The economic impact of Boris Johnson's Brexit proposals

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The Economic Impact of Boris Johnson's Brexit Proposals*

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Foreword

The Prime Minister has set out a means of escaping the Brexit stalemate, but his new Brexit proposals have, as yet, not managed to overcome the impasse. What, though, would the plan mean for the UK economy? That is the question we seek to answer in what follows.

As ever, we have been lucky enough to be able to draw on the skills and expertise of some of the leading experts in the field. The bulk of the work was done by Hanwei Huang, Jonathan Portes and Thomas Sampson, with contributions from Matt Bevington and Jill Rutter. Hanwei and Thomas used the LSE's Centre for Economic Performance trade model to carry out the modelling.

We hope you find the report interesting and informative. Brexit is clearly about more than economics, but the economic impact of leaving the EU nevertheless merits careful scrutiny.

Professor Anand Menon, Director, The UK in a Changing Europe

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Introduction

There has been a vigorous debate about the proposals the Prime Minister made to the European Union about how best to secure an end to the current Brexit impasse. What has been striking, though, is the extent to which that debate has focused on the implications of what the government has proposed for Northern Ireland. Clearly, these matter enormously. However, it is worth emphasising that the proposals for the rest of the UK also have significant and far-reaching implications.

Little remarked upon but central to the Prime Minister's vision of Brexit, and to his insistence on rewriting the Withdrawal Agreement negotiated by Theresa May, is Boris Johnson's view of the ultimate relationship the UK should have with the EU. Gone is the notion that a shared customs territory and close regulatory alignment on goods were a 'bridge' to the long-term relationship. As the Prime Minister himself put it:

> 'the backstop acted as a bridge to a proposed future relationship with the EU in which the UK could be closely integrated with the EU customs arrangements and would align with EU law in many areas. That proposed future relationship is not the goal of the current UKgovernment. The government intends that the future relationship should be based on a Free Trade Agreement in which the UK takes control of its own regulatory affairs and trade policy.'

The differences between the key elements of Mrs May's deal (some of which were enshrined in the backstop) and Mr Johnson's preferred destination are set out below.

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May's deal versus the Johnson proposals

	May's deal	Johnson's proposals
NI customs/tariffs	NI in EU customs union	All UK (inc NI) in its own customs territory
GB customs/tariffs	GB in EU 'customs territory'	UK in its own customs territory
Agriculture and manufactured goods	NI follows EU, UK maintains comparable standards	NI follows EU, UK flexibility
Labour/environmental standards	No digression/level playing field provisions	UK flexibility
Implications for third country free trade agreements	Services only	UK flexibility
Likely EU-UK free trade agreement	Full free trade agreements, customs territory, some regulatory alignment ('Turkey+')	Goods only ('Canada minus'), minimal coverage of services; significant non-tariff barriers
Irish border	No checks	Checks away from the border

Clearly, all this will have implications not just for Northern Ireland, but for the UK economy as a whole. In what follows, we consider what this might mean for the long-term future of the UK economy.

We also, as in previous work, model the impact of changes to migration policy. Migration is a key area where Brexit will lead directly to greater policy flexibility. Mrs May set out her proposals in a white paper last year, but we also model a possible variant under which Mr Johnson adopts a more liberal approach.

Trade effects

Our goal is to estimate the long-run effect of the changes in the UK's trade relations with the EU that will occur as a result of Brexit on economic outcomes. Since Northern Ireland only accounts for around 2% of the UK economy, we focus on how Boris Johnson's proposals will affect trade barriers between the UK as a whole and the EU. Mr Johnson's plan is for the UK to leave the EU's customs union and single market, and to negotiate a bespoke free trade agreement with the EU.

Theresa May aimed to achieve as frictionless trade as possible with the EU, despite leaving the EU customs union and the single market. She agreed to have new customs arrangements with the EU, but also to stay closely aligned with EU goods regulations to avoid the need for border checks—and for the UK to potentially stay inside some of the EU's agencies in heavily regulated sectors.

Mr Johnson has abandoned that aspiration. Instead, he will seek to negotiate tariff- and quota-free trade with the EU. Even with such a free trade agreement in place, if the UK is not in the EU's customs union, there will be customs checks at the border, goods will have to satisfy rules of origin requirements to qualify for tariff-free entry, and trade will be subject to the threat of anti-dumping duties and countervailing measures.

Under Mr Johnson's proposals, Great Britain will be outside the single market and will have the opportunity to diverge from EU regulations, while Northern Ireland will remain bound by a greater number of EU rules. However, there will be new checks to ensure goods comply with the EU's standards, and businesses may face extra costs if they need to split production lines for different markets.

Unlike the Withdrawal Agreement negotiated by Theresa May's government, Mr Johnson's plans do not commit the UK to any of the so-called level playing field provisions. These apply in areas such as state aid, competition, taxation, environmental standards, and labour and social protection. Their aim is to prevent the undercutting of EU standards to gain a competitive advantage. Weak level playing field provisions have featured in recent EU trade agreements, but the EU has already given notice that the size and geographic proximity of the UK mean that it would insist on rigorous level playing field provisions in return for access to the EU market. Absent such provisions, it will be difficult for the UK to reach a comprehensive free trade agreement with the EU.

Taking these considerations into account, we assume that under Mr Johnson's proposals the future relationship would be based on a 'Canada minus' model. In other words, the UK and EU would strike a free trade agreement somewhat less comprehensive than the EU-Canada agreement. We assume—and it is an assumption, as we do not yet have the details—this will provide for tariff- and quota-free trade. However, new non-tariff barriers will increase trade costs. For goods trade, these non-tariff barriers will be notably lower than in a no deal scenario, but considerably higher than under Theresa May's Withdrawal Agreement where the UK would have remained aligned with most EU goods regulations and part of the EU's regulatory sphere. For services trade, we assume non-tariff barriers will be the same as under Mrs May's deal, but much higher than at present, as in both cases the UK would leave the single market, leading to new regulatory barriers to trade in services

Our analysis does not allow for possible changes in trade barriers between the UK and countries outside the EU. The government's own long-term analysis suggested that, even on optimistic assumptions about the UK's ability to conclude new trade agreements in addition to rolling over all existing agreements, the positive impact on GDP after 15 years would only be about 0.1-0.2%.

We analyse the effect of changes in UK-EU trade barriers on aggregate real income per capita ten years after the new trading arrangements are introduced. A ten-year window allows the economy time to adjust and means our results should be viewed as estimating the long-run impact of Mr Johnson's proposals. We do not attempt to model the short-run effects. These are harder to forecast because less is known about how and at what speed consumers and business react to higher trade barriers.

Nor do we attempt to forecast how much the UK economy will grow over the next ten years. Rather, we address the narrower question of the change in the UK's income per capita if the future relationship with the EU were based on Mr Johnson's proposals. The UK's actual growth performance will obviously depend on numerous factors outside the scope of this analysis.

As with all economic forecasts, our estimates should be treated with caution. We analyse how Mr Johnson's proposals would affect the UK economy using the best available information and modelling techniques. However, there are several unavoidable sources of uncertainty: economic models are an imperfect map of the world; we do not know exactly what form future relations will take; and we do not account for changes in foreign direct investment (FDI), which will also shape the economic effects of Brexit. There is already some evidence that reduced investment flows have begun to adversely affect the UK economy.

Nevertheless, given Mr Johnson's stated policy on regulatory divergence, we believe our assumption—of a 'Canada minus' agreement—is at the optimistic end of the spectrum. It is perfectly feasible that for political and economic reasons no deal at all is possible under the conditions set out by Mr Johnson, in which case our trade with the EU would largely revert to WTO terms. This scenario is also set out below.

Modelling Boris Johnson's proposals

Our analysis uses the Centre for Economic Performance (CEP) trade model. The CEP trade model was used prior to the referendum to study how a 'Norway' or 'WTO' Brexit would affect the UK. We use the same calibration of the model employed in previous CEP work. The model divides the world into 31 sectors and 35 regions, including the UK and the major EU economies. It features trade in intermediate inputs, which are used in the production of each sector's output, and takes account of how changes in trade barriers affect income levels through their impact on the UK's trade with both the EU and the rest of the world.

To implement the model, we have to make assumptions about how trade costs between the UK and the EU will change under Mr Johnson's proposals. We divide changes in trade costs into three parts: first, tariffs on goods trade; second, non-tariff barriers to trade arising from customs checks, product standards and regulations, and other costs of cross-border trade; and, third, the loss to the UK of not benefiting from any future steps the EU takes towards reducing non-tariff barriers through deeper integration within the single market.

To compare the economic implications of Mr Johnson's proposals with alternative Brexit options, we also report estimates for a WTO exit and a scenario where future UK-EU relations are based on the Withdrawal Agreement negotiated by Theresa May's government. In the former case, not only would the UK leave both the single market and the customs union, but there would be no UK-EU free trade agreement. Under Mrs May's deal, the UK would leave the single market, but Northern Ireland would remain inside for most goods. Great Britain (the UK excluding Northern Ireland) would stay closely aligned on goods regulation to avoid regulatory divergence from Northern Ireland. In this scenario, the UK would continue to have a customs union type arrangement with the EU to ensure there was no hard border in Northern Ireland.

We model the WTO scenario using the same assumptions made in previous CEP work. UK-EU goods trade would be subject to the EU's most-favoured nation tariffs, and all UK-EU trade would face an increase in non-tariff barriers three-quarters as large as the estimated reducible non-tariff barriers between the EU and the US. This assumption reflects the judgment that, because of the close integration that currently exists between the UK and EU, even without a free trade agreement non-tariff barriers on UK-EU trade would be lower than on EU-US trade. It implies an increase in non-tariff barriers of 8.3%. We also assume that, in line with estimates of the rate of cross-country price convergence, intra-EU trade costs fall 40% faster than trade costs in the rest of the world over the ten-year forecast period, but UK-EU trade costs do not. Assuming the fall in trade costs applies to three-quarters of reducible non-tariff barriers, this implies a 12.7% reduction in intra-EU non-tariff barriers that the UK does not benefit from.

Under both Mr Johnson's proposals and Mrs May's deal, there would be no tariffs on UK-EU trade. But in both cases non-tariff barriers would increase. The increase in non-tariff barriers on goods would be greater under Mr Johnson's proposals than Mrs May's deal because a 'Canada minus' free trade agreement involves higher trade barriers than a customs union. We assume UK-EU goods trade would be subject to half of the reducible non-tariff barriers between the EU and the US under Mr Johnson's proposals and a quarter of the reducible non-tariff barriers under Mrs May's deal. This implies non-tariff barrier increases of 5.5% and 2.8% respectively.

Neither Mr Johnson's proposals nor Mrs May's deal would reduce non-tariff barriers on trade in services by much compared to trading on WTO terms. We therefore assume that services trade costs will be the same in both cases. Specifically, we assume services trade would be subject to two-thirds of the estimated reducible non-tariff barriers between the EU and the US, implying a 7.3% increase.

Finally, we assume that after Brexit the UK does not benefit from future reductions in intra-EU trade costs. However, we take the view that regulatory divergence in goods would have been more limited under Mrs May's deal than if Mr Johnson's proposals are adopted. In both cases we assume that, as in the WTO scenario, intra-EU trade costs fall 40% faster than trade costs in the rest of the world over the ten-year forecast period, but UK-EU trade costs do not. For Mr Johnson's proposals we assume that the fall in trade costs only applies to half of reducible non-tariff barriers in goods, while for services it applies to two-thirds. For Mrs May's deal, we assume the fall in trade costs applies to a quarter of reducible non-tariff barriers in goods and two-thirds in services.

Modelling results

The trade impacts of our modelling exercise are shown in the table below. Relative to staying in the EU, income per capita in the UK would be 2.5% lower under Mr Johnson's proposals, compared to 1.7% under Mrs May's deal and 3.3% in the WTO scenario. We draw the following conclusions:

- All three scenarios would reduce UK living standards compared to staying in the EU.
- The decline in income per capita under Mr Johnson's proposals is 50% greater than for Mrs May's deal, but smaller than under a WTO exit. The costs of Mr Johnson's proposals are roughly equidistant between those of Mrs May's deal and a WTO exit.

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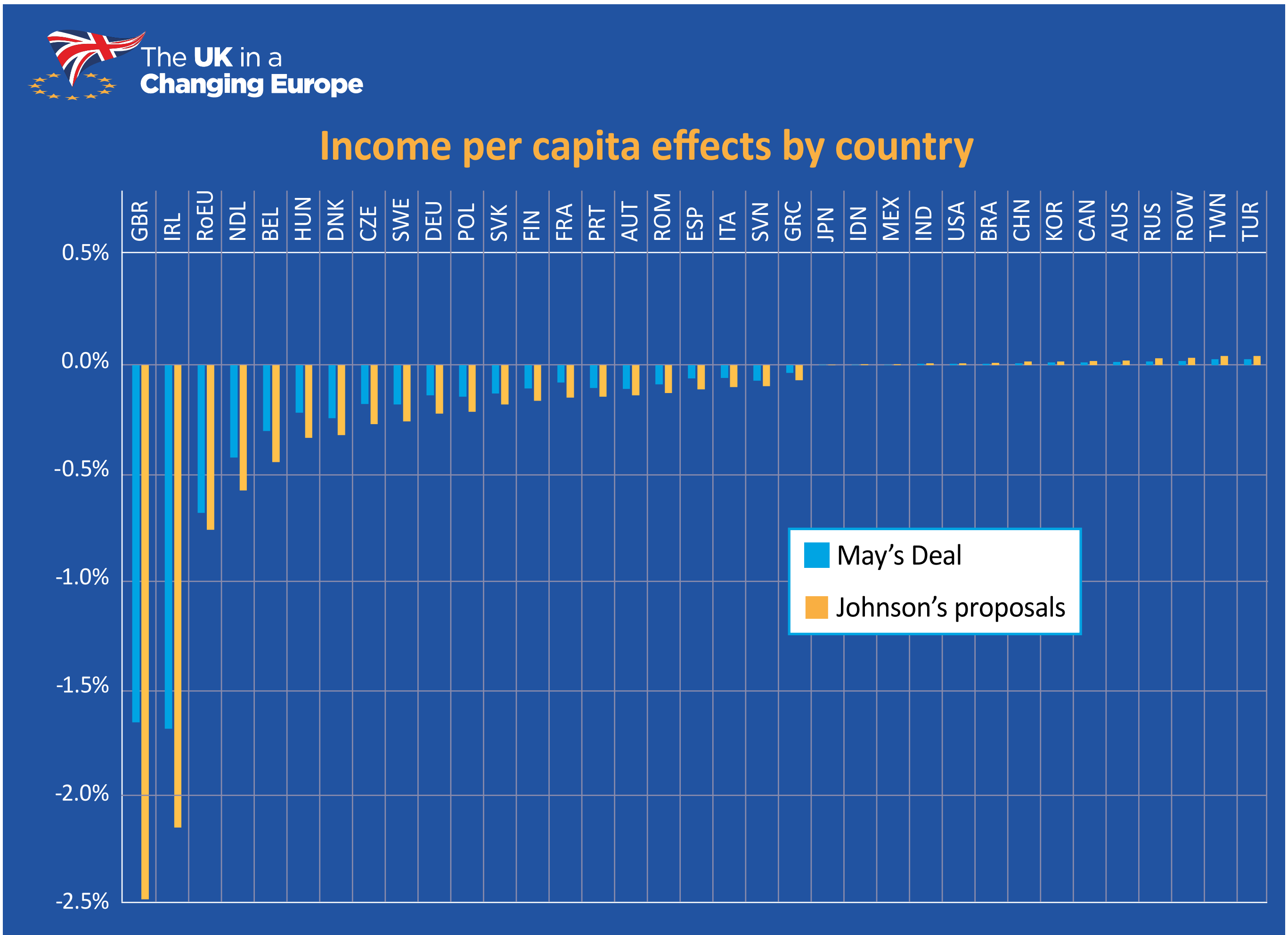
Income per capita effects

	%	£
May's deal	-1.7%	-£500
Johnson's proposals	-2.5%	-£800
WTO	-3.3%	-£1,000

Source: CEP calculations. Sterling values based on 2018 data from ONS.

We have also calculated how the scenarios would affect income per capita in other countries. The results for Mrs May's deal and Mr Johnson's proposals are shown in the chart below. Income per capita falls under both scenarios in all EU countries and the costs are approximately 50% larger under Mr Johnson's proposals. The reduction in Ireland's income per capita is comparable in size to the UK effect, but for most EU countries the losses are around five to ten times smaller than for the UK. Ireland is the worst-affected EU country because of its high share of trade with the UK. Non-EU countries would experience small income gains due to trade diversion effects.



Source: CEP calculations

Trade and productivity

The CEP trade model does not allow for any dynamic effects of trade on productivity. Trade integration can raise productivity by promoting efficiency through increased competition, by stimulating innovation or by reducing the cost of intermediate goods. For an alternative estimate of the economic costs of Brexit, we turn to the empirical literature on how trade affects income per capita. A central estimate from this literature is that a 1% decline in trade reduces income per capita by around 0.5%. This estimate is designed to capture all channels through which trade affects income, including productivity changes in addition to the mechanisms embedded in the CEP trade model. It may also partially capture the consequences of changes in foreign investment and immigration that are correlated with changes in trade policy.

Combining this estimate with the changes in UK trade calculated by our model gives the results shown in the table below. The model implies aggregate UK trade falls by 10% under Mrs May's deal, by 13% for Mr Johnson's proposals and by 16% in the WTO case. Therefore, under Mr Johnson's proposals, income per capital falls by 6.4%, whereas under Mrs May's deal it falls by 4.9% and in the WTO scenario by 8.1%. These costs are around two and a half times as large as the falls in income per capita obtained directly from the trade model. This suggests that the model does not incorporate all the channels through which trade affects production and living standards. We conclude that although the exact magnitude of changes in income per capita in the three scenarios is uncertain, all options are likely to reduce UK living standards and our analysis suggests the costs could be substantial.

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Income per capita effects including productivity adjustments

	%	£
May's deal	-4.9%	-£1,500
Johnson's proposal	-6.4%	-£2,000
WTO	-8.1%	-£2,500

Source: CEP calculations. Assumed elasticity of income per capita to trade equals 0.5. Sterling values based on 2018 data from ONS.

Migration

A further aspect of the UK-EU relationship that will have a significant bearing on the economic implications of Brexit is migration policy. Both Mrs May and Mr Johnson have said that freedom of movement will end once the UK leaves the EU. Both also said that it would be replaced with a system that does not differentiate between EU and non-EU citizens, while EU citizens already in the UK before Brexit will be entitled to stay pending successful application to the settled status scheme.

However, there is a potential difference in approach when it comes to how the UK would use its ability to set migration policy after Brexit. Mrs May's policy was set out in a white paper in December 2018 and its main proposal was to introduce a salary cap of £30,000. The Johnson administration is investigating an 'Australian style points system'. Early indications suggest that the Johnson administration may take a more liberal approach to immigration than the May regime.

To look at the possible impact, we have modelled a restrictive scenario and a more liberal one:

- The 'restrictive' scenario assumes that EU migration to the UK of those earning more than £30,000 is reduced by 50%, while for those earning less it is reduced by 75%. For non-EU migrants earning more than £30,000, we assume that a somewhat more liberal regime increases their numbers by 25%.
- The 'liberal' scenario assumes reductions of a third and two-thirds for high and low-paid EU migrants respectively, and increases of 10% and 50% for low- and high-paid non-EU migrants.

In order to estimate the impact on future migration flows, and hence on the UK workforce, we apply these changes to the number of migrants in each category who are currently resident in the UK and who arrived in the last nine years. We are assuming that future migration flows would be similar to the recent past, in the absence of Brexit-induced policy change. From this, we derive an estimate of the impact of the proposed policy change over ten years to match the trade modelling. This methodology takes account of return or onward migration for future arrivals, as we are looking at the impact of alternative policies on the resident workforce over ten years.

In order to ensure that we broadly capture primarily only work-related migration, we restrict the analysis to full-time workers. We do not take account of any impact on return migration rates for EU nationals already resident in the UK. This group will be entitled to apply for settled status under the Withdrawal Agreement, but some may choose to leave the UK and this would lead to additional reductions in net migration.

The results are shown in the table below.

Restrictive scenario

	2009-17 arrivals currently resident (000s)	Average salary (£)	Impact of policy change	Impact of policy change (000s)
EU, earning less than £30,000	598	18,804	-75%	-498
EU, earning more than £30,000	220	49,237	-50%	-122
Non-EU, earning less than £30,000	263	18,920	0%	0
Non-EU, earning more than £30,000	235	50,157	25%	65
Total	1,316	29,514		-555

Source: Labour Force Survey/Annual Population Survey, author's calculations

In order to assess the economic impact of these changes, we adopt the following methodology. We calculate the average salary for each of these four groups (as shown in the table), and we then assume that the contribution of an individual worker to GDP (migrant or native) is proportional to their earnings. Current employment in the UK is equal to about 28 million full-time equivalents. A reduction in the workforce of approximately 550,000, as in the restrictive scenario, would translate into a reduction in GDP of approximately 2%, if all migrants earned the average UK salary. However, since the reductions are disproportionately concentrated on the lower paid, the implied reduction is somewhat less—approximately 1.4% of GDP.

Liberal scenario

	2009-17 arrivals currently resident (000s)	Average salary (£)	Impact of policy change	Impact of policy change (000s)
EU, earning less than £30,000	598	18,804	-67%	-445
EU, earning more than £30,000	220	49,237	-33%	-81
Non-EU, earning less than £30,000	263	18,920	10%	29
Non-EU, earning more than £30,000	235	50,157	50%	131
Total	1,316	29,514		-366

Source: Labour Force Survey/Annual Population Survey, author's calculations

By contrast, in the liberal scenario, the reduction would be much smaller, and concentrated even more on lower-paid migrants. Migration by higher-paid workers would actually increase, so the reduction to GDP would be much smaller at about 0.6%.

This is the direct, arithmetic effect of a reduction in the workforce and change in its composition. However, as with trade, migration also has indirect impacts on productivity. In its recent report, the UK's Migration Advisory Committee (MAC) concluded that immigration has:

> 'a positive impact on productivity, but the results are subject to significant uncertainty. While the evidence on overall migration is not entirely conclusive the evidence perhaps unsurprisingly suggests that high-skilled migrants have a more positive impact.'

In fact, the studies commissioned by the MAC all suggested that immigration has a large and positive impact on productivity, as does the most recent major cross-country study published by the IMF.

Broadly consistent with the MAC conclusions, we assume that immigration of relatively less skilled workers has no indirect impact on productivity. Consistent with the published empirical studies, we assume that relatively skilled immigration increases productivity, with an increase in the skilled migrant share of the workforce of 1 percentage point associated with a productivity increase of 2%. These assumptions appear relatively conservative, given the consistently positive evidence on the productivity impacts of immigration. However, they are, as the MAC says, subject to a high degree of uncertainty.

This makes the two scenarios even more distinct. Under the restrictive scenario, there would be a further hit to GDP of approximately 0.4%, resulting from the assumed net fall in skilled migration of about 60,000, which is equal to about 0.2% of the full-time equivalent workforce. The total reduction in GDP resulting from the changes to immigration policy would therefore be 1.8%. Under the liberal scenario, skilled migration would increase by about 50,000, boosting GDP by a similar amount, and reducing the negative impact to 0.2% of GDP.

And what about GDP per capita? Lower-paid migrants from the EU, who account for the bulk of the reduction, do not generally have non-working dependents, but there will be some. Assuming a ratio of working migrants to non-working dependents of 2:1, then the reduction in population would be about 1.2% under the restrictive scenario and 0.8% under the liberal scenario. These impacts are summarised in the table below.

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Immigration impact compared to EU membership

	GDP (%)	GDP per capita (%)
Restrictive scenario	-1.8	-0.6
Liberal scenario	-0.2	+0.6
Restrictive scenario (without productivity impacts)	-1.4	-0.2
Liberal scenario (without productivity impacts)	-0.6	+0.2

As outlined above, these results are subject to several caveats, both on the impact of policy on migration flows, and the impact of changes in migration flows on economic outcomes. However, it is consistent with both economic theory and the empirical literature that a less open and more restrictive migration policy should, just as with trade policy, have a negative impact on output and productivity. By extension, a more liberal one would have a more positive impact.

These results emphasise that the economic impacts of Brexit will be determined not just by the automatic, direct implications for policy, but also by UK policy choices in the future. A restrictive approach to immigration would exacerbate the large negative impacts that result from changes to trade policy, while more open, liberal approach on immigration could help to mitigate them.

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Trade and migration impact

	Without productivity adjustment % GDP per capita	With productivity adjustment % GDP per capita
May's deal	-1.9	-5.5
Johnson's proposals		
Liberal migration scenario	-2.3	-5.8
Restrictive migration scenario	-2.7	-7.0
WTO	-3.8	-8.7

Fiscal impacts

The public finances have always been a key part of the Brexit debate. Just as under Theresa May, Boris Johnson's Brexit proposals are supposed, first and foremost, to bring 'our money' back under our control.

So how would Mr Johnson's proposal affect the public finances in the long term? There are broadly three main factors to consider: the 'divorce bill', the UK's current contributions to the EU budget and the impact of Brexit on the economy.

Divorce bill

Under both Mr Johnson's proposals and Mrs May's deal, the UK would pay a financial settlement (or divorce bill) covering the UK's liabilities to the EU. The bill is front-loaded, as it is dominated by the impact of the UK's outstanding contribution to the EU budget for 2014-20. After ten years, the divorce bill is estimated by the OBR to have a negligible impact on the public finances, consisting mainly of outstanding pension liabilities.

EU contributions

The Office for Budget Responsibility estimates that if the UK were to remain a member of the EU then its payments in 2023-24 would be £13.4 billion in 2018-19 prices. However, the benefit to the public finances of removing future contributions (after taking account of outstanding divorce bill payments) would be lower, as the UK would need to replace at least some of the various financial transfers back from the EU, including funding for farm support, scientific research and education. A proportion of the EU's spending on foreign aid also contributes towards the UK government's current commitment to spend 0.7% of its GDP on overseas assistance.

While the Treasury has said that formal decisions on these areas in the near term will not be taken until the Spending Review, the current administration has stuck with the previous government's commitment to see UK schemes replace EU spending on farm payments and support for scientific research. Over time the government may decide to spend less in these areas, but that support will not disappear entirely. These commitments would leave little by way of additional resources for increased public spending, and this is before we subtract any additional administrative costs associated with Brexit. The Treasury has committed £2.1 billion in spending in 2019/20 to prepare for no deal, alongside the £2 billion core funding for Brexit preparedness. A further £2 billion in core funding has been guaranteed for 2020/21. Some of these costs will disappear in the longer term, but others, such as the costs of staffing new UK regulatory agencies and manning the border, will endure.

Net payments to the EU budget currently amount to 0.4% of UK GDP, and this could in principle be redirected to fund greater public spending in the UK.

It is also possible that the UK could continue to contribute to the EU budget in return for a closer relationship and participation in EU agencies. This is unlikely in a 'Canada minus' style arrangement under Mr Johnson's proposals, but the UK might have had to contribute under a May-style deal. Having said that, non-participation in EU agencies would require the UK to set up its own agencies, which will cost more than contributing to EU agencies. In either case, the costs amount to a tiny proportion of government spending and have limited implications for the public finances after Brexit.

Taking these various factors into account, we therefore assume that the net fiscal benefit to the UK budget over the longer term is 0.4% of GDP. That is, any savings generated from the government not replacing EU spending are offset by additional spending in associated areas, for example on administrative costs.

Economic impacts

The analysis above estimates long-run impacts on GDP per capita from changes in trade and migration. To estimate the implications for the government finances, we assume that a 1% fall in GDP per capita reduces government revenue by 0.4% of GDP. As noted above, we also assume that the public finances benefit by 0.4% of GDP per year as a result of reduced EU net contributions, although this may be optimistic. Our estimates imply a substantial reduction in funds available for public spending as shown in the table below.

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Fiscal impact compared to EU membership

	Without productivity adjustment		With productivity adjustment	
	% of GDP	£ billion (current GDP)	% of GDP	£ billion (current GDP)
May's deal	-0.6	13.3	-1.8	38.8
Johnson's deal				
Liberal migration scenario	-0.7	16.0	-1.9	40.5
Restrictive migration scenario	-0.9	18.8	-2.2	48.8
WTO	-1.2	26.5	-2.8	60.7

Our most optimistic scenario suggests that, assuming no contributions to the EU budget, Mr Johnson's deal would leave the public finances £16 billion worse off at current prices. For comparison, the government forecasts transport spending at £19 billion in 2019/20 (at 2018/19 prices). Our most pessimistic scenario forecasts a much greater impact on the public purse, of around £49 billion. This is substantially above current forecast spending on defence in 2019/20 of £39 billion (at 2018/19 prices).

As we have emphasised throughout, these estimates are subject to considerable uncertainty, for two reasons. First, there is inherent uncertainty associated with forecasting the impact of economic policy choices. Second, there is also political uncertainty as to what those future policy choices will be, both on the part of the UK and the EU. Nevertheless, it should be clear that under any plausible scenario the costs associated with Brexit's potential economic effects are much larger than the savings from reduced contributions to the EU budget. As in so many areas, the ultimate impact of Brexit on the public finances will depend crucially on the outcome of the UK and EU's future trade negotiations.

Conclusion

As this report makes obvious, modelling economic impacts of hypothetical scenarios is fraught with difficulty. And the purpose of attempting it has not been to reach fine-grained conclusions about the economic impact of various Brexit scenarios. Rather, we hope to have established the broad impacts of leaving the EU, taking into account the major determinants: trade, migration and, indirectly, productivity.

Our findings suggest that the economic impact of Mr Johnson's proposals are substantially negative relative to the status quo of EU membership. We modelled four scenarios based on hypothetical liberal and restrictive migration policies, and with and without a productivity adjustment. Our most optimistic scenario—assuming no productivity effect and a relatively liberal approach to migration—suggests that income per capita would by 2.3% lower in the long term. A more restrictive approach to migration would push this figure up to 2.7%.

As we explain, the impact on productivity is difficult to infer, as trade and migration affect productivity indirectly. Nevertheless, the productivity effects as modelled here are substantial. In the liberal migration scenario, they push the fall in income per capita from 2.3% to 5.5%, and in the restrictive scenario from 2.7% to 7%. Broadly speaking, based on our previous modelling of Theresa May's Withdrawal Agreement and a WTO scenario, we find that Mr Johnson's proposals fall somewhere between those scenarios in terms of lost economic growth.

We have not looked at what might happen to the UK economy as a whole, but the isolated impact of a change in the UK's relationship with the EU. Overall economic performance obviously depends on many other factors, including global economic trends and domestic policy choices.

One obvious policy lever is migration policy. This is an area where under Mr Johnson there is perhaps more scope for mitigation than under Mrs May, given his relatively more liberal approach. That said, there are clearly other important mechanisms, such as fiscal and regulatory policy, where choices will be crucial in determining overall economic performance.

As with all forecasts, the findings of this report should be used with caution. We have set out explicitly our assumptions and highlighted the many uncertainties involved in producing forecasts of long-term economic performance. The forecasts give an indication of the scale of the impact of Mr Johnson's proposals. Our main insight is that his proposals sit somewhere in between Mrs May's deal and a WTO scenario in terms of negative economic impact. The impact on income per capita is negative in all scenarios, but Mr Johnson's proposals would be more damaging than Mrs May's deal.

The UK in a Changing Europe

The UK in a Changing Europe promotes rigorous, high-quality and independent research into the complex and ever changing relationship between the UK and the EU. It is funded by the Economic and Social Research Council and based at King's College London.

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