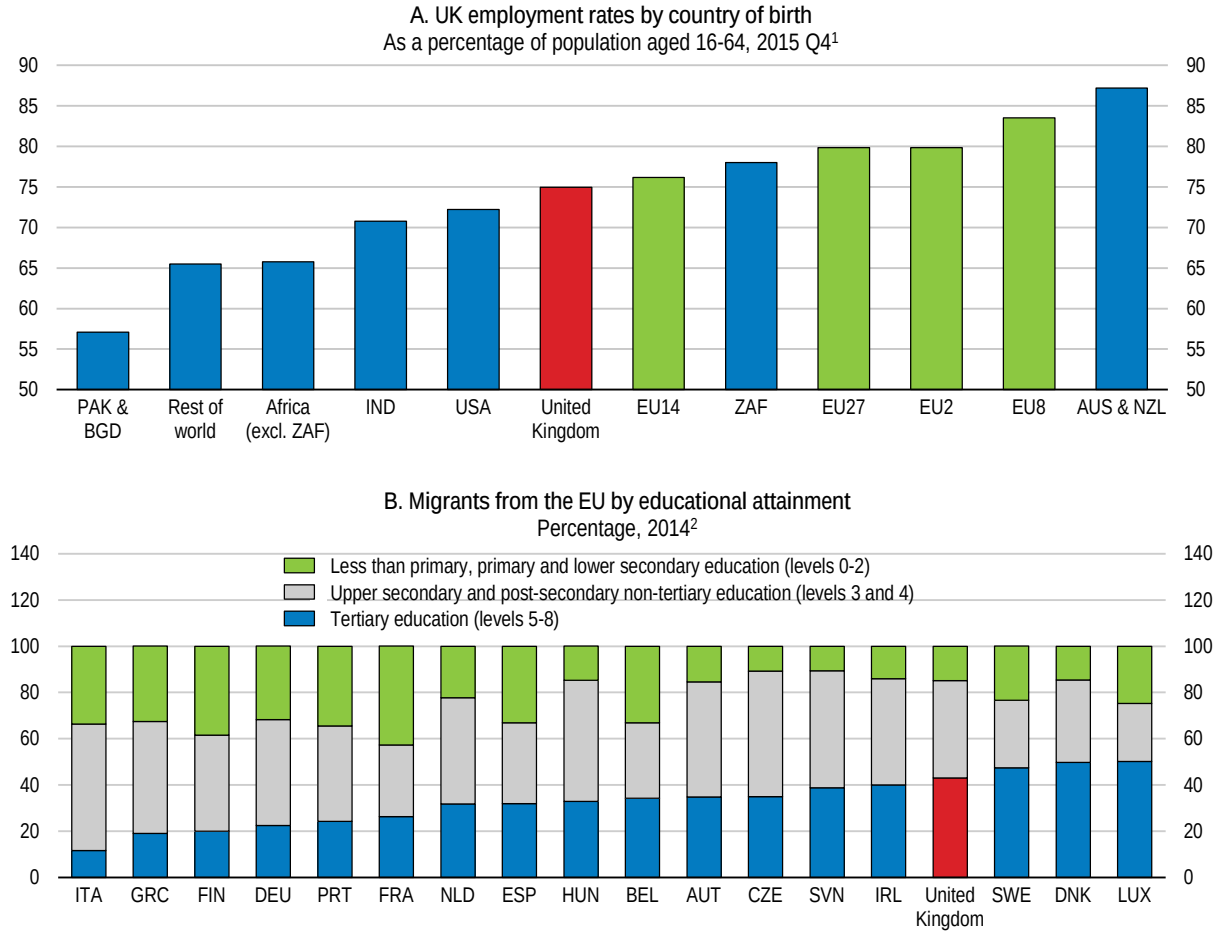
StatLink http://dx.doi.org/10.1787/888933351103

1. Rolling annual data.
2. EU15 estimates are for Austria, Belgium, Denmark, Finland, France, Germany, Greece, Republic of Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain and Sweden. EU8 estimates are for Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia. EU2 estimates are for Bulgaria and Romania. There is a structural break in the data in 2010. The source for the figures for the period prior to 2010 is the International Passenger Survey, while after 2010 it is the Long-Term International Migration Statistics.

Source: ONS (2016), "Migration Statistics Quarterly Report: February 2016", Office for National Statistics.

Immigrants, particularly from EU countries, have boosted GDP growth significantly in the UK. EU immigrants have higher employment rates than natives and almost all other migrant groups (Figure 15, Panel A). Migrants from countries that acceded to the EU in 2004 (EU8 countries) have a higher employment rate than EU migrants in general. EU migrants also have a better education than in most other EU countries (Figure 15, Panel B), although wages of immigrants from EU8 countries are rather low. Immigration has been a key factor behind the strong labour market. Out of around 2.5 million jobs that were added to the UK in 2005-15, 2.2 million were supplied by immigrants, with nearly 60% originating from the EU (Figure 16, Panel A). Immigrants have contributed on average 0.7 percentage points to GDP per year since 2005, accounting for roughly half of GDP growth, with a slightly higher contribution of immigrants from the EU than non-EU countries (Figure 16, Panel B). Immigration should also provide longer-term economic benefits by mitigating population ageing.

Figure 15. European Union immigrants are well attached to the job market and have good skills



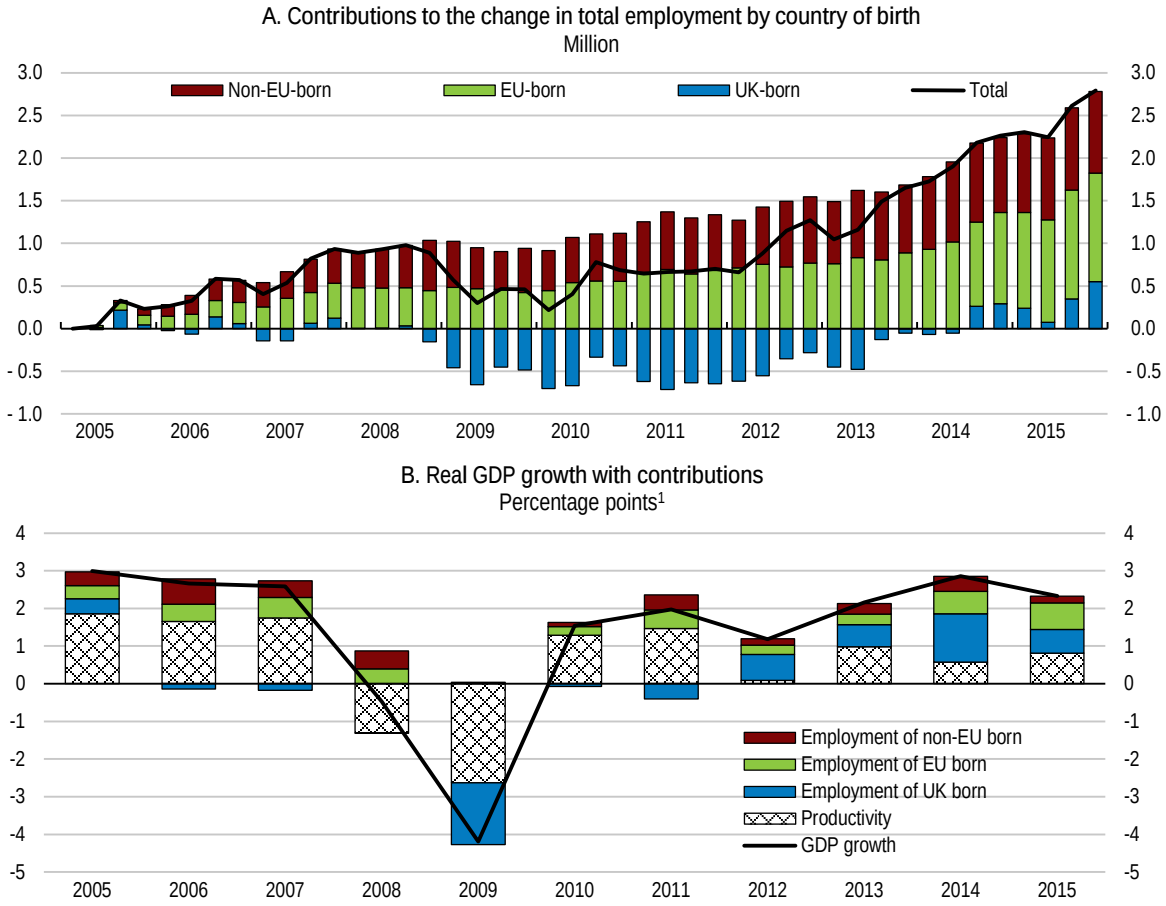
StatLink http://dx.doi.org/10.1787/888933351113

1. PAK: Pakistan. BGD: Bangladesh. EU27 consists of all 27 EU member states excluding the UK. EU14 refers to Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain and Sweden. EU8 refers to Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic and Slovenia. EU refers to Romania and Bulgaria.

2. Data refer to population aged between 15 and 64.

Source: ONS (2016), "Labour Market Statistics, March 2016", Office for National Statistics; and Eurostat (2016), "Distribution of the population by educational attainment level", in *Migration Integration Indicators* (database), January.

Figure 16. Immigration is an important driver of employment and GDP growth in the United Kingdom



StatLink http://dx.doi.org/10.1787/888933351127

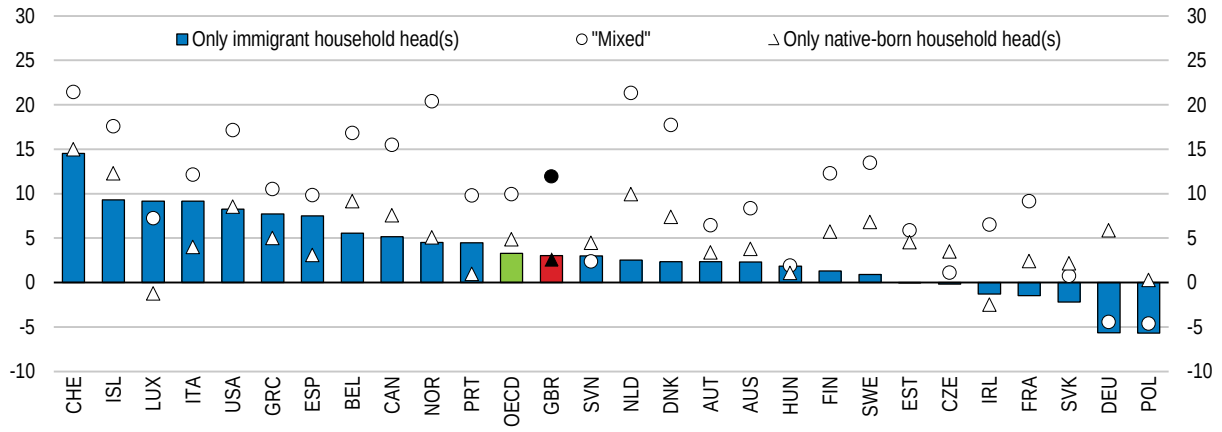
1. The sum of contributions of employment growth by country of birth does not equal the sum of total employment as the series for total employment also includes people who do not state their country of birth or nationality.

Source: ONS (2016), "UK Labour Market: March 2016", *Statistical Bulletin*, Office for National Statistics; and OECD (2016), *OECD Economic Outlook: Statistics and Projections* (database), April.

Immigrants from the EU make a positive contribution to the public finances, despite relying on the UK welfare system, which is also the case of UK migrants elsewhere in the EU. As the vast majority of immigrants from EU member states are working, they are less likely to receive out-of-work benefits. However, as immigrants from new EU countries have comparatively lower wages, they are more often eligible for in-work tax credits. The net fiscal contribution of immigrant households in the UK is positive (Figure 17), and households of EU-immigrants are no exception. As migrants in the UK benefit from its welfare system, the same applies to UK migrants in other EU countries. Around 30 000 UK citizens receive unemployment benefits in other EU countries. This group is smaller than the 65 000 individuals from other EU countries who receive benefits in the UK, but the country distribution is different. In particular, UK unemployed in nine affluent EU countries outnumber claimants from those countries in the UK, and benefits in other EU countries tend to be higher than in the UK.

Figure 17. Immigrant households make a positive net contribution to public finances

Average net direct fiscal contribution of households by migration status of the household head, 2007-2009 average, EUR (PPP adjusted) thousand



StatLink http://dx.doi.org/10.1787/888933351135

Source: OECD (2013), *International Migration Outlook 2013*.

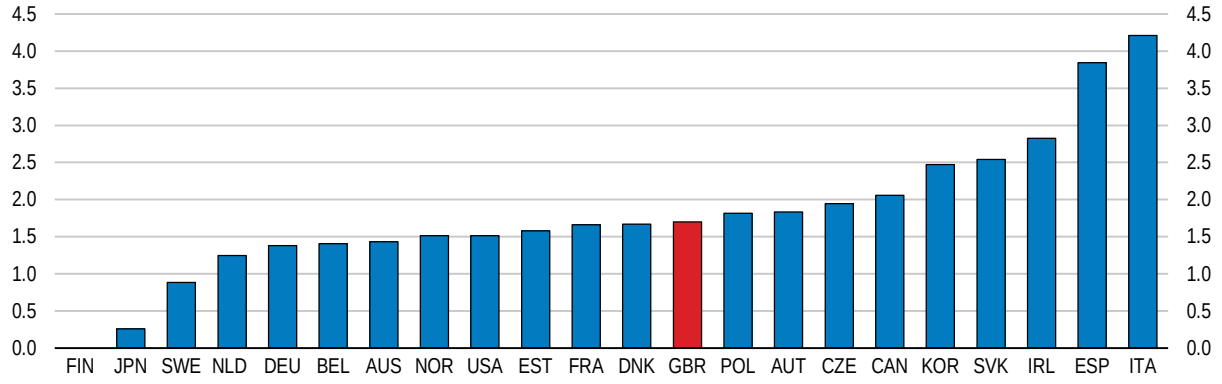
After Brexit, immigration is likely to be restricted more significantly. Despite important growth dividends, immigration remains a major concern for the UK population. However, it is unlikely that a decision to restrict the number of (EU) immigrants would have a long-run impact on the unemployment of natives. Concerns stem from poor wage growth, which is a reflection largely of weak productivity developments (Figure 19, Panel B). Immigration is also increasing housing demand, creating upward pressure on house prices, which reduces affordability for first-time buyers. However, the UK faces a long-standing problem of weak housing supply, which would require bolder domestic policies to relax land planning regulations. The UK Prime Minister has set the target of reducing net migration to below 100 000 per year assuming that the UK remains in the EU. Although not directly linked to negotiations with the EU following Brexit, tighter controls in the UK could lead to a reduction of net migration from EU and non-EU countries to below this level. This factor would be reinforced by the impact of a weaker economy and a loss of inward investment. Labour market conditions and income levels in the UK relative to those in other European countries would be hit by exit, reducing the incentives for economic migration to the UK. A decline in inward investment would also lower new inflows of foreign managers and other skilled professionals.

A loss of skills would reduce technical progress

Lower immigration and weaker FDI could reduce the pool of skills. Measures to control immigration, based on the introduction of points systems as in Australia and Canada, help to increase skill levels of new immigrants. However, should immigration controls be high, the effect of higher quality would likely be offset by the effect of lower quantities, resulting in an overall reduction of the pool of skills which could efficiently be combined in the production process. In turn, this could increase skill mismatches. Also, another channel through which skills would be negatively affected is poorer FDI, resulting in weaker transfer of best-practice knowledge from abroad, including managerial expertise, weakening overall managerial quality over time. OECD research suggests (Figure 18) that this would have a negative impact on productivity, albeit modest.

Figure 18. Estimated gains to the level of labour productivity from reforms related to managerial quality

Percentage points



StatLink http://dx.doi.org/10.1787/888933351148

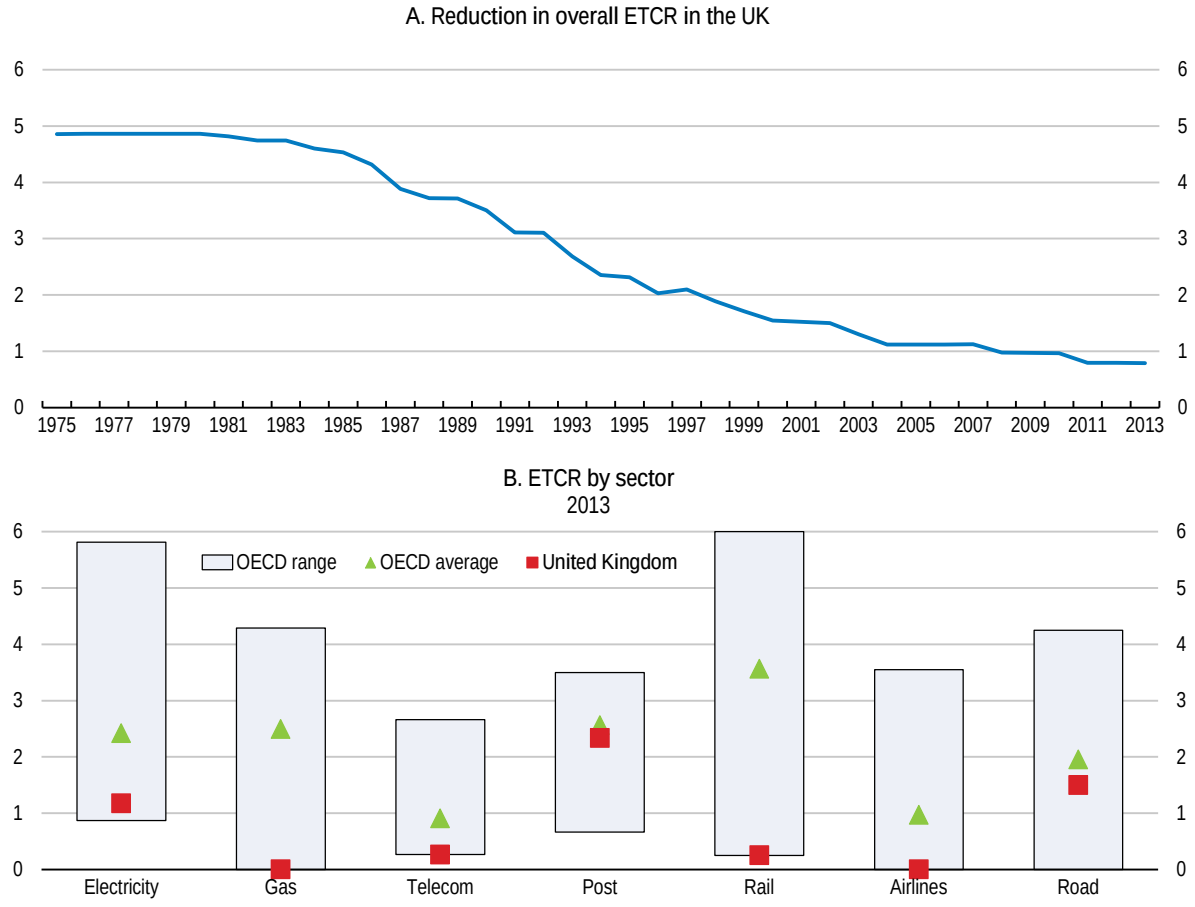
Source: Adalet McGowan, M. and D. Andrews (2015), "Labour Market Mismatch and Labour Productivity: Evidence from PIAAC Data", *OECD Economics Department Working Papers*, No. 1209, OECD Publishing.

Further deregulation could have some positive effects

Deregulation could benefit businesses, but the scope seems limited. For example, the UK has the second-lowest value of the OECD Product Market Regulation indicator and holds the 6th position in the World Bank's Doing Business ranking. Regulation of network industries has been the least restrictive among OECD countries, although the pace of regulatory reform has slowed down in recent years, possibly reflecting the increasing difficulty of enacting further reforms when they are already at low levels (Figure 19, Panel A). However, in some sectors, notably post and road, the gap with the best performers remains sizeable (Figure 19, Panel B). Overall, EU membership has not been an obstacle for implementing liberal market policies, since regulations are low relative to those in other EU member states, and, given that the best performers in some areas are other EU countries, the UK is not even using all the available regulatory space. Reducing regulation in these areas thus requires overcoming strong domestic barriers, which would be challenging. Despite labour market regulation being among the least restrictive in the OECD, many UK firms find EU labour market regulation too tight, in particular the Temporary Agency Workers Directive and the Working Time Directive. However, there is no guarantee that the political constellation after Brexit would ensure more business friendly legislation in substitution of abolished EU laws.

Figure 19. Regulation of network industries is low in the UK, leaving little scope for further reductions

Indicator of regulation in energy, transport and communications (ETCR), scale of 0-6 from least to most restrictive



StatLink http://dx.doi.org/10.1787/888933351151

Source: OECD (2013), *OECD Product Market Regulation Database*.

Quantifying the longer-term effects of Brexit

In the longer term, Brexit would generate substantial structural changes in the economy, reflecting the new relationship with the EU, new policies and adverse supply-side shocks. These changes are triggered by lower trade openness, the reduced attractiveness for FDI, less investment in research and development, a net decline in inward migration, lower managerial quality and additional regulatory reform (Box 4). These effects are assumed to cumulate over a decade or more. The changes in trade openness, regulatory performance, and both management quality and R&D intensity (via inward investment) would have long-run supply-side effects via their impact on total factor productivity (TFP). A decline in the labour force from reduced migration and the adverse impact on the capital stock from the series of negative shocks from 2016 onwards would add further supply-side challenges.

Box 4. Calibration of the longer-term effects of Brexit

In the longer term, a central scenario is considered as well as an optimistic and pessimistic scenario. These draw on OECD research to quantify the impact of non-EU membership on trade openness and the inward FDI stock, different assumptions about the degree to which the UK reduces anti-competitive product market regulations in network industries, and the impact of changes in managerial quality. Different assumptions about the possible impact exit might have on net migration into the UK are also considered. As the results depend on how these different factors interact and their overall size, a range of outcomes from different specifications is used in the scenarios below.

- In the longer term, trade openness is estimated to decline by between 10 to 20%, based on the range of empirical estimates presented in Table 1 in Fournier et al. (2015).
- The longer term inward FDI stock is estimated to decline by between 10 to 45%, based the range of empirical estimates presented in Table 4 in Fournier (2015). This decline in FDI would also contribute indirectly to weaker trade performance.
- Given the important role that high-productivity foreign-owned firms have in the UK business sector, the declines in inward FDI were assumed to transfer directly to the amount of R&D undertaken in the UK by foreign multinationals. To the extent that agglomeration economies from the UK research base matter, it is possible that this could overstate the likely longer term effect from EU exit, even if export-oriented foreign-owned firms (including those in financial services) gradually withdrew from the UK.
- The decline in inward investment was also judged to be likely to result in an overall reduction in management quality in the United Kingdom, based on Bloom et al. (2014). The impact of particular changes in managerial quality on skill mismatches, and hence productivity, was based on McGowan and Andrews (2015).
- Annual net migration into the UK is assumed to decline by between 56 000 per annum to 116 000 per annum, depending on the stringency of future controls and the extent to which the weaker economy deters economic migration to the UK. In the central scenario, net migration into the UK is assumed to be 84 000 lower per year. Implicitly, it is assumed that net migration from non-EU countries would fall compared to 2015 levels, so that employers do not respond to tighter controls on EU migration by seeking to attract more people from outside the EU.
- The decline in immigration also reduces labour force growth. It is assumed that 75% of the foregone migrants would have been in the labour force, consistent with evidence of the participation of recent EU immigration inflows.
- Outside the EU, the UK might seek to improve the business climate by undertaking additional regulatory reforms to stimulate additional competition in network industries. The best possibility considered is that the UK continues to undertake reforms over the next 10 years at the same pace as during 2009-13, i.e. 0.2 points per five-year period. In the pessimistic scenario, it is assumed that no further reforms in network industries are undertaken.

The impact of forces acting in the different longer term scenarios is set out in Table 4. For simulation purposes, it was assumed that the full longer term effects on productivity of these changes emerge by 2026, a decade after the vote to exit. The annual decline in net immigration was assumed to persist from 2019 onwards, giving a total population decline of 1.3 million by 2030 in the “pessimistic” scenario.

Table 4. Assumptions for longer term scenarios

	Unit	Scenarios		
		Optimistic	Central	Pessimistic
Trade	%	-10	-15	-20
Inward FDI stock	%	-10	-30	-45
Annual net immigration	In thousands	-56	-84	-116
Business R&D	% of GDP	-0.11	-0.29	-0.48
ETCR reduction	ETCR index	-0.4	-0.2	0
Decline in management quality	%	-5	-10	-20

Source: OECD calculations.

The shocks to productivity largely draw on the quantification of past reforms in Egert and Gal (2016):

- A decline in trade openness of 4 percentage points reduces TFP by 1.17% after ten years.
- A decline in business sector R&D intensity of 0.1 percentage points reduces TFP by 0.17% after ten years.
- A change of -0.31 in ETCR increases TFP by 0.74% after ten years.
- A decline of 20% in UK managerial quality reduces productivity by 0.4 percentage points, based on McGowan and Andrews (2015).

The impact of lower TFP and reduced inward migration on the long-run supply side performance of the UK economy is reinforced by a longer-term decline in the business sector capital stock. This stems from a variety of factors. The TFP and migration shocks lower the level of potential output, reducing the equilibrium capital stock (all else equal). These longer term effects come on top of the hit to business investment and the capital stock over 2016-2023, from heightened uncertainty, higher risk premia and the hit to export levels on leaving the EU by 2019. Both factors imply a long-lasting hit to the capital stock over 2026-2030, even if their impacts on business investment would slowly attenuate in the absence of shocks beyond 2023. If the UK undertook additional regulatory reforms this would provide a partial offset, but the overall long-run effects remain negative. By 2030, in the three scenarios set out here, the capital stock declines by around 6% (optimistic), 9% (central) and just over 12% (pessimistic). Even in the absence of the longer-term supply-side shocks, the disruptions in the years following the vote to exit are estimated to still leave the business capital stock weaker by over 3% through 2026-2030.

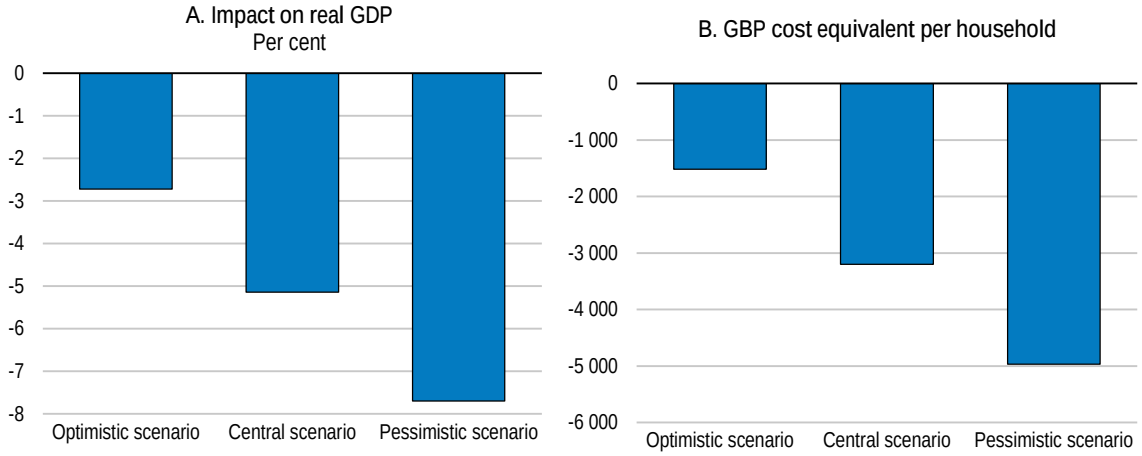
The impact of the longer-term shocks was again assessed using the National Institute Global Econometric Model (NiGEM) macro model for the world economy. Monetary policies and exchange rates were endogenous, with the model run in forward mode given that the supply side shocks are ones that can eventually be anticipated by businesses and households. Budget targets were kept unchanged, so that any budgetary shortfall has to be offset by additional fiscal measures. With the full shocks only being reached from 2026 onwards, the impact on output builds up steadily over time.

Sources: Adalet McGowan, M. and D. Andrews (2015), "Labour Market Mismatch and Labour Productivity: Evidence from PIAAC Data", *OECD Economics Department Working Papers*, No. 1209, OECD Publishing; Bloom, N., R. Sadun, and J. Van Reenen (2013), "Management as a Technology*", LSE mimeo;* Egert, B. and P. Gal (2016), "The quantification of structural reforms: A new Framework", *OECD Economics Department Working Papers*, forthcoming; Fournier, J.-M., A. Domps, Y. Gorin, X. Guillet and D. Morchoisne (2015), "Implicit Regulatory Barriers in the EU Single Market: New Empirical Evidence from Gravity Models", *OECD Economics Department Working Papers*, No. 1181, OECD Publishing; Fournier, J.-M. (2015), "The Negative Effect of Regulatory Divergence on Foreign Direct Investment", *OECD Economics Department Working Papers*, No. 1268, OECD Publishing.

In the central scenario, UK GDP is more than 5% below the baseline by 2030 (Figure 20, Panel A). This is equivalent to an annual reduction in UK GDP growth of 0.3 percentage points per annum over 2016 to 2030. Around three-fifths of this shock is accounted for by the lower level of productivity (including its indirect effect via a lower capital stock). In turn, most of this stems from the decline in trade openness. Stronger regulatory reforms and a smaller decline in trade and inward FDI weaken the longer term output effect in the optimistic scenario, but GDP is still below baseline, by around 2.7% as of 2030. A failure to undertake regulatory reforms, together with strong declines in inward migration, trade openness and innovation would result in much more negative outcomes, with GDP over 7.5% below baseline by 2030.

Figure 20. Longer-term effects of Brexit on real GDP in the United Kingdom

Difference from baseline, 2030



StatLink http://dx.doi.org/10.1787/888933351163

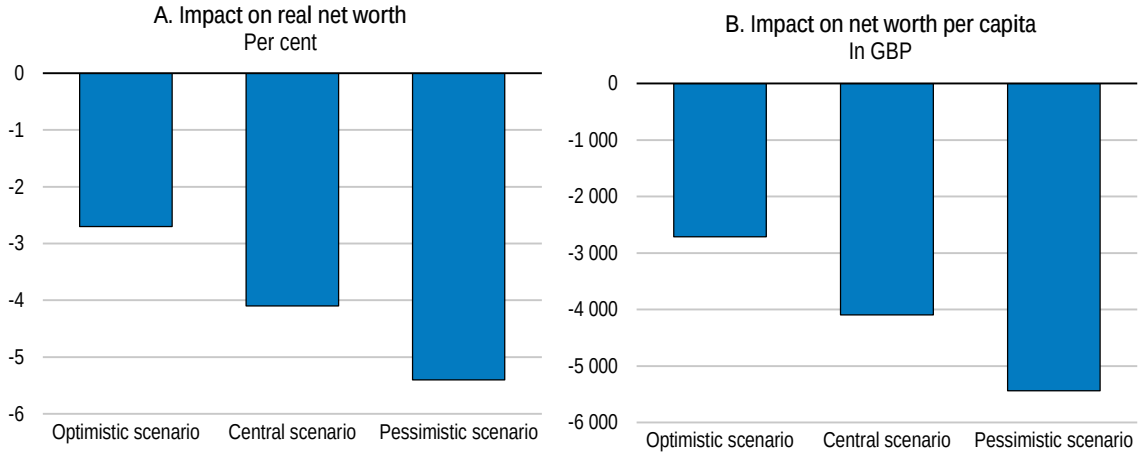
Source: OECD calculations.

The impact on a per capita or per household basis is smaller, reflecting the decline in the population as well as the decline in output. Nonetheless, in the central scenario, the GDP decline is equivalent to a cost per household of GBP 3200 by 2030 relative to the baseline (Figure 20, Panel B). In the pessimistic scenario, the equivalent cost per household is nearly GBP 5000 in 2030 relative to the baseline.

In addition to the decline in output (relative to baseline), the cumulative effects of the different shocks from Brexit also reduce the real stock of net assets the UK has available to provide future returns and meet future commitments. UK real net worth, given by the deflated sum of domestic tangible assets and the sterling value of net financial assets held by UK residents outside the UK, is over 4% below baseline by 2030 in the central scenario (Figure 21). In per capita terms, this is equivalent to a decline of over GBP 4300 per person. Almost all of this stems from the longer-term decline in the business sector capital stock as a result of the negative shocks from Brexit, with only a small offset provided by an improved external position. In the pessimistic scenario, UK net worth (in 2015 prices) is just under 5.5% below baseline.

Figure 21. Longer-term effects of Brexit on UK net worth

Difference from baseline, in 2015 prices, 2030



StatLink http://dx.doi.org/10.1787/888933351170

Source: OECD calculations.

Additional reforms in Europe would offer benefits for the UK

In contrast to a Brexit, remaining in the EU and actively promoting and supporting reforms of the EU Single Market would lift living standards in the UK and the rest of Europe. The new settlement between the UK and the EU foresees further reforms, by lowering administrative burdens, especially for SMEs, repealing unnecessary legislation, and pursuing an ambitious policy on trade (Box 1). The Single Market has delivered substantial economic benefits and taking steps to complete it further by reducing regulatory heterogeneity and complexity within the EU would benefit trade in goods and services and FDI, and thereby generate additional economic benefits (Box 5).

Box 5. An illustration of economic benefits from continuous EU membership

Reforms that reduce barriers to competition would enhance trade and FDI for all EU members, including the UK. A lower bound of the possible gains can be obtained by looking only at reforms recommended by the OECD for the EU and embedded in the PMR indicator (OECD, 2016), and assuming that their implementation would be accompanied by a reduction of PMR heterogeneity. According to Fournier et al. (2015) and Fournier (2015), a scenario of a reformed EU could boost UK trade by 3% and the UK inward FDI stock by 2%. In particular, trade between the EU and the UK would increase by 4.5% and FDI between the UK and the EU by 3%. The benefits for trade and FDI in the whole EU would be roughly similar. The higher trade and FDI would raise GDP in both the UK and the EU (OECD, 2016). These effects could be larger if the EU also reaches new free trade and investment agreements with the rest of the world (e.g. the on-going EU-US negotiation on the Transatlantic Trade and Investment Partnership).

Note: J.-M. Fournier, from the OECD Economics Department, prepared this Box and related calculations.

Source: Fournier, J.-M., A. Domps, Y. Gorin, X. Guillet and D. Morchoisne (2015), "Implicit Regulatory Barriers in the EU Single Market: New Empirical Evidence from Gravity Models", *OECD Economics Department Working Papers*, No. 1181, OECD Publishing; Fournier, J.-M. (2015), "The Negative Effect of Regulatory Divergence on Foreign Direct Investment", *OECD Economics Department Working Papers*, No. 1268, OECD Publishing; OECD (2016), *OECD Economic Surveys: European Union 2016*, OECD Publishing, Paris, forthcoming.

Conclusion: comparison with other studies

The negative effect on economic activity and household is in line with the findings of recent other studies (Table 5). The many uncertainties surrounding Brexit make it difficult to quantify the

economic effects, but the outcomes across time and model specifications are consistently negative (Dhingra et al. (2016a), Dhingra et al. (2016b), HM Government (2016), PwC (2016)). That various studies including different channels and modelling techniques arrive at the same result strengthens the message that Brexit would harm the economy to a considerable extent.

Table 5. Comparison of recent studies on the impact of Brexit on the United Kingdom

	OECD	CBI / PwC		LSE / CEP		Treasury		
	WTO/FTA	FTA	WTO	Optimistic ("FTA")	Pessimistic ("WTO")	EEA	FTA	WTO
Outcomes								
Near term	*2020*	*2020*		*Static*				
GDP (%)	-3.3%	-3.1%	-5.5%	-1.3%	-2.6%			
GBP cost equivalent per household	-2200	-2100	-3700	-900	-1700			
Longer term	*2030*	*2030*		*Dynamic*		*Impact of leaving the EU after 15 years*		
GDP (%)	-5.1%	-1.2%	-3.5%			-3.8%	-6.2%	-7.5%
Range	*-2.7% to -7.7%*			*-6.3% to -9.5%*		*-3.4% to -4.3%*	*-4.6% to -7.8%*	*-5.4% to -9.5%*
GBP cost equivalent per household	-3200	-600	-1800			-2600	-4300	-5200
Range	*-1520 to -5000*			*-4200 to -6400*		*-2400 to -2900*	*-3200 to -5400*	*-3700 to -6600*
Channels								
Uncertainty in short-term	x	x	x					
Tariffs on goods trade with the EU	until 2023		x		x			x
Non-tariff barriers on trade with the EU	x	x	x	x	x		x	x
Current FTAs with non-EU countries maintained/replaced		x	from 2026	x	x	gradually replaced	gradually replaced	gradually replaced
Fall in migration	x	x	x					
Fall in FDI	x	x	x			x	x	x
Lower private R&D spending	x					x	x	x
Lower managerial skills	x							
Deregulation	x	x	x					
Lower or zero contributions to EU budget	x	x	x	x	x	x	x	x

Source: OECD calculations; *CBI/PwC study:* PwC (2016), "Leaving the EU: Implications for the UK economy", PricewaterhouseCoopers (PwC) report commissioned by The Confederation of British Industry (CBI).; *LSE/CEP study:* Dhingra, S., G. Ottaviano, T. Sampson and J. Van Reenen (2016), "The consequences of Brexit for UK trade and living standards", Centre for Economic Performance (CEP), London School of Economics and Political Science (LSE); and *Treasury:* HM Treasury (2016), "HM Treasury analysis: the long-term economic impact of EU membership and the alternatives", April 2016.

Bibliography

Adalet McGowan, M. and D. Andrews (2015), "Labour Market Mismatch and Labour Productivity: Evidence from PIAAC Data", *OECD Economics Department Working Papers*, No. 1209, OECD Publishing.

Bloom, N., R. Lemos, R. Sadun, D. Scure and J. Van Reenen (2014), "The New Empirical Economics of Management", Journal of the European Economic Association, Vol. 12.

Dhingra, S., G. Ottaviano, T. Sampson and J. Van Reenen (2016a), The consequences of Brexit for UK trade and living standards, Centre for Economic Performance (CEP), London School of Economics and Political Science (LSE).

Dhingra, S., G. Ottaviano, T. Sampson and J. Van Reenen (2016b), The impact of Brexit on foreign investment in the UK, Centre for Economic Performance (CEP), London School of Economics and Political Science (LSE).

Egert, B. and P. Gal (2016), "The quantification of structural reforms: A new Framework", *OECD Economics Department Working Papers*, forthcoming.

Fournier, J.-M., A. Domps, Y. Gorin, X. Guillet and D. Morchoisne (2015), "Implicit Regulatory Barriers in the EU Single Market: New Empirical Evidence from Gravity Models", *OECD Economics Department Working Papers*, No. 1181, OECD Publishing.

Fournier, J.-M. (2015), "The Negative Effect of Regulatory Divergence on Foreign Direct Investment", *OECD Economics Department Working Papers*, No. 1268, OECD Publishing.

HM Government (2016), "HM Treasury analysis: the long-term economic impact of EU membership and the alternatives".

OECD (2016), OECD Economic Surveys: European Union 2016, OECD Publishing, Paris, forthcoming.

OECD (2015), METRO version 1 model documentation, Trade and Agriculture Directorate, OECD.

OECD (2011): Dee, P. , J. Francois, M. Manchin, H. Norberg, H. Kyvik Nordås, F. van Tongeren , The Impact of Trade Liberalisation on Jobs and Growth: Technical Note, Paris, *OECD Trade Policy Working Papers*, no 107. http://dx.doi.org/10.1787/5kgj4jfj1nq2-en

Petri, P. and M. Plummer (2016) , The Economic Effects of the Trans-Pacific Partnership: New Estimates, The Peterson Institute, working paper no. 16-2; Capital Economics (2016), The economic impact of 'Brexit', February 2016.

PwC (2016), Leaving the EU: Implications for the UK economy, PricewaterhouseCoopers (PwC) report commissioned by The Confederation of British Industry (CBI).