



afterbrexit

Alternate forms of Brexit and their implications for the United Kingdom, the European Union and the United States

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Preface

In a referendum on 23 June 2016, the British public voted to begin a process of withdrawing from the European Union. Since World War II, no developed country has decided to leave such a major international institution without a military defeat or political revolution. The Brexit negotiations are therefore likely to bring great uncertainty to both the UK and the EU.

This study examines the processes and issues involved in the Brexit negotiations, and explores the implications of possible outcomes for the UK, the European Union and the United States. It draws upon formal negotiating positions and mandates adopted, but with the expectation that a wider array of concerns will come into play as the process develops. The study uses game theory insights to explore and create a better understanding of how a wide variety of factors might affect the outcome of the negotiations. The use of modelling and game theory modes of analysis illuminates the broader issues at play, at some remove from the day-to-day drama of the UK's negotiations with the European Union.

We also model the potential economic implications of various options for a post-Brexit relationship between the UK and EU. Specifically, the study examines the economic effect of five 'hard Brexit' options: an arrangement in which UK trade is governed by WTO rules, including the application of most-favoured-nation tariffs; the successful negotiation of a UK–EU free trade agreement (FTA); the creation of a UK–EU–US FTA based on the proposed Transatlantic Trade and Investment Partnership; the creation of a US–UK FTA excluding the EU; and an extended transition period during which EU and UK tariffs do not change but other non-tariff barriers to trade come into effect. In addition, we examine three 'soft Brexit' scenarios: the Norwegian model (membership of the European Economic Area), the Swiss model (a series of bilateral agreements) and a customs union. Significantly, the study also explores the potential implications of Brexit for the United States, including its effects on US economic, political and security interests, and the alternative paths America's future relationships with the UK and the EU may take. Research for this study was completed as of 15 September 2017.

Accompanying this study is an online calculator, allowing users to alter key assumptions in order to understand their significance or create other scenarios for examination as negotiations proceed. This calculator can be found at <https://www.rand.org/randeuropa/research/projects/brexit-economic-implications/calculator.html>.

Two RAND Europe studies further explore the effects of Brexit on transatlantic security institutions and patterns of cooperation and the use of choice modelling to determine British public

preferences towards the process. These include, respectively, *Defence and Security After Brexit* (Black et al. 2017) and *What Sort of Brexit Do the British People Want?* (Rohr et al. 2017).

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Summary

'Brexit means Brexit, and we will make a success of it!' has been the rallying cry of the British government since the 23 June 2016 referendum in the UK, in which a majority of citizens voted to leave the European Union. Yet, what does 'success' mean? The British government has put forward several different versions of the United Kingdom's future after it leaves the EU on 29 March 2019. In one scenario, the UK is a close partner of the EU, perhaps with access to the Single Market and part of a customs union following a 'soft Brexit'. In another, 'Global Britain' has opted for a 'hard Brexit' – outside both the Single Market and the Customs Union – but has negotiated a web of new trade agreements and established an independent influence around the world. Even now that the UK–EU negotiations have started, it is unclear which future the UK might choose, and whether that will be a path to success.

Whether Brexit is successful will depend a great deal on the economic implications of leaving the EU and whether trade agreements with others might fuel the UK's economic growth. Yet our modelling suggests the 'hard Brexit' options frequently discussed in the press can be expected to cause a significant loss of growth, with the 'no deal' scenario making the UK 4.9 per cent poorer in 2029 than if it had remained in the EU. Staying in the Single Market or the Customs Union certainly alleviates that decline in growth, but these 'soft Brexit' options are still worse economically than staying in the EU. Recently, the possibility of a transition period has gained favour in both London and Brussels. This option is slightly better, assuming the UK stays temporarily in the Single Market and Customs Union, but only because it delays the real decisions and their effects. The loss of growth cannot be made up by negotiating free trade agreements (FTAs) with other partners either, including the United States. Such agreements would compensate only somewhat for the loss of trade and investment with the UK's main market, the EU. Indeed, the most beneficial FTA for the UK would be one with the EU, and the best overall outcome would be a trilateral UK–EU–US FTA, similar to the Transatlantic Trade and Investment Partnership (TTIP), itself now in hiatus.

Which version of Brexit the UK is able to choose will depend largely on its negotiations with the EU. This will be a complex set of talks involving multiple issues, and if game theory is any guide, the UK will face an uphill struggle. The UK must disentangle its current ties with the EU, while

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also negotiating arrangements for a future UK–EU relationship. Both sides have declared their intent to have a positive partnership, but if discussions over the divorce arrangements and future accord are negotiated consecutively rather than concurrently, the British are at a definite disadvantage. Similarly, the two-year deadline very much favours the EU, especially since all 27 member states must approve any extension. Both sides face serious internal divisions and must find ways of satisfying internal constituencies to maintain consensus. Since the EU has a political incentive to demonstrate that the UK is worse off as a result of leaving the EU (so as to discourage other departures), and some in the UK believe the costs of ‘no deal’ are low, there is a real risk that the parties – even while seeking to cooperate – will find themselves struggling to reach any agreement. Unfortunately for the UK, ‘no deal’ – or, indeed, any of the ‘hard Brexit’ scenarios – is the worst situation for the future, with significant losses in terms of economic growth.

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Issues for negotiation

In Theresa May’s 29 March 2017 letter triggering Article 50 of the Lisbon Treaty and thus beginning the Brexit process, the British government made clear that the UK would not try to stay in the Single Market, but instead would seek a free trade agreement with the EU. Moreover, it requested that issues related to departing the EU be negotiated concurrently with the arrangements for the future relationship between the two parties. The EU, however, responded with a phased approach involving three separate negotiations: one on the terms of the UK’s exit, a second to establish a framework for a future relationship, and a third to establish any necessary transitional arrangements. The EU also held that ‘sufficient progress’ would have to be made in finalising the exit accord before formal talks on the future relationship could start. Since all 27 remaining member states would have to approve any extension of the two-year negotiating mandate, this procedure alone would give the EU leverage on the substance of the exit provisions being discussed. The EU’s chief negotiator, Michel Barnier, cautioned that the real deadline could be as early as October 2018, because of the need for European Parliament approval before the European Council could accept the arrangement.

The first-phase exit negotiations involve the following issues:



Rights of citizens. A new arrangement must be agreed to secure the rights of millions of EU citizens living in the UK and UK citizens living in the EU.



Financial settlement. The UK will have financial obligations to settle as it leaves the EU, given its multi-year commitments to certain EU agencies and programmes. As the negotiations began, the EU was signalling that the UK may need to make payments of as much as €100bn in total, while Theresa May, in a speech in Florence in September 2017 offered only €20bn.



Northern Ireland. Both parties are determined to preserve the stability of Northern Ireland, based on the Good Friday Agreement. But with Northern Ireland leaving the EU, some form of border must be established with the Republic of Ireland.



European Court of Justice. The question of the ECJ's role in adjudicating disputes between the EU and UK post-Brexit has been very sensitive politically. The EU has argued that the ECJ should have jurisdiction over post-Brexit disputes on citizens' rights as well as other matters. But this is extremely difficult politically, especially for the current British government, which has campaigned on regaining British sovereignty from the ECJ.

Even if 'substantial progress' is made on these exit issues, and negotiations on the future relationship begin, the process could easily extend well beyond the two-year, March 2019 deadline, causing the UK to end up with an inadvertent 'no deal'. To prevent such a scenario, the parties are likely to negotiate a transition accord, so that there can be adequate safeguards as they proceed to focus on a new trade agreement and customs arrangement. While a transition agreement is certainly not the worst outcome for the UK, it will only temporarily postpone the economic costs of Brexit, and uncertainty about the final outcome would remain. In effect, a transition arrangement merely delays many of the vital decisions about trade and customs arrangements that will make an enormous difference to the UK's future economic health. Moreover, since a transitional arrangement would affect incentives for both parties to complete final arrangements, it may turn out to be as difficult to negotiate as any final accord.

Priorities of the negotiating parties

Brexit marks the first time a developed country has sought to leave a major international institution without a military defeat or political revolution. Superficially, the talks are bilateral, with the UK and the EU27 as the two parties involved. In reality, both have significant internal constituencies, each with their own potential to block a successful resolution of the negotiations. Whether these internal actors will hold together throughout the exit process is far from clear. The June 2017 election in the UK left its government more divided than ever, at least in the short term, and reduced the Prime Minister's ability to keep everyone in line.

The UK government seeks four main outcomes from its departure from the EU: the ability to impose restrictions on freedom of movement of EU citizens in the UK, freedom from ECJ jurisdiction, as much free and open trade as possible and the smallest possible financial settlement with the EU. But different parties in the UK, and even within the ruling Conservative party, have distinct priorities. In particular, concern over migration to Britain by citizens of other EU member states played a central role in attracting support for Brexit during the referendum, and continues to be a high priority for one faction of the pro-Leave camp that demands the re-establishment of British sovereignty. Along with controlling freedom of movement, advocates of this perspective want to stop what they view as 'meddling' by Brussels, and escape the jurisdiction of the ECJ. A second group, while also favouring Brexit, emphasises the importance of free markets, trade and an outward perspective. This group believes that the UK can secure better access to world

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markets on its own rather than relying on the European Commission to negotiate FTAs with trading partners. The group's adherents advocate a relatively internationalist approach, aiming for a low-tariff trade deal with the EU that does not prevent the UK negotiating trade and economic deals with other global markets.

The EU has so far maintained a steady consensus during the early stages of the Brexit negotiations. While that unity may come under strain over time, as EU member states seek to use the process to secure objectives on issues far removed from Brexit, for now the EU negotiators and member states have been consistent in identifying their core objectives: to have the UK as a close partner, to have any deal based on a balance of rights and obligations, to preserve the integrity of the Single Market and the four freedoms, and to ensure that a non-member does not have the same benefits as members. This last objective is particularly important, as it is seen as discouraging any other possible exits.

There are several fault lines in the EU's position that could emerge. These include the diverging interests of the countries that use the euro currency and those that do not, as well as the diverging interests of those countries that are net contributors to the EU budget and those that are net recipients. Interests could also diverge on regional bases: northern European countries may seek the maximum possible free movement of goods while trying to lure the financial industry from London to their countries, southern European countries may focus on securing a high financial settlement from the UK and preserving agricultural and fisheries policies, and eastern European countries may seek strong protections for their citizens currently in the UK. These differing priorities may come into play as trade-offs are made.

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Brexit and game theory

Game theory offers some important insights into the Brexit negotiations. In particular, it makes clear that the structure and timing of the negotiations present real challenges to the UK. Specifically, game theory provides the following insights:

- **The structure of the game is crucial.** It is to the EU's advantage that talks over the exit arrangements and the future relationship occur consecutively, so that the prospect of a future trade agreement – a British priority – can provide leverage in securing UK agreement to EU exit terms, including the financial settlement. For the UK, however, it would be much more beneficial if the talks were conducted concurrently, so that it could obtain benefits in exchange for concessions made, and better sell the resulting package to the British people.
- **Both sides face serious internal divisions and coalition maintenance will be costly.** The EU understands that its interests depend on staying united behind a coordinated strategy. As a result, EU institutions and 'core' countries may even be willing to make concessions to other member states on internal EU matters in order to ensure the continued consensus on Brexit.

Divisions within the UK, and especially within the Conservative party, weaken the UK negotiating position. These divisions have only intensified following the June 2017 general election, and there is the prospect of a leadership struggle in the near future.

- **Given the complexity of the negotiations, the parties should be careful about the language they use with domestic constituencies, and seek to avoid limiting their options.** Both parties have signalled certain elements of their negotiating position, and both are making their position papers public. While such transparency can be beneficial, it can also make it more difficult to concede points in the negotiations later.
- **The two-year negotiating deadline puts the UK in a weaker position.** If there is no resolution by March 2019 and no agreement by the EU27 to continue talks, a suspension or ending of the negotiations would harm the UK much more than the EU. A transition period may provide more flexibility for both parties, but would also come with some domestic cost in the UK if it prolongs free movement of EU citizens and ECJ jurisdiction – and in any case a transition agreement may be almost as difficult to negotiate as the final arrangement.
- **Flexibility on both sides will be needed to avoid an outcome where both parties lose.** As long as each party views the pay-offs differently – with the EU winning only if the UK is seen to lose and the UK believing that the costs of ‘no deal’ are low – there will be few incentives to coordinate in order to avoid harm.

Finally, adding additional actors to this game, such as the United States, may further complicate the situation, especially since US objectives and interests remain ambiguous.

The economic effects of Brexit

Whether Brexit is judged a success or not will depend to some degree on its economic impact. Much of the British debate has focused on whether the UK should leave the EU Single Market and Customs Union. Given that trade with the EU has gone from being 33 per cent of total UK trade in 1973 to almost 60 per cent in 2014, any disruption to the UK–EU trading partnership will have consequences. Indeed, any option that involves leaving the Single Market and the Customs Union will have a significant negative effect on future UK economic growth. Out of eight different scenarios evaluated for their impact on UK trade and GDP, some of those most discussed in the press have the harshest outcomes.

Any option that involves leaving the Single Market and the Customs Union will have a significant negative effect on future UK economic growth.

Five scenarios fall within the category of ‘hard Brexit’, as they involve the UK leaving both the EU Single Market and the Customs Union:



Baseline Scenario 1 – WTO rules. If the UK leaves the EU without any arrangements in place (‘falling off the cliff’ or ‘no deal’), then its trade with the EU and the rest of the world would be governed by WTO bound tariff schedules. The UK would be able to set its own tariffs and establish its own regulatory standards, although any divergence from EU standards would increase non-tariff barriers (NTBs). This is the most costly outcome for the UK, reducing future GDP

(compared to full EU membership) by about 4.9 per cent, or \$140bn, over 10 years.¹ The loss to the EU in this scenario is relatively minor, about 0.7 per cent of GDP.



Scenario 2 – UK–EU FTA. In this case, tariffs would stay at zero, but UK exports to the EU would have to satisfy some rules of origin requirements, and customs measures would increase compared to current Single Market membership. NTBs are also assumed to increase gradually over time as UK regulations and standards diverge from those of the EU. This is definitely better for both the UK (an improvement of 3.0 percentage points of GDP over Scenario 1) and the EU (an improvement of 0.5 percentage points) than falling back to WTO rules, although, as in all scenarios, the impact is far less for the EU than the UK.



Scenario 3 – A trilateral UK–EU–US arrangement (TTIP). In this case, a UK–EU FTA is supplemented by a trade agreement with the United States that eliminates tariffs on goods and agriculture and reduces NTBs substantially. This is the most beneficial outcome, not only for the UK, but also for its partners. Compared to Scenario 1, UK GDP would increase by \$202bn (7.1 percentage points of GDP).



Scenario 4 – UK–US FTA. Both the UK and US governments have indicated their willingness to negotiate a bilateral accord, and it is assumed that such a deal would reduce tariffs on goods and agriculture, as well as some services barriers. UK–US NTBs would also be reduced, although this might have the impact of raising UK–EU NTBs, if the UK moves towards US standards. This option benefits both parties (UK GDP 2.4 percentage points better than Scenario 1; US GDP 0.2 percentage points better), although it is not as beneficial to the UK as an FTA with the EU. The United States benefits far less than the UK, perhaps giving it leverage (though less interest) in the talks. The EU, lacking an FTA with either the UK or the United States, would be slightly worse off in this scenario compared to the baseline (minus 0.1 percentage points), as a result of trade diversion.



Scenario 5 – UK–EU transitional zero-tariff arrangement. The previous scenarios assume that to avoid Scenario 1 – falling back on WTO rules – it looks increasingly likely that the UK and EU might negotiate a transitional arrangement in which both parties apply zero tariffs on goods for an interim period. Both have indicated that the transition must be for a limited time; we have assumed it would be in place for four years before a UK–EU FTA was agreed. The outcome in this case is better than Scenario 1: the transitional agreement leaves UK GDP 2.8 percentage points better than Scenario 1, and the EU 0.4

¹ Throughout the report US Dollar is used as currency. Using the 2017 (January to October) average US Dollar exchange rates provided by the OECD (<https://data.oecd.org/conversion/exchange-rates.htm>), the suggested exchange rates are as follows: \$1 to £0.782; \$1 to €0.895.

percentage points better off. But the long-term economic impact will very much depend on the type of final deal agreed.

An additional three scenarios (none of which are currently being explored by the UK government) examine the possible consequence of what are known as ‘soft Brexit’ outcomes, in which the UK stays within either the EU Single Market or the Customs Union:



Scenario 6 – The Norwegian model. In this scenario, the UK stays in the European Economic Area, with access to the EU Single Market, but leaves the Customs Union. The UK would have to comply with EU rules on free movement of goods, services, capital and people, which would be politically difficult in the UK. It would be able to pursue its own independent trade policy, but would face rules of origin and other NTBs in trade with the EU, and would have to accept EU regulations and contribute to the EU budget, despite being excluded from the decision-making process. This option brings a slightly better economic outcome for the UK, with GDP 3.2 percentage points better than Scenario 1 (WTO rules). But it is also slightly better economically than either an FTA with the EU (Scenario 2), or with the United States (Scenario 4).



Scenario 7 – The Swiss model. In this case, the UK would stay in the Single Market, but only for goods, not services. The UK–EU goods trade would continue to be tariff-free. But NTBs on trade in services would rise relatively sharply to WTO bound levels. As in Scenario 6, the UK would also be required to contribute to the EU budget and adhere to EU regulations and standards (as Switzerland is obliged to do). Because of the important role of services in EU–UK trade, this scenario, while making UK GDP 2.5 percentage points better than the Scenario 1 baseline, turns out to be worse for the UK than the Norwegian model (Scenario 6) or the UK–EU FTA (Scenario 2).



Scenario 8 – Customs union covering goods. The two previous scenarios assume that the UK would exit the EU Customs Union so that it could independently negotiate FTAs with other countries. But another option is to maintain a customs union with the EU, but only for goods, not services, while leaving the Single Market. This would restrict the UK’s ability to act independently, but would ensure trade with the EU took place free of tariffs and some NTBs, even though NTBs on services would rise. The economic impact on the UK is slightly better than an FTA with the EU (3.1 percentage points better than Scenario 1), but not quite as beneficial economically as the Norwegian model (Scenario 6).

A key element in the UK’s economic relationship with the EU and the United States is that of foreign direct investment (FDI). The UK is one of the largest investors in the United States and vice versa, and many US companies invest in the UK in part because it offers open access to the EU. Research suggests that EU membership has a positive and significant effect on FDI, boosting inflows by 28 per cent and FDI stocks by 34 per cent. Even for non-members, signing a comprehensive FTA with the EU boosts inwards investment sharply. But there is much uncertainty about how a re-imposition of trade barriers might affect FDI, as the situation is so unusual. Our research indicates that a fallback to WTO rules (Scenario 1) would reduce EU FDI inflow into the UK by

about \$7.8bn. If the UK signs a comprehensive FTA with the EU, investment from the EU would fall by \$3.4bn – a reduction of about 9 per cent from EU membership investment levels. Signing an FTA with the United States would add about \$3.2bn in FDI inflows for the UK from our baseline scenario, making up about one-third of investment lost due to termination of EU membership. The best option would be to conclude a three-way UK–EU–US trade agreement, but the likely investment inflows from that arrangement still do not make up for the total investment impact of leaving the EU.

US interests

Brexit will have a significant effect on US political and economic interests, especially in Europe. That impact will be mostly negative, although there is still much that is uncertain. It is also unclear which stances the United States might adopt to be most effective in advancing US interests.

The most important potential effect of Brexit on US interests could be through its impact on European cohesion.

The most important potential effect of Brexit on US interests could be through its impact on European cohesion. The United States has long seen an integrated Europe as supporting the security, prosperity and stability of European allies, and thus benefiting the United States. Brexit brings a risk of eroding that cohesion, although it could also reinforce the cohesion of the remaining EU27. But even if Brexit ends up strengthening the remainder of the EU, the United States will miss the influence and global perspective that the UK has brought to the EU decision-making process. In the development of EU defence policy, for example, the UK aim was often to ensure that EU measures did not undermine NATO and the strong transatlantic partnership.

The stresses of the Brexit process could also reopen old political disputes. In particular, the United States has a strong interest in preserving the stability created in Northern Ireland by the Good Friday Agreement, and would not welcome any negative fallout from Brexit. New tensions between Spain and the UK over Gibraltar would also not be in US interests, especially since US Navy ships, based in Spain, regularly use facilities in that territory. Nor would the United States benefit if Brexit leads to EU divisions over Russia policy, including sanctions. As an EU member, the UK has been a steady advocate for a more effective EU foreign policy, and although the EU is certainly likely to continue growing its international role post-Brexit, the lack of British input may lead to approaches more distinct from US preferences.

Brexit also presents some economic risk for the United States, although with more uncertainty. If the UK fails to sign a comprehensive FTA with the EU and reverts to WTO rules, the substantial economic penalty on UK GDP may affect US businesses in the UK and possibly UK investment in the United States. It should be noted, however, that while the UK is the largest investor in the United States, UK-owned firms only comprise a very small part of the US economy, and any 'Brexit effect' in this dimension is likely to be negligible. Of course, the UK may succeed in negotiating an FTA with the United States, but our research indicates that even a UK–US FTA would have little macro impact on the US economy.

Brexit could also have some secondary economic effects that negatively affect US interests: for example, a weakened economy may reduce the UK's capability to fund its defence forces,

including anticipated purchases of American defence equipment, with negative consequences for US defence firms. US financial firms could also find themselves having to move out of London to preserve access to the EU market, with some additional costs. But the biggest economic impact is likely to be the loss of the UK's voice in setting EU economic policy. The UK has long advocated a more free-market approach than others in Europe, and British Members of the European Parliament have been influential in areas of financial regulation, digital policy and privacy rules, among others. An EU without the UK may be more willing to create barriers for non-EU companies, to the detriment of US companies and the American economy.

While Brexit presents primarily negative consequences for the United States, in some cases Washington may find that the UK out of the EU would be a more willing ally, in both political and economic matters, as it seeks to find its new place in the world. It may align itself with US international initiatives and regulatory approaches, even possibly against those of the EU. But the greatest consequence of Brexit for US interests will be the uncertainty that it brings in many arenas.

A note about our Brexit calculator

Accompanying this study is an online calculator, allowing users to alter key assumptions in order to understand their significance or create other scenarios for examination as negotiations proceed. This calculator can be found at <https://www.rand.org/randeurope/research/projects/brexit-economic-implications/calculator.html>.

The quantitative estimates reported in this Summary, and the main body of the report, differ slightly from the estimates reported in RAND's online Brexit calculator. As a specific example, the Summary reports that GDP would fall by 4.9 per cent in the WTO rules scenario, while the online calculator reports an estimated fall in GDP of 4 per cent.

This discrepancy is a consequence of two differences between the report and the calculator. First, as the online calculator is designed to rapidly calculate the economic implications of user-designed Brexit scenarios, the analytical approach is necessarily simplified. The estimates in the report are derived from a computationally intensive general equilibrium model, which provides more precise estimates of the economic effects, while the calculator produces first-order approximations of these same results using a partial equilibrium approach. Second, while the main results in this Summary include only trade-related economic effects, the calculator allows users to also include the economic effects of Brexit-related changes in foreign direct investment (FDI). Third, while the main results in this Summary and the main body of the report include both the predicted effects from changes in immediate trade costs and changes in trade costs over time (i.e. due to regulatory divergence), the calculator includes the effects from changes in immediate trade costs alone. Finally, in addition to the percentage loss in GDP over a ten-year time period, the calculator reports a set of other effects, such as the predicted percentage of growth foregone, and changes in the levels of trade and foreign direct investment.

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The attempt to assess objectively the potential costs and benefits of a major, unprecedented economic and political change such as Brexit, and to do so while the details are being negotiated, is inherently difficult. To undertake such an analysis in the midst of major political turmoil in the United Kingdom was an additional complication. The study team is particularly grateful to the more than 20 British and EU27 academics, think tankers, trade experts, government and European Commission officials, and journalists we consulted in the course of our research. While we conducted such interviews on a non-attribution basis, we thank these busy individuals for taking the time to help us think through the scenarios and political implications and for helping us find the data sources to underpin our modelling.

This study also benefits from, and extends, the analysis presented in two previous RAND Europe studies related to Brexit, *Defence and Security After Brexit* (Black et al. 2017) and *What Sort of Brexit Do the British People Want?* (Rohr et al. 2017), as noted in the Preface.

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Abbreviations

CAP	Common Agricultural Policy
CEPS	Centre for European Policy Studies
CGE	Computable general equilibrium
CSDP	Common Security and Defence Policy
CU	Customs union
CXT	Common external tariff
DESTA	Design of Trade Agreements
EC	European Communities (the EEC, ECSC and Euratom together)
ECJ	European Court of Justice
ECSC	European Coal and Steel Community
EEA	European Economic Area
EEC	European Economic Community
EFTA	European Free Trade Association
Euratom	European Atomic Energy Community
FDI	Foreign direct investment
FTA	Free trade agreement
IMP	Internal Market Programme
IT	Information technology
JCPOA	Joint Comprehensive Plan of Action
MFF	Multiannual Financial Framework (the EU budget)
MFN	Most favoured nation
MPCC	Military Planning and Conduct Capability
NAFTA	North American Free Trade Agreement
NATO	North Atlantic Treaty Organization

NQTM	New quantitative trade model
NTB	Non-tariff barrier
OECD	Organisation for Economic Co-operation and Development
OEEC	Organisation for European Economic Co-operation
PTA	Preferential trade agreement
QMV	Qualified majority voting
SG	Structural gravity model
TEU	Treaty on European Union
TTIP	Transatlantic Trade and Investment Partnership
WTO	World Trade Organization

1 Background to Brexit

The United Kingdom's attitude towards the European Union and its predecessors has been episodically ambivalent. In 1957, when the Treaty of Rome was signed, the UK made it clear that it was not interested in joining the six founding members of the European Economic Community or EEC (France, Germany, the Netherlands, Italy, Belgium and Luxembourg) in creating a customs union on the basis of the European Coal and Steel Community. The UK feared that membership would cost it its global power role.²

However, in light of its own poor economic performance, the UK quickly changed its mind. It applied to join the EEC in 1961, but this application was vetoed – twice – in the 1960s by French President Charles De Gaulle. By the early 1970s, the UK was lagging seriously behind its European neighbours in terms of economic growth. Under Conservative Prime Minister Edward Heath (and with De Gaulle finally off the scene), in 1973 the UK succeeded in joining the European Communities (the EEC, the European Coal and Steel Community and the European Atomic Energy Community, or Euratom³), along with Denmark and Ireland.

There was almost immediate resistance within the UK to its entry into the European Communities, later known as the European Community (EC). The ruling Labour party was split on membership, with unions fearful of the effect of membership on British workers. To quell such internal debate, the Labour government of Harold Wilson staged a 1975 referendum on whether to leave the EC. Some 67 per cent of British voters supported membership, thanks to strong support from the Conservative party and its leader, Margaret Thatcher, in particular. Nonetheless, Labour (under leader Michael Foot) ran its 1983 general election campaign against Thatcher with a manifesto promising to withdraw. They lost. That manifesto was memorably called the 'world's longest suicide note'.

In the 1980s, while supportive of European Community membership, Margaret Thatcher stimulated growing euroscepticism in the Tory party by the positions she took towards Brussels. In 1984, Thatcher demanded a better deal on net contributions to the EC's budget, ultimately

2 The UK also (accurately) assessed that a European Economic Community (EEC) would require that it dismantle its Commonwealth preferential trading system (May 2013; Broadberry 2008; Shrapnel 1961).

3 As a result of a 1965 treaty, the three 'communities' were governed from 1967 by a single Commission and a single Council of Ministers. See (as of 13 October 2017): https://europa.eu/european-union/about-eu/history/1960-1969/1965_en

winning the UK a substantial 'rebate' of its membership contributions. In 1988, in a famous speech at the College of Europe in Bruges, Thatcher warned against a European 'super-state'.

In 1991, Europe advanced in an integrationist direction by concluding the Treaty of Maastricht, which provided for a common currency (the euro), changed the EC's official name to the European Union, and added Justice and Home Affairs as new areas of joint responsibility. In the negotiating process the UK, then led by Prime Minister John Major, along with Denmark, insisted on an 'opt-out' from the treaty's requirement that all member states prepare to join the single European currency.⁴

'New Labour', under Tony Blair, took office in 1997, firmly in support of the UK taking a leading role in Europe. Blair signed up the UK for the EU's 'social chapter'.⁵ In 1998, the UK even joined with France at the French city of St Malo to support a European defence identity separate from that of the North Atlantic Treaty Organization (NATO), a step that raised eyebrows in the United States. But among segments of the British public, euroscepticism continued to grow, especially after ten new member states from Central Europe, the Baltic and the Mediterranean joined the EU in 2004. The European Union's guarantee of free movement, applied as of the date of membership by the UK, allowed new member-state citizens to freely take up residence in the UK. The resulting influx of 'Polish plumbers' and 'welfare migrants' (as covered prominently in the tabloid press) fed British resentment of the EU.

Euroscepticism in the UK was also fuelled by the EU's fiscal problems, sensationalised press accounts of 'eurocrat meddling', and, after the 2008 global recession, even more increases in migration to the UK by citizens of other EU countries looking for work in its relatively more vibrant economy.

To contain the eurosceptic wing of the Tory party, and to help the party compete more effectively against the then-growing UK Independence Party (UKIP), David Cameron promised in January 2013 that, *in the term of the next Tory-led government*, the UK would seek to negotiate new terms for its relationship with the rest of the EU – especially the right to constrain benefits for EU citizen-migrants – and, critically, that *the new arrangements would be put to a national referendum*.⁶

Other Europeans scoffed at the commitment and the idea of Europe 'à la carte' that was implied. But when Cameron and his party decisively won the national election in 2015, the government was committed to the renegotiation and the referendum. In February 2016, the other EU leaders agreed to make some minor, non-treaty commitments to Cameron regarding the applicability of the phrase 'ever closer union', ways the UK could constrain benefits to migrant families and other matters of concern. The referendum was scheduled for 23 June.

The campaign was ugly and emotion-laden. The 'Leavers' now admit to having used fudged figures and exaggerations of the UK's contributions to the EU budget. The 'Remainers' pursued

4 Denmark later decided to join the Euro; had the UK joined, Brexit would be much more economically disruptive.

5 Formally the Protocol on Social Policy and the Agreement on Social Policy annexed to the Treaty on European Union (the Maastricht Treaty), the social chapter allowed certain types of EU social policy legislation to be approved without unanimity of the member countries; these areas included equal opportunities and working conditions (European Commission 1997).

6 Watson 2013.

what critics called ‘Project Fear’, featuring economic estimates of the dire consequences of leaving the EU. Facts, it appears, had little to do with voters’ decisions, and in a strong rejection of UK elites and the business community, the results on 23 June were unambiguous: 52 per cent for Leave. The London area and Scotland strongly favoured Remain; most of the rest of England voted for Leave. David Cameron resigned the following day.

It quickly became apparent that Brexit supporters had no real plans for how to proceed, and lacked coherent ideas about what kind of future relationship they wanted with the EU. Boris Johnson, London’s colourful ex-mayor and a former journalist, stood for prime minister, but was abandoned politically by Michael Gove, his former colleague at the top of the Brexit campaign. In the end, Home Secretary Theresa May became prime minister in July 2016. Although she had (softly) favoured ‘Remain’ in the referendum, she declared that she would pursue withdrawal from the EU as a priority, and appointed leading Brexit advocates David Davis, Liam Fox and Boris Johnson to key ministerial positions in her Cabinet.

Organisation of this study

This study aims to draw out some of the economic and political implications of the Brexit process going forward, and to consider how the negotiating parties and interested third countries (such as the United States) may affect and be affected by the results. It is based on interviews with experts, secondary sources, game theory applications and academic research and economic modelling of possible Brexit-related trade and investment changes.

In Chapter 2 we discuss the issues that the UK and the remaining 27 members of the EU (the EU27) will be negotiating. In Chapter 3, we cover the priorities not only of the UK and the EU27, but of different groups of countries within the EU27 and of the United States. We then describe in Chapter 4 the implications of game theory regarding the structure of the negotiations and the negotiating strategies of the parties (game theory is a branch of social science that is used to analyse the behaviour of two or more parties when the actions of each party are determined by the actions of the other). In Chapter 5, we analyse the economic effects of Brexit under a number of different likely scenarios. By using economic modelling, we are able to examine the economic effects of specific assumptions associated with different forms of agreements and to explore the implications of changes in those assumptions at will. This allows a thorough examination of how these options might affect the UK and EU27 economies post-Brexit – an examination that we hope will help inform policymakers’ choices as the UK and EU move forward with negotiations. We explore the implications for US interests in Chapter 6, and Chapter 7 presents conclusions and policy directions for the United States, the UK and the EU.

2 Issues for negotiation

Immediately after taking office, Prime Minister Theresa May announced that ‘Brexit means Brexit, and we will make a success of it!’⁷ With that, she launched the UK – and the 27 other members of the EU – into unprecedented and challenging negotiations. The UK must disentangle its relationship with the EU, a process that has been repeatedly compared to a divorce, with good reason. In this case, the marriage has persisted for 42 years, and all the while the bonds have become more complicated and intense. Divorce will require the resolution of a wide array of sensitive issues. There is the additional task of defining the UK’s future relationship with the EU. At the centre of this imagined post-Brexit world would be a trade and investment accord of some sort, although neither side has provided many specifics as to what they envisage. However, the UK and the EU have declared their desire to have a positive partnership, which in addition to trade arrangements could involve a series of specific agreements that preserve and facilitate cooperation on such issues as anti-terrorism and defence. The complexities of the agreements establishing the future relationship will probably require a transitional period, and, if so, the length and terms of that must also be negotiated.

The prelude

Leaders in the EU began issuing public statements after the results of the referendum were clear. They regretted the UK’s decision, with many remarking, as European Council President Donald Tusk, that ‘There is no hiding the fact that we wanted a different outcome.’⁸ German Chancellor Angela Merkel called the vote a ‘...watershed for Europe and the European unity process’, but also said that the EU was strong enough to find the ‘right answers’, and that future relations with the UK should be close and cooperative.⁹ A few days later, the EU27 leaders, meeting informally for the first time since the referendum, stated that they ‘deeply regret’ its outcome but also respected the will of the British people. They also outlined an initial approach to the divorce process. Firstly, it was up to the UK to invoke Article 50 – the EU’s exit clause – and until that was done there could be no negotiations. Moreover, ‘Any agreement, which will be concluded with the UK as a third country, will have to be based on a balance of rights and obligations. Access to

7 Withnall & Mortimer 2016.

8 European Commission 2016b.

9 Cottrell 2016.

the Single Market requires acceptance of all four freedoms.¹⁰ This statement made clear that, in the view of the EU, the UK would have to accept the free movement of goods, services, capital and people – the last being the most contentious – if it wanted to remain part of the EU's huge economic market. It also indicated, as would be repeated by many European leaders, that the UK would become a 'third country' – it could not be half in or half out, and enjoy a better deal than any member state. These principles were reiterated in the conclusions of the EU27 informal European Council in December 2016 and were embodied in the negotiating directives issued in May 2017.¹¹

In London, it soon became clear that the new government was far from unified in its views and had no real plan for achieving Brexit. The summer of 2016 was dominated by turf battles as Foreign Secretary Boris Johnson, Secretary of State for International Trade Liam Fox, and Secretary of State for Exiting the European Union David Davis sought to reconcile overlapping portfolios. Liam Fox initiated discussions with Australia, the United States and others on future trade deals.¹² He also argued that UK trade with the EU would be 'at least as free' after Brexit as when the UK was a member (even though UK–EU trade arrangements were in David Davis' portfolio).¹³ After saying that the UK had launched informal trade talks with 12 countries (which is part of Liam Fox's portfolio), Davis said that free trade agreements (FTAs) could be announced as soon as Brexit was finalised¹⁴ – even though under EU law the UK could not begin formal negotiations until it had actually withdrawn. Davis claimed that a UK–EU FTA could be negotiated in two years, which would be unusually fast for a significant trade agreement.¹⁵

Divisions also developed within the government between those advocating a 'hard Brexit', involving leaving both the Customs Union and the Single Market (and represented by Fox and Davis), and those, such as Chancellor of the Exchequer Philip Hammond, who called for a 'soft Brexit', or 'Brexit-lite', which would preserve as much access to the Single Market, including for financial services, as possible. These two visions imply fundamentally different relationships with the EU. The *Customs Union* applies to trade in goods and would mean not only zero tariffs, but also identical trade policy with respect to non-members. The *Single Market* is essentially a regulatory union in which, with exceptions, all members adhere to similar regulations, including on labour and capital, with an enforcement system that rises to the European Court of Justice.¹⁶

Initially, the Prime Minister seemed to side with Hammond.¹⁷ However, in a major speech in January 2017, she made clear that the UK government's priorities would be for the UK to regain control over immigration and to escape the direct authority of the European Court of Justice. This,

10 European Council 2016b.

11 European Council 2016a.

12 Ross 2016.

13 BBC News 2016.

14 Dominiczak 2017.

15 The Canada–Europe Comprehensive Economic and Trade Agreement took seven years to negotiate; Martin 2017.

16 Winters 2017.

17 Grice 2016.

she said, would mean that the UK could not remain in the Single Market or the Customs Union.¹⁸ This statement provided some clarity on the strategy that the UK would adopt as it went forward towards triggering Article 50.

On 29 March 2017, Theresa May sent a formal letter informing President of the European Council Donald Tusk that the UK was invoking Article 50 to leave the EU, as well as the European Atomic Energy Community (Euratom). The letter stated that the UK sought to build a ‘new deep and special partnership with a strong European Union’, and noted that therefore the UK government believed ‘it is necessary to agree the terms of our future partnership *alongside* [emphasis added] those of our withdrawal from the European Union.’ The UK sought negotiations to address the terms of the future partnership, including cooperation in the economic and security realms, at the same time that the conditions of Brexit were to be finalised. In her letter, May warned that failing to agree on future economic and security arrangements by the time the UK left the EU would be detrimental to both parties – a point that some later took as a threat.¹⁹ She reiterated that the UK would not seek to remain in the Single Market, and instead called for a ‘bold and ambitious’ FTA between the UK and EU. She also called for an early agreement on the rights of EU citizens living in the UK and UK citizens living in the EU.²⁰

On 27 April, the European Council approved negotiating guidelines that defined the EU’s approach. Contrary to May’s proposal, the EU guidelines envisaged a staged approach, with the exit arrangements given priority. The EU foresaw three separate negotiations to be conducted: 1) those for ‘an orderly withdrawal’; 2) ‘preliminary and preparatory discussions on the framework for a future relationship’; and 3) ‘any form of transitional arrangements’. The guidelines stated that only after the EU is convinced that ‘sufficient progress’ has been made on the exit arrangements would even preliminary discussions on the future relationship be allowed. The EU also explicitly ruled out any prospect for separate negotiations between individual member states and the British. Finally, the guidelines identified a longer list of issues to be resolved than any official British statement.²¹ More detailed negotiating directives for the European Commission (the European Union’s executive arm, which serves as the Brexit negotiator for the EU) were adopted on 22 May, consistent with the Council’s principles.²² Additionally, the EU adopted principles on transparency that require all documents shared with the Council, European Parliament or UK to be released to the public – a procedure that will have an unknown effect on the negotiations.²³ It also created an ad hoc ‘Working Party on Article 50’, comprised of representatives of each EU27 member state and chaired by the Council secretariat, to maintain oversight of the negotiations.²⁴

Some ten days before the Council’s guidelines were approved, Theresa May called a general election, saying that her ability to negotiate with the EU would be strengthened with a stronger

18 Castle & Erlanger 2017.

19 Asthana et al. 2017.

20 European Council 2017e.

21 European Council 2017c.

22 European Council 2017a.

23 European Council 2017a.

24 European Council 2017b.

majority in the House of Commons.²⁵ At the time, the Conservatives enjoyed a slim majority of 17, which had been used to pass the bill authorising the triggering of Article 50 (see below). Initially, May was expected to win a large majority, perhaps of more than 100 seats, in the election scheduled for 8 June.²⁶ But as the results came in that night, it became clear that the Conservatives had suffered a major defeat, taking only 318 seats and losing their majority in Parliament. Although Brexit seemed to factor less in the campaign than domestic social issues and the prime minister's personal campaigning style, the result left the British government divided just days before the start of the Brexit negotiations. While speculation was rife in the British press about how long May would stay in her job, she reappointed the key Brexit ministers, David Davis, Liam Fox and Boris Johnson, to their positions. But she also turned to the Democratic Unionist Party of Northern Ireland (DUP) to support her minority government. The DUP had supported Leave in the referendum, despite public sympathy in Northern Ireland for Remain, and in its 2017 election manifesto the party had urged the government to end ECJ oversight, while securing the best free trade and customs agreements with the EU and an open border with Ireland.²⁷ Thus, going forward, the British government will find itself reliant on the parliamentary votes of every Tory MP – including staunch Remainers and the most extreme Brexiteers – as well as ten votes of a party with their own distinct vision of Brexit.

The process

A key element in the negotiations – one that is likely to have a strong impact on both process and outcomes – is timing. Under Article 50, the withdrawing member state finds itself out of the EU in two years, regardless of whether a divorce agreement has been concluded or not. The talks – and continued EU membership for the state seeking to leave – can only be extended with the unanimous approval of the other member states. This means that if there is not an exit agreement by 29 March 2019, the EU27 must all be willing to continue, or the UK will cease being a member of the EU.

In practice, the timeline will be even shorter. The final agreement must be approved by a majority vote of the European Parliament (including UK MEPs) before the deadline, which among other things requires translating the final text into 24 languages. The Council must then accept the agreement by a strong qualified majority vote (approval by 72 per cent of the 27 member states, representing at least 65 per cent of the population of the EU27).²⁸ (It is possible that the final exit agreement might require unanimity if it were to include certain policy areas, such as the Common Security and Defence Policy (CSDP),²⁹ but it is more likely that such issues would be reserved for an agreement on future relations.) Finally, the UK must also ratify the exit agreement, which

25 BBC News 2017b.

26 Riley-Smith 2017.

27 Democratic Unionist Party 2017.

28 Qualified majority voting (QMV) normally requires approval by 55 per cent of member states (i.e. 16 out of 28), representing at least 65 per cent of the EU population. But when the Council is voting on a proposal not from the Commission or the High Representative (in this case from the UK), a stronger version of QMV is required: 72 per cent of member states representing at least 65 per cent of the population (EUR-Lex 2017; European Council 2016c).

29 Institute for Government 2017.

would involve an Act of Parliament. The Commission therefore estimates that negotiations must be concluded no later than October 2018 for all the required approvals to be obtained by 29 March 2019.³⁰ It is not yet clear whether the exit agreement must also be approved by each member state according to its own ratification procedures, which would add considerable time. The European Commission does not mention this in its own description of the process, nor is it required in the text of Article 50.³¹ But even without this requirement, and given the EU's propensity to reach agreements only at the very last minute, Brexit could become a real cliffhanger. Given the potential economic disruption to both sides, it might make sense to extend the deadline or to 'stop the clock' – neither of which is uncommon in EU negotiations (and even then, there would still need to be arrangements for the June 2019 European Parliament elections to be run without British involvement). Given that the analysis provided in Chapter 5 indicates that EU27 stands to lose less than the UK if there is no agreement, much may depend on the atmosphere surrounding the negotiations as the endgame unfolds.

The March 2019 deadline does not apply to the negotiation of any post-Brexit arrangements, which would be concluded under the normal processes for EU negotiations with a third country. As these arrangements are likely to address the post-Brexit trade, aviation, conformity assessment and investment relationships, as well as any security partnership, they may be even more complicated than the initial divorce settlement. Certainly, a UK–EU accord on trade, investment and regulatory cooperation will require reconciling competing interests among the EU27, as well as with the UK. Both the UK government and the EU27 have indicated that they expect some sort of transitional arrangements might be required; if there is not to be a disruption after the exit date, such arrangements – including duration – should be agreed by then. But the ability to achieve even a transitional accord may be affected by whether the process has been constructive. In addition, a short transitional period (such as two years, as has been suggested by some) may not be long enough to allow for detailed negotiation of a customised future relations agreement.

In recognition of the difficult timeline, the EU proposed an intensive negotiating schedule, with a starting date of 19 June. The European Commission set up a task force, led by veteran Commissioner Michel Barnier, to run the talks on a daily basis. The Council has appointed its own representative, Didier Seeuws, to oversee the process. Both before and after each monthly negotiating rotation, the Commission is to brief the Working Party on Article 50 to keep the Council and member states informed. In addition, each member state has appointed its own Brexit 'Sherpa' to ensure that its top leadership remains informed about the course of negotiations. The European Parliament has also insisted on being involved, given that it must approve the final deal. Guy Verhofstadt, a strong pro-federalist, has been appointed as the top European Parliament representative to the talks and the Commission is expected to brief the Parliament's 'Brexit Committee' regularly. Thus on the EU side alone, this negotiation could easily be slowed by the need to consult with multiple parties and to secure their agreement at key points.

On the UK side, the process has also been complicated by the need to ensure parliamentary involvement. In January 2017, the UK Supreme Court determined that an Act of Parliament was

30 Zalan 2016.

31 European Commission 2017a.

required before the government could trigger Article 50. It ruled that because exiting the EU would change both the way law is made in the UK (removing the EU as a source of law) and also potentially the fundamental rights of British citizens (guaranteed under the EU Charter of Fundamental Rights), the government must have parliamentary approval.³² In the debate over the bill authorising the invocation of Article 50, the House of Lords attempted to insert an amendment giving Parliament a veto over the final Brexit deal. This amendment was removed from the final bill, as approved by the House of Commons on 13 March. Nevertheless, the government has agreed politically that Parliament will be given an 'up or down' vote over the final agreement.³³ Even though the impact of such a vote is uncertain, Parliament could be a factor in the negotiating process. The EU also maintains that the UK must formally ratify the final deal to ensure, among other things, that the nation is committed to the treatment of EU citizens and financial provisions agreed in the divorce. But it is unclear what would follow if Parliament were to fail to ratify an agreement, since Article 50 provides that after two years the UK is out of the EU in any case.

The issues

If the EU's current negotiating guidelines and directives are followed, the first order of business in the negotiations will be reaching an agreement on orderly withdrawal – the exit accord. The EU envisages that only after the Council determines that 'sufficient progress' has been made on the issues involved in the exit accord will it be possible even to begin discussing trade and other elements of the future relationship. Moreover, any expansion of the negotiation mandate must be approved by all EU27 members.

In the EU directives, three key issues for this first phase of the negotiations were identified: securing the rights of EU citizens living in the UK and UK citizens in the EU, achieving a financial settlement and ensuring the stability of peace and security in Northern Ireland in keeping with the Good Friday Agreement. The directives also called for agreement on administrative and legal transitional arrangements, on dispute settlement procedures, on arrangements concerning UK military bases in Cyprus (an EU member) and on transfers of fissile material and property between the UK and the European Atomic Energy Community. A more detailed discussion of the most prominent issues follows. Subsequent events may change elements of the discussion, and it should be remembered that in such complex negotiations, conflict can often arise in unexpected quarters and over unanticipated matters.

The status of citizens

As of 2015, there were estimated to be 3.3 million EU citizens living in the UK and 1.2 million British citizens living in other EU countries.³⁴ By treaty, EU citizens enjoy freedom of movement within the Union, in most cases benefiting from the same rights and benefits as citizens of their country of residence. In many cases, citizens have built lives in other EU member states, either as workers with families, or as retirees. Within the EU, governments have arranged for cross-border

32 *Telegraph* 2017b.

33 Cooper & Kroet 2017.

34 Migration Watch UK 2016.

payment of pensions, reimbursement of healthcare costs, and other transfers associated with the free movement of people. But as the UK leaves the EU, there must be new arrangements and new guarantees of rights, or millions of affected individuals may have to return home.

Since the Brexit referendum, both EU and UK leaders have made clear that resolving this issue is a top priority. Both have indicated a willingness to find a solution, especially for those who were resident prior to the June 2016 referendum. However, as the negotiations have proceeded, this has proved to be an area of considerable disagreement between UK and EU27 negotiators.

Firstly, the cut-off date for migration will need to be established. Is it the date of the referendum? Or is it the date Article 50 was triggered? Or the date of the exit accord? Migration from the EU to the UK has slowed since the referendum, but if the UK continues to be an EU member until March 2019, its citizens may expect to have the right to settle elsewhere in the EU until that time.

Secondly, the EU has outlined a long list of rights it seeks to preserve for its citizens in the UK after withdrawal: the right to continued residence, including permanent residence after five years; the coordination of social security systems and export of benefits; the right to self-employment; and access to the labour market including education and training for family members under the same conditions as nationals. The EU also seeks to secure the status of rights that are agreed by the withdrawal date but do not take effect until later (this would be of particular importance to pension rights).³⁵ This is a starting position in the negotiations, but it presents the British with some challenges. The EU envisages reciprocal treatment of UK citizens in the EU and EU citizens in the UK, but, if the UK government should later wish to change – most likely reduce – its own social welfare benefits, either in structure or costs, would the benefits of EU citizens in the UK also be reduced? The UK government will have to play out multiple scenarios, including benefits that may be introduced between now and the exit date, to ensure that EU citizens in the UK do not end up with better benefits than British nationals. One issue that quickly raised the ire of British officials was the proposal that the European Court of Justice should maintain its role as the guarantor of citizens' rights and as the adjudicator in case of disputes.³⁶ This runs directly contrary to a major element of the 'Leave' campaign – that upon withdrawal the ECJ would no longer have oversight of British law and policies. Despite the good intentions of both sides, the issue of citizens' rights is one where specifics may waylay good intentions. Indeed, Barnier responded to the UK's initial proposal on this issue by calling for more 'ambition, clarity and guarantees.'³⁷

The financial settlement

As with any divorce, there are property and financial assets to be distributed and commitments that have been made should be honoured. And as with many divorces, this issue has quickly become one of the most difficult between the UK and the EU, with politicians on both sides drawing lines in the sand. EU leaders have estimated that the UK would have to pay as much as €100bn to meet the obligations it has undertaken in budgets, pensions and institutions, while some British politicians – who promised voters a financial windfall upon leaving the EU – reject

35 European Council 2017a.

36 O'Donnell 2017.

37 Boffey 2017a.

the very idea of a significant financial settlement. But given that all member states contribute to a common EU budget, and also receive various outlays from that budget, it seems clear that there will have to be some sort of financial reckoning. The EU directives for negotiators identify three elements to be decided: the methodology for determining the total amount, the total amount itself and the schedule of payments. The EU negotiator has said that the methodology must be decided before talks on the future UK–EU relationship can proceed.³⁸

The UK currently pays between 12 and 15 per cent of the EU budget, depending on the year. It is the fourth largest contributor in absolute terms, but the smallest when contributions are related to gross national income.³⁹ The sum is nevertheless substantial,⁴⁰ and it is clearly in the EU's interest to secure as large a payment as possible. But the complexity of the EU budget means that there will be plenty of opportunities for disagreement about how to calculate what the UK owes. The amount could include: the UK's contribution to the Multiannual Financial Framework (MFF, the EU budget), at least up to the leave date; obligations to the European Investment Bank and other EU institutions; payments pledged by the UK to specific funds and programmes, such as that supporting Syrian refugees in Turkey; potential pension costs of UK officials working in the EU institutions; the cost of moving EU agencies from the UK and other costs directly related to the exit; and other liabilities for cohesion funds, fisheries and infrastructure projects – mostly projects to which the UK committed funds that have not yet been spent. Some Central European states, concerned that their funds from the EU might be reduced, now argue that because the UK committed to the MFF that runs until 2020, it should pay up to the end of that term, rather than simply to the date of exit in March 2019. Depending on what is included or not, estimates of UK liabilities range from €82bn to €109bn.⁴¹

On the other side of the ledger, the UK is likely to be owed a considerable sum, including support for British farmers through commitments made until the exit date, as well as other EU commitments in the UK and the UK's share of EU-owned assets. After these receipts are balanced against the liabilities, outside estimates suggest the net amount the UK would owe is reduced considerably, to between €42bn and €75bn.⁴² However, another complication is that if there is an extended transition period, the UK would need to make additional contributions for its duration. Given the complexity of the financial negotiations – and the high stakes involved for all EU members – there is substantial potential for conflict.

The stability of Northern Ireland

Almost 20 years ago, the UK, the Republic of Ireland and most political parties in Northern Ireland signed the Good Friday Agreement. It established devolved power sharing among political rivals, the decommissioning of weapons, and the removal of the previously militarised border between

38 Barker 2017a.

39 BBC News 2017c.

40 Amora 2017.

41 For a full discussion of the potential liabilities and receipts and how they might be calculated, see Barker 2017b and Darvas et al. 2017.

42 Figures from Barker 2017b and Darvas et al. 2017.

the Republic of Ireland and Northern Ireland, as well as other measures to reinforce the peace process. The agreement also included recognition that Northern Ireland was part of the UK, but that by a majority vote of its people, it could become part of a united Ireland.⁴³ The EU was an essential element in reaching this accord: its meetings provided neutral opportunities for British and Irish diplomats to connect, and the EU provided – and still plans to provide – significant financial support to the Good Friday Agreement: €3.4bn in the period 2007–2013, and €3.5bn in 2014–2020.⁴⁴ Perhaps aware of the financial flows and how much the Good Friday Agreement benefited from the engagement and support of the EU, residents of Northern Ireland voted to remain in the EU by 56 per cent to 44 per cent.

Both the European Council guidelines and the negotiating instructions for the Commission task force identify preserving the stability of Northern Ireland and supporting the Good Friday Agreement as priority objectives. It is unclear whether ‘substantial progress’ towards these goals will also be required before discussions can start on the future relationship between the EU and UK. But unlike protecting the rights of citizens or the financial settlement, there are no specific directives included – a sign that the EU does not have a clear idea of how to proceed. Nevertheless, some issues must clearly be resolved if Northern Ireland is to remain stable and continue to grow economically after Brexit:

- **Border.** For the most part, the border between the Republic and Northern Ireland is now truly open. Reinstating even a modestly patrolled border would be a major issue for residents, 30,000 of whom live on one side of the border and work on the other.⁴⁵ While there has long been a Common Travel Area between the UK and Ireland, in which citizens have travelled relatively freely across land, sea and air borders, a problem may arise with respect to non-Irish EU citizens who after Brexit could travel freely to Ireland but whom the UK may wish to restrict, especially in this age of migration sensitivity and terrorism.
- **Trade and investment.** The EU27 is a major export market for Northern Ireland. Many of these exports are agricultural, which would likely face high tariffs into the EU post-Brexit, unless there is a quick trade deal. Manufacturing in the region also ignores the border, with industrial supply chains transiting the border several times in the production of goods. Even if there were no such value chains in Ireland, if the UK is outside of the EU Customs Union, customs checks will be necessary (as with Switzerland now).
- **Citizenship.** The Good Friday Agreement allows individuals born in Northern Ireland to hold either British or Irish citizenship (or both). Since Brexit, there has been an upswing in applications for Irish citizenship. Unless these individuals move to the Republic, this trend will increase the numbers of EU citizens remaining in the UK after Brexit.

Both the UK and the EU are steadfast in their support of the Good Friday Agreement. But given the complexity of the situation, Brexit will undoubtedly present some very real challenges in managing the security of the region while also building confidence among the communities. That

43 European Parliament 2017.

44 European Commission 2016a.

45 European Parliament 2017.

domestic Northern Ireland politics have been difficult for some time – as of November 2017 there is no government – only makes the situation even more volatile. The reliance of the UK government on the DUP to survive also adds a new layer of complexity. Finally, the EU has included a wild card in its guidelines, accepting the suggestion of the Irish government that it should seek to ensure that should Northern Ireland ever join the Republic, it would be immediately accepted into the EU, as happened with East Germany in 1989.⁴⁶

The role and competence of the European Court of Justice

The negotiating directives for the Commission require it to seek to maintain ongoing judicial cooperation between the EU27 and the UK in civil, commercial and criminal matters, ongoing administrative and law enforcement cooperation, and existing EU judicial and administrative procedures already started (but not concluded) before the exit date.⁴⁷ These objectives are designed to ensure that procedures already established and underway will not be interrupted when the UK leaves the EU. For example, a joint police investigation into a terrorist cell would not stop automatically, nor would the sharing of information and evidence in a cross-border money laundering case, or cross-border administrative cooperation in a wide range of issues, providing this had already started before the exit date. The Commission also will seek to establish procedures to ensure enforcement of the exit agreement itself. Necessarily, if there are disagreements about how to interpret the financial settlement in the future, there needs to be some procedure in place to resolve those differences.

However, in almost every case, the EU has specified that these procedures should fall under the jurisdiction of the ECJ. The same is true for the EU's negotiating directives regarding the protection of EU citizens in the UK. According to the directives, if there is a need to settle disputes about the rights of an EU citizen in the UK, or a UK citizen in the EU, 'the jurisdiction of the Court of Justice of the European Union (and the supervisory role of the Commission) should be maintained'.⁴⁸ This could mean that if a French citizen living in London believes his or her rights in the exit agreement have not been implemented properly, that person's case would be heard and settled on appeal at the ECJ, rather than in the British court system. The UK government is unlikely to agree to such an arrangement, especially in the area of citizens' rights. Indeed, this will be a tough obstacle for negotiators to overcome even in the much less visible areas of administrative or police cooperation. Throughout the Brexit campaign, the issue of removing ECJ oversight of UK law was one of the main points of the 'Leave' campaign, and it has remained a very visible and sensitive objective of the May government. In her Lancaster House speech in January 2017, the prime minister stated: 'So we will take back control of our laws and bring an end to the jurisdiction of the European Court of Justice in Britain.'⁴⁹ Thus, even for what seems like a relatively mundane area of negotiation, there are serious obstacles ahead.

46 Zalan 2017.

47 European Council 2017a.

48 European Council 2017a.

49 May 2017.

Other issues

While the issues above are the most important ones confronting the UK and EU – and the ones most likely to cause the exit negotiations to fail – there are many other matters that must be decided upon. For the most part, they should not cause much turbulence, although nothing is certain in such a complex and unprecedented undertaking. More difficult examples include:

- **Euratom.** The UK is leaving not only the European Union but also the European Atomic Energy Community (Euratom), which manages the production of nuclear energy within the European Union and provides oversight of facilities and materials. The EU negotiating directives specify that the exit agreement must include provisions for the transfer of ‘special fissile material’ from Euratom facilities in the UK and also the transfer of facilities.⁵⁰ Perhaps of most importance, Euratom provides an essential safeguard regime, which has allowed the UK to engage in civilian nuclear cooperation with the United States and other countries. New safeguards will have to be established and new arrangements agreed with the International Atomic Energy Agency.⁵¹
- **British bases on Cyprus.** In the 1960 treaty making Cyprus independent, the UK retained two territories, including military installations and some surrounding villages, now known as the Sovereign Base Areas of Akrotiri and Dhekelia. When the UK joined the EC in 1974, it specifically exempted these territories from EC jurisdiction. When Cyprus joined 40 years later, it also exempted the territories, but created enough exceptions, such as agriculture, customs duties, freedom of movement and borders, that there is now a complex mix of UK, Cypriot and EU rules and jurisdictions.⁵² In light of a pending settlement between Cyprus and northern Cyprus, in both 2009 and during the current negotiations the UK government has offered to return to Cyprus about half the territories (specifically residential areas that have nothing to do with military operations).⁵³ Brexit may offer an opportunity to clarify jurisdictional issues concerning the bases, especially concerning the rights of EU citizens. And because the border between the bases and Cypriot territory will constitute an external border of the EU, there will also be a need to revisit existing procedures for regulating that border.⁵⁴
- **Gibraltar.** The guidelines adopted by the European Council on 29 April state, ‘After the United Kingdom leaves the Union, no agreement between the EU and the United Kingdom may apply to the territory of Gibraltar without the agreement between the Kingdom of Spain and the United Kingdom.’⁵⁵ This would seem to give Spain an effective veto over the arrangements that will need to be made for Gibraltar’s border with Spain and for the approximately 12,000 workers who cross that border every day. Given the often fraught relations between Spain and the UK over Gibraltar, this issue could become a sticking point that could hold up negotiations in other areas.

50 European Council 2017a.

51 Barker, Beesley & Ward 2017.

52 Yiolitis 2016.

53 Summers 2017; see also Yiolitis 2016.

54 Yiolitis 2016.

55 European Council 2017c.

All of these issues are currently identified by the EU as part of the divorce negotiations. As mentioned above, the EU claims there must be 'substantial progress' on at least the rights of citizens and the financial settlement before it will move to preliminary discussions about a post-Brexit UK–EU trading arrangement. Once the future-oriented talks begin, the focus will be on negotiations for a new economic arrangement between the UK and the EU. We discuss the various options and their effects in Chapter 5.

Aside from the economic accord, there will also need to be several additional UK–EU agreements. One – or perhaps two separate agreements – would focus on security and defence cooperation. Recent terrorist incidents have made clear the vital importance of continued cooperation among police and judicial authorities across Europe, including the UK. The British have also been big contributors to, and users of, intelligence concerning terrorist networks in Europe, including the Schengen Information System. In addition, the UK may be interested in occasionally participating in EU CSDP operations, both civilian and military. Given UK military capabilities, the EU should welcome this engagement. Moreover, the EU has recently launched an investment fund aimed at creating more joint defence capabilities. An agreement would be needed to allow participation by British companies and concomitant British financial contributions – something that over the long term would help European defence.

Another UK–EU agreement specifically regarding financial services will probably also be needed. The UK will likely seek to secure a ruling from the European Commission that its financial services market is 'equivalent' to that of the EU, but for longer-term stability, especially as it concerns Euro-clearing – a business worth \$995bn daily in London – a more formal arrangement may be necessary.⁵⁶ In contrast to defence and security agreements that clearly benefit both partners, there is already considerable tension across the Channel about any financial services agreement as Frankfurt, Paris and other cities look to replace London as Europe's financial capital.

The complexity of these future arrangements may mean agreements may not be reached before the March 2019 deadline. Indeed, both UK and EU representatives have conceded that transitional arrangements will likely be necessary to bridge the gap between the exit date and the conclusion of future arrangements on trade, security and other issues. In its guidelines, the European Council specified that any transitional arrangements must be 'clearly defined, limited in time and subject to effective enforcement mechanism... this would require existing Union regulatory, budgetary, supervisory, judiciary and enforcement instruments and structures to apply.'⁵⁷

Although it is widely presumed that any transitional phase will simply continue existing arrangements until new agreements are concluded, it may not be that simple. Should the EU continue to grant access to the Single Market until there is a new UK–EU FTA, even though the UK is no longer a member? Should it allow continued access to the Schengen Information System if the UK has not also agreed to a corresponding privacy regime? It seems unlikely that the EU would agree to either scenario. And from the other direction, should the UK agree to ECJ oversight in a transitional period or would it consider that such oversight might set a politically unacceptable precedent for the permanent agreements? The terms of any transitional arrangements must

56 Brinded 2017.

57 European Council 2017c.

provide incentives for both parties to complete the final negotiations for future arrangements. Transitional arrangements may turn out to be almost as difficult to negotiate as the final accords.

In short, the Brexit process is just beginning. Given the multitude of issues and their complexity, success is likely to depend on the UK and the EU developing clear priorities based on careful thought about their interests and careful planning on how to pursue those interests and priorities. The unfolding negotiations will allow the world to discover whether this has occurred.

3 Examining Brexit negotiations: priorities of the various parties

Brexit negotiations will be complex. While on the surface the negotiations will be conducted between two entities, the EU and the UK, both have many internal, competing factions, each with their own priorities. In this chapter, we examine the negotiation priorities and strategic interests of the UK as outlined by the government that stood until the 8 June elections. We then take into account that the UK is not monolithic in its Brexit aspirations, with different segments of the population prioritising different potential outcomes and strategies. Next, we examine the priorities and interests of the EU27 as a unified negotiating bloc. We detail the interests of various groups within the EU27 – the Eurogroup (using the euro currency), countries that are net contributors and net receivers from the EU budget, and regional groupings (for a breakdown of the different groupings, as well as population data for each country, see Appendix A).⁵⁸ Finally, we consider the priorities of a non-EU actor, the United States, which will not directly participate in the negotiations but which has vested interests in the outcomes.

UK priorities

Broadly, the UK wants four outcomes from the Brexit talks: restrictions on the freedom of movement of EU citizens in the UK, freedom from ECJ jurisdiction, as much free and open trade as it can retain, and the lowest fee possible to settle its commitments to the EU. In January 2017, Theresa May laid out her terms for a possible deal, but made no mention of financial payments. These terms included setting the UK's own immigration rules, leaving the single market, and seeking a free-trade deal with the EU.⁵⁹ On 29 March 2017, she reiterated the importance of economic and security cooperation in her formal invocation of Article 50, but again made no mention of a financial settlement, or what is termed an 'exit bill' in the popular press.⁶⁰

As noted earlier, the UK was one of only three EU countries to open its labour markets immediately to workers from the ten new members admitted to the EU in May 2004. Since then,

58 According to Mark Essex at KPMG, 'based on analysis of European media, the statements of European politicians and the schedules of their travel and meetings, we believe the union's 27 remaining members are splitting and coalescing into rival blocs: the northern Europeans, an enlarged Visegrad Group to the east and a Mediterranean alliance, led by France' (Essex 2016).

59 Parker, Ford & Barker 2017.

60 Smith 2017.

hundreds of thousands of individuals from these countries, as well as people from more recent EU entrants (e.g. Bulgaria, Romania and Croatia), have moved to the UK looking for work.⁶¹ In 2015, about 3.3 million people living in the UK (about 5 per cent of the UK population) were citizens of other EU countries, and annual net migration from the rest of the EU was at historically high levels, having increased from around 70,000 in 2010 to between 160,000 and 190,000 per year.⁶² EU27 citizens living in the UK included approximately 850,000 Poles, 200,000 Lithuanians, 75,000 Slovaks and 60,000 Bulgarians.⁶³

Some UK citizens were dismayed by this relatively fast influx of foreigners. One especially controversial Leave advert sponsored by UKIP leader Nigel Farage showed a stream of refugees walking down a road, captioned with the words 'Breaking Point: The EU has failed us all. We must break free of the EU and take back control.' Many observers thought that the advert was designed to incite racial hatred and that it was reminiscent of Nazi propaganda from the 1930s.⁶⁴ In December 2015, Simon Tilford of the Centre for European Reform stated:

If Britain votes to leave the EU it will be because of hostility to immigration. It will not be because of the threat of eurozone caucusing, the role of national parliaments vis-à-vis the European Parliament, regulatory threats to the City of London or concerns over the competitiveness of the EU economy. Disillusionment with the EU has risen in the UK because membership has become synonymous in many voters' minds with uncontrolled immigration.⁶⁵

Tilford argues that stagnating wages (caused by the 2008 recession), an inadequate supply of housing and other public services (due to failures in public policy) and the declining status of the white working class have hit UK citizens, especially low-income residents, particularly hard. While there is little evidence that immigration caused any of these problems, 'in the popular mind there is a causal link between migrants and falling wages' as well as competition for housing and pressure on public services such as the National Health Service and education.⁶⁶

In their May 2017 election manifesto, the Conservative party reiterated their commitment to a target of limiting net migration to tens of thousands and threatened to double the cost to an employer of hiring a skilled foreign worker. At the same time, a UK think tank published a report arguing that the UK economy would need more than 200,000 migrants a year to avoid the 'catastrophic economic consequences' of Brexit.⁶⁷

Along with control of its borders, the UK also seeks to have more control over its laws by revoking ECJ jurisdiction over the country. Based in Luxembourg, the ECJ was established to interpret EU law at the request of the national courts and to resolve disputes between EU member states and institutions. Since under the treaties EU law supersedes national law within the EU, the Court's

61 Vargas-Silva 2014.

62 White 2015; O'Leary 2017.

63 Cooper 2017b.

64 Stewart & Mason 2016.

65 Tilford 2015.

66 Wintour 2017a.

67 Wintour 2017a.

decisions have widespread effect. Although the ECJ is widely respected in continental Europe, it has been especially unpopular in the UK and has long been denounced by many UK politicians and media outlets. Newspaper articles before the referendum proclaimed that over the previous 40 years the UK had lost more than 75 per cent of cases it was involved in before the ECJ. Many derided ECJ rulings as meddling by Brussels and felt that the court limited the sovereignty and self-determination of the UK.⁶⁸

Another important issue for the UK is how Brexit will affect the sale of goods and services across borders. Trade and investment flows benefit both the UK and its EU partners. Trade in services is especially important to the UK, constituting 43 per cent of total exports and a quarter of total imports.⁶⁹ Given the size of the financial sector in London, ‘passporting’ rights have been particularly important; such rights allow any bank authorised in one EU member state – such as the UK – to operate freely throughout the EU. This includes banks headquartered in an EU country and EU-regulated subsidiaries of banks in third countries, such as the United States.⁷⁰ In 2016, the financial sector accounted for 7.2 per cent of UK gross value added (a measure of the size of the economy);⁷¹ 16.3 per cent of the London region’s gross value added; 3.1 per cent of all UK jobs; and in the year to March 2015, 11 per cent of all UK government receipts.⁷² According to Daniel Gros of the Centre for European Policy Studies (CEPS) think tank, ‘financial services account for about one-third of Britain’s total services exports and two-thirds of the overall services surplus that the UK needs to pay for its deficit on goods. The industry’s success is a result, at least partly, of the UK’s EU membership.’⁷³ Even before Article 50 was invoked in March 2017, Brexit had already begun to take its toll on the financial services sector: in January 2017, HSBC, one of the largest banks in the world, reported that it would move 1,000 jobs from London to Paris.⁷⁴ Aviation is also a key British interest, as several airlines with extensive European route networks (Ryanair, easyJet, British Airways) are domiciled in the UK, and Heathrow and Gatwick are two of the world’s leading airports.

Beyond services, a large portion of the UK goods trade either goes to EU countries or comes from EU countries. The EU27 as a whole receive 44 per cent of the UK’s goods exports and are the source of 54 per cent of the UK’s goods imports (Table 3.1). The most important markets for UK goods exports are Germany (10.0 per cent of all UK goods exports), France (5.9 per cent), the Netherlands (5.7 per cent) and Ireland (5.5 per cent). The most important source countries include Germany (15.0 per cent of all UK goods imports), the Netherlands (7.5 per cent) and France (6.1 per cent).

68 Hall 2016.

69 Borchert 2016.

70 Arnold & Noonan 2016; Magnus, Margerit & Mesnard 2016. Passporting applies to all members of the European Economic Area, which includes several countries beyond the EU28 (British Bankers’ Association 2016).

71 GDP is gross value added after adding taxes and subtracting subsidies. Gross value added is often used to measure the economic output of regions and other entities smaller than a country since total aggregates of taxes on products and subsidies on products are only available at a national level. In 2013, financial services firms accounted for approximately 9.6 per cent of the UK’s GDP (Southwood 2013; see also PricewaterhouseCoopers 2016).

72 Tyler 2017; PricewaterhouseCoopers 2015.

73 Gros 2016.

74 Parker, Ford & Barker 2017.

Some EU countries receive high proportions of their imported goods from the UK (Table 3.2). These include Ireland (25.7 per cent of all goods imports in Ireland come from the UK), Cyprus (8.8 per cent), Malta (6.9 per cent), the Netherlands (5.6 per cent) and Belgium (5.1 per cent). For many of these countries, the UK is also an important export destination. In particular, Ireland sends 13.8 per cent of its goods exports to the UK, and 14 other countries send more than 5 per cent of their exports to the UK.

Table 3.1. UK goods trade with the EU, million US\$, 2015

Country	Exports	Share of world (%)	Imports	Share of world (%)
Austria	2,454	0.53	4,692	0.74
Belgium	17,715	3.80	31,402	4.98
Bulgaria	531	0.11	564	0.09
Croatia	211	0.05	145	0.02
Cyprus	567	0.12	239	0.04
Czech	2,999	0.64	7,445	1.18
Denmark	3,534	0.76	5,308	0.84
Estonia	335	0.07	289	0.05
Finland	2,055	0.44	3,136	0.50
France	27,276	5.85	38,704	6.14
Germany	46,632	10.00	94,348	14.97
Greece	1,355	0.29	1,095	0.17
Hungary	1,951	0.42	3,860	0.61
Ireland	25,499	5.47	19,179	3.04
Italy	12,871	2.76	25,056	3.98
Latvia	329	0.07	737	0.12
Lithuania	412	0.09	1,188	0.19
Luxembourg	335	0.07	742	0.12
Malta	575	0.12	278	0.04
Netherlands	26,458	5.67	47,549	7.54
Poland	5,538	1.19	12,435	1.97
Portugal	1,911	0.41	3,594	0.57
Romania	1,508	0.32	2,373	0.38
Slovakia	675	0.14	3,060	0.49
Slovenia	308	0.07	497	0.08
Spain	13,536	2.90	21,606	3.43
Sweden	6,747	1.45	10,446	1.66
EU Total	204,318	43.82	339,965	53.94

SOURCE: United Nations International Statistics Database (UN Comtrade).

NOTE: Prices are in current US\$.

Table 3.2. EU goods trade with the UK, million US\$, 2015

Country	Imports			Exports		
	World	UK	UK share (%)	World	UK	UK share (%)
Austria	147,935	2,605	1.76	145,277	4,431	3.05
Belgium	371,025	18,743	5.05	397,739	35,154	8.84
Bulgaria	29,265	534	1.82	25,779	651	2.52
Croatia	20,580	232	1.13	12,844	231	1.80
Cyprus	5,666	500	8.83	1,931	134	6.93
Czech	140,716	3,018	2.14	157,194	8,372	5.33
Denmark	85,327	3,855	4.52	94,619	5,481	5.79
Estonia	15,747	462	2.94	13,897	363	2.61
Finland	60,174	1,867	3.10	59,682	2,895	4.85
France	563,398	21,625	3.84	493,941	35,003	7.09
Germany	1,057,616	42,549	4.02	1,328,549	98,713	7.43
Greece	47,264	1,329	2.81	28,289	1201	4.24
Hungary	90,761	1,711	1.89	100,297	3910	3.90
Ireland	77,760	19,958	25.67	124,671	17,251	13.84
Italy	410,933	12,067	2.94	456,989	24,783	5.42
Latvia	13,850	255	1.84	11,491	602	5.24
Lithuania	28,176	832	2.95	25,411	1136	4.47
Luxembourg	19,296	309	1.60	12,626	486	3.85
Malta	6,788	465	6.85	3,915	140	3.58
Netherlands	424,851	23,571	5.55	473,834	42,262	8.92
Poland	189,696	5,052	2.66	194,461	13,241	6.81
Portugal	66,871	2,106	3.15	55,259	3,725	6.74
Romania	69,858	1,735	2.48	60,605	2,642	4.36
Slovakia	72,958	1,161	1.59	75,051	4,077	5.43
Slovenia	25,870	443	1.71	26,587	593	2.23
Spain	305,266	13,966	4.57	278,122	20,258	7.28
Sweden	138,365	7,660	5.54	140,001	9,777	6.98
EU Total	4,486,012	188,610	4.20	4,799,016	337,512	7.03

SOURCE: United Nations International Statistics Database (UN Comtrade).

NOTE: Prices are in current US\$.

The EU is a particularly important destination for some UK agricultural exports, and tariff increases for many items could be high without some form of trade agreement. For example, the 95 per cent of UK sheep exports that go to the EU will face a tariff of 30 per cent without an agreement. Tariffs on dairy would be 36 per cent and beef exports could face tariffs of up to 50 per cent. Currently, since the UK is within the EU Customs Union, those tariffs are zero. In addition, farm subsidies from the EU provide 50 per cent to 60 per cent of UK farm income.⁷⁵

A final important priority for the UK is the financial settlement that it may have to pay. The so-called 'exit fee' – where the UK would have to pay to cover its portion of commitments already made by the Union (e.g. budget allocations and pension benefits) – is a key aspect of the negotiations (see Chapter 2).

Internal UK priorities

Long before the referendum on EU membership, the Leave campaign was an amalgam of various competing views of the future of the UK. Some within the UK (we will call them UK1) wanted to peel back EU integration and re-enthroned British sovereignty, and the UKIP leader Nigel Farage exemplified this vision of the Leave initiative. The UK1 group was chiefly concerned with the growing rate and unprecedented number of immigrants to the UK from Eastern European countries and what they viewed as meddling in British affairs by Brussels. Such voters were based in the industrial heartland cities and towns of the Midlands and they were also concerned about the decline in UK-based manufacturing. Besides immigration and job losses, this group was also troubled about what they considered to be the erosion of self-determination in the face of EU institutions such as the European Court of Justice, as highlighted in eurosceptic newspapers such as the *Daily Mail*. For UK1 voters, tax revenues could be better spent on social welfare for UK citizens through the National Health Service, for instance, rather than being contributed to common EU programmes. Many people who identify with UK1 would be pleased to cut ties with the EU even without a transitional agreement or an exit treaty.⁷⁶

Other supporters of the Leave campaign (we will call them UK2) promoted free markets, trade and an outward perspective. They believed that the country could better secure privileged access to world markets on its own than as part of the EU. They also resented what they considered to be the crippling supranational bureaucracy imposed by Brussels. Championed by pro-business leaders such as Matthew Elliott and Conservative Member of the European Parliament Daniel Hannan, the UK2 faction argued for an internationalist UK, 'presenting Brexit as the inevitable fulfilment of Margaret Thatcher's vision'.⁷⁷ They promoted the 'Singapore of the Atlantic Model',⁷⁸ a scenario where the UK becomes an open, internationally competitive island nation based on free trade in goods and services and the free flow of capital and investment. During the campaign,

75 Dunt 2017.

76 Although the percentage of Leave voters who would better identify with UK1 or UK2 is not known, a recent paper examined which factors were correlated with a higher share of Leave votes in a given geographical area. The study found that age, education and economic factors explained more of the Leave vote than did measures of EU exposure, fiscal consolidation or availability of public services. For more information see Becker, Fetzner & Novy 2016.

77 Colvile 2016.

78 Thomas 2015; Collinson 2016.

they argued that approving trade deals would be much easier if the UK could act unilaterally instead of negotiating together with 27 other national parliaments (and additional regional ones). John Fonte, a senior fellow at the Hudson Institute, summed up the argument of these Brexit supporters:

Britain, with the world's fifth largest economy, will have plenty of opportunities to expand its GDP under Brexit. It could negotiate its own trade deals with China, India, Singapore and the United States and represent itself within the WTO instead of being one voice among 28 on the EU team. Further, Britain would be free of the heavy burden of EU regulations. Even with this burden today, Britain's economy is stronger than that of the Eurozone.⁷⁹

Some UK2 experts urged a 'Clean Brexit', arguing that the UK should explicitly rule out remaining in the EU's Single Market or Customs Union, aggressively negotiate FTAs with the rest of the world, and 'offer the other 27 EU nations a deal to carry on trading under existing tariff-free arrangements, but make clear we are also happy with World Trade Organisation (WTO) rules, operating under 'Most Favoured Nation' (MFN) status.'⁸⁰ Many of Theresa May's statements at the beginning of 2017 reflected this philosophy.⁸¹ MFN, a specialised trade term that appears in many Brexit and broader trade discussions, essentially refers to equal treatment of trade partners. It stems from the idea that the duties charged to any trade partner must be the same as the duties charged to the 'most favoured' partner. Among World Trade Organization members, there are several exceptions, including where customs unions and free trade areas have been formed.⁸²

For most UK2 advocates, however, maintaining financial services passporting rights and as much open and free trade with the EU as possible is a top priority. Those with this orientation are more likely to advocate for as low barriers as possible with the EU27, without foregoing the opportunity for the UK to negotiate trade and economic deals with other global markets.

EU27 priorities

If the EU remains unified in its negotiating positions, Brexit can be considered a two-party negotiation between the UK and the EU27. Major EU players understand that unity provides a stronger negotiating position and are pushing for continued cohesion. EU27 leaders have been successful on this front, and member countries have been cohesive and well prepared for important meetings. For instance, it took less than four minutes for them to adopt guidelines for the Brexit negotiations on Saturday 29 April 2017, at the Special European Council (Article 50) meetings.⁸³ EU President Donald Tusk claimed that 'There is unanimous support from all the 27 member states and the EU institutions, giving [the EU] a strong political mandate for these negotiations.'⁸⁴

79 Haass & Fonte 2016.

80 Halligan & Lyons 2017.

81 Critics of this vision noted that, once outside the EU, the UK will have less leverage in dealing with potential trading partners and would be a much smaller player on the international scene relative to the United States, the EU27, China or Russia.

82 World Trade Organization 2017c.

83 Herszenhorn 2017.

84 Britain in Europe 2017.

However, the French president at the time, François Hollande, noted that maintaining unity would be the biggest challenge for the EU in the coming negotiations.⁸⁵ Indeed, EU27 unity may come at a steep price. According to one EU diplomat, 'Countries are already starting to link issues that are off the table with the Brexit talks. They start sending the message that if you want to keep unity on Brexit then they have to get this or this other thing on other dossiers. I expect that this will increasingly be the case.'⁸⁶ Italian Prime Minister Paolo Gentiloni reinforced this point, telling reporters after an EU summit that it would be easier to maintain unity on Brexit in the future if the EU adjusted some of its policies, such as those on fiscal austerity and migration.⁸⁷

At a press conference after the agreement of the negotiating guidelines, President Tusk said that citizens were 'priority number one'.⁸⁸ This was echoed by Politico reporters who spoke to officials from every EU27 country: 'There is a remarkable consensus about the importance of guaranteeing citizens' rights and of the UK meeting its existing obligations to the EU budget framework.'⁸⁹ The EU27 would like EU citizens resident in the UK to have the same level of protection as they would receive under EU law and to retain these protections for life. This would include extension of the judicial authority of the ECJ for these residents. The UK has spoken of offering residency rights to EU27 citizens but it is unclear if these rights would include dependents or uphold current social welfare benefits and (as noted above) the UK has rejected the jurisdiction of the ECJ for internal matters.⁹⁰

The other two explicit priorities the EU adopted at the Special European Council (Article 50) meetings were negotiating a monetary settlement (the EU27 has suggested a figure as high as €100bn) and figuring out a solution for the border between the UK and Ireland that supports peace in Northern Ireland. The EU is insisting on settling these three issues before it will discuss the structure of a future UK–EU relationship.⁹¹ Besides these objectives, the EU27 also seeks reasonable freedom of movement for both goods and services and continued security cooperation and partnerships to promote science, technology and innovation. Many EU27 countries are also interested in luring away high-taxpaying financial firms from London (see below).

At the Special European Council meetings, the leaders of the EU27 countries outlined their core principles for the negotiations. They:

- Reiterated their wish to have the UK as a close partner.
- Reiterated that any future deal will need to be based on a balance of rights and obligations and ensure a level playing field.
- Stressed that the integrity of the single market must be preserved, which means the four freedoms are indivisible and any cherry-picking is excluded.

85 Britain in Europe 2017.

86 Herszenhorn 2017.

87 Herszenhorn 2017.

88 Britain in Europe 2017.

89 Cooper 2017b.

90 Duff 2017.

91 Britain in Europe 2017; Duff 2017.

- Stated that a non-member cannot enjoy the same rights and benefits as a member.⁹²

Permeating the agreement documents and much of the discussions since the referendum is the EU idea that a country cannot be better off outside the union than within. This sentiment provides a rationale for one of the EU27's top objectives – to preserve the union by discouraging any other member state from leaving. This means it seeks to make the UK withdrawal sufficiently painful to '*décourager les autres*'.⁹³ Many EU members are fighting their own internal nationalist movements, which they fear may be further empowered by any agreement that appears favourable to the UK. As former French President Hollande articulated, France wants the UK to pay 'a price' for leaving the EU.⁹⁴ Such an objective may inform the EU27's effort to get the UK to contribute as much as possible to the general EU budget before it leaves, in addition to a natural interest in maximising revenue to cushion the shock of the departure of one of the EU's biggest net payers. Besides a high exit fee, the desire to demonstrate that Brexit is costly may influence trade negotiations over services as well as UK passporting rights for financial firms.

Differing European perspectives

A monolithic position would lead to more negotiating power for the EU27 in the upcoming talks. However, there is substantial variation in the incentives and priorities of its members. In an extreme scenario, 27 different national interests might be expressed on some issues, complicating any potential deal.⁹⁵ And possible coalitions could form around subgroup interests.

One likely such coalition could be formed by the 17 member states that have adopted the euro, especially as this grouping already has its own standing informal body – the Eurogroup – which meets monthly at the finance minister level and from time to time at the Summit level.⁹⁶ In 2016, Eurogroup countries accounted for 86.3 per cent of EU27 GDP and 76.5 per cent of EU27 population, so as a group they have tremendous economic weight and are on average wealthier than the non-euro countries.⁹⁷ The Eurogroup regularly discusses the 'economic situation and outlook in the euro area', the 'budgetary policies of euro area countries' and 'matters related to maintaining financial stability in the euro area' among other issues, each of which arguably could be affected by Brexit. In addition, euro area countries could have a special interest in financial services issues and ways in which the post-Brexit financial sector arrangements could be organised to benefit euro area countries at the expense of the City of London. These countries may hope to attract headquarters of leading UK-based financial firms (including European subsidiaries of US firms such as JPMorgan Chase or Goldman Sachs), thus increasing their tax revenues from this

92 European Council 2017d.

93 In other words, to 'discourage the others'; Freedland 2017.

94 Parker, Barker & Blitz 2016. Emmanuel Macron, elected President of France in May 2017, has even suggested that perhaps Brexit could be avoided, saying 'of course the door remains open, always open until the Brexit negotiations come to an end.' However, like many in the EU he pushed for talks to begin as soon as possible following the UK snap election (Merrick 2017).

95 Cooper 2017b; Poli 2016.

96 European Council 2017f; European Council 2008.

97 GDP and population data are from World Bank World Development Indicators and are variables NY.GDP.MKTP.CD (nominal GDP) and SP.POP.TOTL, respectively.

sector.⁹⁸ Cities in other EU countries (and especially non-Eurogroup members) may lack the necessary global reputation or depth of financial experience to do as well in recruiting deserters from the City of London.⁹⁹ Thus, while they have an incentive to have as much trade in goods as possible, Eurogroup members may want to limit trade in services, especially financial services.

Given the serious budgetary implications of Brexit, coalitions of EU27 member states could also emerge based on the common perspectives of net contributors – or net recipients – of the EU common budget. Despite the rebate won by Margaret Thatcher, as noted earlier the UK is still a net contributor to the budget (see Table 3.3). Other net contributors and net recipients alike have a common interest in maximising the size of the break-up settlement the EU would receive from the UK, which in theory would compensate the Union for commitments made in budgets already agreed. But looking forward to arrangements for the EU's relationship with the UK after Brexit, the interests of net payers and net recipients may diverge.

In 2016, the net contributors accounted for 76.3 per cent of EU27 GDP and 60.3 per cent of EU27 population, so as a group they have tremendous economic weight and are on average wealthier than the net recipient countries.¹⁰⁰ The net contributors may seek to use the UK departure as an occasion to re-examine (or renationalise) expensive commitments from the EU common budget in the negotiation of the EU's seven-year budget perspective, the EU Multiannual Financial Framework, just getting underway. Programmes such as the Common Agricultural Policy or Cohesion Funding may be especially contentious. It appears there is little that the UK could do to turn such disputes to their advantage in the future relationship negotiations, but the existence of the intra-EU fight may complicate or delay European Council decision making about the future agreement with the UK.

In addition to these two broad divisions – Eurogroup/non-euro and net contributors/net recipients – there are other regionally based interests that are emerging, or may emerge. KPMG's Mark Essex has identified three distinct groupings of EU member states with respect to Brexit: northern Europeans, southern Europeans and an expanded Visegrad Group, which we will call Visegrad-Plus (Table 3.4).¹⁰¹ Although there is some heterogeneity among members' priorities within each group, the groups may also share some unifying priorities. And even if the countries do not act together as a regional group, their regionally based interests may result in some divergence from a unified EU stand.

98 Cooper 2017b. France, which we classify in the southern European grouping, could also anticipate attracting headquarters of leading UK-based financial firms.

99 Malta may be an exception, and given its language and climate it reportedly considers itself in a good position for poaching financial services firms from the UK. See Cooper 2017b.

100 GDP and population data are from World Bank World Development Indicators and are variables NY.GDPMKTP.CD (nominal GDP) and SP.POP.TOTL, respectively.

101 Essex 2016; the report did not fully specify all members of each group. We have classified the EU27 as in Table 3.2.

Table 3.3. Net EU contributors and recipients, 2006–2014

Net contributors	Net recipients
Germany	Poland
France	Greece
United Kingdom	Portugal
Italy	Hungary
Netherlands	Spain
Sweden	Romania
Belgium	Czech Republic
Denmark	Lithuania
Austria	Slovakia
Finland	Bulgaria
Luxembourg	Latvia
	Ireland
	Estonia
	Slovenia
	Malta
	Cyprus
	Croatia

SOURCE: EU Information Centre (DK) 2017.

The northern Europeans, with Germany as the largest member, consist of 12 countries and approximately 34 per cent of the EU27 population. They are considered to be interested above all in keeping the EU together and are committed to the free movement of goods and people. Most of the countries in this group have been long-time supporters of, and true believers in, the European project. For many of them, it was hard to understand why the UK would want to leave the Union; in public opinion polls, Germans, with margins of 3 to 1, and Belgians, with margins of almost 2 to 1, reported that they ‘could not understand the reasons behind the British vote’.¹⁰² Many also have significant trade ties to the UK and would like to see the continuation of as much trade in goods as possible. For example, the UK is Belgium’s fourth most important trading partner and is especially important in the Flemish north, which accounts for the majority

of Belgian exports to the UK. Similarly, the Netherlands, Luxembourg and Estonia have large FDI positions in the UK and therefore incentives to see the UK get the best Brexit deal possible.¹⁰³

Table 3.4. EU27 groupings by regional interests

Northern	Southern	Visegrad-Plus
Austria	Cyprus	Bulgaria
Belgium	France	Croatia
Denmark	Greece	Czech Republic
Estonia	Italy	Hungary
Finland	Malta	Poland
Germany	Portugal	Romania
Ireland	Spain	Slovakia
Latvia		Slovenia
Lithuania		
Luxembourg		
Netherlands		
Sweden		

Northern countries are also concerned to maintain the Union as a relatively open trading economy. As a liberalising, market-friendly member, the UK traditionally helped northern Europeans counteract the more protectionist leanings of the southern European countries.¹⁰⁴ Some northern Europeans, notably Finland, Latvia, Lithuania and Estonia, along with Visegrad group member Poland, care a lot about maintaining security cooperation with the UK to fend off potential threats from Russia. These countries may fear that Brexit could undermine the EU's position towards Russia or the coherence of EU–NATO relations, and they may be inclined to be more lenient on the UK in economic terms to ensure it remains deeply engaged in European security.¹⁰⁵

The southern Europe grouping may comprise only seven countries but among these are France, Italy and Spain, which alone account for 44 per cent of the EU's population. If southerners were to hold together, because of qualified majority voting they could withhold approval of, for example, a trade deal. Southern Europe is not very competitive in terms of goods exports to the UK, and may be more interested in other objectives with respect to a post-Brexit relationship with the UK.¹⁰⁶ These countries want to maintain the Union after Brexit, to quell internal eurosceptics by making

103 Herszenhorn 2017; Cooper 2017b.

104 Poli 2016.

105 Cooper 2017b; Poli 2016; Black et al. 2017.

106 For more on trade flows, see Chapter 5.

Brexit appear costly, for the UK to contribute as much as possible as an exit fee and to preserve agricultural policy, in particular the Common Agricultural Policy (CAP) and fisheries policy. In addition, Spain and Malta in particular will be interested in ensuring British retirees remain invested in their tourist and real estate markets and Cyprus will be concerned about tourism as well as arrangements regarding UK military bases, which cover 1 per cent of its land (as discussed in Chapter 2).¹⁰⁷

Some of the southern European countries (such as Spain) are worried not only about populist movements at home but also about empowering separatist movements in the event that Brexit triggers another independence vote in Scotland. Making Brexit as painful as possible, for instance by taking away the UK's financial services passporting rights and other benefits, and delaying an independent Scotland's entry into the EU, would show that leaving the EU is economically costly and this may help to stall anti-EU and separatist movements.

Additional interests may further encourage the southern Europeans to stick with northerners on Brexit issues. These might include easier austerity terms, as France's new President Emmanuel Macron urges. France and Spain will also be focused on the redistribution of EU fishing quotas after Brexit, as well as post-withdrawal access to traditional fishing grounds in UK waters. There might even be some special national axes to grind: a Greek archaeologist, for example, has suggested that the return to Greece of the 'Parthenon Marbles' from the British Museum should be part of any final arrangement.¹⁰⁸

Although in some ways the interests of southern Europe may be aligned with those of the northern countries, in other ways they are not. The southern countries in general are more interested in an EU that redistributes wealth from the relatively rich north to the less developed south. Northern members are worried that without the UK, power in Brussels will shift, and southern European countries may be able to block any laws that they do not like (such as cuts to generous subsidies for agriculture and development).

For the Visegrad Group (the Czech Republic, Hungary, Poland and Slovakia) along with Bulgaria, Croatia, Slovenia and Romania (together, Visegrad-Plus), the rights of citizens are a priority. This is because individuals from their countries have disproportionately moved to the UK and other northern European countries for job opportunities. We have seen how their citizens were a driving force behind the immigration that helped to precipitate Brexit and these citizens remain in limbo pending an agreement on their futures. Since EU enlargement in 2004, 850,000 Poles have settled in the UK (15.7 per cent of all migrants in the UK are Polish citizens¹⁰⁹). About half of these individuals have been in the country for less than five years, not long enough to become permanent residents under the current rule structure.¹¹⁰ As a result, Visegrad-Plus countries will be keenly interested in post-Brexit rights of abode for their nationals now resident in the UK and assurances about their treatment under any subsequent British migration regime. These countries also wish

107 There are more British people in Spain than Spaniards in the UK; this is unique among EU27 countries (Cooper 2017b; Herszenhorn 2017).

108 ekathimerini.com 2017.

109 Vargas-Silva & Rienzo 2014.

110 Rettman 2016; Poli 2016; Cooper 2017b.

to maintain the remittances that their UK-based citizens send to their countrymen back home. In 2011, remittances from the UK to other countries were estimated to be worth \$23bn – including more than \$1.2bn to Poland.¹¹¹

As with some northern European states geographically close to Russia, some Visegrad-Plus countries (especially Poland) are also likely to favour an agreement that promotes UK–EU security cooperation, given their history with Russia. And while it is unlikely that they will entice UK financial firms to relocate in their countries, and their exports to the UK are relatively small, Visegrad-Plus states should gain in manufacturing sectors if trade barriers (tariff and non-tariff alike) disadvantage British manufacturers in the post-Brexit period.¹¹²

France and Germany, the two most populous EU countries and historically the most active at exercising leadership of the EU, will likely have the most power in the negotiations and they are currently taking a very tough line. Other European states may follow the German and French lead to advance their own interests. Italy and Greece, for instance, may follow a German lead on Brexit in the expectation of German understanding of their positions on economic austerity and migration. Bulgaria, Croatia and Slovenia are also expected to follow Germany's lead because of close economic ties.¹¹³ In fact, the UK exit is likely to strengthen Germany's position. Poland, for example, has often relied on the UK as a counterbalance to Germany and France in matters relating to the speed and depth of integration. Now, however, the UK's influence will be lost.¹¹⁴

US priorities

The United States has varied interests and priorities in the outcome of Brexit. As the UK has often found itself in agreement with US economic and political perspectives, its exit from the EU may make it harder for the United States to exert as much influence on mainland Europe. Brexit will affect US agendas on trade, digital privacy, security, terrorism and global tax reform. US priorities post-Brexit include negotiating trade access to the UK and perhaps the EU27 markets; possibly enticing firms, especially financial firms, to move London-based financial operations to the United States; and maintaining a united Europe as a partner to counter Russia and China.

In a press conference in London in April 2016, then US President Barack Obama called the Brexit referendum 'a matter of deep interest to the United States because it affects our prospects as well. The United States wants a strong United Kingdom as a partner. And the United Kingdom is

111 *Guardian* 2013.

112 The positions of these countries don't always fall in line with these broad groupings. For example, Denmark, the Netherlands and Ireland may fear a fast-tracked political union pushed forward in the UK's absence by Germany and France. Similarly, with the withdrawal of the UK from the Single Market there will be considerable economic disruption to manufacturing value chain relationships across the EU, including in specific Visegrad and southern European countries. Especially in the automobile, aerospace and technology sectors, tight integration of parts suppliers across the EU would be disrupted by the imposition of tax and paperwork burdens on cross-channel trade. Some countries could benefit, but many manufacturing relationships will be disrupted, resulting, potentially, in politically damaging transitional unemployment.

113 Cooper 2017b.

114 Dempsey 2017.

at its best when it's helping to lead a strong Europe.'¹¹⁵ He also tried to discourage those arguing that the UK could make better trade deals outside of the EU, saying that his priority was a US–EU deal. In the event of Brexit he said that, 'maybe some point down the line, there might be a UK–US trade agreement, but it's not going to happen anytime soon. The UK is going to be in the back of the queue.'¹¹⁶

Immediately after the Brexit vote, Obama encouraged the UK and the EU to work together and remain committed to western values, saying 'Europe can't afford to turn inward. They're going to have to worry about working with us on the Middle East. They are going to have to worry about us working together to deal with an aggressive Russia.'¹¹⁷

However, Donald Trump, elected president of the United States on 8 November 2016, commented positively about the results of the UK Brexit vote during his campaign. Contradicting Obama's April 2016 observations, Trump said he thought Brexit would 'end up being a great thing' and that his administration would quickly offer the UK a 'fair' trade deal with the United States.¹¹⁸ Many governments were even more shocked at the president-elect's comments that he expected one or more other member states to exit the EU eventually, calling into question the new American leader's view of the importance of an integrated Europe to the United States.¹¹⁹

The United States has a major interest in the strength and stability both of the UK and the EU27, since the EU is the largest export market for US goods and services and by far the most important destination for American direct investment.¹²⁰ This is also true for the EU without the UK: after Brexit, of the two parties, the EU27 will be the larger customer and the more important direct investment locale (although the UK does remain important, as illustrated in Chapter 5). The optimal outcome for the United States is no Brexit, and among the Brexit outcomes the optimal is the one that most preserves UK access to the EU market and which therefore has the largest positive effect on UK and EU growth rates. The United States signalled it will defend its own trade interests in objectioning (along with other trading partners) to the UK and EU's proposed division of the WTO-bound agricultural tariff rate quotas.¹²¹

The United States also has an interest in preserving UK participation in European security and anti-terrorism cooperation, given that UK views tend to parallel American. Finally, the United States has an interest in preserving both the integrity of the UK and the residual EU, and in avoiding a renewal of sectarian conflict in Northern Ireland.

115 Browne 2016.

116 Browne 2016.

117 Salinas 2016.

118 Masters & Hunt 2017.

119 Gove & Wright 2017.

120 In 2016, US exports of goods and services to the EU totalled \$502.3 billion, of which \$381.0 billion went to the EU27; this placed the EU27 ahead of second-place Canada (\$321.3 billion) and third-place Mexico (\$261.9 billion) (US Census Bureau and US Bureau of Economic Analysis 2017). In 2015, the US direct investment position (a measure of FDI) in the EU totalled \$2.7 trillion; without the UK that amount was \$2.1 trillion, still well ahead of the next-largest recipient, the Netherlands, with \$858 billion (US Bureau of Economic Analysis 2017a).

121 Donnan and Brundsen 2017.

Meeting competing priorities

The Brexit negotiations involve and will continue to involve 28 governments, the European Parliament and the European Commission. They will also potentially attract high levels of interest from the United States, non-EU European countries and others. They may end up occurring as a pure bilateral discussion – the UK and the representative of the EU27, i.e. the European Commission – but they could also involve numerous side discussions and great complexity as the 28 countries attempt to meet sometimes competing priorities.

Some within the UK hope to prioritise control over movement of EU citizens into the UK, ending jurisdiction of the European Court of Justice and obtaining a breakup financial settlement as low as possible. Others hope to reduce overall bureaucracy while maintaining as much trade in goods and services as possible and ensuring the right to pursue other FTAs around the world. Still others, mostly outside the government, would like to remain in the Single Market, and/or the Customs Union, or avoid Brexit altogether.

Many within the EU agree that one of their top priorities is to maintain the Union after Brexit. Other priorities include ensuring the residency and employment rights of their citizens currently living in the UK, having the UK pay its share of the European Union's commitments, and securing the peace process in Northern Ireland. Countries that use the euro as their currency may find common cause in ensuring the financial stability of the EU, making sure the budgetary policies of countries are in accordance with EU policy, and trying to attract financial services firms from the UK to their countries. Countries that are net contributors to the EU budget will want to make sure the burden left by the UK exit does not add significantly to their obligations, while net recipients will be reluctant to see the money they receive cut.

There are also regional interests. Even though these may not coalesce into united regional action, they may still raise a challenge to EU cohesion. Countries in the north are interested in the maximum possible freedom of movement for goods, maintaining security cooperation and the possibility of luring away financial firms from London. Southern European countries are interested in making the UK contribute as much as possible to the EU budget before it leaves and preserving the CAP and fisheries policy. They also wish to quell euroscepticism within their borders. Those in the east will lobby for the maximum possible freedom of movement for their citizens who live and work in the UK. They are also interested in compelling the UK to pay a high exit fee and maintaining security cooperation to fend off Russian aggression.

One way to understand both how the negotiations might evolve and the best options for each party is through game theory, a method for analysing interdependent decision making when one's course of action also depends on the course of action chosen by others. We expand upon this in the context of Brexit in the next chapter.

4 Examining Brexit negotiations: implications from game theory

As soon as the result of the Brexit vote became known, negotiations between the UK and the EU began. These were not formal negotiations, but rather they involved signalling among the numerous stakeholders, as well as positioning within the parties as to how they would approach the task of negotiating the UK's withdrawal.¹²² Theresa May's letter in March 2017 triggering Article 50 marked the beginning of the formal exit negotiations, which are likely to take the full two-year exit period. Bargaining over an agreement or agreements to establish future economic, political and security arrangements between the UK and the EU is likely to take much longer.

There is no precedent for the UK's withdrawal from the European Union. (While the countries of Central Europe exited from the Warsaw Pact and the Soviet Union's economic orbit, that was in the context of the decline and subsequent break-up of the Soviet Union itself, and they were never voluntary members in the first place.) In this chapter, we draw on insights and intuition from game theory to explore the implications of the design of the negotiations. Since the process is so complex and in many respects uncharted, game theory may help to shed light on the strategies the various parties could employ, as well as routes to the most positive outcomes possible.

The application of game theory to Brexit

Game theory can provide insights into the positions and actions that the key parties, especially the UK and the EU27, may take in the Brexit negotiations. This analytical method, widely used to study the interactions of actors, such as individuals, firms and countries, allows for the identification of the *strategies* – the 'complete plan for action, covering all contingencies'¹²³ – that the entities could take, based on either data or assumptions about the rules and possible outcomes of the game.¹²⁴ Even with its simplifications, game theory is useful in identifying trade-offs, aspects of how the negotiations should be structured, how the actors might be expected to behave, whether successful coordination is possible, and potential outcomes. Game theoretic models also help to explain the significance of the sequencing of the negotiations, the effective number

122 Signalling is the idea that an individual, firm or country can take actions that credibly convey some unobservable information about itself to another party. For example, in an early paper on the subject, Michael Spence examined how potential employees seek to communicate (signal) their quality to potential employers (Spence 1973).

123 Snidal 1985.

124 Mas-Colell, Whinston & Green 1995, Chapter 7.

of players in the game, the rules and whether the game can be expected to be zero-sum (where one player's gain is another player's loss), negative-sum (where all players are worse off) or positive-sum (where mutually beneficial outcomes are possible). Here we will explore sequencing, number of players, game rules and potential outcomes (zero-sum, negative-sum or positive-sum) in turn.

Many analysts have already employed game theoretic tools to illustrate the ongoing Brexit bargaining: popular press articles have modelled Brexit using the classic game of chicken or the prisoner's dilemma,¹²⁵ while others – pointing to the complex structure underlying the Brexit negotiations, with at least 30 potential unique actors, repeated interactions of the players and other complications – have suggested that modelling Brexit using insights from poker may be more applicable.¹²⁶ Given the complexity, it may also be the case that a branch of game theory analysing what are known as cooperative games may be useful. Whereas *non-cooperative games* feature interdependent decision making when individuals do not have the ability to make binding agreements, *cooperative games* focus on groups and whether they can form coalitions and make binding agreements.¹²⁷

The structure and the agenda for the negotiations will have a major effect in determining whether coordination to ensure the best possible outcome for all actors will be possible. As explained in Chapter 2, there are two major agreements that must be reached:¹²⁸

1. An agreement on the details of the UK's Article 50 withdrawal, including the magnitude of the fee owed by the UK to the EU, the fate of foreign citizens and the UK border with Ireland.¹²⁹ This 'Article 50' agreement will require approval by a strong qualified majority vote (QMV) of EU member states, following approval by the European Parliament, and will also require ratification by the UK.
2. An agreement or agreements providing for the future relationship between the UK and the remaining 27 members of the EU. The EU decision-making modality for the future relationship agreement(s) will depend on whether they are mixed member state and EU competence or whether the agreement in question applies only to matters – such as trade – that are exclusive competences of the EU. A mixed agreement would require unanimity and ratification by national parliaments and the European Parliament; an exclusive competence agreement can be approved by the European Council under QMV and by the European Parliament.

125 Appendix B provides further background on the game of chicken, the prisoner's dilemma and cooperative games.

126 For examples of the prisoner's dilemma, see Springford 2016, Sutherland 2016 and Elliott 2016.

127 Mas-Colell, Whinston & Green 1995, 217–18.

128 The decision-making modality for any transition agreement to spell out what happens in the period after withdrawal, but before the completion of a new permanent relationship, would depend on its terms. If it applies only to trade, it should be approvable under QMV.

129 However, it would take unanimous agreement to extend the negotiations beyond two years, and it is unclear what the decision threshold would be if an agreement was finally reached after three years.

Although we believe that game theory does provide insights in this context, it should be remembered that, as a simplification of reality, game theoretic models sometimes have a difficult time incorporating the subtle nuances and contexts of real-world environments.¹³⁰

Sequencing of the two major agreements

Given the level of importance, it is not surprising that there was considerable signalling about the sequencing of the two negotiating processes – for the exit agreement and the future relationship – in the period prior to the UK filing its Article 50 notice on 29 March 2017. If the two processes were tackled simultaneously, trade-offs between the two could be facilitated.¹³¹ If sequential, trade-offs are more difficult, in part because of lack of trust. One party may concede a point in the exit negotiations in return for some benefit in the future arrangements negotiations, but then the other party could renege on that agreement once the exit deal is signed. In a sequential negotiation, the UK may also have more difficulty obtaining a domestic political consensus for making a significant financial settlement, which would be viewed as an up-front concession.¹³²

The EU first proposed that the discussions should be handled sequentially, settling the exit agreement before any talks begin about a future relationship between the EU and the UK.¹³³ The EU's chief Brexit negotiator, Michel Barnier, indicated that the UK would have to meet all previously agreed financial commitments and that there must be agreement on both the rights of EU citizens living in the UK and the Irish border issue before any talks on the future could take place. He further stated that it was impractical to negotiate a free-trade deal in only two years but that the EU would be willing to consider a transitional deal, or a number of such deals, to establish what will happen after the UK leaves the Union in 2019. Barnier subsequently qualified this firm line by explaining that perhaps only the 'principles' would need to be agreed in a first phase of the negotiations, before the future relationship discussions could begin in parallel.¹³⁴ The sequential approach formally softened somewhat in May 2017 when the EU approved its guidelines for negotiations, specifying that 'substantial progress' on these items had to be made before the negotiations on the future could begin.¹³⁵

130 According to one scholar, 'game theory often seems to demand more information than can feasibly be obtained' and 'it cannot always adequately incorporate other important available information – including relevant historical details about the context of interaction, insights into the personalities and behavior of decision makers, and understandings of the diplomatic or foreign policy process.' To the extent that historical events or outside influences that could affect negotiations are recognisable, they can often be incorporated into the structure of the game or the strategies and pay-offs of the various players (Snidal 1985).

131 An example of such trade-offs is so-called 'pork barrel' spending in the US Congress, in which specific projects that a particular politician wants are funded as part of a deal with other members of Congress. There is some evidence that the elimination of such pork barrel spending in the United States made it more difficult for Congress to get things done (Evans 2004; Lee 2005).

132 Friman 1993.

133 Barker 2017c.

134 Barker & Brunsden 2017b.

135 The guidelines explain: 'The European Council will monitor progress closely and determine when sufficient progress has been achieved to allow negotiations to proceed to the next phase'; and '...an overall understanding on the framework for the future relationship should be identified during a second phase of the negotiations under Article 50 TEU [Treaty on European Union]. We [the European Union and its Member States] stand ready to engage in preliminary and preparatory discussions to this end... as soon as the European Council decides that sufficient progress has been made in the first phase towards reaching a satisfactory agreement on the arrangements for an orderly withdrawal' (European Council 2017c).

The guidelines adopted by the EU also stated that, under a transition agreement, the UK would still be subject to the jurisdiction of the ECJ.¹³⁶ The structure proposed by the EU understandably is favourable towards the Union. In the EU view of sequencing, the first part of the negotiating period, which aligns with major elections in EU countries, would be focused on the financial settlement, while ensuring that the UK is subject to the ECJ during any transition period. The UK would be seen as suffering negative outcomes due to its Brexit decision, and this perceived punishment early in the process would help to quell Continental eurosceptic movements, dissuade other would-be leavers and allow pro-EU, centrist leaders to stay in office in EU countries. After the UK has been seen to pay the price for leaving and EU27 politicians have won their internal elections, they would then have more political flexibility to negotiate a mutually beneficial trade deal without as much pressure from eurosceptics.

The UK has less power to influence the outcome in the Article 50 negotiations than in those for the future relationship and, potentially, the UK government has a lot to lose if the British people believe the UK has been systematically disadvantaged early in the negotiating process.¹³⁷ Talks that simultaneously consider the UK's exit from the EU as well as a transitional or free trade deal would allow the UK more flexibility in making trade-offs, with the benefits of a new deal being presented domestically to offset the sting of exit payments.¹³⁸ UK politicians could highlight the wins from a new trade agreement and downplay the exit bill internally to convince citizens that they were getting a good result.

The effective number of players in the game

A game is defined by four things – the players, the rules, the possible outcomes and the pay-offs.¹³⁹ Here, we present issues related to the players.

The effective number of players in a game can affect the structure of the game as well as the potential strategies and pay-offs. Will Brexit be mostly a two-party negotiation between an EU27 representative and the UK, or will it be more like a multiparty game between 30 or more different interest groups? Will the UK government be able to bind its various home constituencies to an international agreement without undermining its fragile governing coalition? And as noted in Chapter 3, the EU will likely have to make side deals with member states to ensure their support in maintaining a unified position.

If the united EU front holds, the UK will have a harder time winning concessions since it will be more difficult to play members off against each other or build a coalition of support among the EU27. Internally, the UK must balance the demands of very different supporters of Brexit (those interested in more free trade and less bureaucracy and those interested in fewer immigrants) to present a united front in negotiations or its positions may be undermined by a lack of support

136 Boffey & Rankin 2017.

137 Pahre & Papayouanou 1997.

138 Balakrishnan, Patton & Lewis 1993; Busch & Horstmann 1997; Druckman & Mitchell 1995; Conlin & Furusawa 2000.

139 Mas-Colell, Whinston & Green 1995, Chapter 7.

among its own people.¹⁴⁰ The UK is in an even more tenuous position after the elections of 8 June 2017, as May's Conservative Party must now also consider the priorities of its governing partner, the DUP. A misstep in the Brexit negotiations could unravel the government, necessitating another election, causing further delays and perhaps changing the UK negotiating position and objectives substantially.

It may be in the UK's interest to reach side understandings with individual EU27 member states or groupings to gain support for favourable outcomes on some issues. In November 2016, Theresa May promised that Polish and other EU nationals could stay in the UK after Brexit if British nationals could stay in the EU. She also pledged to take a tough line on Russia, and sent 150 soldiers to Poland in April 2017 to 'deter Russian aggression by reinforcing Europe's eastern flank'.¹⁴¹ In addition, Chancellor of the Exchequer Philip Hammond promoted the idea of 'sector-by-sector' deals that would effectively retain the Single Market for key industries such as UK financial services, Italian wine and German cars.¹⁴² Following the resignation in January 2017 of Sir Ivan Rogers, the UK ambassador to the EU, officials explained that Rogers was focusing too much on Germany and France and that negotiations would 'require a knowledge not only of the thinking inside the commission negotiating team led by Michel Barnier, but also the possibility of driving a wedge into the EU's surface unity by locating allies in key European capitals'.¹⁴³ The possibility of such deals was thought by many in the UK as facilitating quid-pro-quo arrangements with European countries and helping the UK to secure favourable Brexit terms.

European leaders have signalled that they will tenaciously resist allowing the UK to negotiate on a country-by-country basis. Indeed, the Commission guidelines, approved by the Council, give Barnier's team exclusive negotiating rights. So far the Commission and the Council have been successful in maintaining a united front and, as noted in Chapter 3, the Commission and the largest member states are likely able to offer more than the UK could to other member countries to ensure they maintain the party line. German Chancellor Angela Merkel urged lawmakers to resist efforts by certain industries, such as automobile makers, to push for access to the UK market in return for UK banks being allowed to operate in the EU. Merkel may have been concerned that the UK was seeking sector-by-sector deals before Brexit talks had even begun, and she has been clear that Germany is insisting on a package deal. Some German ministries have even explicitly instructed officials to avoid back-door contacts with their UK counterparts.¹⁴⁴ Merkel also refused to discuss a bilateral understanding with May on EU nationals living in the UK before Brexit talks began,¹⁴⁵ and despite May's earlier assurances regarding Poles living in the UK, the Polish cabinet announced in March 2017 that it would back the rest of Europe and the European Commission in the negotiations with the UK.¹⁴⁶ Although unsuccessful so far, the UK

140 A negotiating partner must believe that any agreements reached are credible and will be enforced by home country politicians (White & Williams 2009; Stinnett 2007).

141 Rettman 2016.

142 Parker, Barker & Blitz 2016.

143 Wintour 2017b.

144 Jennen 2016.

145 Rostowski 2016.

146 MacShane 2017.

may well continue trying to offer other ‘sweeteners’, including, for instance, post-Brexit fishing rights in UK waters,¹⁴⁷ additional assistance on security and foreign policy issues, or other concessions to win support on key points. Any of these offers could make it harder for the EU to present a united front,¹⁴⁸ although President Tusk said on 28 April 2017, ‘If someone expected some divisions among the 27 would help the UK to achieve something better for them, it’s a pure illusion. The only possible way to achieve a final agreement between the 27 and the UK is unity of the 27. I have no doubts this is the first and most important political condition.’¹⁴⁹

The decision-making model within the EU will also affect whether the negotiations remain a two-player game or take on a multiplayer dimension. As noted earlier, although decisions in the Article 50 negotiations will be based on a qualified majority vote, it is possible that a future relations agreement, if it is constructed as a more comprehensive ‘mixed agreement’, will require unanimity and ratification by national and regional parliaments, as well as the European Parliament. The negotiation will be much more difficult and the outcome more uncertain if the UK has to achieve unanimous consent for the relevant agreement or agreements, rather than merely a qualified majority.¹⁵⁰ However, in such circumstances, it will also be harder for the EU to function as a single coalition during the negotiations, and if the EU side should fracture, it would decrease the chance that any agreement is reached.¹⁵¹ The UK, and perhaps also key EU states such as Germany, may therefore prefer to rely on the two-player trade-only format for future relations arrangements, so as to limit opportunities for any single or small group of member states to take the entire relationship hostage, even though that may limit the benefits.

Given the goals of the various Leave factions within the country (see Chapter 3), the UK may struggle to maintain a united position itself. The varied views even among those who supported Brexit mean that almost any exit or trade deal is likely to make one or more groups unhappy. This internal pressure may limit the UK’s negotiating options and make it a difficult negotiating partner for the EU. Managing internal politics will thus be very important for UK politicians. Theresa May’s decision in mid-April (when the Conservatives were strongly favoured in the polls) to call for special elections in June was intended to strengthen her position and allow her more flexibility in the upcoming negotiations. However, the unexpectedly large Conservative losses and the resulting hung parliament has instead weakened the UK’s position. That May’s government needs the support of the Northern Irish DUP party to survive further complicates the internal situation for the UK and increases overall uncertainty.

147 The UK announced in July 2017 that it will pull out of the London Fisheries Convention, which allows Irish, Dutch, French, German and Belgian fishermen access to UK territorial waters between 6 and 12 nautical miles from UK shores, and vice versa. Under EU law, all member states have access to fisheries between 12 and 200 nautical miles from EU shores. This move by the UK could have been made to build support for Brexit among the UK fishing industry (Dickie 2017).

148 Barker 2016b.

149 Herszenhorn 2017.

150 Whether any agreements that come out of the Brexit negotiations are self-executing or must appeal to a centralised enforcement mechanism (such as the European Court of Justice) could also influence players’ potential strategies.

151 Cai 2003; Cunningham 2006.

Mutually understood rules of the game and outcomes

As a consequence of uncertainty about the structure of the negotiations and divergences in desired outcomes, it is difficult for the players to predict the strategies of the others in the negotiation. This ‘incomplete information’ makes coordination more difficult and makes signalling potentially more important.¹⁵²

One way this uncertainty could affect negotiations is by undermining domestic support for the UK government’s position. Uncertainty is generally bad for businesses as it makes it more difficult to plan for future investments and predict cash flows.¹⁵³ Were the economy to suffer, people may blame both Brexit generally and the government specifically, making it difficult for the latter to retain support in its negotiations with the EU. Politicians and other officials can reduce future policy uncertainty by signalling their goals and positions in advance. Indeed, such signalling began in the case of Brexit soon after the referendum passed.

While signalling true intentions may help to facilitate coordination and cooperation, there are two difficulties. Firstly, in negotiations it is often beneficial for a player to signal that he or she has very high requirements for the outcome, known in game theory as a high reservation value. This may provide more flexibility once negotiations start if the actual requirements for the outcome are less strict, because backing away from the original demands would involve making concessions on items that are less important or even unimportant to the negotiator. Leaders may therefore have incentives to take hard-line positions so they can appear more reasonable to negotiating partners as they move towards the middle.

The Brexit rhetoric (on both sides) up until at least the spring of 2017 was in part posturing to provide a more advantageous starting position for when negotiations did begin. In January 2017, Theresa May told EU ambassadors that if the UK could not get a good Brexit deal or if the EU tried to push ‘a punitive’ deal, the UK would walk away without an agreement and would abandon the country’s European economic model in favour of ‘competitive tax rates and the policies that would attract the world’s best companies and biggest investors’.¹⁵⁴ In her March 2017 letter to trigger Brexit, May reiterated that trade between the UK and EU would fall back on WTO rules if no deal was reached. Several pundits, including many in the UK press, wondered if this ‘Plan B’ was an elaborate bluff. Director of the Centre for European Reform Charles Grant said, ‘Threatening to walk away if you don’t get a good deal is a standard negotiating tactic, but if the threat is empty you look a bit foolish. Everyone knows she is not an ultraliberal.’¹⁵⁵ He thought it unlikely that the prime minister could convince parliament to vote for loosening regulations in a way that would fulfil her statement about radically revising social and economic policies to attract international investment.

152 Ghosh & Masson 1994; Milner 1997; Babcock & Loewenstein 1997.

153 Baker, Bloom & Davis 2016; Rampell 2017.

154 Parker, Ford & Barker 2017; McTague 2017. This ‘no-deal’ statement has been criticised by commentators who point out that Britain actually would be better off economically with any preferential trade arrangements with the EU than none at all. See, for example, Springford & Tilford 2017.

155 Parker, Ford & Barker 2017; McTague 2017.

A second reason that leaders might not signal true intentions is that they must speak to multiple constituencies at once and, therefore, may find it difficult to provide messages of strength that appeal to citizens within their own nations and simultaneously demonstrate their willingness to be flexible to outside partners. Unfortunately, while starting out with a high reservation value and negotiating down might be a good general strategy, it could backfire if the population come to view anything less than the initial position to be a loss, thus limiting opportunities in the actual negotiations.¹⁵⁶ The EU's signalling to the UK that it intends to stick to its hard line and its decision to make all Brexit documents public may be an attempt to make its opening positions more credible, but may also allow less room for manoeuvre.

Given its weaker negotiating position, some fear that the rhetoric from the UK government before the spring of 2017 may have diminished its potential options, decreasing the flexibility that the UK might need to facilitate a cooperative outcome during the actual negotiations. Some also argue that the UK is making a mistake by publicly minimising the costs of falling back on WTO rules.¹⁵⁷ David Hannay, former UK Ambassador to the European Union, argued that the UK government should not make statements that limit its position on an exit deal before the negotiations even begin. According to Hannay, 'nothing would be more counter-productive than if the government were to rule out pre-emptively from the outset some of the main components of that new relationship which is by far the more important of the two negotiations we will be embarking on this spring... ruling things in or out from the outset will only tempt the other side to do likewise, leading to a race to the bottom which will serve the interests of neither side.'¹⁵⁸

One rule that is already established is the length of the exit negotiating period. This is likely to be a critical impediment for the UK. The player with the most to lose if no agreement is reached faces increased pressure as the 'disagreement point', the moment at which bargaining fails, approaches.¹⁵⁹ Accordingly, the UK is likely to find itself increasingly on the defensive as time passes. Although the UK and EU formally have two years from the triggering of Article 50 in March 2017 to find a cooperative outcome, some of that two-year window will be spent in developing an opening position and, at the end, securing European Council, European Parliament and UK Parliament concurrence to any agreement or agreements (as discussed in Chapter 2).¹⁶⁰ The EU will likely use this compressed timeline, which will affect the UK most, as leverage in negotiations. Some observers are arguing that the UK government should focus on an exit agreement as soon as possible as other possible side agreements (e.g. a transition agreement) could detract from a

156 'Anchoring' is a concept originally from psychology and behavioural economics in which an individual who is estimating some value is given a starting number and then asked to estimate the true value. The starting number makes a difference in terms of the final number, and subjects often do not adjust far enough from the anchor in their estimation of the true value. In the context of negotiations, a negotiator will start with a value, the anchor, and then adjust, but might not adjust far enough to reach agreement but instead hold the view that the final agreement needs to be close to the initial anchor. For more on anchoring, see Moran & Ritov 2002, Tversky & Kahneman 1974 and Ritov 1996.

157 In a speech at Lancaster House on 17 January 2017, Prime Minister May said 'no deal for Britain is better than a bad deal for Britain.' No deal would likely mean WTO rules (*Independent* 2017).

158 Hannay 2017.

159 Fuchs & Skrzypacz 2013; Binmore, Rubinstein & Wolinsky 1986.

160 Barker 2016a.

final agreement and might ‘immediately devour a large chunk of the May government’s negotiating capital in the exit discussions’.¹⁶¹

Zero-sum versus win-win and lose-lose

The pay-offs for the Brexit game extend beyond economic gain and loss. As noted earlier, one of the EU’s top objectives is political as much as economic: to prevent others from following the UK in seeking to exit the EU. The EU interest in the game is thus primarily that the UK be ‘seen to lose’. The EU may thus view the negotiations as zero-sum – if the UK obtains what is perceived as a favourable outcome then the EU loses. The UK may also view the negotiations as zero-sum, but it is more likely that the UK would position the game in a ‘win-win’ framework – all should work together to minimise economic damage. Which view of the potential pay-offs prevails could determine how acrimonious negotiations are. The UK must convince the EU that their preferences are not diametrically opposed and that they share an interest in minimising economic and political damage.

The underlying driver of these divergent views is that from the perspective of the EU27, this is not a one-shot game. If the EU is playing a repeated game with other potential leavers then deterrence becomes much more important than if it is playing a single game with the UK. Actions taken now could entice other members to leave the Union, so, in addition to ensuring the best possible outcome from the bilateral negotiation with the UK, the EU27 needs to also adopt a strategy to discourage other member states from leaving the EU based on the UK experience. Punishing the UK dissuades other potential leavers.¹⁶²

The UK itself does not particularly care if other countries leave the EU, but there remains the significant challenge of persuading the EU to develop a different strategic rationale that does not depend on punishment. Despite that, the rhetoric from the UK government up to the spring of 2017 was largely combative and antagonistic, playing into the zero-sum mentality rather than stressing the shared interests of both parties and focusing on arrangements that would minimise harm to all involved.¹⁶³ After the June 2017 election, however, with a hung parliament and a minority government, there were some signs that the UK might be more willing to cooperate.¹⁶⁴

Unfortunately, as will be evident from the next chapter, Brexit really is a lose-lose game, at least in the economic realm. All outcomes are worse for both parties than no exit. So in reality the game is about achieving the least bad outcome.

161 Ford 2017.

162 It is also possible that too hard a punishment may turn other EU citizens or countries against the Union.

163 Oltermann et al. 2017; Poole 2017.

164 May even conceded that the ECJ might have some role in the UK post Brexit for a limited transition period (Parker & Barker 2017).

Conclusion

The lasting effects of Brexit will depend crucially on how the negotiations are structured and how each of the parties plays the game. Several insights can be gained from analysing the impending negotiations using some common ideas from game theory:

Insight #1. It is in the EU's interest to pursue the sequential framework, which will allow the early period of negotiations to focus on punishing the UK for leaving the Union. The UK, however, would prefer simultaneous negotiations, which would allow it to make trade-offs between the exit agreement and a future transition or trade agreement. It can then highlight wins and minimise losses when selling the deal to its own people. A sequential process is doubly costly politically for the UK: the country may be left with a deal involving a substantial withdrawal settlement but without any assurance of future benefits. An agreement on future relations may not be completed for an extended period of time, and possibly not before the next UK national election, which under the Fixed-term Parliaments Act would be held in 2022 (but could occur sooner if the UK's minority government fractures). This scenario could be very costly for the UK government as it may be perceived to have secured a bad deal with only costs and no benefits before a domestic election in which voters could remove them from power.

Insight #2. Coalition maintenance will be costly and will matter on both sides. The UK may have somewhat more options to meet its political and economic goals if it could divide the EU into component interest groups and change the number of players in the game. But the EU seems to understand that its interests depend on a coordinated strategy. Thus, EU institutions and traditional 'core' countries can be expected to make substantial concessions to peripheral countries on other internal EU policies to ensure that the Union remains united on Brexit terms (and the EU core has vastly more leverage over the periphery than the UK does). Any British search for terms that will satisfy the smaller European countries is likely to be messy and time-consuming.¹⁶⁵

Splits within the UK between supporters primarily interested in sovereignty objectives on the one hand and supporters of economic liberalism ('Singapore of the Atlantic') on the other would weaken the UK negotiating position. Further complicating the situation, the result of the June 2017 election means that preventing internal fractures will likely be more difficult for the UK. Internal politics and challenges in the Brexit negotiations could lead to dissolution of the fragile minority government. This makes the UK's position even more difficult and increases the uncertainty of the negotiations.

Insight #3. The uncertainty surrounding the rules and structure of negotiations makes coordination among the parties harder and leaves room for signalling positions before the serious talks

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In game theory language, these terms may be called the 'Shapley values'. The Shapley Value, named after Lloyd Shapley who shared the Nobel Prize in Economics in 2012, is a mechanism for fairly distributing the gains and losses to players in a coalition depending on their marginal value to the group and how likely they are to be the one that makes a difference in creating value for the coalition. Players each gain as much or more than they would have gained had they acted independently, providing an incentive to collaborate. The 'marginal' country – the one that makes a difference between a deal getting approved or not – has more power under this solution concept. Shapley was a research mathematician at RAND from 1948 to 1950 and from 1954 to 1981. He also taught a game theory course for many years at what is now the Pardee RAND Graduate School.

begin. Both sides should be cautious in the language that they use publicly, as it may bind them to 'bargaining' positions rather than to the policies that they know to be viable.

Insight #4. The two-year negotiating deadline puts the UK in a weaker position. One aspect of the talks that is already determined by one of the core EU treaties, the Lisbon Treaty,¹⁶⁶ is the length of the exit negotiating period. The two-year timetable favours the EU as it puts pressure on the UK to make concessions to avoid 'falling off a cliff' in 2019 if no transition agreement is reached. Lengthening the negotiating period through a transition agreement may be in the UK's interest, as it would provide more time to negotiate for better final terms, but it would come at a political cost domestically if it prolonged free movement of EU citizens and ECJ jurisdiction. This heightens the UK's interest in concurrently negotiating both an exit and transition agreement.

Insight #5. Flexibility on both sides will be needed to avoid an outcome where all parties lose badly. An outcome that minimises damage to all parties is not likely to be achieved if one player assumes a zero-sum game. As long as both players view their pay-offs very differently – with the EU winning only if the UK is seen to lose and the UK asserting that it believes the costs of not coming to any kind of agreement to be low – coordination on minimising harm will be difficult. An agreement that is overly punitive will be rejected by UK voters and the politicians who represent them just as a painless agreement would be rejected by European leaders.

As suggested in Chapter 3, the effect of adding the United States as a discrete factor to the already complex multiparty game further complicates the analysis. President Trump declared a view (Brexit will 'end up being a great thing') that suggests an interest in an outcome favourable to the UK, but it is unclear whether explicit US support will help the UK achieve its core interests. Indeed explicit support from Trump might actually have an effect opposite to that intended. Despite his earlier statement, at a meeting with European Council President Tusk and European Commission President Jean-Claude Juncker in May 2017, Trump seemed to indicate that he understood that Brexit could be costly for some US companies, and possibly for jobs.¹⁶⁷ The US president's evolving and potentially unpredictable position on Brexit increases the uncertainty and complicates the negotiations.

To help the UK, the United States could offer some sweeteners to the EU27, but it is difficult to see what these may be. And if the UK prioritises sovereignty issues, Brexit might cause short-term harm to the interests of US investors in the UK (in the financial services as well as other industries) that depend on access to EU markets. The costs to US economic interests may be offset eventually by the advantages of an FTA between the United States and the UK (Scenario 4 in Chapter 5), but if, as a result, a broader FTA between the United States, the UK and the EU (an agreement such as the proposed Transatlantic Trade and Investment Partnership; Scenario 3 in Chapter 5) does not come to pass, the United States also obtains a suboptimal outcome. US interests are further examined in Chapter 6.

166 The Treaty of Lisbon is an international agreement that amended the two treaties which formed the constitutional basis of the EU. It was signed by EU member states on 13 December 2007, and entered into force on 1 December 2009.

167 *Telegraph* 2017a.

Finally, although game theory assumes that players maximise their perceived pay-offs given their constraints, actors in the real world do not necessarily behave as economists would predict. Given the complexity of the negotiations and the diplomatic climate, there is a distinct possibility that negotiators may optimise other objectives (political or politicians' personal outcomes, for instance) and not make decisions that match the best possible outcome for their countries.¹⁶⁸ UK negotiators will have to prioritise the government's survival, while EU negotiators will need to balance the different preferences of member states. Either side can also simply make mistakes.

168 Snidal 1985.

5 Estimating the economic effects of Brexit

The nature of post-Brexit trade, investment and other economic relations between the EU and the UK will be consequential for both parties. At one extreme, the UK could find itself leaving the Customs Union and trading and investing with the EU under WTO rules, whereas at the other the UK could pursue continued membership of the European Economic Area (EEA) and hence follow a very integrated relationship with the EU. The EEA, formed by the EU and the three member states of the European Free Trade Association (EFTA), is a market that operates under the same basic rules as the EU internal market, allowing freedom of movement of goods, services, capital and people.¹⁶⁹ In between these two extremes, there are a number of other possibilities for economic arrangements of varying depth and with different trading partners.

All possible arrangements are likely to have consequences for the United States. However, our results in a wide range of scenarios suggest that the economic effects on the United States will not be large. The United States will benefit most from a comprehensive FTA with the UK and the EU27, a situation effectively rejoining the UK to the EU in one form. Economically, the United States would also benefit slightly from a US–UK FTA. The numbers are small enough, though, that other US interests, such as security, are likely to outweigh the modest economic gain of Brexit (US interests are discussed in Chapter 6). The United States gains little and loses little from any other post-Brexit arrangement.

For the UK and the EU27, our major analytical finding is that, contrary to Theresa May's claim that 'No deal is better than a bad deal,' a reversion to a WTO most favoured nation (MFN)-bound trade relationship with the EU (which is the status quo for EU–US trade now) would be the worst scenario, economically, for the UK. The predicted magnitude of the negative effect on GDP ten years after the UK exits the EU is about 4 per cent of 2015 GDP each from increased trade cost and reduction in FDI inflows. A reversion to WTO rules would also harm the EU27 economically, although the impact on the UK would be far more dramatic. The most advantageous outcome economically for all three parties would be a free trade arrangement among the three parties, the UK, the EU27 and the United States, essentially the proposed but moribund Transatlantic Trade

¹⁶⁹ The European Economic Area facilitates the free movement of capital, goods, services and people between the EU and three EFTA members (Liechtenstein, Iceland and Norway). Norway is exempt from EU rules on agriculture, fisheries, justice and home affairs but pays a contribution to the EU budget and generally has to accept the common regulatory framework of the single market. Switzerland, the fourth EFTA member, has its own arrangements with the EU (European Free Trade Association 2017).

and Investment Partnership (TTIP). As an FTA, such an agreement would allow a great deal of free- or low-barrier trade, but it is fundamentally different than a customs union in one important respect: FTAs have often-detailed rules of origin (ROOs), which designate the rules under which a good is considered to have come from an FTA member. These are necessary to avoid transshipment. If the UK and the EU have an FTA, and the UK has an FTA with a third country that does not have an FTA with the EU, the third country would first want to ship its goods to the UK for zero tariffs and then ship the goods from the UK to the EU for zero tariffs, rather than shipping directly from the third country to the EU at higher tariffs. ROOs are designed to prevent this, but add complexity and cost to trade.

Apart from the TTIP scenario, the UK would benefit most from 'softer Brexit' scenarios such as a Norwegian- or Swiss-style arrangement with full or partial access to the Single Market for goods and services. Under so-called 'hard Brexit' scenarios where the UK is assumed to leave the Single Market and the EU Customs Union, the UK would benefit more from a deep and comprehensive FTA with the EU than it would from a similar bilateral FTA with the United States, mainly because of the greater scale of the UK's current trade and investment with the EU.

This chapter begins by reviewing the key findings of existing studies. It then describes the scenarios used in our modelling and outlines the approach taken to analyse the potential effects of these scenarios on trade and investment for the UK, the EU27 and the United States. Finally, the chapter presents the outcomes of the scenarios, expressed in terms of effect on the GDPs of the UK, the EU27 and the United States. An accompanying online calculator (<https://www.rand.org/randeurope/research/projects/brexit-economic-implications/calculator.html>) allows readers to examine how key assumptions affect the modelled outcomes.

Existing estimates of economic effects

A number of quantitative studies have estimated the potential economic effects of Brexit on the UK and the EU27. Far fewer studies – if any – estimate the effects on the United States. The studies estimating effects on the UK and the EU27 were conducted by official agencies such as the UK Treasury, the Organisation for Economic Co-operation and Development (OECD), and the Netherlands Planning Bureau, and by universities and research institutes.¹⁷⁰ The modelling approaches taken include gravity models,¹⁷¹ computable general equilibrium (CGE) models¹⁷² or macroeconomic models,¹⁷³ and structural gravity (SG) models.¹⁷⁴ The gravity model is one of the most popular analytical frameworks in economics, with hundreds of papers applying the gravity equation to investigate the effects of various determinants of international flows.¹⁷⁵ Based

170 Her Majesty's Treasury 2016; Kierzenkowski et al. 2016; Rojas-Romagosa 2016; Dhingra, Huang et al. 2016; Aichele & Felbermayr 2015; Booth et al. 2015.

171 The HM Treasury (2016) impact analysis of different Brexit scenarios on trade is based on a gravity model.

172 Such as Booth et al. 2015.

173 Such as the National Institute of Economic and Social Research's Global Econometric Model (NiGEM). As of 13 October 2017: <https://nimodel.niesr.ac.uk/>

174 Also known as new quantitative trade models (NQTM). Note that the terms 'NQTM' and 'SG model' are used interchangeably in the literature. We will use the term 'SG model' for the remainder of this chapter.

175 Yotov et al. 2016.

on the equation for gravitational attraction from physics, the model estimates bilateral cross-border flows (e.g. trade, investment) between two countries as directly proportional to the product of their sizes and inversely proportional to the trade or investment frictions between them, usually proxied by distance between trading partners.

Using these different modelling approaches, the studies simulate a set of scenarios that range from 'optimistic', meaning a moderate increase in trade barriers between two trading parties, to 'pessimistic', referring to a larger increase in trade barriers.¹⁷⁶ The optimistic scenario in most of the studies completed before the Brexit vote assumed that the UK would obtain a post-EU membership arrangement close to that enjoyed by Norway, which is a member of the EEA. In the UK, such a scenario became known as a 'soft Brexit'. The pessimistic scenarios generally assumed that the trading relationship between the UK and the EU27 would be conducted on WTO terms, with tariffs bound at MFN rates (the tariff rates that countries apply to partners that are not part of a preferential trade agreement).

Due to differences in approach, scenario assumptions and data used, the studies provide a broad range of estimated costs associated with Brexit. For instance, the estimated costs to UK GDP growth of between 1.3 and 4.2 per cent for the optimistic and pessimistic scenarios, respectively, correspond to an income loss between €33bn and €109bn. For the EU27, the studies predict an average GDP loss of about 0.1 to 0.5 per cent for the optimistic and pessimistic scenarios, corresponding to a predicted income loss between €13bn and €63bn. Thus the cost of Brexit is estimated to fall disproportionately on the UK. It is important to stress, however, that some EU27 member states with close ties to the UK were predicted to suffer GDP losses similar in proportion to that which the UK would suffer. Ireland, for instance, will be especially exposed compared to other member states due to its strong trade relationship with the UK (Table 3.2).¹⁷⁷ Furthermore, countries such as Malta and Luxembourg are predicted to be hit under some of the pessimistic scenarios due to their relatively close economic relationship with the UK financial sector.¹⁷⁸

There are advantages and disadvantages to each type of model. Trade policy analysis using gravity models generally relies on the actual track record of existing FTAs and is sometimes agnostic about the specific structure of an economy. Furthermore, gravity models explain only the pattern of bilateral trade and cannot provide direct estimates of the corresponding welfare effects.

Analysis using CGE relies on detailed models and assumptions of the structure of the economy to quantify the potential future effects of new trade scenarios. To make predictions, CGE models use the present economy as the underlying benchmark. Furthermore, CGE models are applied to quantify the effects of changes in trade policy on a country's welfare levels and the distribution of income. In CGE models, changes in the openness of trade through reductions in tariffs and non-tariff barriers (NTBs) induce multiplier effects throughout the economy by affecting trade and production structures simultaneously, and dynamic effects such as improvements in productivity

176 Emerson 2017.

177 Dhingra, Ottaviano et al. 2016a.

178 Aichele & Felbermayr 2015.

can be incorporated. However, CGE modelling is relatively complex and generally depends heavily on the assumptions made regarding the model structure and the input data.¹⁷⁹

SG models are an emerging tool in the analytical trade literature that provide a more nuanced understanding of changes in trade patterns induced by changes in trade cost.¹⁸⁰ In essence, the SG modelling framework allows flexibility in terms of the inclusion of multiple sectors, multiple countries or intermediate goods. The only limitation is that, in contrast to CGE, SG models cannot capture dynamic effects such as trade-induced future productivity gains. The model results also depend to a great extent on the assumptions made regarding the model structure.¹⁸¹ Nevertheless, the SG model is becoming increasingly popular to estimate the effects of trade policy experiments and has recently been applied to predict the economic effects of the (notional) TTIP,¹⁸² the (existing) North American Free Trade Agreement (NAFTA)¹⁸³ and the (upcoming) Brexit.¹⁸⁴

The economic analysis presented in this chapter builds on the approach taken by Dhingra, Huang et al. (2016), who apply a modern quantitative trade SG model of the global economy to estimate the effects of Brexit on trade and economic welfare.¹⁸⁵ The model takes into account trade in both goods and services and calculates the trade and GDP effects of changes in trade costs, both tariff and non-tariff, under different scenarios of future UK post-Brexit relationships.¹⁸⁶ The key addition in our analysis is to expand the range of scenarios considered and include changes in UK trade costs to third countries with which the EU has preferential trade agreements.¹⁸⁷ Note that the model does not include FDI, which is analysed differently towards the end of the chapter.

Different UK post-EU trade scenarios

Since joining the EU in 1973, the UK has not conducted an independent trade policy. Instead, it is a member of the EU Customs Union, with a common external tariff and no internal tariffs. The

179 The studies using a CGE approach are Rojas-Romagosa 2016 and Booth et al. 2015.

180 Arkolakis, Costinot & Rodriguez-Clare 2012. In contrast to traditional gravity models, SG models allow a direct estimation of income effects induced by changes in trade costs. One of the key parameters for SG models are trade elasticities, which are calculated using empirical gravity equations and measure by how much trade flows are affected by changes in trade cost.

181 Including (i) Dixit-Stiglitz preferences where consumers have a 'love' for a variety of goods; (ii) perfect or monopolistic competition; and (iii) one factor of production (labour).

182 Aichele & Felbermayr 2015; Egger et al. 2015.

183 Caliendo & Parro 2015.

184 Dhingra, Ottaviano et al. 2016a.

185 The model is outlined in technical detail in Dhingra, Huang et al. (2016), equations (1) to (30). To simulate the model we use the programme code provided by Costinot & Rodriguez-Clare 2014.

186 Note that with the dramatic decline in tariffs over recent decades through the successive rounds of multilateral negotiation and unilateral liberalisations, the main trade-distorting barriers nowadays are non-tariff barriers (NTBs). Generally, NTBs to trade include import licensing, rules for valuation of goods at customs, pre-shipment inspections, rules of origin regarding identifying a specific source country when inputs from multiple countries are used, and trade-related investment measures (World Trade Organization 2017b).

187 The analysis is benchmarked on input-output matrix data from the World Input-Output Database for 31 countries and 31 sectors for the year 2014. An input-output matrix describes relationships between economic sectors, specifically showing how the production of each sector is used as an input in the production of every other sector.

EU manages trade relations with non-EU countries for all member states through its commercial policy, which is an exclusive power of the EU. This means that only the EU, and not individual member states, can legislate on trade matters and conclude international trade agreements.¹⁸⁸ Although the UK is a WTO member, it does not have its own agreements on tariffs, or schedule of concessions as they are known in the WTO, since it is part of the EU's schedule. The UK's current trading arrangements thus can be summarised as follows:

- The UK trades freely with all EU countries and preferentially with all non-EU countries with which the EU has a preferential agreement or customs union.¹⁸⁹
- It imports goods at lower-than-MFN tariffs from all developing countries that belong to the EU's Generalised System of Preferences (preferential trade access offered to developing countries).
- It trades (along with all other EU member states) on MFN terms with all other WTO members (including the United States).

Membership of the EU generally reduced trade costs between the UK and Europe, since tariff barriers were removed. In addition, the decade-long effort to create the Single Market (with strong support at the time from the UK Prime Minister, Margaret Thatcher) contributed to elimination of many NTBs for goods. The latter include a variety of measures such as rules of origin checks, non-harmonised regulations over product standards and safety, and border controls. These reductions in non-tariff trade costs increased trade between the UK and other countries in the EU. If the UK leaves the EU without staying in the Customs Union or the Single Market, the same trade costs would be expected to rise. For instance, if the UK leaves the Customs Union, customs measures and border controls would have to be established, giving rise to UK–EU trade cost.

In 1973, UK trade with member countries accounted for about a third of total UK imports and exports. In 2014, almost 60 per cent of UK trade (about \$293bn UK exports and \$358bn UK imports) was with EU countries (Table 5.1). Among the most intensively traded goods are 'Chemicals and chemical products' and 'Transport equipment' (the former includes pharmaceutical products and the latter includes motor vehicles). Note that these sectors, beside 'Food, beverages and tobacco' and 'Agriculture', face some of the highest bound tariffs on the EU's schedule at the WTO (Figure 5.2), and once the UK is outside the EU, relatively high tariffs would apply ('bound' tariffs are the highest rates agreed to – countries are free to charge actual tariffs that are lower than the bound rates). Among services, 'Sale, maintenance and repair of motor vehicles and motorcycles', 'Health and social work' and 'Renting of machinery and equipment' are among the most traded.

In comparison, the overall trade volume in 2014 between the UK and the United States, one of the most important trading partners for the UK outside of the EU, was about \$160bn, or one fifth of the trade with the EU. Among the most traded goods between the UK and the United States were 'Manufacturing goods', 'Chemicals and chemical products' and 'Electrical and optical equipment'.

188 European Commission 2017d.

189 The EU currently has about 40 agreements in place, with the Canada–EU Comprehensive Economic and Trade Agreement finalised but not yet applied (European Commission 2017c).

Table 5.1. UK trade with EU and the United States, 2014

Sector	UK-EU				UK-US				
	Exports		Imports		Exports		Imports		
	\$ billion	%	\$ billion	%	\$ billion	%	\$ billion	%	
<i>Goods</i>									
1	Agriculture, hunting, forestry and fishing	3.0	1.0	4.5	1.3	0.3	0.4	0.3	0.4
2	Mining and quarrying	10.7	3.6	2.3	0.6	0.5	0.6	0.7	0.8
3	Food, beverages and tobacco	13.1	4.4	26.2	7.3	2.2	2.8	1.1	1.3
4	Textiles, textile products, leather and footwear	3.8	1.3	9.2	2.6	0.4	0.6	0.3	0.3
5	Wood, wood products and cork	0.4	0.1	2.5	0.7	0.0	0.0	0.2	0.2
6	Pulp, paper, printing and publishing	2.4	0.8	6.0	1.7	0.4	0.5	0.6	0.7
7	Coke, refined petroleum and nuclear fuel	8.7	3.0	6.6	1.9	1.9	2.5	6.0	7.2
8	Chemicals and chemical products	25.9	8.8	41.3	11.6	7.0	9.1	5.9	7.1
9	Rubber and plastics	5.5	1.9	9.0	2.5	0.7	0.9	0.6	0.7
10	Other non-metallic minerals	1.7	0.6	3.5	1.0	0.3	0.4	0.3	0.3
11	Basic metals and fabricated metal	12.3	4.2	14.4	4.0	2.4	3.2	2.6	3.1
12	Machinery	11.9	4.1	22.2	6.2	5.0	6.5	3.0	3.6
13	Electrical and optical equipment	16.1	5.5	26.4	7.4	3.5	4.5	5.5	6.6
14	Transport equipment	15.8	5.4	48.6	13.6	5.7	7.5	1.1	1.3
15	Manufacturing, recycling	12.9	4.4	22.2	6.2	6.3	8.2	28.6	34.0
<i>Services</i>									
16	Electricity, gas and water supply	5.8	2.0	4.0	1.1	3.5	4.5	1.3	1.6
17	Construction	0.6	0.2	2.9	0.8	0.1	0.1	0.0	0.0

Sector	UK-EU				UK-US			
	Exports		Imports		Exports		Imports	
	\$ billion	%	\$ billion	%	\$ billion	%	\$ billion	%
18 Sale, maintenance and repair of motor vehicles and motorcycles	41.1	14.0	22.9	6.4	10.0	13.1	0.4	0.5
19 Retail trade, except of motor vehicles and motorcycles	4.7	1.6	4.1	1.1	1.1	1.4	0.1	0.1
20 Hotels and restaurants	1.5	0.5	2.3	0.6	0.0	0.0	0.1	0.2
21 Inland transport	0.7	0.3	3.4	1.0	0.1	0.1	1.8	2.1
22 Water transport	0.5	0.2	3.9	1.1	0.0	0.0	0.8	0.9
23 Air transport	1.9	0.6	7.9	2.2	2.0	2.7	4.3	5.1
24 Other supporting and auxiliary transport activities	2.8	0.9	1.9	0.5	0.0	0.0	0.4	0.5
25 Post and telecommunications	18.8	6.4	11.5	3.2	3.7	4.9	4.6	5.5
26 Financial intermediation	13.9	4.7	5.9	1.6	4.1	5.3	4.9	5.8
27 Real estate activities	4.0	1.4	5.7	1.6	5.2	6.9	2.1	2.5
28 Renting of Machinery & Equipment and other business activities	23.2	7.9	12.3	3.4	7.3	9.5	3.5	4.2
29 Education	1.2	0.4	0.5	0.1	0.7	0.9	0.2	0.3
30 Health and social work	24.2	8.2	20.9	5.8	1.5	2.0	1.0	1.2
31 Social and personal services	4.8	1.6	2.8	0.8	0.7	0.9	1.7	2.0
Total	293.9		357.8		76.4		84.0	

SOURCE: World Input-Output Database.

When the UK leaves the EU, bilateral trade costs will most certainly increase compared to the current status quo of EU membership. Based on previous studies that have investigated the potential economic effect of Brexit, rising trade costs are expected to be driven by three factors: immediate changes in tariffs on goods, immediate changes in NTBs on goods and services, and increasing NTBs over time due to exclusion of the UK from further EU market integration. Regarding the latter, being outside of the Single Market would allow the UK to set its own economic policy and regulatory standards free of any obligation to apply EU rules, but any future

divergences in regulation and standards between the EU and the UK would act to increase NTBs over time. Some argue that such regulatory divergence would likely happen only slowly, if at all,¹⁹⁰ and if it does happen the adjustments stemming from divergence may take about 10 to 12 years to materialise, implying that if the UK exits the EU by 2019, it would not be until around 2030 that effects of this type would be seen.¹⁹¹

At this stage, it is uncertain what the final Brexit deal between the UK and the EU will mean in terms of trade and investment, but a variety of potential scenarios for the post-Brexit EU–UK relationship have been discussed, including ‘soft’ options such as EEA membership or staying in the Customs Union, as well as ‘hard’ options where the UK leaves the Single Market and the Customs Union but seeks to secure a comprehensive agreement with the EU or, alternatively, trade under WTO rules with the EU if no agreement can be reached. Most of the ‘soft’ post-EU scenarios seemed less likely once Theresa May announced in her speech of 17 January 2017 that she would not pursue European Economic Area membership but instead aim for a comprehensive FTA, as subsequently confirmed in the UK’s Article 50 notification. Nevertheless, the weak showing for May’s government in the June 2017 election put some of the ‘soft’ options back into consideration. In the following sections we discuss in more detail different ‘soft’ and ‘hard’ Brexit scenarios.

The post-Brexit trade scenarios applied in the trade modelling exercise

The various scenarios used in the trade modelling exercise and the assumptions made about how trade costs will change are described below. Three factors of trade costs are discussed for each:

1. Changes in tariffs.
2. Immediate changes in NTBs (e.g. rules of origin and customs measures, non-harmonised regulations over product standards and safety, and border controls).
3. Changes in NTBs over time due to divergence in regulatory standards and lower market integration.

Generally, whereas tariff data on the goods trade are readily available, quantifying bilateral NTBs is not straightforward, especially in the case of Brexit, which is probably the first time a new trade agreement will increase, rather than reduce, trade costs for parties to the agreement. Finding a historical example of how NTBs may evolve in this situation is difficult. To incorporate changes in NTBs we follow the approach taken by previous studies, which use information from the quantification of NTBs between the EU and the United States in a potential TTIP. In the absence of detailed data on tariff equivalents of EU–UK NTBs, the studies make assumptions about

190 To prevent regulatory uncertainty, the UK government announced its intention to put all existing EU direct-effect rules and regulations into UK domestic law in one omnibus ‘Great Repeal Bill’, to come into effect on withdrawal from the EU (BBC News 2017a).

191 Jung 2012.

the extent to which US–EU barriers would apply between the UK and the EU post-Brexit.¹⁹² We describe this in more detail in Appendix C.

Hard Brexit scenarios



Scenario 1 (baseline): WTO rules

The UK currently trades tariff-free with the EU, but if it leaves the EU without any special trade arrangements in force, then its trade with the EU and the rest of the world would be governed by WTO bound tariff schedules. Under this scenario, the UK would automatically lose preferential access to those countries that have varying types of trade agreements, such as FTAs, with the EU. As a WTO member, the UK's exports to the EU and other WTO members would instead be subject to the importing countries' MFN tariffs. In addition, the UK would no longer be bound by the EU's common external tariff and hence would be in a position to set its own MFN tariffs on imports.¹⁹³ The UK's services trade would also be subject only to non-discrimination rules and commitments under the WTO's General Agreement on Trade in Services, which represents lower access to EU markets for UK service providers. Being out of the Single Market would mean that the UK is no longer constrained by any agreement with the EU and thus can set its own economic policy and regulatory standards without having to take into account the EU preferences. However, any divergence in regulatory standards between the EU and the UK would impose additional NTBs to bilateral trade.

For the WTO scenario, for analytical purposes we therefore estimate changes in effective trade costs as follows:¹⁹⁴

- **Tariff barriers.** UK–EU tariffs and tariffs between the UK and EU preferential-trade-agreement partners increase to the level of those of trade partners with MFN status.¹⁹⁵
- **Non-tariff barriers, immediate change.** UK–EU NTBs increase to three-quarters of the pre-Brexit US–EU NTBs for goods, agriculture and services.¹⁹⁶

192 Assumptions for the NTBs throughout the analysis are from Dhingra, Huang et al. (2016), who rely on Berden et al. 2009. Dhingra, Huang et al. assume that, under their optimistic scenario (e.g. Norwegian model or EU–UK bilateral agreements), EU–UK NTBs would rise to one quarter of the EU–US NTBs, and that, under their pessimistic scenario (e.g. trade under WTO rules), NTBs would rise to three-quarters of EU–US NTBs.

193 However, as a starting point the UK would have to notify the WTO of its proposed tariff schedules and the British government has indicated that its intention is to notify on the basis of the EU's common external tariff bound rates. Over time, other WTO members will have to agree to the new bindings – or attempt to negotiate concessions – under the WTO rectification process.

194 Note that only changes relative to pre-Brexit conditions are reported (e.g. if there is no change in EU–US trade costs, then this is not reported).

195 Assumption and data are from Dhingra, Huang et al. (2016), who calculate average MFN tariffs using tariffs by product from the WTO and UN Comtrade data to aggregate tariffs on industries. Unlike Dhingra, Huang et al., we assume that increase to MFN tariffs would also apply to trade with third countries with preferential trade arrangements with the EU.

196 The three-quarters assumption is from Dhingra, Huang et al. (2016), corresponding to a weighted increase of NTBs across all sectors of about 8 per cent. This assumption may seem ad hoc at first glance, but by using the ESCAP-World Bank Trade Cost Database, which covers bilateral effective trade cost between many countries for goods and agriculture, we find that NTB costs between the EU and its trade partners are on average between six to twelve per cent higher without an FTA (e.g. WTO scenario). See Appendix C for more details.

- **Non-tariff barriers, change over time.** Due to the exclusion of future market integration with the EU (e.g. harmonised standards and regulations), non-tariff costs increase annually by about 0.08 per cent for goods and services and by 0.09 per cent for agriculture.¹⁹⁷



Scenario 2: UK–EU FTA

Given the already close integration between the UK and the EU27, any FTA between the two parties would be expected to be comprehensive in nature and cover many areas, including trade in goods, agriculture and services. Hence, compared to a WTO rules scenario, UK–EU trade costs are expected to increase post-Brexit but to a lesser extent.

In relation to trade in goods and agriculture, tariffs would stay at the current rate of zero but UK exports would still likely need to satisfy some rules of origin requirements to enter the EU duty free, which would lead to the introduction of customs measures and hence to some increase in NTBs. Generally it is to be assumed that an FTA would not provide the same EU market access as Single Market membership, since, for example, no country that is not member of the EEA has passporting rights for financial services.¹⁹⁸ It is assumed that alternatives to passporting rights are likely to be costly as they would require setting up subsidiaries within the Single Market member states or negotiating a regulatory agreement with the EU under which the EU could grant licences to UK-based financial institutions (and, even then, such licences may not give equivalent access to EU markets compared to passporting rights).¹⁹⁹ Together with business services, financial services represent almost two thirds of the service flows between the EU and the UK.²⁰⁰ Furthermore, critical to services in the forthcoming exit negotiations between the UK and the EU member states will be the extent to which the EU wishes to punish the UK for leaving the bloc. To that end, the EU may aim to restrict access for UK services, especially financial services, to European markets, and hence we have excluded financial services in this scenario. Concerning the trade agreements the EU has with third countries, the UK government expects to be able to continue and benefit from the EU's preferential agreements with around 40 countries during any transition period.²⁰¹ However, it remains unclear whether the UK will be able to do the same once it leaves the bloc, or whether it will have to negotiate separate deals. Hence, for the purpose of our analysis, we assume that the UK would not have access to the EU's preferential agreements post-Brexit.

197 Based on our own calculations. See Appendix C for more detail.

198 In essence, Single Market membership allows banks in one country of the EU to set up branches or provide cross-border services in another member state, while being regulated by home country authorities. Passporting rights are hence important for the UK financial industry, since, for example, passporting means that an American bank can provide services across the EU from its UK branch or subsidiary.

199 It is assumed that these implications would raise (non-tariff) costs for UK financial services trade post-Brexit, but it is difficult to capture all these effects in the quantitative trade model; e.g. we can only assume that NTBs would increase to a proportion of the current level of financial sector NTBs between the EU and United States. In addition, the financial sector depends on foreign direct investments, which are not directly covered within the trade model.

200 See Table 5.1.

201 Reuters 2017.

For this scenario, changes in effective trade costs are as follows:

- **Tariff barriers.** Tariffs with the EU remain at zero (no change from pre-Brexit). UK tariffs with the EU's preferential-trade-agreement partners increase to the level of that of trade partners with MFN status.
- **Non-tariff barriers, immediate change.** UK–EU NTBs increase to one quarter of the pre-Brexit US–EU NTBs for goods, agriculture and services other than financial services.²⁰² NTBs for financial services increase to three-quarters of the pre-Brexit EU–US NTBs.
- **Non-tariff barriers, change over time.** Since the UK replaces EU membership with an FTA, there is still some exclusion from market integration, but to a lesser extent than under WTO rules. We assume that non-tariff costs will increase per year by about 0.06 per cent for goods and services and about 0.01 per cent for agriculture.²⁰³



Scenario 3: TTIP that includes the United States, the UK and the EU27

After leaving the EU, the UK could become a third partner in a possible TTIP.²⁰⁴ Specifically, this would mean reaching an agreement with both the EU and the United States; although the UK currently has free trade with the EU through the Customs Union, it trades with the United States at WTO MFN rates. TTIP is envisaged to eliminate tariffs on goods and agriculture with a commitment to reduce NTBs substantially across all sectors, including services, with some exceptions including financial services.²⁰⁵ The relationship between the UK and EU would be similar to that under Scenario 2, where integration is assumed to be comprehensive, but it would also be expected that UK goods would need to satisfy rules of origin requirements to enter the EU duty free, which would lead to an increase in NTBs in the trade relations between the UK and EU post-Brexit. It is also assumed that the UK would trade with those countries with which the EU currently has preferential trade agreements, under WTO bound tariffs. As the UK would no longer be a member of the Single Market, we assume a small increase in NTBs over time due to divergence in regulatory standards.

For this scenario, changes in effective trade costs are as follows:

- **Tariff barriers.** Tariffs between the UK and EU27 remain at zero (no change from pre-Brexit). Tariffs between the UK, EU and United States fall to zero. Tariffs applied to trade between the UK and other countries with preferential trade agreements with the EU increase to MFN levels.

202 The one quarter assumption is from Dhingra, Huang et al. (2016), corresponding to an average increase in NTB costs of about 2 per cent across sectors. For goods, this is assumed to include increased costs due to rules of origin requirements, due to leaving the Customs Union with the EU. Using the ESCAP-World Bank Trade Cost Database, which covers bilateral effective trade cost between many countries for goods and agriculture, we find that NTB costs between the EU and its trade partners are on average about 3 per cent higher with a deep free trade agreement (e.g. UK–EU FTA). Note that *ad valorem* NTBs in services used for the analysis represent the level of market access, including cross-border trade in services, which may require establishments abroad. See Appendix C for more detail.

203 See Appendix C for more detail.

204 TTIP is currently not progressing because of the change in US administration, although negotiations have not formally ended.

205 Egger et al. 2015.

- **Non-tariff barriers, immediate change.** UK–EU27 NTBs increase to one quarter of the pre-Brexit US–EU NTBs for goods, agriculture and non-financial services.²⁰⁶ NTBs for financial services increase to three-quarters of the pre-Brexit EU–US NTBs. UK–US and EU–US NTBs on goods and agriculture are reduced by about half. This represents the share of NTBs that can be realistically removed by policy action.²⁰⁷ Services, except financial services, are also included in the agreement.²⁰⁸
- **Non-tariff barriers, change over time.** Since the UK replaces its EU membership with an FTA, there is still some exclusion from market integration, but to a lesser extent than under WTO rules. Hence non-tariff costs are modelled to increase per year by about 0.06 per cent for goods and services and about 0.01 per cent for agriculture. In contrast, due to the deeper integration between the EU, the UK and the United States, we assume that UK–US and EU–US NTBs will decrease over time by about 0.07 per cent for goods and services and about 0.01 per cent for agriculture.²⁰⁹



Scenario 4: UK–US FTA

The Trump administration promised the government of Theresa May a rapid launch and conclusion of a trade agreement with the United States to make Brexit a ‘great success’.²¹⁰ It is assumed that such a deal could include goods, agriculture and services. Similarly to the assumptions made in the TTIP literature, financial services might be excluded from the agreement. However, Trump’s campaign pledge to ‘dismantle’ the Dodd–Frank Act, the financial-sector regulation law approved after the global financial crisis, and replace it with less stringent regulation, may open the possibility for deeper integration of the transatlantic service trade.²¹¹ The UK trade relationship with the EU would be governed under WTO rules, as described in Scenario 1.

For this scenario, changes in effective trade costs are as follows:

- **Tariff barriers.** UK–US tariffs decrease to zero. UK–EU tariffs and tariffs between the UK and EU preferential-trade-agreement partners increase to the level of those of trade partners with WTO MFN status.
- **Non-tariff barriers, immediate change.** UK–EU NTBs increase to three-quarters of the pre-Brexit US–EU NTBs for goods, agriculture and services (as under WTO rules); US–UK NTBs on goods, agriculture and services are partially removed (as in the TTIP scenario), with an optional exception for financial services.

206 As under Scenario 2, we continue the assumption that non-tariff costs will increase on goods and agriculture due to the establishment of some rules of origin requirements.

207 Following TTIP literature (e.g. Berden et al. 2009; Egger et al. 2015), which assumes that the share of NTBs that can be removed through policy action is around 50 per cent of overall NTBs.

208 We also examine the potential effects if financial services are included.

209 See Appendix C for more detail.

210 Donnan 2017.

211 Barbash & Merle 2017.

- **Non-tariff barriers, change over time.** Due to the exclusion of future market integration with the EU (e.g. harmonised standards and regulations), UK–EU NTBs for goods and services increase annually by about 0.08 per cent for goods and services and 0.09 per cent for agriculture. Due to the deeper integration between the UK and the United States, we assume that NTBs between those two countries will decrease over time by about 0.07 per cent for goods and services and about 0.01 per cent for agriculture.²¹²



Scenario 5: UK–EU transitional zero-tariff arrangement

Scenarios 1 to 4 assume that an arrangement would be in place by the end of the two-year Brexit negotiation period in 2019. However, there is an expectation that a future trade deal may take longer than two years to negotiate and conclude, and both the UK and the EU27 may want to avoid a hard landing, meaning a fallback to WTO rules. Accordingly, there is a possibility that a transitional trade arrangement may be negotiated.²¹³ Increasingly there has been acknowledgement from both parties that a transitional arrangement will be needed, but a clear idea of what such an arrangement would look like has not emerged so far.

To illustrate the potential effects of a transitional arrangement, we assume that both parties could apply zero tariffs on goods for an interim period after the UK leaves, as a prelude to a comprehensive trade agreement that may be adopted later.²¹⁴ Specifically, Scenario 5 assumes that a zero-tariff deal on goods would let the UK avoid a 'cliff-edge' and a fallback to WTO rules, but would still impose some trade restrictions in the form of rules of origin requirements. In our analysis we assume that the transitional period would be in place for four years, at which point the UK would sign a comprehensive trade agreement with the EU27.

For this scenario, changes in effective trade costs are as follows:

- **Tariff barriers.** UK–EU27 tariffs remain at zero.
- **Non-tariff barriers, immediate change, first four years.** UK–EU27 NTBs increase to three-quarters of the pre-Brexit UK–EU NTBs for services (as under WTO rules); they increase to only one quarter of the pre-Brexit UK–EU NTBs for goods.
- **Non-tariff barriers, change after four years.** UK–EU27 NTBs for services reduce to one quarter of pre-Brexit UK–EU values (as in Scenario 2).
- **Non-tariff barriers, change over time.** Since the UK leaves the Single Market there is still some exclusion from market integration but to a lesser extent than under WTO rules. We assume that non-tariff costs increase per year by about 0.06 per cent for goods and services and about 0.01 per cent for agriculture (as in Scenario 2).²¹⁵

212 See Appendix C for more detail.

213 Boffey 2017b; Donnan 2017.

214 Von der Burchard 2017.

215 See Appendix C for more detail.

Soft Brexit scenarios



Scenario 6: The Norwegian model

Staying in the European Economic Area but exiting the EU Customs Union is often referred to as the Norwegian model. The EEA was established in 1994 to provide European countries that are not part of the EU a means to become members of the Single Market. The EEA includes all members of the EU together with Iceland, Liechtenstein and Norway. Members of the EEA are part of the Single Market and have to comply with rules regarding the free movement of goods, services, people and capital. If the UK stays in the Single Market, trade would continue to be tariff free. In addition, it is assumed that UK financial institutions would keep their passporting rights. However, as EEA members are not part of the Customs Union, some exports must satisfy rules of origin requirements to enter the EU duty free. This would give rise to some new NTBs between the EU and the UK. In essence, joining the EEA would allow the UK to remain part of the Single Market and pursue its own independent trade policy, while not participating in other deeper forms of (political) European integration. However, by leaving the EU and joining the EEA, the UK would give up its influence over all EU decision-making processes and would have to agree to implement EU legislation without having a say in creating it. Hence, in our analysis, we assume that no regulatory divergence between the UK and EU would emerge over time. In addition, staying in the Single Market would mean that the UK would have to contribute to the EU budget.²¹⁶

For this scenario, changes in effective trade costs are as follows:

- **Tariff barriers.** Tariffs with the EU remain at zero. UK tariffs with the EU's preferential trade agreement partners increase to the level of that of trade partners with MFN status.
- **Non-tariff barriers, immediate change.** UK–EU NTBs increase to one quarter of the pre-Brexit US–EU NTBs for goods, agriculture and services.
- **Non-tariff barriers, change over time.** No increase in NTBs over time because Single Market membership assumes compliance with EU rules and hence no significant regulatory divergence will occur.²¹⁷



Scenario 7: The Swiss model

The assumption under the Swiss Model is that the UK would stay in the Single Market, but only for goods and not services. UK–EU trade in goods would stay tariff-free and NTBs on goods would stay relatively low, as only some rules of origin requirements would occur for goods to enter the EU duty free. However, we assume that NTBs for services would rise relatively strongly, to the same extent as under WTO rules. As in the Norwegian model, the UK would need to contribute to the EU budget.²¹⁸ For this scenario, since the UK would stay in the Single Market, we assume that no regulatory divergence between the UK and EU would emerge over time.

216 Equivalent to Norway's payments, the UK would still pay 83 per cent of its current per capita payments to the EU budget post-Brexit (Miller 2013).

217 See Appendix C for more detail.

218 However, the net contribution to the EU would be lower than under the Norwegian model by about 60 per cent.

For this scenario, changes in effective trade costs are as follows:

- **Tariff barriers.** Tariffs with the EU remain at zero (no change from pre-Brexit). UK tariffs with the EU's preferential-trade-agreement partners increase to the level of that of trade partners with MFN status.
- **Non-tariff barriers, immediate change.** UK–EU NTBs increase to one quarter of the pre-Brexit US–EU NTBs for goods and agriculture, and to three-quarters of the pre-Brexit US–EU NTBs for services.
- **Non-tariff barriers, change over time.** No increase in NTBs over time because Single Market membership assumes compliance with EU rules and hence no significant regulatory divergence will occur.²¹⁹



Scenario 8: Customs union covering goods only

While Scenarios 1 to 5 assume that the UK would exit the Single Market and the EU Customs Union, Scenarios 6 and 7 assume that the UK would exit only the latter. The advantage of exiting the Customs Union for the UK is that it could form its own trade policy and strike FTAs with other countries, but at a cost of increasing tariffs and increasing NTBs with the EU due to customs measures in the UK–EU trade relationship. However, another option for the UK that has been discussed is to have a customs union with the EU covering trade in goods but not services.²²⁰ To that end, tariff barriers on goods traded with the EU would be avoided and the UK would have the ability to strike new trade deals in the service sectors. However, a customs union would mean that the UK would have little or no autonomy in setting its trade policy, at least partially contradicting Theresa May's pledge of becoming a 'truly Global Britain'. Nevertheless, this scenario would mean that once the UK leaves the EU, increasing tariff and non-tariff costs in goods could be avoided. In addition, in our analysis we assume that staying in the Customs Union would allow the UK to further benefit from access to the EU's preferential agreements with third countries post-Brexit.

For this scenario, changes in effective trade costs are as follows:

- **Tariff barriers.** Tariffs with the EU remain at zero and do not change with the EU's preferential trade agreement partners.
- **Non-tariff barriers, immediate change.** UK–EU NTBs increase to three-quarters of the pre-Brexit US–EU NTBs for services.
- **Non-tariff barriers, change over time.** Since the UK leaves the Single Market there is still some exclusion from market integration but to a lesser extent than under WTO rules, at least for goods and agriculture. We assume that non-tariff costs increase per year by about 0.06 per cent for goods and about 0.01 per cent for agriculture (as in Scenario 2). The increase for services is 0.08 per cent (as in Scenario 1).²²¹

219 See Appendix C for more detail.

220 Cooper 2017a.

221 See Appendix C for more detail.

Figure 5.1. Changes in effective trade costs (summary)

		TARIFF	NON-TARIFF	
			Immediate	Over time
 <p>Scenario 1: WTO rules</p>		 to level of trade partners with MFN status	 to 3/4 of pre-Brexit US-EU NTB for agriculture, goods and services	 annually by 0.08% for goods and services and 0.09% for agriculture
				
				
 <p>Scenario 2: UK-EU FTA</p>			 to 1/4 of pre-Brexit US-EU NTB for agriculture, goods and non-financial services; to 3/4 of pre-Brexit US-EU NTB for financial services	 annually by 0.06% for goods and services and 0.01% for agriculture
				
				
 <p>Scenario 3: UK-EU-US TTIP</p>			 to 1/4 of pre-Brexit US-EU NTB for agriculture, goods and non-financial services; to 3/4 of pre-Brexit US-EU NTB for financial services	 annually by 0.06% for goods and services and 0.01% for agriculture
		 to zero	 to half of pre-Brexit US-EU NTB for agriculture, goods and non-financial services	 annually by 0.07% for goods and services and 0.01 for agriculture
		 to zero	 to half of pre-Brexit US-EU NTB for agriculture, goods and non-financial services	 annually by 0.07% for goods and services and 0.01 for agriculture
 <p>Scenario 4: UK-US FTA</p>		 to level of trade partners with MFN status	 to 3/4 of pre-Brexit US-EU NTB for agriculture, goods and services	 annually by 0.08% for goods and services and 0.09% for agriculture
		 to zero	 to half of pre-Brexit US-EU NTB for agriculture, goods and non-financial services	 annually by 0.07% for goods and services and 0.01 for agriculture
				

		TARIFF	NON-TARIFF	
			Immediate	Over time
 <p>Scenario 5: UK-EU transitional zero-tariff agreement</p>			 First 4 years: to 3/4 of pre-Brexit US-EU NTB for agriculture and services, 1/4 for goods; After 4 years: to 1/4 of pre-Brexit US-EU NTB for agriculture, goods and services	 annually by 0.06% for goods and services and 0.01% for agriculture
				
				
 <p>Scenario 6: Norwegian model</p>			 to 1/4 of pre-Brexit US-EU NTB for agriculture, goods and services	
				
				
 <p>Scenario 7: Swiss model</p>			 to 1/4 of pre-Brexit US-EU NTB for agriculture and goods; to 3/4 of pre-Brexit US-EU NTB for services	
				
				
 <p>Scenario 8: Customs union covering goods only</p>			 to 3/4 of pre-Brexit US-EU NTB for services	 annually by 0.06% for goods, 0.08% for services and 0.01% for agriculture
				
				

KEY	 Increase in trade costs	 Decrease in trade costs	 No change in trade costs
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The scenarios summarised

The UK would face MFN-level trade costs with the EU27 in Scenarios 1 and 4, and trade costs under an FTA with the EU27 in Scenarios 2 and 3. Scenarios 6 and 7 assume the UK stays in the Single Market, whereas Scenario 8 assumes the UK leaves the Single Market but stays in a customs union for goods. The UK would face WTO trade costs with the United States – as it does now – in Scenarios 1, 2, 5, 6, 7 and 8 and FTA trade costs with the United States in Scenarios 3 and 4.

Figure 5.2 depicts predicted changes in effective UK trade costs (changes in tariffs and NTBs) to the EU in Scenario 1. Under WTO rules, notably higher tariffs would apply to the ‘Agriculture, hunting, forestry and fishing’ and ‘Food, beverages and tobacco’ chapters of the tariff code. But other sectors such as ‘Textiles and textile products’, ‘Rubber and plastic’ and ‘Transport equipment’ would face increased effective trade costs as well.²²² Figure 5.3 depicts the relative changes predicted under Scenarios 2, 3, 6, 7 and 8.

The estimated trade effects of potential Brexit scenarios

Our analysis of the trade effects of Scenarios 1 to 8 compares how changes in trade costs lead to changes in trade flows and subsequent changes in GDP. Table 5.2 reports the findings of the estimations regarding the effects of Brexit on GDP. Note that Panel A in the table compares Scenario 1 (WTO rules) to the current status quo of EU membership. Panel B then compares Scenarios 2 to 8 to Scenario 1, or in other words it compares the percentage and absolute change in GDP and in GDP per capita relative to a projection of where the UK will trade with the EU27 under WTO rules. In all cases, the results reflect cumulative costs after ten years, and the percentage change is relative to 2015 GDP.

Scenario 1 – trading at WTO MFN rates, or ‘falling off the cliff’ – is the most costly for the UK. The effects of the increased trade costs are estimated to reduce the UK’s GDP by about 4.9 per cent of 2015 GDP, or \$140bn. The implied loss of income per capita is about \$2,144. In contrast, the loss to the EU27 is only about 0.7 per cent of its combined GDP, or \$97bn, representing about \$219 per person. The United States would gain about 0.02 per cent, or about \$4bn, in this scenario, mainly through reduced trade diversion as the UK exited the EU.²²³

222 Transport equipment includes the majority of the car manufacturing industry.

223 The formation of a free trade agreement or a customs union can lead to trade being diverted from a more efficient exporter to a less efficient one. See, for instance, Viner 1950.

Figure 5.2. Changes in effective trade costs under Scenario 1 (WTO rules) compared to the status quo

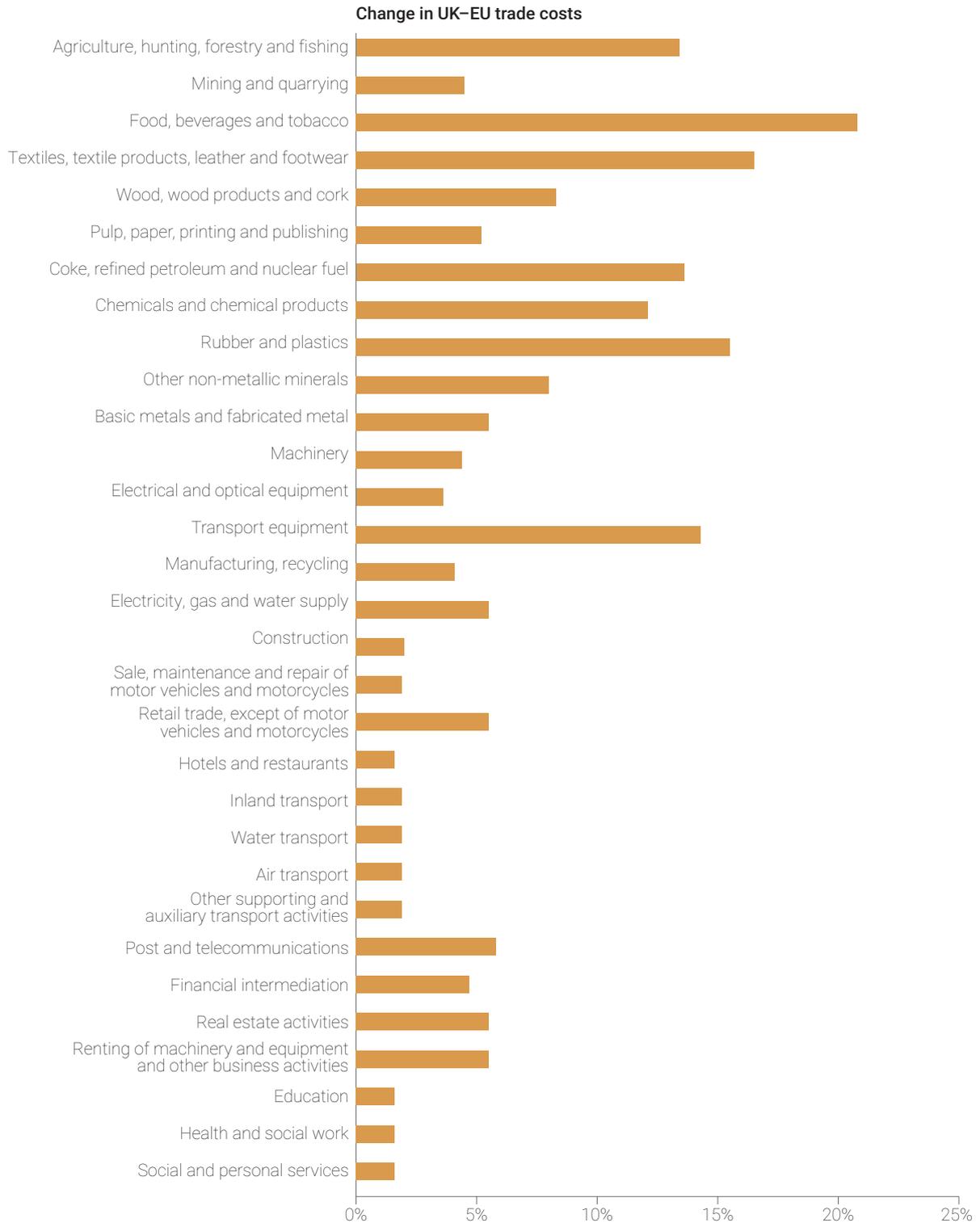


Figure 5.3. Changes in effective UK-EU trade costs under Scenarios 2, 3, 6, 7 and 8 (relative to the baseline Scenario 1)

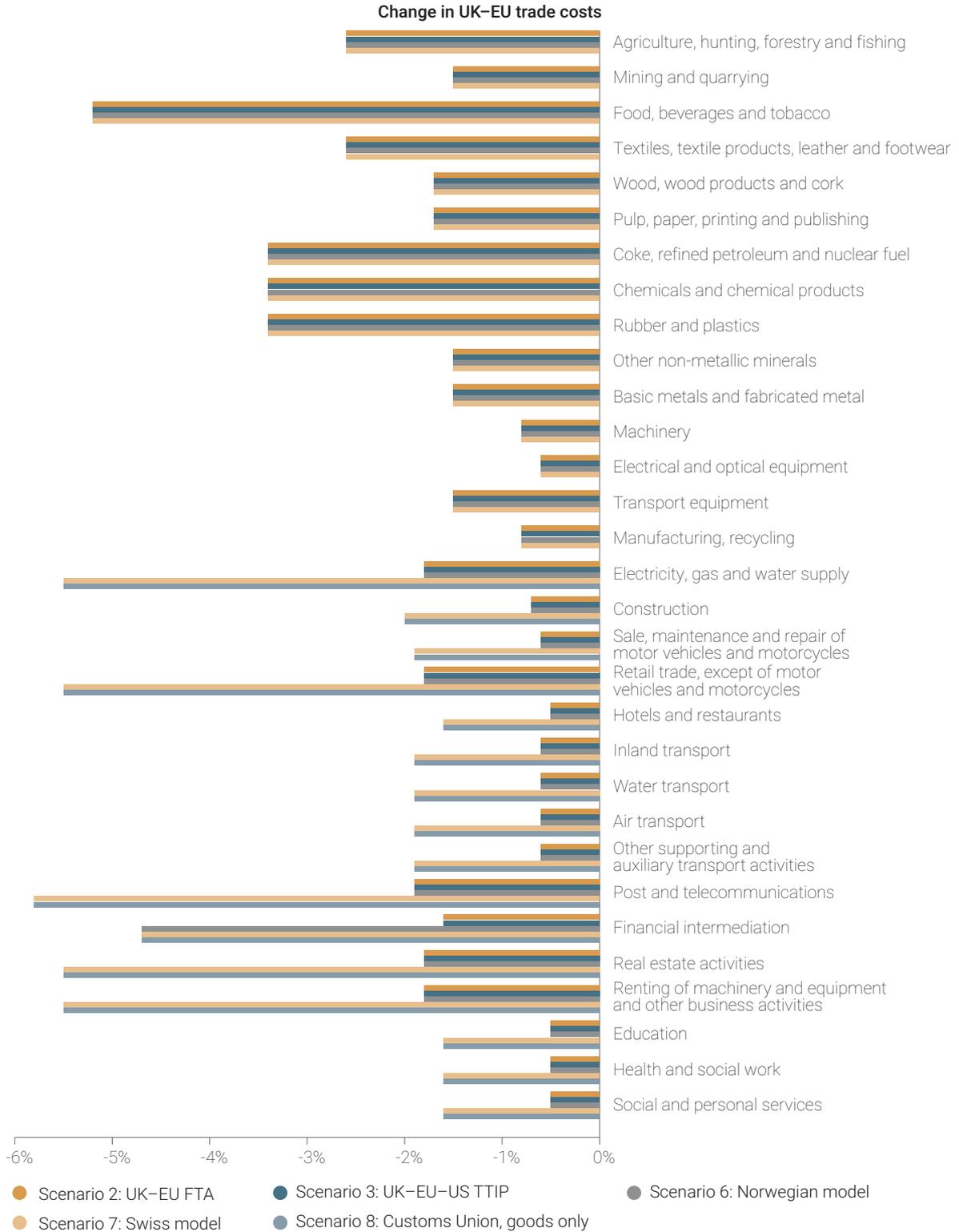


Table 5.2. GDP under different scenarios (10-year cumulative effect)

	UK			EU27			US		
	%	\$ billion	\$ per capita	%	\$ billion	\$ per capita	%	\$ billion	\$ per capita
Panel A									
Scenario 1: WTO rules	-4.9	-140	-2,144	-0.7	-97	-219	0.02	4	12
Panel B									
Hard Brexit scenarios									
Scenario 2: UK–EU FTA	3.0	85	1,300	0.5	67	151	-0.01	-2	-7
Scenario 3: UK–EU–US TTIP	7.1	202	3,104	3.2	428	962	4.2	761	2,366
Scenario 4: UK–US FTA	2.4	70	1,070	-0.1	-12	-28	0.2	41	127
Scenario 5: UK–EU transitional	2.8	79	1,208	0.4	57	129	-0.01	-2	-5
Soft Brexit scenarios									
Scenario 6: Norwegian model	3.2	92	1,407	0.5	66	149	-0.01	-2	-7
Scenario 7: Swiss model	2.5	72	1,109	0.4	51	114	-0.01	-2	-6
Scenario 8: Customs union, goods only	3.1	89	1,370	0.5	61	137	-0.02	-3	-9

SOURCE: Authors' calculations.

NOTE: The analysis has a time horizon of ten years and the reported effects represent the (discounted) cumulative effect after ten years. The entries are calculated using 2015 GDP and population data from the World Bank; those for the EU27 are weighted by country GDP. The % entries in Panel B represent percentage point changes relative to the baseline scenario 1 reported in Panel A.

At the other end of the range of possible outcomes, the largest potential gains for all three partners – the UK, the EU27 and the United States – would arise from Scenario 3. Relative to the WTO scenario, our analysis estimates that under a UK–EU–US TTIP-like arrangement the UK would be \$202bn better off. In addition, the EU27's and the United States' GDP would be larger by about \$428bn and \$761bn, respectively.²²⁴ In fact, all three parties would be better off under a TTIP-like scenario than under the current arrangement of the EU28. However, the overall gain would likely be even more with a TTIP between the EU28 (including the UK) and the United States. Note also that these gains and losses are not from a 2019 base, but from what UK, EU and US GDP would

224 Note that to allow comparison with the existing TTIP literature, we compare our findings also to the current status quo where the UK is still a full member of the EU. Our predictions suggest that the United States would gain around 4.26 per cent, which is in line with previous estimates in TTIP studies using the SG model (see, for instance, Table 5 in Felbermayr et al. 2015). The UK and the EU27 would gain around 2.33 per cent and 2.45 per cent respectively. This is lower than previous TTIP estimates, but these did not take into account a potential Brexit effect in which the UK and the EU27 establish trade barriers in their bilateral trade relationship.

otherwise be in 2029. So UK GDP might rise over that period despite Brexit, but rise less than it would had it not exited.

It should also be remembered that the addition of the United States to this otherwise binary analysis does not change the negative effect to the UK and the EU of all forms of Brexit; rather it simply introduces some offsetting positive effects as a result of increased transatlantic trade. The result would be even more positive for all concerned if the UK stayed in the EU and the EU28 concluded an FTA with the United States.

Among the other 'hard Brexit' scenarios, a comprehensive UK–EU FTA (Scenario 2) would be considerably better for the UK and the EU than the losses imposed by a potential fallback to WTO rules. Under this scenario, the predicted relative gain compared to the WTO baseline for the UK is about \$85bn, or \$1,300 per person. The relative economic effect is again predicted to be lower for the much larger EU27 combined economy, about \$67bn, or \$151 per person.

If the UK could agree an FTA with the United States (Scenario 4), it would be \$70bn better off in GDP terms than in the WTO scenario, but it would not gain as much as if it had obtained a comprehensive FTA with the EU27. This is mainly because the UK's present trade relationship (imports and exports) with the EU is more than twice the size of its trade with the United States.²²⁵ The United States would gain \$41bn or \$127 per person.

Finally, among the hard Brexit scenarios, the estimates of the effects of a transitional agreement covering goods for five years until a comprehensive agreement is in place between the UK and the EU27 show that such an outcome would be better for the UK than a fallback to WTO rules by a GDP gain of \$79bn, or \$1,200 per person.

Among soft Brexit options, staying in the Single Market under the Norwegian model or entering a customs union in goods with the EU would both overall be slightly better options economically for the UK than a comprehensive FTA with the EU.²²⁶ The UK–EU FTA option would result in \$4bn to \$7bn higher losses than the Norwegian model or the customs union. However, the numbers among all three options are close, suggesting none are firmly preferred above the others. The Swiss model would not represent a very attractive soft-Brexit option for the UK, mainly because of the restricted access of UK services to European markets under this scenario. All of the soft Brexit options are also compatible with a TTIP agreement, which would provide all parties the same additional benefits as under the hard Brexit options above.

To check the validity of our estimates, we compare the trade flow predictions to existing estimates from a separate, previous study for the two most previously applied Brexit scenarios, WTO rules (Scenario 1) and comprehensive FTA or EEA membership (close to our Scenario 2). Using a standard gravity model, HM Treasury predicts that a fallback to WTO rules would result in a reduction of overall trade by between 22 per cent and 25 per cent, while a comprehensive FTA instead

225 It is important to note that our estimated gain from a UK–US FTA is relatively large, driven by the assumption that the UK would manage to get the same terms of trade with the United States as under a TTIP scenario where the UK would negotiate under the umbrella of the EU. This is unlikely to be the case and hence this estimate should be seen as an upper boundary.

226 Note that this does not take into account potential payments to EU budget under the Norwegian model.

would result in a decline of trade by between 8 per cent and 10 per cent.²²⁷ Our SG model predictions are in a similar range: under the WTO scenario, we predict a fall of UK trade by around 20 per cent, and under a UK–EU FTA, a fall of about 6 per cent (see Appendix D).²²⁸

The effect on FDI

The importance of the UK’s membership of the EU as an incentive for FDI has been stressed in the past by the Remain campaign.²²⁹ In their view, foreign firms see the UK as a gateway to other EU markets and reduced access to the Single Market could make the UK a less attractive FDI destination. However, the UK is one of only 28 current members in the EU and hence foreign firms looking for an EU base have a number of countries to choose from. Other factors affecting the UK’s attractiveness to FDI include the use of English language and a relatively business-friendly environment with a relatively deregulated labour market.²³⁰ These advantages would remain if the UK leaves the EU.²³¹ Previous studies have estimated that a vote to leave the EU would result in a reduction of inward FDI flows to the UK of between 14 and 38 per cent.²³²

Table 5.3 reports the bilateral FDI flows and stocks between the UK, EU, the United States and the rest of the world. The average annual inflow of FDI from the EU27 to the UK is about \$38bn, corresponding to about 1.4 per cent of UK GDP. The average annual FDI inflow from the UK to the EU is about \$44bn.

Table 5.3. Bilateral FDI flows and stocks

Recipient	Origin	Flow		Stock	
		\$ billion	% of 2015 GDP	\$ billion	% of 2015 GDP
UK	EU27	38.2	1.4	734.8	27.4
	US	20.2	0.8	425.1	15.8
	RoW	9.9	0.4	208.8	7.8
EU27	UK	43.7	0.3	520.9	3.4
	US	43.5	0.3	487.1	3.2
	RoW	43.0	0.3	745.7	4.9

227 Her Majesty’s Treasury 2016.

228 To test the robustness of the trade flow predictions from the SG model we also applied a standard empirical gravity model. The standard model predicts very similar changes in UK trade flows: a reduction of about 23 per cent for the WTO scenario and a reduction of 6 per cent for the UK–EU FTA scenario.

229 Beck 2016.

230 Dhingra, Ottaviano et al. 2016b; World Bank 2017; Her Majesty’s Treasury 2016.

231 Beck 2016.

232 Dhingra, Ottaviano et al. 2016b; Her Majesty’s Treasury 2016. Note that the studies are based on data for different time periods and data samples.

Recipient	Origin	Flow		Stock	
		\$ billion	% of 2015 GDP	\$ billion	% of 2015 GDP
US	UK	34.2	0.2	486.8	2.9
	EU27	69.2	0.4	1155.3	7.0
	RoW	54.4	0.3	915.5	5.5

SOURCE: Authors' calculations using the OECD bilateral FDI database from 1995–2013.

NOTE: Entries for flows report the average bilateral flow between 1995 and 2015; entries for stocks are for the year 2013; RoW = rest of world.

The average FDI inflow from the United States to the UK is about \$20bn per year, less than that to the UK from the EU. The flow from the UK to the United States is on average about \$34bn. Overall, FDI inflows from the EU and the United States together represent the vast majority of inflows to the UK, with the inflows from the rest of the world valued at about \$10bn. In 2013, the stock of FDI in the UK from the EU was \$735bn and the stock from the United States was \$425bn, representing 27 per cent and 16 per cent of 2015 UK GDP. The stock of UK FDI in the EU was \$520bn and the UK FDI stock in the United States was \$487bn.

The effect of EU membership and free trade agreements on FDI

We turn now to an examination of the potential effects on FDI flows of some of the different UK post-EU relationships outlined above. The literature on the relationship between FTAs and FDI generally predicts a positive effect, suggesting that FTAs can foster FDI. However, as for the trade analysis described above, there has been little to no study of the possible effect on FDI flows of re-imposing barriers on countries since, aside from Brexit, there have been few such cases in the last century.²³³ Our analysis relies on a gravity model to estimate the effect of the five different possible hard Brexit scenarios discussed above on FDI. This approach follows previous analyses, in that we use historical data to examine how much larger FDI flows and stocks between two countries would be if one country or both join the EU, or if the countries sign an FTA with each other, taking into account other factors that may affect FDI decisions (see Appendix F for the technical details of the model and the corresponding estimation results). This then allows us to posit a symmetric negative effect when delinking from a trade agreement.

Given the unusual nature of Brexit, we do not have a strong empirical record to say definitively that the relationship will be symmetric. Our findings likely represent an upper bound, since remaining investments could stay profitable, leading to expansions, because in some cases it may be cheaper to reinvest in existing investments than to reverse the investment, and because more generally, existing investment tends to attract new investments.²³⁴

The findings suggest that the effect on FDI flows of being in the EU is positive and statistically significant, with the predicted changes in GDP associated with changes in FDI summarised in

²³³ For a more detailed summary of the literature related to the association between FTAs and FDI, see Appendix E.

²³⁴ Bobonis & Shatz 2007.

Table 5.4. Effect on GDP of changes in FDI flows under different scenarios

	UK			EU27			US		
	%	\$ billion	per capita	%	\$ billion	per capita	%	\$ billion	per capita
Panel A									
Scenario 1: WTO rules	-3.3	-89	-1358	-0.3	-39	-88	-0.2	-36	-113
Panel B									
Scenario 2: UK–EU FTA	1.1	29	441	0.2	30	66	0.0	0	0
Scenario 3: UK–EU–US TTIP	1.7	44	676	0.4	65	147	0.6	95	295
Scenario 4: UK–US FTA	0.6	15	233	0.0	0	0	0.2	27	85
Scenario 5: UK–EU transitional	0.8	21	326	0.1	22	49	0.0	0	0

SOURCE: Authors' calculations.

NOTE: The analysis has a time horizon of ten years and the reported effects represent the (discounted) cumulative effect after ten years. The % entries in Panel B represent percentage point changes relative to the baseline scenario 1 reported in Panel A.

Table 5.4.²³⁵ Compared to being outside the EU, on average, being in the EU increases FDI inflows to the UK by 28 per cent and FDI inward stocks by 34 per cent.²³⁶ EU membership also has a positive effect on a country's FDI outflows, increasing flows to other countries by 23 per cent. By comparison, signing a comprehensive FTA with the EU could boost inward FDI by only 23 per cent (stock) and 16 per cent (flow).

FTAs can have a positive effect on FDI, but our calculations suggest that after Brexit even signing a deep and comprehensive FTA with the EU would not fully restore the UK's levels stemming from EU membership. In absolute terms, leaving the EU to fall back on WTO rules would reduce FDI inflow from the EU to the UK by around \$7.8bn. If the UK manages to sign a comprehensive FTA with the EU, we estimate it would suffer a loss in FDI from the EU27 to the UK of only about \$3.4bn (compared to full membership). This means that such an FTA would restore about \$4.4 billion in lost FDI, but not all of it. In percentage terms, exiting the EU and joining a comprehensive

235 To estimate the effects of changes in FDI on UK GDP, similarly to Dhingra, Ottaviano et al. (2016b) we draw on estimates from Alfaro et al. (2004), who estimate the effect of changes in FDI flows on growth rates across countries, in order to predict how changes in FDI affect growth. Alfaro et al. (2004) found that increases in FDI inflows have a positive effect on GDP growth, especially for countries with a relatively large and developed financial sector, such as the UK. Using the estimates from Table F.1 in Appendix F (column 1) and Alfaro et al. (2014), we predict changes in GDP and GDP per capita under different post-Brexit scenarios (see Appendix F for more details on the calculations). It should be noted that we have not attempted to account for any discrete impact on FDI flows of any exchange rate consequences of the scenarios.

236 See columns 1 and 2 in Table F.1 (Appendix F).

FTA with the EU27 would result overall in a predicted FDI reduction of about 9 per cent relative to the level resulting from EU membership.

If the UK were instead to sign an FTA with the United States, FDI inflows relative to no FTA with the United States would increase by about \$3.2bn, all other things being equal. Accounting for the loss of FDI were the UK to trade strictly on a WTO basis with the EU, signing an FTA with the United States would replace a little more than one third of the lost FDI inflows from the EU27.

In all cases, the decline in FDI would lead to reductions in future GDP. Panel A of Table 5.4 reports the predicted change in UK, EU and US GDP for our baseline Scenario 1, the return to WTO rules, estimating a reduction of UK GDP in ten years equal to 3.3 per cent of 2015 GDP, or about \$89bn. For the EU27, the loss in GDP is predicted to be only 0.3 per cent of 2015 GDP, or about \$39bn. Compared to 2015 GDP, the United States is predicted to have a 0.2 per cent lower GDP in ten years, due to a reduction of UK FDI flows after Brexit. Panel B of Table 5.4 reports the effects of the other hard Brexit scenarios, compared to the baseline.²³⁷ Under a potential TTIP agreement, the UK would be about \$44bn better off than under WTO rules, but it is important to note that the estimated overall loss from Brexit would not be fully covered by such an agreement. Under a UK–EU FTA scenario, the UK is predicted to be \$29bn better off than under WTO rules, compared to about \$15bn better off under a potential UK–US FTA. A UK–EU transitional agreement with four years of zero-tariff trade in goods, followed by a deep and comprehensive UK–EU FTA would make the UK \$21bn better off than under WTO rules. TTIP would also represent the best possible option for the EU27 and the United States, leaving both parties \$65bn and \$95bn better off than under WTO rules, respectively.

Conclusion

The UK is likely to suffer losses in trade and FDI under any form of Brexit. In this chapter we have provided estimates for the economic effects of the UK leaving the EU under five hard Brexit scenarios: (1) a complete exit, in which the UK's economic relations would be governed only by WTO rules; (2) an exit followed by an FTA with the EU27; (3) an exit followed by an FTA with the EU27 and the United States; (4) an exit followed by an FTA with only the United States; and (5) a hard Brexit with a transitional phase.

We did not explore the 'Singapore of the Atlantic' model, in which the UK would complete FTAs with numerous countries. Of these potential agreements, an FTA with the United States would be by far the most productive, but analysis of a UK–US FTA indicates the relative value of having a series of other FTAs as well. Depending on the countries selected for trade deals, it would take many FTAs to create a set of free trade partners that had the same size economy as that of the United States. Furthermore, negotiating numerous FTAs would be challenging and extremely time-consuming, especially for a country – the UK – that has not had an independent trade policy

²³⁷ Note that the FDI analysis, based on an empirical gravity model, allows less flexibility in terms of modelling different scenarios. For instance, with the given parameters on EU membership and FTA arrangements, it is not possible to distinguish sufficiently the different soft Brexit scenarios from a UK–EU FTA scenario. Nevertheless, we would predict the FDI effects of a deep and comprehensive FTA to be a lower bound estimate for the effects of a Norwegian scenario with continued Single Market membership.

for more than 40 years and therefore has little experience negotiating trade deals. Finally, each FTA would have its own set of rules, adding complexity to businesses conducting international trade. Therefore, signing many FTAs, but not an FTA with the United States, would not have as large an economic effect as an FTA with the United States. In this way, the results of modelling an FTA with the United States come close to modelling an upper bound of the 'Singapore of the Atlantic Scenario' if the UK were to have no deal with the EU27.

In this chapter we also investigated the economic effects of three forms of soft Brexit: (6) the Norwegian model, meaning EEA membership, so membership of the Single Market but not the Customs Union; (7) the Swiss model, meaning membership of the Single Market for goods; and (8) membership in a customs union for goods.

Of all the options, the best economically for the UK by far is to participate in a three-way FTA involving the United States, the EU27 and the UK, essentially a revised version of the moribund TTIP. Our modelling estimates indicate that the UK would still suffer some losses in trade, investment and GDP, but not as great as they would be under the Norwegian model (second best), a customs union for goods (third best), or a UK–EU FTA (fourth best).

The EU27 and United States, in turn, would also benefit most from the TTIP option. However, from there, interests diverge. The EU27 would benefit similarly from a UK–EU FTA, a Norwegian-style arrangement, and a customs union in goods arrangement. The United States, in contrast, would benefit second most from a UK–US FTA, but not by much – in fact, the United States would likely fail to notice gains or losses from any of the other arrangements. The United States, however, has interests other than economic. We turn to these in the next chapter.

6 US interests

The United States shares deep political, security, intelligence and cultural ties with the UK, perhaps its closest ally and friend. The European integration process, of which the European Union is the culmination, began on the basis of far-sighted American initiatives after World War II, including the Marshall Plan, the Organisation for European Economic Co-operation (OEEC) and the Truman Doctrine. The EU's other 27 members are also close friends, and most are NATO allies of the United States. The EU28, individually and collectively, are major US trading partners, the source of \$1.866 trillion in FDI in the United States in 2015, and the destination for \$2.677 trillion in US direct investment abroad.²³⁸ EU and US financial markets – especially London and New York – are intimately interrelated and critical to the 24-hour global economy. The United States therefore has a major stake in the outcome and in the specifics of the terms of the UK's withdrawal from the EU.

Brexit will affect US political and economic interests, in some respects negatively. In some areas the effect of the change, such as in the strategic environment generally, is uncertain. This chapter first presents ways that Brexit could affect US political interests, followed by the economic effects.

Political effects

The United States has supported European integration for nearly 70 years in order to foster secure, stable, peaceful and democratic partners in facing the world's broader challenges. The most consequential potential effect of Brexit could be on European cohesion, although the direction of the effect remains uncertain. Since the end of World War II, cooperation and coordination between the United States and Europe has proved a potent force for spreading prosperity and freedom throughout the world. The United States and the EU combined constitute greater than half the world's economy. Their diplomats, other government officials and militaries have vast experience dealing with global problems. One recent example is their combined efforts to institute

238 Foreign direct investment in the United States is the direct investment position, or total stock, and is taken from US Bureau of Economic Analysis 2017a. The total excludes FDI from Gibraltar (administered by the UK – \$7.5 billion) and Greenland (part of Denmark – \$2 million). US direct investment abroad is the direct investment position, or total stock, and is taken from US Bureau of Economic Analysis 2017b. The total excludes FDI to Gibraltar (\$50.2 billion) and Greenland (no data available, but likely low).

sanctions following Russia's aggression in Crimea and Eastern Ukraine – acting alone, either one would have been less effective.

On the one hand, the advent of Brexit could over time increase euroscepticism and centrifugal forces within the EU and thereby lead to less secure, stable, peaceful and democratic partners. As noted in earlier chapters, this effect was uppermost in the minds of Europeans in the immediate aftermath of the June 2016 referendum. On the other hand, the example of Brexit, and the evident economic and political costs it appears to impose on the UK, could have the effect of strengthening the cohesion and commitment of the remaining 27 members of the EU. The response of the EU Commission, Council and Parliament to the challenge of Brexit is to take steps to minimise the risks of the former (centrifugal forces) and reinforce the greater cohesiveness effects. The evident decline in electoral results for eurosceptic parties in the Netherlands²³⁹ and France²⁴⁰ since the Brexit vote may indicate that this strategy is working. Recent public opinion polls also suggest a significant upswing in support for the EU.²⁴¹

But whether or not the UK's departure strengthens or weakens the EU as a whole, the United States will miss the influence and perspectives that the UK brought to EU deliberations. A member of the EU since 1973, and one of two EU-member-state permanent members of the UN Security Council, with a long tradition of global involvement, the UK contributed extensively to the development of the EU Common Foreign and Security Policy, and traditional British pragmatism helped in the application of EU influence around the world but especially in Europe's 'near abroad'.

The United States will also miss the UK's strong contribution of talent to the European project. Europe's second High Representative of the Union for Foreign Affairs and Security Policy (effectively the European Union's Foreign Minister) was Lady Catherine Ashton.²⁴² She led the negotiation of an interim agreement with Iran that set the stage for the nuclear arms treaty known as the Joint Comprehensive Plan of Action (JCPOA) two years later, and helped resolve a dangerous impasse over Kosovo's status and the Serbian enclave of Mitrovica. Without the UK as a member, highly capable British officials like Lady Ashton will no longer be involved in the development and implementation of EU foreign policy approaches.

Moreover, by many accounts British influence in Brussels helped restrain other EU member states' efforts to create EU-only operational headquarters for fledgling common defence initiatives, which might have undermined parallel NATO structures.²⁴³ Over a number of years, the United States has relied on the British taking a lead to ensure that NATO and EU arrangements in this

239 In the 2017 parliamentary elections, Geert Wilders and his Party for Freedom were widely expected to win more seats than any other party, but actually came in second (*The Economist* 2017).

240 Emmanuel Macron, leader of the EnMarche! Movement, won the French presidential election with 66.1 per cent of the vote, while Marine Le Pen received only 33.9 per cent (Clark & Holder 2017).

241 The Pew Research Center recently reports sharp upswings in favourability of the EU in nine out of ten European countries – Italy being the exception (Stokes, Wike & Manevich 2017; see also Directorate-General for Communication 2017).

242 Javier Solana, a Spaniard, was the first, and Italian Federica Mogherini is the present holder of the job.

243 The controversy over a possible EU military headquarters dates from at least 2003, when Belgium, France, Germany and Luxembourg proposed a headquarters and Britain and the United States objected (Wright & Agencies 2003; Pan 2005). Britain has maintained those objections even after the Brexit referendum, and recently opposed the creation of an EU joint centre for coordinating training missions until it was clear that the unit's role was limited (Wagstyl 2016).

field remained compatible. Recently, the EU decided to establish a Military Planning and Conduct Capability (MPCC) facility to oversee military training missions. The British initially objected but acceded after the description of the unit as an 'operational headquarters' was dropped.²⁴⁴

Also potentially troublesome for US interests, the stresses of the Brexit process threaten to reopen settled political disputes at national levels. Most immediately, and identified as a risk by both Theresa May and Donald Tusk, withdrawal of the UK from the EU may lead to re-imposition of a hard international border between Northern Ireland and the Republic of Ireland, undermining the success of the Good Friday Agreement that resolved the decades-long and violent 'Troubles' of Northern Ireland. The Good Friday Agreement was the achievement, among others, of US foreign policy.

Similarly, the withdrawal of the UK from the EU could lead to renewed tension and conflict over Gibraltar between key NATO allies, the UK and Spain. Spain claims Gibraltar as sovereign territory, although the UK has administered the territory for more than 300 years.²⁴⁵ The EU membership of both countries constrains nationalistic policies, and bedrock EU policies of freedom of movement for goods, services and people ensure the border stays open. Upon British withdrawal from the EU, the Spanish will be pressed domestically to restrict Gibraltar access to Spanish territory, sharply undermining the economic basis of the territory. US Navy ships based at Rota, Spain, frequently call at strategically placed Gibraltar and might be caught up in the dispute.

Brexit could also affect the balance of EU policies towards Russia. Among important EU member states, the UK is unique in having no dependence on Russia for natural gas supplies, a result of its North Sea hydrocarbon discoveries. This strategic independence, its nuclear deterrent and the UK's global outlook as a permanent member of the UN Security Council, have allowed it to support strong and consistent policies with respect to Russia. The UK was a steadfast advocate of 'widening' the European Union to include Baltic and the Central European states. Lady Ashton, with strong support from London, travelled with her French and German counterparts to Kiev in February 2014 to encourage Ukrainian President Yanukovich to back down from his violent approach to protestors in the Euromaidan crisis. Although the UK has not been a participant in the Minsk process, which has sought to end the conflict in Ukraine, it has been a firm supporter of the sanctions aimed at altering Russia's aggressive stance.

There are some possible political gains for the United States from Brexit. Outside of the constraints of a common foreign and security policy, the UK may be even more willing to align itself with US international initiatives and cooperate closely on security issues (although the UK's EU membership even now does not constrain it from cooperating on intelligence issues as a member of the so-called 'Five Eyes' grouping). These gains are likely to be outweighed by the loss of a cohesive European partner that includes the UK.

As a member of the EU, the UK has been a long-term and steady advocate for the bloc to develop a more effective foreign policy. While most EU members are primarily concerned about Europe and developments in the immediate neighbourhoods to the east and south, British horizons

244 Barigazzi 2017.

245 Britain gained control of Gibraltar after the War of the Spanish Succession, 1701–1714 (W. 2013).

have been much further afield. Along with the French and a few others, the British have helped push EU leaders to see the Union as having a broader international role. While there are sometimes specific policy differences, European efforts in supporting international democracy, open markets and other shared values have been in US interests. Although the EU is likely to continue to increase its international role, the lack of a British voice may lead to an approach that is more distinct from US policy preferences.

Economic effects

As set out in Chapter 5, the UK's future economic prospects depend considerably more on the nature of the post-Brexit arrangements with the EU than they do on any further removal of trade and investment barriers between the United States and the UK. British goods and services exports to the EU in 2015 were worth \$342bn, more than twice that of the \$154bn in exports to the United States.²⁴⁶ Our estimates suggest that a British failure to secure an ongoing preferential trade arrangement with the EU would cost the UK economy the equivalent of more than 4 per cent of its 2015 GDP. US trade and investment interests in the UK could suffer, primarily from this negative income effect as UK consumers and businesses would simply have less to spend. Although it is possible to envisage the creation of an FTA between the United States and the UK (our Scenario 4 in Chapter 5), the gains of this scenario to the UK are considerably less valuable than the benefits that would be lost in the event that the basis of UK–EU trade returns to WTO-bound MFN rates or even to an FTA. Moreover, the trade benefits of a US–UK FTA to the United States are trivial – potentially only 0.2 percentage points of US GDP, or \$127 per capita, over ten years – relative to a complete exit of the UK from the EU (Scenario 1), and not much more than that relative to current arrangements.

A 4 per cent blow to the British economy would have serious secondary effects as well. With fewer budget receipts, the UK government may be tempted to ease off the rebuilding of British defence forces, which suffered during earlier budget cuts. This could include cutbacks in expected purchases from US companies, including Apache helicopters and F-35 fighters, with serious consequences for US defence firms.²⁴⁷ US financial firms could also be at risk: many top US banks and financial firms have used London as a base for their European operations, relying on UK membership in the EU to provide them with passporting rights to conduct business throughout the Union. With uncertainty about the continuation of their ability to operate seamlessly with the EU27, some firms are now considering relocation, sometimes at considerable cost.²⁴⁸ Finally, the UK is the biggest single investor in the United States, with FDI stocks in 2014 representing 16 per cent of cumulative US inward investment.²⁴⁹ A faltering UK economy may place future large investments in the United States at risk.

246 Office for National Statistics (UK) 2016. Actual figures were in millions of pounds and were £222 billion and £100 billion, respectively. We converted them at an annual average rate of 0.65 pounds to the US dollar, drawn from the IMF's International Financial Statistics database.

247 Tovey 2017.

248 Finch 2017.

249 Office of the Chief Economist (US) 2016.

The United States would also suffer from the loss of the UK's voice in the European Council when it comes to setting economic policy. As noted earlier, the groundbreaking EU Single Market initiative of the 1980s and 1990s was strongly supported by Margaret Thatcher, and in fact resulted from the recommendations of a study team led by the UK's own Lord Arthur Cockfield, at the time the EU Commissioner for the Internal Market. The British have continued to be the voice of liberal international economics within EU debates, while British Members of the European Parliament have held very influential positions in the fields of financial services regulation, digital policy and privacy – all significant areas of EU regulatory domain. Although the future is not certain, an EU without the UK may be more willing to create barriers for external companies, for instance by increasing the regulatory burden such firms would face.

While there may be some modest economic gains for the United States from a US–UK FTA (Scenario 4 in Chapter 5), other potential effects of Brexit, in areas such as transatlantic security cooperation, are less clear. A UK that is not constrained by common EU positions may be more amenable to cooperative approaches with the United States, especially on regulatory issues.²⁵⁰ But a post-Brexit UK that is linked to the EU, with both then linked to the United States through a UK-EU-US TTIP-style arrangement (Scenario 3 in Chapter 5), is by far the most beneficial economic scenario for the United States. This may be the end result, but there will be transition costs, and some of those may fall on the United States.

250 For an exploration of how a post-Brexit Britain could join with the United States to promote deregulation in trade internationally, see Abbott 2017.

7 Conclusions

The withdrawal of the UK from the EU, now underway, is unprecedented, both as a process undertaken within the Union and more generally anywhere in the world. While the last century has seen various examples of nation states choosing to collaborate politically and economically, eliminating many forms of trade barriers and establishing plurilateral and multilateral organisations with pooled resources and mutual obligations, there are *no* equivalent examples of withdrawal from such undertakings and the re-imposition of barriers. The economic and political effects of the re-imposition of trade and investment barriers between the UK and the EU, and the effects of this process on the UK's trade, economic and political relationships with the rest of the world, are thus uncertain, as are its effects on the United States.

The issues

If there is one certainty about Brexit, it is that the issues involved are complex and interdependent. Each issue has its own pros and cons, and in most cases, several options for resolution. But there will also be opportunities for bargaining over issues that may complicate the process but that are probably also essential for a resolution. To add another layer of complexity, the public debate in the UK about Brexit has been plagued by inaccuracies and exaggerations. Any deal must be sold to a public that will need to accept necessary, unpalatable and perhaps unexpected trade-offs.

The actual negotiations have two specific components and a likely third element: the exit agreement to settle the terms of the UK's departure from the EU; the agreements that will govern the UK's future relationship with the EU in terms of trade, security and other matters; and, most probably, a set of transitional arrangements that will give both parties time for adjustment and to complete negotiations on the future relationship. Currently, the rules are established only for the exit negotiations and, according to the EU, only when 'sufficient progress' has been made on these will discussions start about a framework for the future relationship. The UK initially took the view that the exit talks and discussions on a future relationship should happen concurrently, but in late spring 2017 David Davis, Secretary of State for Exiting the European Union, acknowledged that the talks will proceed more consecutively.²⁵¹ However, 'sufficient progress' has not been defined: the best guess is that bases for the deal on citizens' rights and the financial settlement should be

close to resolution. As the negotiations proceed, identifying and agreeing on the exact point when discussions of future arrangements can start could become very sensitive, and may depend on the atmospherics surrounding the talks overall.

The first exit issue to be addressed is the post-Brexit residency and employment rights of both EU citizens living in the UK and UK citizens living in the EU. This will involve many very specific questions, including what will happen to pension rights, healthcare payments, education and training benefits, and even residence permits for non-EU spouses of EU citizens. Some of the specifics can be easily agreed on the basis of reciprocity, especially for those whose residency is established by the 2019 exit date, but others will be more difficult to resolve, especially as their financial consequences begin to emerge. A greater challenge, however, is likely to centre on interpreting and enforcing citizens' rights. Early indications are that the EU is particularly set on having the ECJ as the arbiter of any disputes over rights as contained in the exit agreement, while the UK believes that their own court system is perfectly adequate. These positions will not be reconciled easily.

The most difficult element of the exit agreement is likely to be the financial settlement. It is about more than money – the exit bill has been reported in an alarmist and antagonistic way in sections of the British media, making compromise a risky endeavour for British politicians. The situation has been eased somewhat by an agreement to first establish the principles for calculating liabilities and receipts, and only later to settle on numbers. Since the EU maintains that these principles should be established before any talks on the future relationship, there is some hope that attention will turn to the more positive idea of a UK–EU FTA before the specific financial terms are agreed and published. But even agreeing the principles is likely to be a serious challenge.

In July 2017, the UK took a small step towards agreeing to a financial settlement in a written statement to Parliament acknowledging that the UK would work with the EU to determine a 'fair settlement... in accordance with the law and in the spirit of our continuing partnership. The Government recognises that the UK has obligations to the EU, and the EU obligations to the UK, that will survive the UK's withdrawal – and that these need to be resolved.'²⁵² This was viewed by some as going beyond Theresa May's previous statement about a 'fair settlement' without necessarily specifying financial obligations.²⁵³

The exit negotiations also will require reaching some level of agreement on Northern Ireland. There will need to be agreement on how to maintain a relatively open border between the Republic and Northern Ireland, and also how to safeguard Northern Ireland's EU market for trade, as well as EU investment. Although everyone seems to be committed to finding solutions and continuing to support the peace settlement, there are few obvious answers to the challenges.

As demonstrated by the initial discussions on citizens' rights, one of the most controversial issues will be the future role of the ECJ. Aside from having it act as the arbiter of disputes related to citizens' rights, the EU has also proposed that it should have jurisdiction over the numerous administrative and legal arrangements required to ensure a smooth continuation of procedures

252 Anelay 2017.

253 Green 2017.

started before the exit date. The UK may agree to some elements of ECJ jurisdiction for short-term measures that can be described as transitional, but removal of ECJ oversight was one of the key elements of the Leave campaign and will be very difficult to abandon for anything but the most temporary accords.

It is widely assumed that once sufficient progress has been made on the exit agreement, negotiations will start on a trade agreement and other arrangements for the future relationship of the UK and the EU. Even if the exit agreement is concluded before the 2019 deadline, the future arrangements will still take considerable time to finalise, given the complexity of trade accords. It will likely be necessary, therefore, to agree on transitional arrangements²⁵⁴ that will govern UK–EU trade, security and other areas until permanent agreements are in force. Talks to establish transitional measures are likely to be less fraught than those involving permanent arrangements, especially as both parties understand the need for such a transitional regime, but also can deny having made any final decisions. That said, critics within both the UK and the EU will be quick to look for unfavourable precedents, especially if the talks seem to be favouring the other party.

In short, there are many potential stumbling blocks between now and the exit deadline of March 2019. Whether the UK and the EU can succeed in a smooth transition to a post-Brexit age will depend on how they assess the challenges and then design their negotiating strategy, and how they evaluate the costs and benefits of the various options before them.

The implications of game theory

Given the fact that decision making by the UK and the members of the EU27 will be interdependent and that possibilities exist for coalitions and agreements, whether binding or not, the discipline of game theory may provide some insights in terms of possible actions and outcomes of the unprecedented Brexit process. One important first-order insight is that the structure of the exit negotiations – whether the discussions of the terms of the exit and the future relationship are sequential or simultaneous – will affect the interests of all parties.

For the EU, the greatest risk to its top objective is present at the outset. It is in the EU's interest to pursue the sequential framework, which will allow the early period of negotiations to focus on the arrangements for the UK leaving the union. The UK, however, would benefit from simultaneous negotiations, which would allow it to make trade-offs between the exit agreement and a future transition or trade agreement. It can then highlight positives and minimise losses when selling the deal to the British public. Politically, a sequential process is doubly costly for the UK: it may confront the country with a deal involving a substantial withdrawal settlement with no assurance of future benefits.

There are also risks associated with the timetable. The negotiating process will be complex, involving compensation and issues surrounding the nature and extent of post-withdrawal barriers to be imposed. Yet the Treaty of European Union establishes a two-year negotiating window that can be extended only by the unanimous agreement of EU member states, giving each of the latter a potential 'spoiler' role.

254 Referred to by the British government as an 'implementation period' (conversation with official, 23 June 2017).

The UK may have more options to meet its political and economic goals if it can divide the EU into component interest groups and change the number of players in the game. But thus far the EU seems to understand that its success in the negotiations depends on a cohesive, disciplined approach. Thus EU institutions and traditional 'core' countries can be expected to make substantial concessions to peripheral countries on other internal EU policies to ensure that the Union remains united on Brexit. The EU core also has more leverage over the periphery than the UK does.

Splits within the UK between supporters primarily interested in sovereignty objectives on the one hand and supporters of economic liberalism ('Singapore of the Atlantic') on the other would weaken the UK negotiating position. Further complicating the situation, the result of the June 2017 election means that preventing internal fractures will be even more difficult for the UK. Some have speculated that internal politics or challenges in the Brexit negotiations could lead to dissolution of the fragile governing coalition. This makes the UK's position weak and increases the uncertainty of the negotiations. Thus the UK government can be expected to devote considerable effort to prevent such divisions even as it seeks to encourage division among the EU27.

The unprecedented nature of the negotiations and the uncertainty surrounding their rules and structure make coordination between the two sides harder and leave room for the signalling of positions before the serious talks begin. It can be problematic to signal true intentions, however, and home country voters may hold politicians accountable if they deviate from tough opening negotiating positions. Both sides should be cautious in the language that they use publicly if they want to maintain negotiating freedom.

Mutually beneficial outcomes are not likely to be achieved if one party is playing as if the game is zero-sum. As long as both players view their pay-offs very differently, with the EU winning only if the UK is seen to lose and the UK asserting that it views the costs of no agreement to be low, coordination on minimising harm will be difficult. An agreement that is overly punitive may be rejected by UK voters and the politicians who represent them, just as a painless agreement may be rejected by European leaders. Flexibility on both sides will be needed to avoid an outcome where all parties lose.

The effect of adding the United States as a discrete factor to the already complex multiparty game further complicates the negotiations. President Trump declared an interest (that Brexit will 'end up being a great thing') in the outcome, but it is unclear whether US views will change over time, or indeed whether explicit US support would help the UK achieve an optimum outcome. At a meeting with President of the European Council Tusk and President of the European Commission Juncker in May 2017, Trump seemed to indicate that he understood that Brexit might be costly for some US companies, and possibly for jobs.²⁵⁵ The evolving and potentially unpredictable American position on Brexit increases the uncertainty and complicates the negotiations.

Although game theory assumes that players maximise their perceived economic pay-offs given their constraints, actors in the real world do not necessarily behave as theory would predict. Given the complexity of the negotiations and the diplomatic climate, there is a distinct possibility that

leaders may optimise other objectives (political or personal outcomes, for instance) during the negotiations and not make decisions that match the best possible economic outcome for their countries.

For the UK, the insights from game theory may be summarised as follows: an effort to convert the negotiations over Brexit into a game of chicken (e.g. 'no deal is better than a bad deal') is not likely to be productive. The outcome of the process means more to the UK than it does to the EU27, so if the EU holds the UK to this, the UK is likely to be the loser. Furthermore, the UK is not likely to have great success in trying to divide the EU27. The benefits that the EU can offer countries on the periphery (e.g. cohesion funding, understanding on the migrant crisis and other budget perspective interests) are much more significant than what the UK can offer, so the attempt might not succeed and might even backfire. The UK may also need the support of EU core countries – such as Germany and France – in holding off last minute demands from other EU members seeking to exploit their potential as spoilers. Game theory would suggest that the UK's initial objective should be to get the EU27 to approach the negotiations as a win-win – rather than a zero-sum – game, while recognising that Europe may have incentives to, at the very least, have the political aspects of the process appear to be zero-sum.

For the EU27, game theory would suggest that, given its multiple actors with a share in decision making (Commission, Council Secretariat, 27 member states and European Parliament), the first priority should be to establish and maintain cohesion in its negotiating strategy and to constrain freelancing by individual actors (as of late summer 2017, there is evidence that the EU27 is doing this effectively: the Commission has been designated as the EU's sole representative in the negotiations, an Article 50 working group with representatives of the EU27 has been established and 'sherpas' have been nominated to tie the process back to national leaders). Since economically adverse outcomes matter relatively less to the EU27 as a whole than to the UK, it is the party more likely to suffer least from the game of chicken, should it wish to push issues on a take it or leave it basis.

Economic implications

Our analysis of the economic implications of various scenarios for Brexit demonstrates clearly that all hard Brexit scenarios will harm the British economy, with the 'harder' options doing the greater damage. Our modelling also indicates that all hard Brexit scenarios will adversely affect economically the remaining members of the EU, but in the aggregate to a much smaller extent than they will affect the UK.²⁵⁶ In addition, our analysis indicates that post-Brexit scenarios involving the UK and the EU27 would have only a negligible impact on the US economy. If the UK were to conclude a comprehensive post-Brexit bilateral FTA with the United States, this would have a minor beneficial impact on US GDP. If, however, a three-way UK–EU–US TTIP-like FTA was agreed, this would benefit all three parties (although still somewhat less than an EU28–US TTIP without Brexit would have).

256 Individual member states that are deeply integrated with the UK's economy, especially Ireland, would see an economic impact on a scale closer to that of the UK itself.

Trade effects

Brexit is unlikely to have large trade-related income effects on the United States. Gains and losses are small under almost any scenario except for a UK–EU–US TTIP. It is true that the United States would gain slightly from a US–UK FTA, but ten-year discounted cumulative gains would amount to the equivalent of only 0.2 per cent of 2015 GDP. Individual companies and industries could be affected either positively or negatively, but in the absence of the revival of TTIP negotiations and the approval of a three-way FTA, aggregate trade effects in the US will likely be difficult to notice.

For the UK, the baseline scenario for our economic analysis is UK trade under WTO rules, which has been described as ‘falling off the cliff’. The ten-year discounted cumulative effect of WTO rules on British GDP is very high, equivalent to 4.7 per cent of 2015 UK GDP, or a loss of \$2,059 per capita GDP for every British citizen. And this estimate is based on an assumption that NTBs between the UK and the EU27 do not increase over time. If, as is perhaps more likely in this contentious scenario, NTBs increase over time, the GDP effect could be worse, projected in Scenario 1 as 4.9 per cent of ten-year discounted GDP, or \$2,144 on a per capita basis.²⁵⁷

In its Article 50 notice to the EU, the UK is on record as seeking a comprehensive FTA with the EU27 after withdrawing from the Union. If it should achieve such an agreement, our analysis (Scenario 2) indicates that the ten-year discounted cumulative effect on GDP would be 3.01 percentage points greater than in the WTO baseline scenario if the FTA covered financial services, and 2.95 percentage points larger if financial services were not covered. This would be much better than the baseline scenario, but still worse than as a full member of the EU. For the EU27, an FTA with a post-Brexit UK would result in a ten-year discounted cumulative effect on GDP equivalent to only 0.2 per cent of 2015 GDP (inclusion or not of financial services does not seem to make much difference in the aggregate).

Many who supported Leave in the British referendum argued that once out of the EU the UK would be able to pursue an independent trade policy and craft trade agreements that served its interests exclusively. We analysed the potential impact of a post-Brexit FTA between the UK and the United States (Scenario 4), the UK’s second largest trading partner (after the EU). Our analysis indicates a UK–US FTA would offer a significant benefit to the UK – the equivalent of 2.4 percentage points of 2015 GDP on a ten-year discounted cumulative basis compared to the WTO rule baseline. While helpful, such an agreement would still be less beneficial than an FTA with the EU. For the United States, an FTA with the UK would be of negligible macroeconomic benefit (equivalent to about 0.22 per cent of 2015 GDP, whether or not it included financial services), but it would actually be more beneficial than the status quo – the UK in the EU and no FTA between the United States and either the UK or the EU.

Of the scenarios analysed, the only one that held significant benefit for both the UK and the EU27 – and the United States as well – was Scenario 3, a TTIP-like FTA involving all three parties, the UK, the EU27 and the United States. In this scenario, the UK would have a ten-year discounted cumulative GDP 7.0 percentage points larger than the WTO-rules baseline scenario. The EU27 would also benefit significantly from such a scenario (equivalent to around 3.2 percentage points

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As noted earlier, our assumptions, including those relating to non-tariff barriers, can be adjusted by users of the calculator at <https://www.rand.org/randeurope/research/projects/brexit-economic-implications/calculator.html>.

of 2015 GDP compared to under WTO rules), which is an order of magnitude more than the benefit to the EU from an FTA only with the UK. And the United States would benefit by an estimated 4.2 percentage points of 2015 GDP (compared to Scenario 1), mainly from reduced trade barriers from the EU as a whole. Of course, TTIP itself was especially controversial in Europe, where civil society groups raised questions about potential investor-state dispute settlement arrangements and political support for it was not strong. So a UK-EU27-United States FTA as modelled would face many political obstacles and delays.²⁵⁸

Many observers consider that a transitional agreement may be necessary to avoid having UK–EU trade fall off the ‘cliff-edge’ to WTO rules upon the expiration of the Article 50 withdrawal process. We modelled this possibility in Scenario 5, assuming duty-free trade under present membership conditions for four years followed by six years under an FTA with the same conditions as Scenario 2. The transitional agreement scenario shows a ten-year discounted GDP effect 2.8 percentage points better than that of the baseline WTO rules scenario, assuming financial services are included.

With the outcome of the British parliamentary election of 2017, it is not at all certain that the UK will, in the end, seek a hard Brexit. Accordingly, we also modelled several soft Brexit outcomes, specifically the Norwegian model of membership in the Single Market, the Swiss model of membership in the Single Market for goods, and a third option of membership in a customs union for goods. The Norwegian model and customs union results were very similar to those of the UK–EU FTA, whereas the Swiss model results were close to those of the UK–US FTA, as far as the UK is concerned. From the standpoint of the EU27 and the United States, all the soft option outcomes were similar to those of the UK–EU FTA.

FDI effects

One other important economic implication of Brexit is its effect on foreign direct investment. FTAs and customs unions have been shown to increase FDI; in fact, there is evidence that even the expectation of joining a free trade area can increase total FDI inflows by about one third. Joining a common market twice as large as the host country can increase the inflows of FDI by 20 per cent or more.²⁵⁹

But as with trade, there are no analogues for a member of an economic pact covering trade and FDI withdrawing from that pact. One can gain insight on the possible effects, however, by modelling how FDI increases when countries join economic agreements. The outcome of the reverse situation will not be symmetric because in many cases the sunk costs of the investment will have been paid and so a continuing profit stream, even if less than expected, might lead investments to stay where they are. But the results can indicate future trends and provide an upper bound in terms of the magnitude of the effects of withdrawal.²⁶⁰

258 Arthur Beasley, ‘TTIP Talks headed for lengthy delay,’ *Financial Times*, September 23, 2016.

259 Lederman et al. 2005.

260 Mathematically this would be a minimum negative bound, since Brexit is expected to cause economic losses.

Joining the EU results in a large, positive effect on FDI received. Compared to being outside the EU, on average being in the EU increases FDI inflows by 28 per cent and FDI inward stocks by 34 per cent. In addition, a country signing a comprehensive FTA with the EU could boost inward FDI by between 23 per cent (stock) and 16 per cent (flow).

In absolute terms, we estimate that leaving the EU to fall back upon WTO rules would reduce FDI inflow from the EU27 to the UK by around \$7.8bn. Translating these numbers into effects on GDP, we find that changes in FDI resulting from a WTO rules arrangement would reduce UK GDP over ten years equivalent to 3.3 per cent of baseline 2015 GDP, or \$1,358 per person. This is similar to the value of the loss of GDP due to trade losses, but the two numbers might not be cumulative since a great deal of trade is facilitated by multinationals, and so there may be some double-counting. Nonetheless, the overall trade and FDI effects are likely to be larger than 4.7 per cent. Exiting the EU and signing a comprehensive FTA with the EU27 would not fully restore the UK's FDI levels stemming from EU membership, but it would leave the UK better off than under WTO rules. With a comprehensive FTA, we estimate UK GDP would be 1.1 percentage points higher than under a WTO scenario. The best arrangement for the UK would be a TTIP scenario, which would almost match the situation under EU membership.

As discussed further in Appendix G, a decline in FDI could lower UK productivity because investment has tended to come from sectors and countries with technological advantages over domestic firms. However, investment in technologically intensive sectors has also tended to increase the demand for skilled labour and decrease the demand for unskilled labour, with likely effects on wages for each group.²⁶¹

Implications for the United States

The United States shares deep economic, political, security, intelligence and cultural ties with the UK. It also has strong ties with the rest of the European Union. Indeed, US support and engagement has been critical to the success of the European project, from the launch of the Marshall Plan in 1947 to the present day. The Obama administration was not enthusiastic about Brexit, and while the Trump administration has been more positive, it is still clear that US interests could be negatively affected by the UK's decision to leave the EU.

The effects on US political interests begin with the potential disruption that Brexit poses to the stability and cohesion of the European Union and more broadly for Europe. The United States has long supported European integration, to create a strong and large economic market, to overcome longstanding rivalries that provoked two World Wars, to promote collective security in the face of the Soviet threat and to foster democratic governance. Initially there were significant concerns that the UK could be the first of several members to leave the EU, especially as populist political forces rose in prominence. But recent elections seem to demonstrate that, for the moment at least, the populist tide has passed, and public opinion polls indicate improved support for the EU. A second political effect of Brexit will be the loss of the strong British voice within the decision-making arenas of the EU. The British have generally been the most effective advocate for US

interests within the EU, given their similar global perspectives and market-economy approaches. The UK has been key to such successes as the nuclear agreement with Iran and also to ensuring that EU decisions on defence policy have not undermined NATO. The UK has also been a strong partner with the United States in encouraging European cohesion in the face of a more aggressive Russia. In addition, US political interests could be negatively affected if Brexit leads to a reopening of some lingering European conflicts, notably in Northern Ireland.

US economic interests are also likely to be affected by Brexit. The failure of the UK to achieve an open trading and investment relationship with the EU post-Brexit would have negative economic implications certainly for the UK, but would provide little, if any, gain for the United States. The United States could seek to capitalise on the situation by negotiating an FTA with the UK, but our research suggests that this would provide gains that were far smaller than those that would result from a UK–EU27–US FTA and therefore presumably from a US–EU28 FTA, as represented by TTIP. A Brexit-related economic downturn in the UK could have secondary effects as well, especially on the ability of the British government to continue funding a strong military force. This has political implications, but it also could affect the US defence industry if the UK delays or forgoes purchases of major weapons systems. Finally, the UK has not only been a strong voice within the EU for supporting the liberal international order, but also for market-oriented economic policies. Without the UK, the member states that prefer more regulation and other forms of government engagement in the economy may come to dominate EU economic policy.

Appendix A. EU27 country groupings

In Chapter 3, we note that the interests of different countries in Europe may not align. The countries of the EU27 can thus be divided into several different groupings according to whether the euro has been adopted, budget contributions and regional interests (see Table A.1, which also gives population figures).

Table A.1. Classifications and populations of the EU27

Country	Euro	EU budget, 2006–2014	Regional grouping	Population	Share (%)
Austria	Yes	Contributor	Northern Europe	8,690,076	2.0
Belgium	Yes	Contributor	Northern Europe	11,311,117	2.5
Bulgaria		Recipient	Visegrad-Plus	7,153,784	1.6
Croatia		Recipient	Visegrad-Plus	4,190,669	0.9
Cyprus	Yes	Recipient	Southern Europe	848,319	0.2
Czech Republic		Recipient	Visegrad-Plus	10,553,843	2.4
Denmark		Contributor	Northern Europe	5,707,251	1.3
Estonia	Yes	Recipient	Northern Europe	1,315,944	0.3
Finland	Yes	Contributor	Northern Europe	5,487,308	1.2
France	Yes	Contributor	Southern Europe	66,759,950	15.0
Germany	Yes	Contributor	Northern Europe	82,175,684	18.5
Greece	Yes	Recipient	Southern Europe	10,783,748	2.4
Hungary		Recipient	Visegrad-Plus	9,830,485	2.2
Ireland	Yes	Recipient	Northern Europe	4,724,720	1.1
Italy	Yes	Contributor	Southern Europe	60,665,551	13.6
Latvia	Yes	Recipient	Northern Europe	1,968,957	0.4
Lithuania	Yes	Recipient	Northern Europe	2,888,558	0.6
Luxembourg	Yes	Contributor	Northern Europe	576,249	0.1

Country	Euro	EU budget, 2006–2014	Regional grouping	Population	Share (%)
Malta	Yes	Recipient	Southern Europe	434,403	0.1
Netherlands	Yes	Contributor	Northern Europe	16,979,120	3.8
Poland		Recipient	Visegrad-Plus	37,967,209	8.5
Portugal	Yes	Recipient	Southern Europe	10,341,330	2.3
Romania		Recipient	Visegrad-Plus	19,760,314	4.4
Slovakia	Yes	Recipient	Visegrad-Plus	5,426,252	1.2
Slovenia	Yes	Recipient	Visegrad-Plus	2,064,188	0.5
Spain	Yes	Recipient	Southern Europe	46,440,099	10.4
Sweden		Contributor	Northern Europe	9,851,017	2.2
Total				444,896,145	

SOURCE: Budget data from EU Information Centre (DK) 2017; population data from Eurostat 2017b.

NOTE: The EU budget column indicates whether countries were net contributors or net recipients over the period 2006–2014; population percentage shares are rounded to one decimal place. In 2016, the United Kingdom was not a member of the euro, was a net contributor to the EU budget and had a population of 65 million.

Appendix B. Game theory examples

Chapter 4 describes two examples from the field of game theory – the game of chicken and the prisoner’s dilemma – as well as a branch of it known as cooperative game theory.

In the game of chicken, also called the hawk-dove game, two players confront each other. Each is better off if the other player yields, but a player’s optimal choice depends on what the opponent does: if the opponent yields, the player should not; if the opponent does not yield, the player should. The classic illustration for this game is two cars speeding towards each other on a narrow road (perhaps with ego involved). If one car swerves, the other should keep going. The first driver is labelled a ‘chicken’ and the second driver gets a pay-off for being dominant. If both cars swerve, both drivers ‘lose face’. If neither driver swerves, however, the two cars crash into each other and both lose more than face.

In the prisoner’s dilemma, two thieves are captured and questioned separately by police officers.²⁶² If one betrays the other (finks), but the other stays silent, the fink will get a lighter punishment and the other will get a tougher sentence. If neither finks, then both benefit. If both fink then both lose (Table B.1). Each player has an incentive to deviate unilaterally from cooperation, or not finking, to betrayal because it is in the best interest of each to do so and, in the one-shot game, the equilibrium is for both players to fink. Both players end up in a worse position than if they had been able to communicate, coordinate their answers and trust each other.

Table B.1. Pay-offs in the prisoner’s dilemma

		Prisoner 2	
		Don’t fink	Fink
Prisoner 1	Don’t fink	-2, -2	-10, -1
	Fink	-1, -10	-5, -5

SOURCE: Mas-Colell, Whinston & Green 1995, 236.

NOTE: Prisoner 1’s pay-offs are listed first followed by Prisoner 2’s pay-offs.

262 The prisoner’s dilemma game was originally framed by Merrill Flood and Melvin Dresher, working at RAND in 1950 (RAND Corporation 2008).

Cooperative game theory focuses on how players compete and cooperate to create value.²⁶³ If players within a coalition have an incentive to deviate, then the game is said to have no solution. This can be illustrated using a scenario in which five individuals are trying to decide how to split jointly owned resources, such as a pot of money. If any agreement must be approved by three of the five individuals, then a coalition of three can form to vote themselves the majority of the money. However, the group of three is not stable because the two that are excluded could make side deals with one individual within the coalition, promising that person a greater share if he or she betrays the others. Moreover, any new coalition would not be stable as the two newly excluded individuals could also be willing to offer a higher payment to one individual within the current coalition, for the same reason. The process continues to repeat itself and there is no solution – no stable and feasible allocation where no member of the coalition has an incentive to deviate.²⁶⁴

263 Chatain 2014.

264 Jackson 2016.

Appendix C. Non-tariff costs over time

In Chapter 5, which analyses different Brexit scenarios, changes in tariffs as well as changes in non-tariff barriers (NTBs) are modelled; this appendix discusses our modelling of the NTBs or costs.

To investigate how non-tariff costs evolve over time under WTO rules in comparison to within an FTA or the European Union, we draw on data from the ESCAP-World Bank Trade Cost Database.²⁶⁵ The current version includes data on tariff and non-tariff trade costs from 1995 to 2014 for more than 180 countries. The method to calculate the bilateral trade cost measure is based on Novy (2012); this comprehensive all-inclusive measure is based on micro-theory and is calculated using macroeconomic data.²⁶⁶ The data are available only for the aggregate across all manufacturing and agriculture sectors and unfortunately do not include trade costs across service sectors. Nevertheless, to investigate how non-tariff costs in these two sectors evolve over time we estimate the following equation:

$$ntc_{ijt} = \beta_0 + \beta_1 EU_{ij} + \beta_2 FTA_{ij} + \beta_3 year + \beta_4 EU_{ij} * year + \beta_5 FTA_{ij} * year + e_{it}$$

In this equation, the variables are defined as follows:

- ntc_{ijt} denotes bilateral non-tariff trade costs between country i and country j at time t .
- EU_{ij} is a dummy variable taking the value 1 if both countries are in the European Union at time t and zero otherwise.
- FTA_{ij} is a dummy variable taking the value 1 if both countries are members of the same FTA (other than the EU) at time t and zero otherwise.
- $year$ is a linear time trend.

In essence, parameters β_4 and β_5 reflect the extent to which non-tariff costs evolve differently within the EU or an FTA rather than under WTO rules (β_3). Table C.1 reports the parameter estimates. Column (1) shows that within the EU, non-tariff costs for goods decrease on average per year by about 0.075 per cent more than under WTO rules and by about 0.017 per cent within

²⁶⁵ United Nations Economic and Social Commission for Asia and the Pacific 2016.

²⁶⁶ Novy 2013.

an FTA outside the EU compared to WTO rules. Column (2) shows that, within the EU, non-tariff costs for agriculture decrease on average per year by about 0.09 per cent more than under WTO rules and by about 0.077 per cent within an FTA outside the EU. Unfortunately we do not have data on non-tariff costs of services, but we assume the reduction of NTBs in services to be of the same magnitude as that of goods.

Table C.1. Non-tariff costs over time (1995–2014)

Outcome: ln (non-tariff cost)	(1) Goods	(2) Agriculture
Constant	3.4577 (0.018)***	4.4243 (0.019)***
FTA	-0.0384 (0.006)***	0.0165 (0.007)**
EU	-0.3888 (0.011)***	-0.1761 (0.014)***
Year	0.0092 (0.000)***	0.0126 (0.000)***
EU_year	-0.0075 (0.001)***	-0.0090 (0.001)***
FTA_year	-0.0017 (0.001)***	-0.0077 (0.001)***
Observations	154,539	97,806
R-squared	0.2965	0.2394

*SOURCE: Authors' calculations based on the ESCAP-World Bank Trade Cost Database for countries trading under WTO rules, including the years 1995–2014. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$*

Appendix D. Changes in trade flows

Chapter 5 discusses how different post-Brexit arrangements might affect GDP. At the heart of these estimations are the changes in trade that will result from different paths that may be taken. Here we provide the results for changes in trade flows.

Table D.1 reports the predicted changes in UK trade flows, including imports and exports, for Scenario 1 (WTO rules) and Scenario 2 (UK–EU FTA) using the SG model.

Table D.1. Changes in UK trade flows, Scenarios 1 and 2

Scenario	Change in imports (%)	Change in exports (%)
1 WTO	-8.69	-9.23
2 UK–EU FTA	-2.69	-2.81

SOURCE: Authors' calculations based on World Input-Output trade data.

NOTE: Entries report annual predicted change in trade relative to the status quo of UK EU membership.

The World Input-Output Database serves as the main input data for the SG model. To see whether our results are sensitive to the model used, we also use a standard gravity model approach with the same data to predict trade flows for Scenarios 1 and 2. In essence we estimate the following gravity equation:

$$\ln(\text{trade}_{ijt}) = \beta X_{ijt} + \beta_1 EU2_{ijt} + \beta_2 EU1_{ijt} + \beta_3 FTA_depth_{ijt} + \varepsilon_{ijt}$$

In this equation, the variables are defined as follows:

- trade_{ijt} denotes exports inflows from country i to country j at time t .
- X_{ijt} is a vector of the usual gravity control variables including distance, $\ln(\text{GDP})$ and $\ln(\text{Population})$ of countries i and j at time t and whether countries share the same language. As our data are on the level of different sectors, we also include sector dummies.
- $EU2_{ijt}$ is a dummy variable taking the value 1 if the destination country and the origin country are members of the EU at time t and zero otherwise.

- $EU1_{ijt}$ is a dummy variable taking the value 1 if the destination country is a member of the EU at time t but the origin not and 0 otherwise.
- FTA_depth_{ijt} is an integer-valued variable for depth of non-EU FTAs based on Design of Trade Agreements (DESTA) data.²⁶⁷ This depth-of-trade agreement variable takes on integer values ranging from 0 (no FTA) to unity (shallow agreement) to 7 (deep agreement).²⁶⁸

Table D.2 reports the estimated coefficients.

Table D.2. Standard gravity model estimates

Outcome variable: $\ln(\text{trade})$	
$EU2_{ijt}$	0.3315
	(0.038)***
	0.258
	(0.405)
$EU1_{ijt}$	-0.1954
	(0.023)***
	-0.240
	(-0.151)
FTA_depth_{ijt}	0.0454
	(0.006)***
	0.034
	(0.057)
Observations	32,736
R-squared	0.5117

NOTE: Based on 2014 World Input-Output data, including 31 sectors. Standard gravity control variables applied, including sector dummies.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

- The estimated parameters suggest that EU membership increases trade flows by around 39 per cent ($e^{0.3315} - 1$). Since about 60 per cent of UK trade is within the EU, a 39 per cent fall in trade with EU members under WTO rules would reduce the UK's overall trade by about 23

267 Dür, Baccini & Elsig 2014.

268 The measure of depth represents an additive index combining seven key provisions that can be included in PTAs (see Dür, Baccini & Elsig 2014). The first provision captures whether the agreement foresees that all tariffs (with limited exceptions) should be reduced to zero. The other six provisions capture cooperation that goes beyond tariff reductions, in areas such as services trade, investments, standards, public procurement, competition and intellectual property rights. For each of these areas, it is coded whether the agreement contains any substantive provisions.

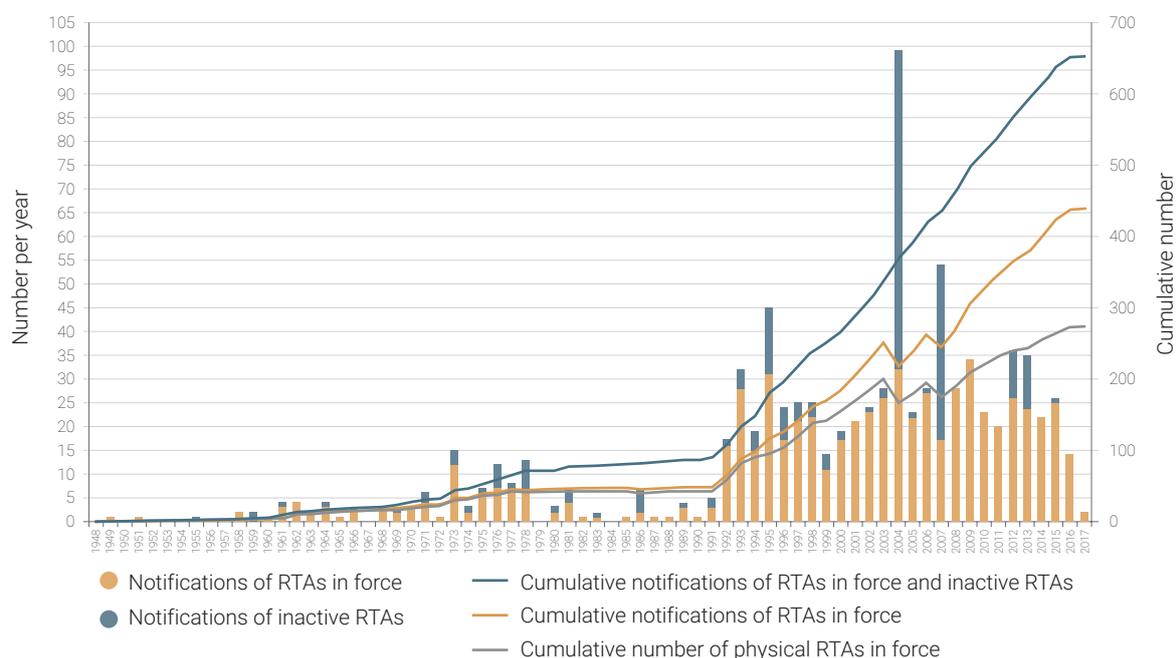
per cent. Similarly, a relatively deep FTA²⁶⁹ would increase trade flows by around 25 per cent ($e^{0.0454*5} - 1$). Exiting the EU and joining a relative deep FTA with the EU27 would therefore result in a predicted trade reduction of around 10 per cent ($e^{0.0454*5} - e^{0.3315}/e^{0.3315}$). The UK's trade share with the EU of 60 per cent would predict a reduction of UK trade by around 6 per cent using estimates from a standard gravity model.

269 Meaning a '5' on the DESTA depth indicator.

Appendix E. Free trade agreements and foreign direct investment

International trade agreements have come into effect at an unprecedented rate over the past two decades. According to the World Trade Organization, in 2017 there were 440 notifications of regional trade agreements in force. In some cases, different parts of an agreement, such as those pertaining to goods and those pertaining to services, are counted separately; combining these gives a figure of 274 regional trade agreements in force in 2017 (see Figure E.1).²⁷⁰ The overwhelming majority of these agreements were signed after 1991.

Figure E.1. The evolution of regional trade agreements, 1948–2017



SOURCE: World Trade Organization 2017a.

NOTE: For 2017, the figure includes data for January to April. Notifications of RTAs: goods, services and accessions to an RTA are counted separately; physical RTAs: goods, services and accessories to an RTA are counted together. The cumulative lines show the number of notifications/physical RTAs that were in force for a given year.

Growth in preferential trade agreements has coincided with growth in foreign direct investment (FDI), which reached \$1.52 trillion in 2016, and the UK is the second largest receiver of FDI after the United States, at \$179bn.²⁷¹ The issue of how free trade agreements (FTAs) and customs unions (CUs) affect FDI is an important issue given that the UK is about to leave the world's largest customs union. Leaving the EU will lead to renegotiation of regional trade agreements and may change investment flows into the UK; a key question is whether foreign investors in the UK will turn to other jurisdictions, potentially affecting the UK's future growth. The theoretical literature is ambiguous on the relationship between FTAs and FDI, indicating that FTAs may either raise or lower FDI. However, the empirical literature tends to suggest that FTAs and CUs raise FDI.

Theoretical literature

Increasing FDI is generally recognised as an important reason for entering preferential trade agreements.²⁷² Although the relationship between trade agreements and trade has received extensive attention in the theoretical and empirical literature, the effect of trade agreements on FDI is less well understood.

Most theoretical studies derive the effect of FTAs on FDI from the relationship between FDI and trade. To understand the latter, it is important to understand why a firm would want to become international. There are two main reasons: one reason is to serve better the local market, and the other is to lower the cost of inputs.²⁷³ FDI designed to serve local markets is often called horizontal FDI, since it involves duplicating parts of the production process in host countries to reduce trade costs (such as tariffs and transportation costs) and improve the firm's competitive position in the host market. Horizontal FDI is usually a substitute for trade because firms establish or expand local production instead of serving the local market through exports.

FDI that is searching for lower-cost inputs is often called vertical FDI. It involves relocating a part of the vertical chain of production to a low-cost location that may have an abundance of cheap inputs such as labour, primary commodities, intermediate goods or even knowledge. Vertical FDI increases trade in intermediate and final goods between different locations.

Additional insights into the trade-offs between FDI and exports can be gained by integrating horizontal and vertical FDI into the 'knowledge capital' model.²⁷⁴ In this model, horizontal multinationals prefer localising production to save on the costs associated with trade. Localising production requires higher fixed costs than exporting. Horizontal FDI, therefore, is usually justified when trade costs are high, the host market is large enough to enable firm-level economies of scale and costs to set up production plants are relatively low.

FTAs may increase FDI because they effectively increase the market size of potential host countries, thereby creating incentives for firms to localise production and achieve economies of scale. Inflows of FDI from non-member countries into the FTA region are also likely to increase

271 United Nations Conference on Trade and Development (UNCTAD) 2017.

272 Medvedev 2012.

273 Shatz & Venables 2000.

274 Markusen 2002.

as companies establish a position in one of the member countries to serve the market of other member countries.²⁷⁵

Motta & Norman (1996) used a three-country model to further explore the effect of economic integration on FDI. They show that economic integration leads to increased investments from non-member countries in the form of intra-regional export-platform FDI into the integrated block, as foreign firms are attracted by increased market accessibility.²⁷⁶ Neary (2002) used a partial equilibrium model to identify several transmission channels for the effect of reducing trade barriers within the FTA zone on FDI flows from non-member countries.²⁷⁷ Intra-regional trade liberalisation makes tariff-jumping FDI and export-platform FDI more attractive than exports, especially when external tariffs remain high and costs of localising production are relatively low.²⁷⁸

On the other hand, FTAs might also reduce FDI for two reasons. Firstly, FTAs may negatively affect FDI into a host market because of its substitution relationship with trade. This effect may occur when multinationals that already operate in protected local markets rationalise their networks of affiliates after the formation of a free trade area.²⁷⁹ Some member countries may lose investment as a result of this process. In work related to the same issue, Heinrich & Eby Konan (2000) used an industrial organisation approach to show that preferential trade agreements (PTAs) may lead to a rationalisation of existing investments from firms outside the PTA area. They argue that the effect of lowering trade barriers on FDI flows depends on the initial level of trade costs. That is, liberalisation of trade within the block, given an initial high level of trade distortion, may incentivise firms to concentrate production in a single plant within the free trade area. Conversely, if the initial trade distortion is relatively low, then trade liberalisation will increase FDI flows due to market expansion. The link between market size and FDI is supported by ample survey and econometric evidence.²⁸⁰ In a comprehensive literature review, Lim (2001) has argued that market size is the most robust determinant of FDI.

Secondly, reduced barriers within the FTA zone increase competition from domestic firms in member countries, potentially reducing incentives for FDI and exports from non-member countries into the FTA zone. Puga & Venables (1997) studied the location effects of geographically discriminatory trade policy.²⁸¹ They find that a preferential move towards a free trade area means that imperfectly competitive domestic firms that sell their output to other member countries

275 Ethier 1998.

276 Export-platform FDI is generally defined as investment and production in a host country where the output is sold largely in third markets, not the parent or host-country markets. For a detailed discussion see Ekholm, Forslid & Markusen 2007.

277 A partial equilibrium model implies that the analysis only considers the effect of a given policy action in the market(s) that are directly affected. This analysis usually omits economic interaction between different markets in a given economy.

278 Tariff-jumping FDI allows a foreign firm to avoid a trade barrier by locating production within the destination market. For a detailed discussion see Blonigen 2005.

279 Adams et al. 2003.

280 See Kolstad & Tøndel 2002 and Chakrabarti 2001 for more evidence in favour of the relationship between market size and FDI.

281 Geographically discriminatory arrangement (GDA) is a generic term used to cover all forms of trade discrimination. For example, a preferential trading arrangement, such as the EU or NAFTA, in which trade barriers are lowered on imports from member countries, can be considered a GDA.

suddenly face lower trade barriers relative to firms outside the area.²⁸² This raises the profitability of firms located in member countries, making them more competitive relative to outsiders and decreasing incentives for trade and FDI from non-members.

In sum, the theoretical literature shows that there are multiple channels by which FTAs could affect foreign direct investment. The relationship between FTAs and FDI could be either positive or negative, depending on the type of FDI, initial trade costs, competitiveness of firms within the area, and whether the agreements increase or divert trade. But there has been little or no study of the possible effect on FDI flows of re-imposing trade barriers on countries currently within a preferential trading agreement, since (before Brexit) there have been few such cases in the last century.

Empirical evidence

The empirical evidence for the effect of FTAs on FDI is generally positive. Although most studies find that trade liberalisation increases FDI flows, a few caution that the increase may be transitory, or not happen at all.

Cross-country analyses provide evidence in favour of a positive association between preferential trade liberalisation and FDI. A study of the effect of regional integration agreements on the location of FDI using outward FDI stocks from 20 OECD countries to 60 host countries found that common membership in a regional trade agreement with a source country increases FDI from that country by 27 per cent.²⁸³ Furthermore, an increase in market size of 1 per cent leads to a 0.1 per cent increase in FDI.²⁸⁴ This is a large amount given that, worldwide, FDI net inflows measured about 2.8 per cent of GDP in 2015.²⁸⁵ A study of aggregate FDI flows to 45 countries from 1980 to 2000 found that even the expectation of joining a free trade area can increase total FDI inflows into the country by about one third.²⁸⁶ Joining a common market twice as large as the host country can increase the inflows of FDI by 20 per cent or more. The responsiveness (known in economics as the elasticity) of FDI to market size is between 0.1 and 0.15, which means that if a country joins a free trade area five times the size of its economy, it can expect an increase in FDI inflows of 50–75 per cent.²⁸⁷

A more recent study estimated the empirical relationship between FTAs and FDI using data from 153 countries over the 1980–2004 period.²⁸⁸ It found that net FDI inflows respond positively to the size of the common market and negatively in relation to the distance to preferential trading

282 Imperfect competition implies that individual producers or consumers may exercise some control over market prices.

283 Yeyati, Stein & Daude 2003.

284 The relationship between proportional changes in two variables is known in economics as an elasticity. Thus, the finding is that the elasticity of FDI with respect to market size is 0.1.

285 According to the World Bank, global net inflows of foreign direct investment accounted for as much as 5.22 per cent of world GDP in 2007, and more recently 2.812 per cent of world GDP in 2015. Data available at (as of 13 October 2017): <http://data.worldbank.org/indicator/BX.KLT.DINV.WD.GD.ZS>

286 Lederman et al. 2005.

287 Lederman et al. 2005, 191–92. Estimates are from Table 5.2, all model specifications.

288 Medvedev 2012.

partners. Results suggested that a 1 per cent increase in the size of a country's extended market tends to raise FDI inflows by 0.05 per cent on average.

Jaumotte (2004) also found that the size of a regional trade agreement has a significant positive effect on FDI inflows, with countries that have a relatively more educated labour force and more stable financial situation attracting a larger share of FDI at the expense of other member states.

Many studies focus on the relationship between regional integration and FDI using data from the EU and NAFTA. A study of the effect of the European Internal Market Programme (IMP) on the sectoral and geographical distribution of FDI by corporations based in the UK found that the IMP has had a statistically significant positive effect on the aggregate level of intra-European investment by UK corporations.²⁸⁹ The study estimated that IMP may have raised the stock of UK investment in the EU, as measured in constant prices, by 28 per cent, with service sectors accounting for more than half of the increase. Additional evidence for the effect of the IMP indicates that the IMP increased the stock of German FDI in the EU by 17.5 per cent.²⁹⁰ In fact, the IMP increased FDI from both inside and outside the European Community after its implementation in 1985,²⁹¹ mainly through its effects on market size, income, the structure of economic activity and agglomeration economies.

Blomstrom & Kokko (1997) studied the effect of regional integration agreements on FDI flows using three case studies: Canada joining the Canada–US Free Trade Agreement (CUSFTA), Mexico's accession to the North American Free Trade Agreement (NAFTA), and the Common Market of the South (MERCOSUR). They found that FDI flows into Canada remained roughly the same after it joined CUSFTA, with intra-block FDI declining and extra-block FDI increasing by the same amounts; the United States received increased FDI inflows after joining CUSFTA, mainly due to increased FDI from non-member countries. Mexico experienced sharp increases in FDI after joining NAFTA, although the authors note that these gains can be also attributed to improvements in the institutional framework that happened at the same time. In the case of MERCOSUR, the study found that FDI from non-member countries increased following macroeconomic stabilisation policies in the early stages of the agreement, with subsequent deeper integration in the form of customs union increasing FDI flows into the region from non-member countries.

Other studies have found that joining NAFTA increased FDI flows into Mexico relative to other Central American countries in the initial two to three years, followed by a decline in subsequent years,²⁹² and that, on average from 1994 through 1998, FDI from the United States and Canada into Mexico would have been 42 per cent lower without NAFTA.²⁹³

A small number of studies have focused on the effect of regional integration agreements on individual countries, providing some evidence for the effect of European integration on the UK. Mayes (1983) found no effects on investment in the UK resulting from membership of the EC, while

289 Pain 1997.

290 Pain & Lansbury 1997.

291 Dunning 1997.

292 Monge-Naranjo 2002.

293 Waldkirch 2003.

Grant (1983), analysing the effect of the EC on UK industrial performance, also found no effect on investments. Both these studies cited higher oil prices and economic recession in the UK as factors that may have influenced the results. Another possible explanation could be that the British economy was relatively open and had already attracted many foreign investors in the 1950s and 1960s, so that accession to the EC did little to encourage additional investment.²⁹⁴ On the other hand, Ireland's membership in the EC did stimulate investment from countries inside and outside Europe.²⁹⁵

Although European integration seems to have increased FDI flows into participating countries,²⁹⁶ there is evidence that it may also have diverted FDI from non-participating countries into participating countries.²⁹⁷ In the early years of the Single Market, foreign investment declined in non-participating countries, especially in countries belonging to the European Free Trade Area; it then recovered after it became clear that many such countries would still link to the EU through the European Economic Area.²⁹⁸

294 Blomstrom & Kokko 1997.

295 O'Farrell 1983.

296 Lim 2001.

297 Yannopoulos 1990.

298 Shatz & Venables 2000.

Appendix F. The effect of Brexit on FDI

In Chapter 5, we provide estimates of how different Brexit scenarios are likely to affect FDI. This appendix describes the model used to calculate those estimates.

The effect of EU Membership and FTAs on inward FDI

Similarly to Dhingra, Ottaviano et al. (2016b), Straathof et al. (2008), and Her Majesty's Treasury (2016), our analysis uses a gravity model specification with country-pair fixed effects. The inclusion of the latter helps to minimise the effects of the exclusion of different time-invariant factors explaining FDI flows, including geographical distance, cultural similarities and differences, and bilateral regulatory agreements. In addition, controlling for year fixed effects takes into account the macroeconomic phenomena that are common across all countries.

Specifically, the analysis is based on the following specification of a gravity model to examine the effect of EU and FTA membership on FDI inflows and stocks:

$$\ln (IFDI_{ijt}) = \alpha_{ij} + \alpha_t + \beta_1 X_{it} + \beta_2 X_{jt} + \beta_3 CC_{ijt} + \beta_4 FTA_depth_{ijt} + \varepsilon_{ijt}$$

In this equation, the variables are defined as follows:

- $IFDI_{ijt}$ denotes FDI inflows or inward stocks from country i to country j at time t .
- X_{it} , X_{jt} are vectors of characteristics of the host country i and home country j at time t , including being a member of the EU, \ln GDP (measure for size of national market) and \ln GDP per capita (measure for a country's wealth); in addition we also include a measure of the size of extra-national market to which the host country allows access to, either through a customs union (e.g. the EU) or a free trade agreement (e.g. NAFTA).
- CC_{ijt} is a dummy variable taking the value 1 if the host country and the home country share the same currency at time t and zero otherwise.
- FTA_depth_{ijt} is an integer-valued variable for depth of non-EU FTAs based on data from Dür, Baccini & Elsig (2014), called the Design of Trade Agreement Database (DESTA). This

depth-of-trade agreement variable takes on integer values ranging from zero (no FTA) to unity (shallow agreement) to seven (very deep agreement).²⁹⁹

- α_{ij} are dyadic fixed effects representing time-invariant country-pair characteristics such as geographical distance and cultural distance (e.g. colonial history, common language).
- α_t are year fixed effects.

Given the specification of the regression equation it is possible to estimate the EU's effect on FDI flows and inward stocks. In addition, including a measure for the depth of an FTA allows us to analyse whether joining an FTA with other countries would significantly affect the potential impact of Brexit on FDI. The results are presented in Table F.1.

Table F.1. Estimated parameters for FDI analysis

Outcome variables:	(1) ln (flow)		(2) ln (stock)	
	beta/se	CI (90%)	beta/se	CI (90%)
EU member (host)	0.2505 (0.081)***	[0.117, 0.384]	0.2915 (0.084)***	[0.153, 0.403]
EU member (home)	0.2072 (0.109)*	[0.028, 0.386]	0.3961 (0.116)***	[0.206, 0.587]
fta_depth1	0.0217 (0.010)**	[0.006, 0.038]	0.0301 (0.011)***	[0.012, 0.048]
Observations	43,229		43,470	
R-squared	0.8218		0.9114	

SOURCE: Authors' calculations.

NOTE: Clustered (country-pair) standard errors (se) in parentheses (*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$). CI reports the 90 per cent confidence interval of the parameter estimate beta using ordinary least squares (OLS). The model specifications reported in columns (1) and (2) control for country-pair specific fixed effects, year fixed effects, $\ln(\text{GDP})$, $\ln(\text{GDP per capita})$ for host and home country, as well as a measure of extra-national market due to membership of a currency union or free trade agreement. In addition, a dummy variable taking the value 1 if two countries share the same currency is also controlled for. Zero FDI flows and stocks have been transformed to one plus zero before taking the natural logarithm.

Column (1) of Table F.1 shows our main results with bilateral FDI inflows as the dependent variable. The main variables of interest are those capturing the effect of EU membership (EU member: host and home) and the effect of the depth of a free trade agreement. The estimated coefficient

299

The measure of depth represents an additive index combining seven key provisions that can be included in PTAs (see Dür, Baccini & Elsig 2014). The first provision captures whether the agreement foresees that all tariffs (with limited exceptions) should be reduced to zero. The other six provisions capture cooperation that goes beyond tariff reductions, in areas such as services trade, investments, standards, public procurement, competition and intellectual property rights. For each of these areas, it is coded whether the agreement contains any substantive provisions.

for the EU host country is positive and statistically significant. It suggests, on average, that EU membership boosts FDI inflows by around 28 per cent ($e^{0.2505} - 1$). In terms of Brexit, as we are de facto running the experiment in reverse, the proportionate effect when leaving the EU is expected to be smaller.³⁰⁰ For instance, if joining the EU increases FDI on average by 28 per cent, we could predict that leaving the EU would reduce FDI inflows by about 22 per cent ($0.28/(1+0.28)$) if the relationship were symmetric. In addition, EU membership also has a positive effect on FDI outflows. The estimated coefficient for the EU home country is positive and statistically significant, meaning that EU membership boosts FDI outflows by around 22 per cent (or an 18 per cent reduction when leaving the EU).

The variable for the depth of an FTA is statistically significant. It predicts that a shift from no agreement to a deep agreement is associated with a semi-elasticity of 0.1484 (7×0.0212) or about 16 per cent ($e^{0.1484} - 1$). In other words, exiting the EU and joining a deep and comprehensive FTA with the EU27 would result in a predicted FDI reduction of around 9 per cent ($e^{0.0212*7} - e^{0.2505}/e^{0.2505}$). In essence, these effects suggest that if the UK withdraws from the EU, it could potentially keep a large proportion of its levels of FDI by signing a deep and comprehensive FTA with the EU27. Using data presented in Table 5.3, leaving the EU and a fallback under WTO rules would reduce the annual FDI inflow from the EU27 to the UK by around \$8.4bn and the FDI inflow from the UK to the EU27 by around \$7.8bn.³⁰¹ Were the UK instead to sign a deep free trade agreement with the EU27, that would reduce FDI flows from the EU27 to the UK by about \$3.4bn and FDI flows from the UK to EU27 by about \$3.9bn.³⁰² If the UK were to pursue Scenario 4 and sign a free trade agreement with the United States, that would add about \$3.2bn in FDI inflows to the UK, all other things being equal. Leaving the EU and signing a free trade agreement with the United States is thus predicted to replace somewhat more than one third of the lost FDI inflows from the EU27 under WTO rules.

Note that column (2) of Table F.1 reports the parameter estimates for FDI stocks, which are qualitatively very similar.

The effect of FDI on GDP

Alfaro et al. (2004) estimated the effect of FDI on economic growth and allowed the impact of FDI on GDP growth per capita to vary with the level of domestic financial markets. They found that countries with more-developed financial markets benefit relatively more from FDI than those countries with less-developed financial systems. Similarly to Dhingra, Ottaviano et al. (2016b), we use our parameter estimates presented in Table F.1 and the parameter estimates from Table 7 (column 1) of Alfaro et al. (2004) to predict future changes in UK GDP under different Brexit scenarios. Alfaro et al.'s (2004) estimates are based on a regression of average growth on the share of FDI among GDP, the interaction with financial market development and other control variables including initial GDP, financial market development, population growth, schooling, government consumption and a dummy for Sub-Saharan Africa, trade volumes and inflation. Dhingra,

300 For instance due to sunk costs resulting in stickiness to FDI.

301 As \$38.2 billion*0.22 and \$43.7 billion*0.18, respectively.

302 As \$38.2 billion*0.09 and \$43.7 billion*0.09, respectively.

Ottaviano et al. (2016b) stress that since the level of trade volumes is controlled for, the parameters of the impact of FDI on growth is net of any influence of trade.

We apply similar parameter values to those used by Dhingra, Ottaviano et al. (2016b) to calibrate the calculations of changes in FDI on GDP, including the shares of FDI inflows in GDP from Table 5.3; the proxy for financial market development as the share of private sector credit in GDP;³⁰³ and the average UK growth rate over the last 25 years as given in the hypothetical absence of Brexit, which is taken from World Bank data. Using these parameter estimates, the growth effect of FDI is calculated as the extra income that would be needed every year to ensure that the sum of income would be achieved with and without Brexit.

303 Data are from the World Bank global financial development indicators, taken as average of 2010–2015 from (as of 13 October 2017): <http://data.worldbank.org/data-catalog/global-financial-development>

Appendix G. Foreign direct investment and economic growth

Chapter 5 discusses how changes in FDI resulting from different Brexit scenarios might affect UK growth. In this appendix, we provide more information on the relationship between FDI and growth.

FDI refers to cross-border investments by residents and businesses from one country into another with the aim of establishing a lasting relationship with the company receiving investment. In 2016, the UK was the second largest recipient of FDI in the world, with estimated inflows of \$253.7bn, and a total inward FDI stock of \$1.2 trillion.³⁰⁴ The UK's decision to leave the EU is likely to make it less attractive to foreign investors, resulting in lower FDI inflows. To understand the implications for the UK, we explore here the theoretical foundations and empirical evidence of the relationship between FDI and economic growth.

Theoretical literature

Neoclassical economic theory suggests that output is a function of labour, capital and productivity.³⁰⁵ In this setup, FDI can have an effect on output by increasing the availability of capital in the host economy. When an economy lowers the barriers to FDI, increasing capital inflows finance domestic investment (equivalent to a current account deficit), leading to a steady convergence of interest rates with world interest rates and causing higher investment and higher growth.³⁰⁶ However, FDI should not be considered as a pure allocative phenomenon; theories approaching

304 OECD investment statistics available in OECD 2014.

305 A simple version of economic growth model can be written in the following general form: $Y = AF(K,L)$. In this equation Y denotes economic output, A is a measure of total factor productivity, K is a measure of capital and L is a measure of labour. The marginal contribution of each factor to economic growth (assuming a Cobb-Douglas production function) is captured in the following equation: $\frac{\Delta Y}{Y} = \alpha \frac{\Delta K}{K} + (1 - \alpha) \frac{\Delta L}{L} + \frac{\Delta A}{A}$, which suggests that growth in output is a sum of contributions of capital, labour and growth in total factor productivity (Mankiw 2016). FDI can contribute to economic growth through its effect on capital term $\alpha \frac{\Delta K}{K}$ by increasing capital, and its effect on the total factor productivity term $\frac{\Delta A}{A}$ through productivity spillovers and competition effects. Developed countries already have a high level of capital, so the marginal contribution of FDI to growth most likely occurs through its effect on the productivity term.

306 Prasad et al. 2007.

FDI as a simple means of shifting homogenous capital from locations where the return of capital is lower to locations where it is higher are now considered to be outdated.³⁰⁷

In addition to the supply of capital, FDI may have a positive effect on the host country's economy by raising the productivity of the domestic firms through several channels. In the macro dimension, FDI could contribute to the creation of new economic sectors, advance the technological frontier and diversify a country's exports. In the micro dimension, FDI may facilitate knowledge spillovers and linkages between foreign and domestic firms, leading to increased technology transfers, improved management and employee skills, and increased incentives to invest in upstream and downstream sectors. Competitive pressure from foreign firms may force local firms to increase productivity, drive out unproductive firms and reallocate resources to more efficient firms and uses.³⁰⁸

The possibility of knowledge spillovers is rooted in the central assumption that multinational enterprises produce and own 'knowledge capital' such as superior technology, management know-how and patents.³⁰⁹ A typical argument is that multinational firms transfer firm-specific technology to their affiliates across international borders.³¹⁰ Firm-specific technologies may also include applying superior managerial practices that entail efficiency-driven restructuring and downsizing in previously domestically owned firms.³¹¹ FDI, therefore, may bring better technologies and management, but it can also result in less employment.

To better understand the effects of FDI it is useful to introduce the distinction between greenfield FDI and acquisition FDI. The former refers to investments where a parent company builds a new operation from the ground up, while the latter refers to investments where a company merges with or purchases an existing firm in a foreign country. Governments of host countries usually encourage greenfield projects because they are thought to bring more positive externalities, especially when they include the most modern technologies.³¹² Acquisition FDI, on the other hand, despite its benefits in terms of technology transfer and efficiency gains, often leads to heated political debates that revolve around possible negative effects on domestic jobs and the restructuring that follows mergers and acquisitions.³¹³

Recent literature gives a more nuanced view of FDI, with a consensus emerging around the positive effect of FDI being dependent on a number of conditions in the host economy. For example, FDI has a positive effect on economic growth through technology transfer only when the host country has a minimum threshold of human capital that can provide absorptive capacity.³¹⁴ Additional evidence based on US data indicates that FDI is positively related to growth through knowledge spillovers from foreign firms, demonstrating that FDI has a greater effect on per capita

307 Markusen 2009.

308 Alfaro & Chauvin 2016.

309 Markusen & Maskus 2001.

310 Markusen 2002.

311 Arnold & Javorcik 2009.

312 Hofmann 2013.

313 Bertrand et al. 2008.

314 Borensztein et al. 1998.

output than domestic investment, conditional on meeting the human capital threshold.³¹⁵ Other conditions include quality of financial markets,³¹⁶ sector characteristics and market structure,³¹⁷ spatial characteristics³¹⁸ and quality of regulations.³¹⁹

Empirical evidence

Empirical evidence for the effect of FDI on economic growth is mixed. In this review,³²⁰ we focus primarily on studies that provide evidence for the UK and other industrialised countries; this follows the argument of Blonigen & Wang (2005), who have suggested that pooling rich and poor countries together without distinguishing between levels of development may underestimate the cross-country heterogeneity and lead to faulty inference.³²¹

Evidence from the UK

Most articles that study the effect of FDI on the British economy focus on its effects on productivity and the implications for the labour market. The former is crucial for understanding FDI's contribution to economic growth, while the latter is often at the centre of heated political debates.

Driffield & Taylor's (2000) analysis of the effect of inward FDI on the labour market in the UK found that it increases earnings dispersion and the use of more skilled labour in domestic firms. They argue that entry of foreign multinationals increases the demand for skilled workers in an industry and region, contributing to increased wage dispersion, and is conducive to the technological development of domestic firms via spillovers from foreign firms. These spillovers increase the relative demand for skilled workers and contribute to aggregate wage dispersion and skill upgrading. While the latter is a key determinant of long-term productivity growth, the effect of FDI on increasing wage differentials between skilled and unskilled labour is a point of concern.

The labour market effects of FDI have been further discussed by Driffield, Love & Taylor (2009). They found that investments in the UK come from sectors and countries that have technological advantage over domestic firms, and that inward FDI in technologically intensive sectors (the most common type of FDI in the UK) increases the demand for skilled labour, decreases the demand for unskilled labour and has positive productivity spillovers to domestic firms. On the other hand, outward FDI is associated with a reduction in demand for unskilled and sometimes skilled labour

315 Ford, Rork & Elmslie 2008.

316 Hermes & Lensink 2003; Alfaro et al. 2004.

317 Alfaro & Charlton 2013.

318 Blonigen et al. 2007.

319 Busse and Groizard 2008.

320 This review is by no means exhaustive. For more systematic reviews see, for example, Görg & Strobl (2001) and Görg & Greenaway (2004) for a meta-analysis of earlier literature on multinational companies and productivity spillovers, Caves (2007) for a comprehensive discussion of the theory of international firms, Contessi & Weinberger (2009) for an insightful overview of empirical literature on FDI and growth, Hofmann (2013) for an extensive discussion of theoretical and empirical literature on determinants and effects of FDI, and Alfaro (2017) for a recent review of micro and macro approaches to identifying gains from FDI.

321 Contessi, De Pace & Francis (2013) show that FDI inflows are pro-cyclical in developed countries and countercyclical in developing countries, so pooling all countries together would not reveal any pattern of cyclicity.

in the UK. The authors caution that regions that have low demand for unskilled labour may be harmed by FDI because it tends to further reduce the demand for unskilled labour by introducing new and more efficient technologies, even though it increases the total factor productivity in domestic firms. This kind of technologically advanced FDI will increase skill differentials and wage inequality rather than reduce it. Attracting FDI that is motivated by low labour costs is not a good solution, since it usually does not generate any technology spillovers.

A study by Haskel, Pereira & Slaughter (2007) focused on the relationship between FDI and productivity. It provides evidence of productivity spillovers from multinationals to domestic firms, using a plant-level panel dataset of all UK manufacturing firms from 1973 to 1999, by estimating plant-level productivity and regressing it on industry-level FDI, controlling for inputs and the level of competition. The main finding was that a 10 per cent increase in foreign presence in a UK industry raises the total factor productivity of that industry's domestic plants by about 0.05 per cent. The authors compared the value of these estimated spillover effects to the value of incentives offered by the government in specific cases and found that these expenditures outweigh the benefits. In other words, the effect of FDI on productivity in the manufacturing sector over the studied period was relatively modest.

A further exploration by Bloom, Sadun & Van Reenen (2012) of the relationship between FDI and productivity using a firm-level dataset on 11,000 establishments in the UK showed that UK affiliates of American companies appear to obtain higher productivity than non-US multinationals and domestic firms from their information technology (IT) capital. Affiliates of US multinationals are more IT intensive and have higher value added and gross output per employee than other foreign and domestic firms. In particular, US establishments are 7.1 per cent more productive than UK domestic establishments. The authors attribute these effects to better management in the US firms, in particular people management practices (hiring, promotions, rewards and firing). One of the implications of this research is that FDI may have different spillover effects on domestic firms depending on country of origin, even when comparing effects of investments originating from developed countries only. In other words, not all FDI is created equal, and countries that house more productive multinationals may naturally enjoy higher leverage in trade and investment negotiations.

Evidence from cross-country studies

A number of cross-sectional studies and cross-sectional-time-series (panel) studies have examined the relationship between FDI and growth, and these have mostly found a positive relationship between the two. However, such results are not definitive, since cross-country regressions generally suffer from a variety of statistical problems, including parameter heterogeneity, outliers, omitted variables, model uncertainty, endogeneity and measurement error.³²² In this section, we briefly review a number of studies that have used cross-country datasets to study the relationship between FDI and growth and the necessary conditions for benefiting from FDI.

Busse & Groizard's (2008) analysis of the linkage between FDI and growth, with a dataset of 89 countries, found that FDI benefits are conditional on having a good business environment in form of government regulations. Less-regulated economies tend to grow faster as a result of foreign

investments. The authors estimated that a 1 per cent increase in the FDI to GDP ratio is associated with a 0.26 per cent to 0.36 per cent increase in output, depending on model specifications. Li & Liu (2005) supported this conclusion, finding a significant endogenous relationship between FDI and economic growth from the mid-1980s onwards, and suggesting that FDI promotes economic growth by itself and through interaction terms. They estimated that a 1 per cent increase in the FDI to GDP ratio is associated with a 0.42 per cent increase in economic output. Alfaro et al. (2004) also found a positive relationship between foreign investment and growth and provide a per capita estimate of the value of these benefits. Based on analysis of a sample of 50 countries during the period 1980–1995, they found that an increase of 1 per cent in the FDI to GDP ratio is associated with an increase of 2.75 in the real per capita constant dollars, while countries with developed financial markets get an additional 2.51 constant-dollar increase in per capita GDP. In other words a country with developed financial markets may expect to gain 5.26 constant dollars on a per capita basis from a 1 per cent increase in foreign investments (as a share of GDP). This is a significant finding that has been used to quantify the effects of Brexit on FDI and growth in a number of recent studies.³²³

Contrastingly, a number of studies have demonstrated a lack of robust relationship between FDI and growth. For example, one study that employed a variety of sophisticated estimation methods taking into account the temporal dimension of international data found that the exogenous component of FDI does not exert a robust, independent influence on growth.³²⁴ And analysis of a dataset of 80 developed and developing countries found that FDI has no direct positive effect on economic growth.³²⁵ This analysis suggests, moreover, that under certain conditions cross-border investments may even harm economic growth.

Evidence from meta-studies and literature reviews

Despite a significant body of theoretical research predicting FDI's positive effect on growth, the empirical results do not offer an unambiguous picture. To better understand the data, in this section we review the conclusions of several systematic literature reviews and meta-studies that provide statistical analysis of previously reported regression results.

A meta-analysis by Görg & Strobl (2001) of the earlier academic literature on multinational companies and productivity spillovers focusing on 21 studies on 15 countries over the period 1966–1995 found that none of the cross-sectional studies detected a negative effect of FDI on growth, while the majority of panel data studies did not find a positive effect. The authors suggested that differences in results may be explained by certain aspects of empirical methods, in particular how studies define foreign presence, as well as the inability of earlier cross-sectional studies to incorporate time-invariant firm- or sector-specific effects, potentially leading to overstated estimates. They also found some evidence of publication bias, suggesting that studies that indicated statistically significant effects of foreign presence on productivity spillovers were more likely to be published. A few years later, a separate review by Görg & Greenaway (2004) of 40 empirical papers

323 In a recent analysis of Brexit, Dhingra, Ottaviano et al. (2016a) use these estimates to quantify the potential effects of lower FDI on the British economy.

324 Carkovic & Levine 2005.

325 Durham 2004.

on productivity, wage and export spillovers found that 'robust empirical support for positive spillovers is at best mixed'.³²⁶ The study cited data imperfections, inadequate statistical methods, heterogeneity and the possibility that productivity spillovers may be very small in reality as possible explanations behind the mixed results in the empirical literature.

A number of meta-studies have focused on the relationship between FDI and economic growth in general. Bruno & Campos (2013) collected and analysed 549 estimates from 103 empirical studies that use firm-level data, and 553 estimates from 72 macroeconomic studies that use a wider cross-country perspective, published between 1973 and 2010. They noted an important distinction between these two types of studies: macro studies tend to view the effect of FDI as conditional on whether recipient countries have attained minimum levels of human capital, and financial and institutional development, while studies using firm-level data tend to find that the micro-effect is conditional on the type of investment.³²⁷ The main findings of meta-regressions suggest that the effect of FDI on economic performance is significantly greater in low-income countries (partial correlation coefficient of 0.080) than in high-income countries (partial correlation coefficient of 0.044).³²⁸ Based on the entire sample of studies, a 10 per cent increase in foreign presence as a percentage of GDP on average increases growth by about 0.83 per cent. The effect is much larger if considering mixed studies only (developed and developing countries), with a 10 per cent increase in foreign presence as a percentage of GDP increasing economic growth by 2.95 per cent.

Iamsiraroj & Ulubaşoğlu's (2015) analysis of 880 estimates from 108 published studies concluded that 'FDI positively affects economic growth'. It was found that a 1 per cent increase in FDI as a percentage of GDP is associated with 0.23 per cent to 0.46 per cent higher real GDP growth per capita depending on model specification. This size of effect is roughly consistent with Bruno & Campos's (2013) estimates from mixed country studies.

Conclusion

The relationship between FDI and economic growth, as well as the relative importance of different channels, is an active area of research in the academic literature. Although the theoretical arguments that support the positive role of FDI are very strong, the empirical evidence is somewhat weaker. As more and better economic data becomes available, we will likely see more studies attempting to understand the various aspects of how FDI (or economic globalisation more broadly) affects home and host economies on different levels. Understanding the differential effects of FDI is particularly important given the rise of protectionist rhetoric in a number of developed and developing countries in recent years. However, based on the reviewed literature, economic results generally favour the view that the net benefits of FDI tend to outweigh the potential costs.

326 Görg & Greenaway 2004, 171.

327 Micro literature distinguishes between backward linkages (between firms and suppliers), forward linkages (between suppliers/producers and customers), horizontal linkages (duplicate investments in the same level of value chain) and vertical linkages (where firms invest in activities upstream or downstream), as well as greenfield FDI (building a new operation) and brownfield FDI (acquiring an existing business).

328 Meta-regression literature uses three ranges to classify the effect size: 0.0 to 0.20 are considered trivial, 0.20 to 0.50 moderate, and 0.50 or above high (Borenstein et al. 2009).

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