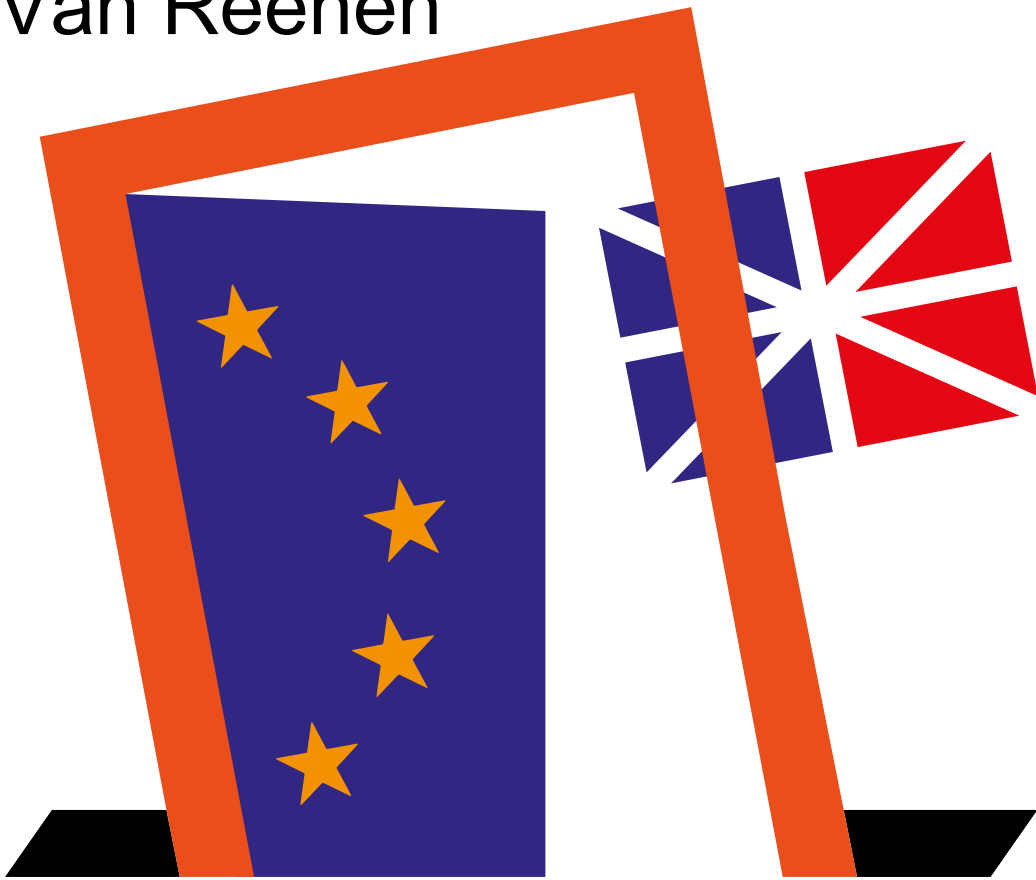


The impact of Brexit on foreign investment in the UK

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CEP BREXIT ANALYSIS No. 3

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- Foreign direct investment (FDI) raises national productivity and therefore output and wages. Multinational firms bring in better technological and managerial know-how, which directly raises output in their operations. FDI also stimulates domestic firms to improve – for example, through stronger supply chains and tougher competition.
- The UK has an FDI stock of over £1 trillion, about half of which is from other members of the European Union (EU). Part of the UK's attractiveness for foreign investors is that it brings easy access to the EU's Single Market. After Brexit, higher trade costs with the EU would be likely to depress FDI.
- Our new empirical analysis looks at bilateral FDI flows between 34 OECD countries (including the UK) over the last three decades. Controlling for many other factors, the baseline estimate is that EU membership has raised FDI by about 28%.
- The positive effect of EU membership on FDI is robust, ranging between 14% and 38% under different statistical assumptions. The size of these effects is also consistent with comparisons between UK FDI flows and a set of matched control countries.
- Striking a comprehensive trade deal – for example, joining Switzerland in the European Free Trade Association – would not significantly reduce the negative effects of Brexit on FDI, according to the data.
- Assessing the impact of lower FDI on income is complex. We use existing macroeconomic estimates of how FDI affects growth combined with a very conservative estimate of the impact of Brexit – a 22% fall in FDI over the next decade. We calculate that a Brexit-induced fall in FDI could cause a 3.4% decline in real income – about £2,200 of GDP per household. The income losses due to lower FDI are larger than our estimates of static losses due to lower trade of 1.3% to 2.6%.
- Estimates of the impact of Brexit on the UK's car industry imply that UK production would fall by 181,000 cars (12%) and prices would rise by 2.5%. Even if the UK manages a comprehensive trade deal and keeps tariffs at zero, production would fall by 36,000 cars.
- The UK's financial services industry is the largest recipient of FDI. Restrictions on 'single passport' privileges following Brexit, would lead to big cuts in activity. Furthermore, the UK would be unable to challenge EU regulations at the European Court of Justice.

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Professor John Van Reenen who joined the CEP as Director in 2003, did not (and does not) support joining the Euro.

CEP's Brexit work is funded by the UK Economic and Social Research Council. As a whole the CEP, receives less than 5% of its funding from the European Union. The EU funding is from the European Research Council for academic projects and not for general funding or consultancy.

Introduction

Foreign direct investment (FDI) comprises investments from outside a country to start up new subsidiaries, to expand existing establishments or to acquire local companies. The UK is a major recipient of FDI with an estimated stock value of over £1 trillion, about half of which is from other members of the European Union (EU), according to UK Trade and Investment (UKTI, 2015). Only the United States and China receive more FDI than the UK.

Countries generally welcome FDI as it tends to raise productivity, which increases output and wages. FDI brings *direct* benefits as foreign firms are typically more productive and pay higher wages than domestic firms. But FDI also brings *indirect* benefits as the new technological and managerial know-how in foreign firms can be adopted by domestic firms, often through multinationals' supply chain (Harrison and Rodriguez-Clare, 2009). FDI can also increase competitive pressure, which forces managers to improve their performance.

There are at least three reasons why FDI might fall if the UK left the EU:

- First, being fully in the Single Market makes the UK an attractive export platform for multinationals as they do not bear potentially large costs from tariff and non-tariff barriers when exporting to the rest of the EU.
- Second, multinationals have complex supply chains and many co-ordination costs between their headquarters and local branches. These would become more difficult to manage if the UK left the EU. For example, component parts would be subject to different regulations and costs; and intra-firm staff transfers would become more difficult with tougher migration controls.
- Third, uncertainty over the shape of the future trade arrangements between the UK and the EU would also tend to dampen FDI.

This report analyses what could happen to UK FDI inflows after Brexit and what effect these FDI changes could have on income levels in the UK.

The effect of EU membership on FDI

A number of factors determine where firms choose to locate and invest. Bigger and richer markets tend to attract more firms, which want to be close to their customers. The UK has strong rule of law, flexible labour markets and a highly educated workforce, all of which make it an attractive FDI location whether or not it is in the EU. But since EU membership reduces trade and investment costs, it is likely to have an impact even after controlling for these other factors.

To estimate the size of the effect of being in the EU on FDI, we provide a new empirical analysis – see Bruno et al (2016) in the Technical Appendix to this report. It is a statistical model based on the bilateral FDI flows between 34 OECD countries from 1985 to 2013. The model estimates why foreign investors choose to invest in the UK, as opposed to other countries such as Germany, France or the United States. It is similar to the 'gravity model' that is the standard way of estimating bilateral flows of exports and imports.

Bilateral FDI flows between any pair of countries depend on their respective market size (measured by GDP), the geographical distance between them and other factors such as GDP per capita. The model addresses the question of how much more FDI would flow between two countries if the sender or the recipient joins the EU, once all these factors are taken into account. Since many FDI determinants – such as geographical distance and culture – are broadly stable over time, we can fully control for them by looking only at changes in FDI and its determinants.

The data show that there is always a statistically significant positive effect of being in the EU on inward FDI. The magnitude ranges from a 14% to 38% increase in FDI depending on the exact statistical method used with an average of 28% across the main three methods.

These estimates are also consistent with those in Campos and Coricelli (2015), who find an impact of 25% to 30% on FDI flows from EU membership using an alternative method comparing the evolution of UK FDI with a set of matched countries as a comparison group. Similarly, Straathof et al (2008) find that EU membership increases inward FDI stocks by 14% from non-EU countries and by 28% from other EU members (using a gravity model but with earlier data).

Being a member of the European Free Trade Association (EFTA) like Switzerland does not restore the FDI benefits of being in the EU. In fact, we find no statistical difference between being in EFTA compared with being completely outside the EU like the United States or Japan. So striking a comprehensive free trade deal after Brexit is not a good substitute for full EU membership.

By comparison, Baier et al (2008) estimate that EU membership leads to trade with other EU members increasing by a quarter or more (compared with EFTA membership). So the magnitude of the FDI effect on Brexit is in the same ballpark as the effect on overall trade.

Since leaving the EU will likely have a smaller proportionate effect than joining, our Technical Appendix concludes that Brexit is likely to reduce FDI inflows to the UK by about 22%.¹

How do changes in FDI affect UK incomes?

There is much evidence that FDI brings benefits in terms of enhanced productivity. For example, Bloom et al (2012) find that multinationals boost productivity in UK establishments through enhanced technologies and management practices. On top of this direct effect, Haskel et al (2007) find that there are foreign investment ‘spillovers’ to other, UK-owned firms in the same industry.

But to get at the nation-wide impact of FDI on output, we need to factor in the many complex ways in which FDI affects people and firms in multiple parts of the economy. This is a tricky task, but fortunately we can draw on the work of Alfaro et al (2004), who estimate the effect of changes in FDI on growth rates across 73 countries. They find that increases in FDI have a large positive impact on GDP growth, especially for countries like the UK that have a highly developed financial sector.

¹ Using a baseline estimate of 0.28, we obtain $0.22 = 0.28/(1+0.28)$. This is very similar to PWC (2016), which finds that UK FDI will be a quarter lower in 2020 because of Brexit.

To be very conservative, we assume a scenario where the Brexit-induced fall in FDI lasts only for 10 years and then reverts to its current level. Using the average of the estimates in the Technical Appendix combined with Alfaro et al's estimates implies a fall in real income of about 3.4% (see the Annex for more detail). Looking at the wider range, we obtain a fall in income of between 1.8% and 4.3%.

The magnitude of our FDI effect on income, of 3.4%, is larger than our static estimates of the losses from trade (between 1.3% and 2.6% in Dhingra et al, 2016). The effect of changes in FDI is equivalent to a loss of GDP of around £2,200 per household.

Using earlier data, Pain and Young (2004) estimate that EU membership added 2.25% to UK GDP via FDI. As FDI into the UK has grown over time, we find that this channel is becoming more important for income.

Such macroeconomic analysis is useful for a bird's-eye view of the impact of Brexit on national income via lower FDI. Firm-level studies will tend to underestimate the positive impact of FDI as they focus on the productivity of the foreign firm itself or can examine only a limited number of mechanisms for the FDI spillovers (for example, firms who are in the same industry as the multinational or are suppliers or customers). Nevertheless, identifying the causal effects of FDI on economy-wide productivity is intrinsically very difficult and our estimates are subject to considerably more uncertainty than the impact of Brexit on FDI (or trade) itself.

So, to obtain a more granular view of the way that key sectors may be affected, we analyse two important UK industries in more detail: cars and financial services.

Concentrating on cars

Cars are a successful part of UK manufacturing. The UK is now the world's fourth largest producer and KPMG (2014) argues that 'much of the recent investment by car manufacturers is in new vehicles which will be predominantly for sale to the EU market.' In 2014, the car industry contributed around 5.1% to UK exports, and about 40% of its car exports were to the EU.² In a survey of its members in 2014, the Society for Motor Manufacturers and Traders found that 70% of its members expect Brexit to have a negative medium to long-term impact on their business.³

There are very rich data on the car industry, which enable us to extend the structural gravity model of exports in Dhingra et al (2016) to the decisions of multinationals over where to base their production. Head and Mayer (2015) use information on assembly and sales locations (IHS Automotive data) on 1,775 models across 184 brands. These data include annual flows of each model shipped from 49 assembly countries to 75 destination countries between 2000 and 2013. They also contain information on the headquarters and assembly location of the car. The model accounts for how the headquarters decide where to locate their production – for example, why BMW chooses to produce Minis in the UK when selling to France.

² <http://researchbriefings.files.parliament.uk/documents/SN00611/SN00611.pdf>;
<http://researchbriefings.files.parliament.uk/documents/SN06091/SN06091.pdf>.

³ <http://www.smmmt.co.uk/2014/04/uk-automotive-industry-europe>.

Head and Mayer estimate the impact of Brexit on plant location as well as the levels of car production and prices. In their work, Brexit has two main disadvantages:

- First, as trade costs rise (due to non-tariff and possibly tariff barriers), locating production in the UK is less attractive because it becomes more costly to ship to the rest of Europe.
- Second, there is an increase in the co-ordination costs between headquarters and the local production plants. Transfers of key staff within the firm may be harder if migration controls are put in place. Different regulatory standards can make engineering, R&D and consultancy services trickier.

Generally, all the things that make trade more costly between firms in different countries will also make trade within multinationals across countries more costly.⁴

Table 1 examines two scenarios for Brexit:

- First, row 1 considers both of the costs together – the increased trade costs of exporting and the higher costs of headquarters co-ordination. Total UK car production is predicted to fall by 12% or almost 180,000 cars per year. This is mainly because European car manufacturers such as BMW move some production away from the UK. Prices faced by UK consumers also rise by 2.55% as the cost of imported cars and their components increase.

Table 1: The predicted impact of Brexit on UK car production and prices

	Change in total number of cars produced	Percentage change in cars produced	Percentage increase in car prices
1. Increase in trade costs and headquarters co-ordination costs	-180,746	-12.0%	2.55%
2. Increase in headquarters co- ordination costs only	-35,728	-2.4%	0.003%

Source: Derived from Head and Mayer (2015).

- Row 2 takes a more optimistic approach and assumes that the UK faces no trade barriers on cars and car components with the rest of the EU (for example, it joins EFTA). Hence, the only increase in costs is due to increased headquarters co-ordination costs. Although prices are stable in this rosier scenario, car production still falls by almost 36,000.⁵

In short, the detailed model in Head and Mayer confirms the macroeconomic and survey evidence that the costs of Brexit for car production in the UK could be severe.

⁴ In theory, these intra-company transfers of services across country borders should be reflected in the trade statistics, but we know that, in reality, these are not well captured. Because of transfer pricing, international flows of technical and managerial know-how are hard to detect within multinationals.

⁵ We have abstracted away from a third channel quantified by Head and Mayer, which allows for the fact that the UK brand would be less attractive to EU consumers after Brexit. This would further reduce welfare by increasing prices by another 2%.

Focusing on financial services

Financial services have the largest stock of inward FDI in the UK (45%) and constitute 8% of GDP and 12% of tax receipts (Tyler, 2015).

The Single Market allows a bank based in one member of the EU to set up a branch or provide cross-border financial services in another, while being regulated by authorities in the home country. This ‘single passport’ to conduct activities in EU member states is important for UK exports of financial services. ‘Passporting’ means that a UK bank can provide services across the EU from its UK home. It also means that a Swiss or an American bank can do the same from a branch or subsidiary established in the UK.⁶

The UK might be able to negotiate some of these privileges after Brexit. Members of the European Economic Area (EEA) outside the EU (for example, Norway) enjoy them, but they also have to contribute substantially to the EU budget, to accept all EU regulations without a vote on the rules and to allow free labour mobility with the EU. And still for these countries, there seem to be greater difficulties in doing business with the EU (Souta, 2015; Bank of England, 2015).

Switzerland is in EFTA (not the EEA) so it enjoys tariff-free access to the EU in goods. But it has no passporting rights, so Swiss financial institutions mostly get access to the EU via special bilateral treaties with the EU, which still require permissions to set up branches in EU members.⁷ This is one of the reasons that Swiss banks often set up subsidiaries in the UK. The EU's new financial directives have set out further rules for authorisation of the EU operations of Swiss firms, so the Swiss option is unlikely to ensure easy access to EU markets after Brexit (City of London, 2013).

More generally, there are concerns that the EEA might not welcome the UK, and that the EU may not grant the special bilateral terms it extended in the past to non-EU countries like Switzerland⁸, since following Brexit, other cities like Frankfurt and Paris will be keen to grab a larger share of the lucrative markets for financial services.⁹

Will Brexit relieve the UK financial services sector of onerous EU regulations? It is unlikely to do so because UK-based financial firms would still need to comply with these regulations for all their EU transactions.

Another question is whether EU regulations are imposing a big burden on UK firms in their transactions outside the EU. As financial regulations are still evolving, it is difficult to put a monetary value on the impact of Brexit on regulations. But it is unlikely that the regulations put UK firms at a competitive disadvantage as the EU is the world's largest exporter of financial services, making up a quarter of world financial services exports. Half of the cross-border lending in the world originates within the EU.

⁶ <https://www.dlapiper.com/en/uk/insights/publications/2015/10/banking-disputes-quarterly/brexit/>

⁷ <http://www.bankofengland.co.uk/pr/Pages/authorisations/passporting/faqs.aspx>.

⁸ <http://www.publications.parliament.uk/pa/cm201213/cmselect/cmcaff/writv/futunion/m21.pdf>;
<https://www.cityoflondon.gov.uk/business/economic-research-and-information/research-publications/Documents/research-2013/Switzerlands-approach-to-EU-engagement.pdf>.

⁹ <http://www.voxeurop.eu/en/content/article/5052502-big-opportunity-europe>;

<http://www.globalcapital.com/article/x1h6hjkpygxb/brexit-casts-long-shadow-over-nervous-uk-banking-sector>.

The Balance of Competences Review questioned the City of London on the extent to which the Single Market had raised the costs of transacting with countries outside the EU.¹⁰ The consensus was that the City became a financial hub while being in the EU, so there was little evidence that membership had seriously hindered the UK's ability to trade with countries outside the EU. City representatives said that access to the Single Market is one of the major reasons for inward FDI in the UK.

Staying in the EU also gives the UK the ability to challenge new regulations at the European Court of Justice, a right that it successfully exercised when the European Central Bank wanted to limit clearing-house activities to the euro area. If the UK leaves the EU, it would lose its leverage in negotiating and challenging future EU regulations.

Future trade agreements

After Brexit, would the UK strike great deals with non-EU countries that would reduce trade costs and so actually boost FDI? It seems unlikely. Although the UK would no longer need to compromise with other EU countries when negotiating, the UK is under a fifth of the economic size of the EU's Single Market. It would simply have much less bargaining clout than the EU currently enjoys. Nor would it get automatic access to the new deals struck with the EU, such as those currently being negotiated with Japan and the United States.

Conclusions

Overall, Brexit is likely to have a negative impact on inward FDI. Our new empirical analysis implies that leaving the EU will reduce FDI inflows to the UK by around 22%.

Such losses of investment will damage UK productivity and could lower real incomes by 3.4%. This is larger than our estimates of the static income losses from trade, which are 2.6% even under our 'pessimistic scenario' (Dhingra et al, 2016).

Case studies of cars and finance also show that Brexit would lower EU-related output of goods and services, and erode the UK's ability to negotiate concessions from regulations on EU-related transactions.

Of course, these costs may be a price that many people are willing to pay to leave the EU. But they are not trivial costs.

April 2016

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¹⁰ <https://www.gov.uk/guidance/review-of-the-balance-of-competences>.

Further reading

Alfaro, L., A. Chanda, S. Kalemli-Ozcan and S. Sayek (2004) 'FDI and Economic Growth: The Role of Local Financial Markets', *Journal of International Economics* 64(1): 89-112.

Baier, S. L., J. H. Bergstrand, P. Egger and P. A. McLaughlin (2008) 'Do Economic Integration Agreements Actually Work? Issues in Understanding the Causes and Consequences of the Growth of Regionalism', *The World Economy* 31(4): 461-97.

Bank of England (2015) 'EU Membership and the Bank of England' (<http://www.bankofengland.co.uk/publications/Documents/speeches/2015/euboe211015.pdf>).

Bloom, N., R. Sadun and J. Van Reenen (2012) 'Americans Do IT Better: US Multinationals and the Productivity Miracle', *American Economic Review* 102(1): 167-201.

Bruno, R., N. Campos, S. Estrin and M. Tian (2016) 'Gravitating towards Europe: An Econometric Analysis of the FDI Effects of EU Membership', Technical Appendix to this report (http://cep.lse.ac.uk/pubs/download/brexit03_technical_paper.pdf).

Campos, N. and F. Coricelli (2015) 'Some Unpleasant Brexit Econometrics' VoxEU (<http://www.voxeu.org/article/some-unpleasant-brexit-econometrics>).

City of London (2013) 'Switzerland's Approach to EU Engagement: A Financial Services Perspective', Centre for Swiss Politics, University of Kent.

Dhingra, S., G. Ottaviano, T. Sampson and J. Van Reenen (2016) 'The Consequences of Brexit for UK Trade and Living Standards', CEP Brexit Analysis No. 2 (<http://cep.lse.ac.uk/pubs/download/brexit02.pdf>).

Harrison, A. and A. Rodriguez-Clare (2009) 'Trade, Foreign Investment, and Industrial Policy for Developing Countries', NBER Working Paper No. 15621.

Haskel, J., S. Pereira and M. Slaughter (2007) 'Does Inward Foreign Direct Investment Boost the Productivity of Domestic Firms?' *Review of Economics and Statistics* 89(3): 482-96.

Head, K. and T. Mayer (2015) 'Brands in Motion: How Frictions Shape Multinational Production', UBC Working Paper.

Levine, R., N. Loayza, and T. Beck (2000) 'Financial Intermediation and Growth: Causality and Causes', *Journal of Monetary Economics* 46(1): 31-77.

KPMG (2014) 'The UK Automotive Industry and the EU', report for the Society for Motor Manufacturers and Traders.

Pain, N. and G. Young (2004) 'The Macroeconomic Effect of UK Withdrawal from the EU', *Economic Modelling* 21: 387-408.

PWC (2016) 'Leaving the EU: Implications for the UK Economy' (<http://www.pwc.co.uk/economic-services/assets/leaving-the-eu-implications-for-the-uk-economy.pdf>).

Souta, P. (2015) 'What Could Brexit Mean for the Financial Services Sector?' (http://www.britishinfluence.org/what_could_brexit_mean_for_the_financial_services_sector).

Straathof, S., G-J. Linders, A. Lejour and J. Mohlmann (2008) 'The Internal Market and the Dutch Economy: Implications for Trade and Economic Growth', CPG Netherlands Document No. 168.

Tyler, G. (2015) 'Financial Services: Contribution to the UK Economy', Economic Policy and Statistics Section, House of Commons Library, February SN/EP/06193.

UKTI (2015) 'UKTI Inward Investment Report 2014 to 2015' (<https://www.gov.uk/government/publications/ukti-inward-investment-report-2014-to-2015/ukti-inward-investment-report-2014-to-2015-online-viewing>).

Annex: Calculating the income effects of lower FDI

Alfaro et al (2004) estimate a cross-country growth regression with 73 countries to examine the effects of FDI on economic growth. They allow the impact of FDI on GDP growth per capita to vary with the level of development of domestic financial markets. They find that countries with developed financial markets like the UK benefit significantly more from FDI than those with less sophisticated financial systems (like many developing countries).

Alfaro et al (2004) present ‘instrumental variables’ (IV) regressions to deal with endogeneity issues. For example, expected growth might affect the level of financial development. We use these more rigorous IV estimates from their Table 7 (column 1), which is based on a regression of average annual per capita growth rate of countries on FDI as a share of GDP, its interaction with financial market development and various controls. The controls include initial GDP, financial market development itself, schooling, population growth, government consumption and a dummy for sub-Saharan Africa, the black market premium, inflation and trade volumes.

Since trade volumes are controlled for, the interpretation of the results is the impact of FDI on growth over and above any influence of trade. The financial market development variable is instrumented by dummies for English and Scandinavian legal origins. There is evidence that these kind of legal origins enhanced the development of financial markets.

To calibrate the growth effect of FDI from this estimation, the parameter values we use are as follows. The share of OECD FDI inflows in GDP for the UK is 2.4%, which is the average from the data in Bruno et al (2016) from our Technical Appendix. The proxy for financial market development in Alfaro et al (2004) is the share of private sector credit in GDP (in Table 7 column (1)). This takes a value of 0.463 (or 46.3% of GDP) in the UK in their data from Levine et al (2000). We assume that the UK growth rate is 2% per year in the absence of Brexit, which is taken from the Office for Budget Responsibility’s current projections of long-run UK labor productivity growth.

Having calibrated the growth effect of FDI, we compute the extra income that would be needed every year to ensure that a household gets the same discounted sum of log income with and without Brexit (exactly like the analysis of the trade effects on income in Dhingra et al, 2016). We use a discount rate of 0.96 for future incomes and set the intertemporal elasticity of substitution equal to one.

When deriving the GDP per UK household, we use the current ONS estimates of 27 million households and a GDP level of £1.8 trillion.