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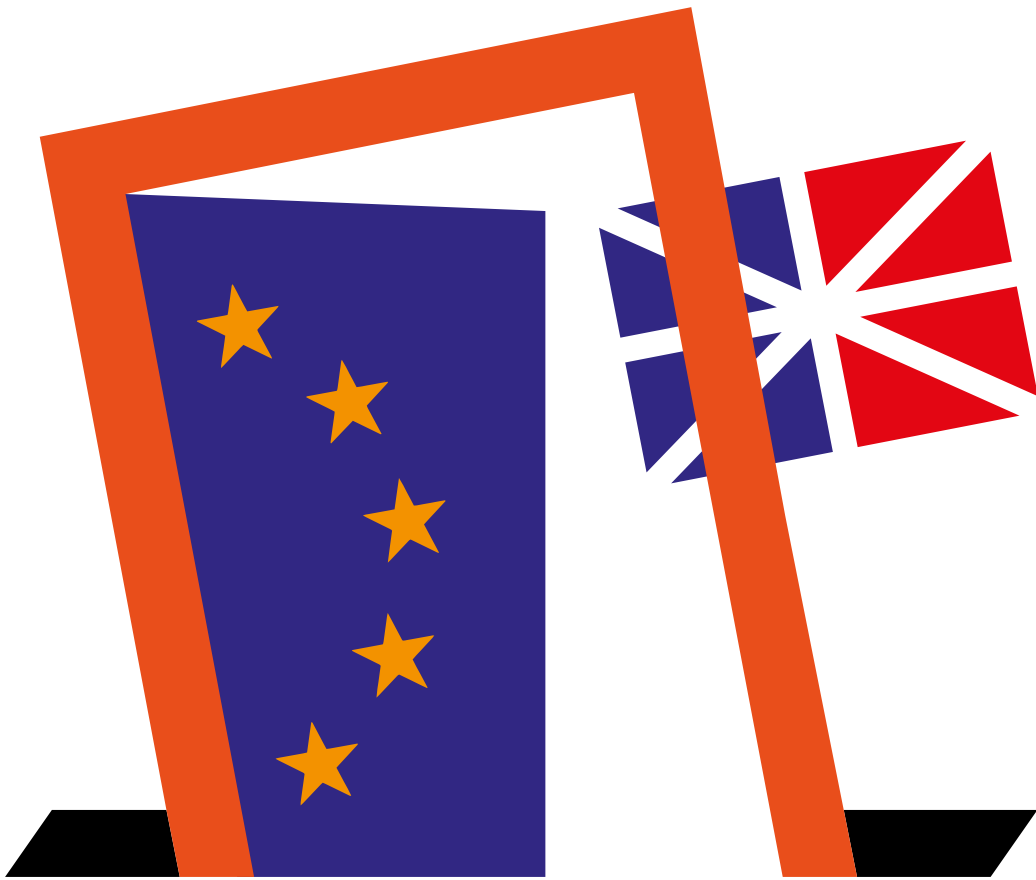OF ECONOMICS AND
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# Economists for Brexit:
# A Critique

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#CEPBREXIT

# Economists for Brexit: A Critique

## CEP BREXIT ANALYSIS No. 6

- Professor Patrick Minford, one of the 'Economists for Brexit', argues that leaving the European Union (EU) will raise the UK's welfare by 4% as a result of increased trade. His policy recommendation is that following a vote for Brexit, the UK should strike no new trade deals but instead unilaterally abolish all its import tariffs.

- Under this policy ('Britain Alone'), he describes his model as predicting the 'elimination' of UK manufacturing and a big increase in wage inequality. These outcomes may be hard to sell to UK citizens as a desirable political option.

- Our analysis of the 'Britain Alone' policy predicts a 2.3% <u>loss</u> of welfare compared with staying in the EU. This is only 0.3 percentage points better than Brexit without unilaterally abolishing tariffs which would result in a 2.6% welfare loss.

- Minford's results stem from assuming that small changes in trade costs have tremendously large effects on trade volumes: according to his model, the falls in tariffs become enormously magnified because each country purchases only from the lowest cost supplier.

- In reality, everyone does not simply buy from the cheapest supplier. Products are different when made by different countries and trade is affected by the distance between countries, their size, history and wealth (the 'gravity relationship'). Trade costs are not just government-created trade barriers. Product differentiation and gravity is incorporated into modern trade models – these predict that after Brexit the UK will continue to trade more with the EU than other countries as it remains our geographically closest neighbour. Consequently, we will be worse off because we will face higher trade costs with the EU.

- Minford's assumption that goods prices would fall by 10% comes from attributing all producer price differences between the EU and low-cost countries to EU trade barriers, ignoring differences in quality.

- Single Market rules (for example, over product safety) facilitate trade between EU members as it creates a level playing field. Minford's assumption that the Single Market merely diverts trade from non-EU countries is contradicted by the empirical evidence.

- Minford also overlooks the loss in services trade that would result from leaving the Single Market, such as 'passporting' privileges in financial services.

- Minford's approach of ignoring empirical analysis of trade data seems predicated on the view that because statistical analysis is imperfect, it should all be completely ignored. But such statistical biases may reinforce rather than weaken the case for remaining in the EU. Theories need grounding in facts, not ideology.

## Introduction

Much publicity recently surrounded 'Economists for Brexit' (2016a, 2016b). Since the economic case for leaving the European Union (EU) has been largely missing in action, it is refreshing to obtain some clarity over the Leave campaign's vision of the UK's post-Brexit economic arrangements.

Professor Patrick Minford of Cardiff University is the only one of the group who has provided some economic modelling. He predicts that there would be a welfare gain of 4% of GDP by 2020 if the UK were to leave the EU. This prediction is surprising because just about every other piece of economic analysis finds negative economic effects from the UK leaving the EU (for example, Dhingra et al, 2016a; HM Treasury, 2016; NIESR, 2016; OECD, 2016; PWC, 2016).

Such studies simply remind people that the EU has been good for trade and trade is good for welfare. It follows that leaving the EU will reduce trade and so have an economic cost. The main question is not so much the direction of the effect, but rather the magnitude of the hit to living standards. There may be offsetting or reinforcing factors from other things – such as regulation, foreign investment, immigration, lower fiscal transfers to Brussels, uncertainty and so on – but distancing ourselves from our closest trading partner could not be beneficial for trade.

Yet Economists for Brexit make just such a claim, so we were curious to understand where Minford's positive effects come from. We summarise the main points of our analysis here and leave more technical details to the Annex.


## 'Britain Alone' – unilateral free trade

One feature of Minford's approach is that after leaving the EU, the UK is assumed to trade simply under World Trade Organization (WTO) rules, without seeking a new trade agreement with the EU or other trading partners like the United States. The UK would simply pay the external tariffs. This is usually the worst case scenario that other economists have modelled. HM Treasury (2016), for example, finds a GDP drop of 7.5% under this scenario.

A second feature of the Minford argument is the assumption that the UK will unilaterally drop all its trade protection against imports from everywhere else in the world after Brexit. One reason why most economists have not focused on this scenario is that it seems politically unlikely. As far as we know, no developed country has ever unilaterally removed all manufacturing tariffs against all other countries – Minford's 'Britain Alone' scenario.

In fact, one can easily imagine the UK establishing *greater* trade protection after Brexit. For example, the recent furore over Port Talbot's steelworks suggests that domestic political pressures may have pushed the government to *increase* tariffs on Chinese steel. Indeed, Minford describes in his model that an implication of the 'Britain Alone' policy (Minford et al, 2016, p. 74 Table 4.3) is that it will 'effectively eliminate manufacturing' in the UK. Another implication of his preferred policy is a dramatic increase in wage inequality: skilled workers' nominal wages increase by around 11%, but unskilled workers' wages *fall* by 14%.[1] These changes are unlikely to be an easy sell politically, to say the least.

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[1] These inequality changes will not be offset by reductions in EU immigration as the impact of immigration on inequality is close to zero (Wadsworth et al, 2016).

Nonetheless, standard economics does suggest that there will be some benefits from 'unilateral trade disarmament'. Indeed, in the work we published in March (Dhingra et al, 2016a, Table 2) we look at what would happen if the UK eliminated all tariffs after Brexit.[2] We find that if the UK trades under WTO rules following Brexit, but maintains import tariffs, then UK income per capita falls by 2.6%. Under Minford's 'Britain Alone' scenario of unilateral liberalisation after Brexit only, UK real incomes still fall by 2.3%. In other words, there is a gain of only 0.3 percentage points from eliminating tariffs compared to just trading under WTO rules – this is completely insufficient to offset the other trade costs of Brexit.

So the real question is not whether moving to unilateral free trade can have some benefits in economic models, but rather:

- Why the benefits are so big in Minford's model (over ten times what we find)?

- Why are there no welfare costs in Minford's model from lower UK exports to the EU after Brexit?

The answers to these questions require an understanding of how thinking about the economics of trade has developed in the last five decades, and how these features are overlooked in the Minford approach.


## The basic idea

There are basically two steps in Minford's analysis. First, he assumes that because of EU tariff and non-tariff barriers, prices paid by UK consumers for manufacturing and agricultural goods would fall by 10% under his 'Britain Alone' policy recommendation. Second, he feeds this 10% tariff equivalent fall in trade costs into his 'Liverpool model' to come up with a GDP increase of 4% (roughly speaking, the increase in GDP is much less than 10% because people consume a lot of services, which are not directly affected by Brexit under Minford's assumptions).


## The 10% fall in trade costs

How on earth can trade costs fall by 10% when the UK's average tariff is currently around 3%?

The answer is that the 10% number does not come from looking at the actual level of tariffs. It comes from looking at the differences in price levels between the UK and some other countries and arguing that these higher prices are due to protectionism caused mainly by EU regulations (non-tariff barriers).

We go through this in detail in the Annex, but there are several very basic problems. First, the estimates he makes are from data in 2002 - 14 years out of date.

Second, it seems extraordinarily unlikely that all the cross-country price differences are really from trade protection rather than a multitude of other factors, such as quality differences, variation in producer mark-ups or measurement error in estimates of distribution margins. For example, say Europeans put a higher premium on high-quality clothing compared with Americans. It will look like Europeans are paying more for their clothes, but in reality, the higher average prices simply reflect a different mix of purchases – we are comparing apples

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[2] Mr. Minford is under the misapprehension that we did not look at his 'Britain Alone' recommendation, but this is because he only refers to the work from two years ago (Ottaviano et al, 2014) and not the recent work (for example, Dhingra et al, 2016a).

with oranges across countries (Deaton, 2015)4 Minford attributes these price differences to nefarious EU regulation excluding cheaper clothing, whereas in fact it could reflect different tastes for quality.

It is true that regulations could mean that prices are higher in the EU as there are stricter quality controls than in other countries. The EU has tougher regulations over children's milk and toys than China does, so sub-standard products cannot be sold. This does create a trade barrier with China and in Minford's data a children's toy will appear as identical, but more expensive in the EU. But this reflects a quality difference. It is true that if the UK left the EU and relaxed the safety standards down to China's level prices would fall. But quality-adjusted prices would not, and this is what is relevant for consumer welfare.

Third, Minford misunderstands the nature of regulations and product standards. The idea of the Single Market is to have common rules so that a product sold in one EU country can also be sold in any other. If there are 28 different sets of rules governing the sale of a product, it will be harder to sell this product across all EU countries. The basic misconception in Minford's world is that the harmonisation of regulations between EU countries to reduce trade barriers is simply a pernicious plot by vested interests to raise prices. In fact, playing by a common set of rules is what helps increase trade and competition in a modern economy. Modern trade agreements are hard because countries are trying to agree on common standards and to harmonise rules that are different.

Minford overestimates the scope for reducing trade costs through unilateral liberalisation. In our analysis of unilateral liberalisation, we focus on the removal of import tariffs because tariffs are measurable and, in the event of Brexit, could be removed at the stroke of a pen.

One way to align standards is simply by co-ordinating on one rule or another; there is no better or worse, weaker or stronger. But it takes two to tango. There simply is no way of unilaterally aligning these type of standards. If the UK simply goes its own way on its own regulatory standards, then this will increase the costs of trading with European countries and reduce the amount of trade.

Other forms of harmonising rules require explicit agreement on how 'tough' a product standard must be. Consider safety standards for children's toys. Some countries may have very relaxed standards over toy safety, but others may have very high standards. Let's say the EU settles on a standard for toys that is tougher than the UK would unilaterally choose, but weaker than Germany would like.[3] The single standard means that all manufacturers know that so long as they meet the safety requirements, they can sell toys anywhere in the EU.

The high product standard is annoying for UK toy manufacturers, some of whom will now have to comply with the EU Toy Safety Directive, even when they do not export to the EU. They will complain that it's only exporters that should have to comply with the higher EU safety standards, as most Britons don't care. But if the UK gets an 'opt out' to produce low safety toys for domestic consumption, it means that there isn't a level playing field – every country will want an opt-out to decrease or increase the standard.

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[3] There are many other examples of such regulations – see Springford (2016). Examples include powdered milk: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:258:0027:0028:EN:PDF; levels of arsenic found in rice products for children: https://www.food.gov.uk/enforcement/regulation/europeleg/euupdates/january-update-maximum-limits-for-arsenic; and of course the classic case on lawnmower noise: https://next.ft.com/content/ac04efc8-34c8-11e3-a13a-00144feab7de.

In our example, the UK can sell high quality safe toys to Germany, but German toy manufacturers can't sell lower quality products to the UK as they are banned from producing them. This is not just a political problem. UK consumers are worse off because locking out foreign competition means that they face higher prices and less innovation.

Another practical problem with multiple standards is that with complex supply chains, countries may not want to import from others with lax standards solely for domestic consumption as it might contaminate the entire batch. This is why the EU and even the United States want to have a global standard for toy safety (http://uk.reuters.com/article/health-toys-safety-rules-dc-idUKL0889219620071108?pageNumber=1).

In this context, Minford's 'Britain Alone' proposal would be that we leave the EU and lower product standards. It is certainly possible for the UK to adopt the lowest standards unilaterally. There would then be lower average prices and quality for children's toys in the UK. But even if this was what the British people wanted, the rest of the EU would not continue to grant the same access to the Single Market as EU toy manufacturers would be excluded from part of the UK market because of higher EU standards. This is why the EU insists that countries play by the same rules if they want to be in the Single Market.

## How Minford defies the laws of gravity

The gravity equation is the most reliable empirical relationship in international economics. First estimated by Nobel laureate Jan Tinbergen, it shows that the trade flow between any pair of countries increases as the economic size of the countries grows, and decreases with rising costs of trade between them caused by import tariffs, transport costs and other trade barriers. Geography matters – the further apart countries are, the less they trade. There are literally hundreds of data-based studies showing the robustness of this relationship across many countries, industries, time periods and multiple specifications (see Head and Mayer, 2014, for a survey).

Today, the gravity equation is central to how economists understand international trade. It is a key economic relationship, which performs extremely well in predicting actual trade flows. To evaluate the effects of changes in trade policy, new methods have been developed that both explain why trade follows a gravity equation and takes into account all the general equilibrium effects of changes in trade policy on prices, wages and output in a multi-country, multi-industry world with trade in both final goods and intermediate inputs.[4]

This matters because the analysis undertaken by Minford uses an old trade model in which all firms in an industry everywhere in the world produce the same goods and competition is perfect so that trade _does not_ follow the gravity equation. This choice is largely responsible for why Minford's findings contradict the results of numerous other studies that conclude Brexit would lower UK GDP.

How does his analysis work? With perfect competition and homogeneous products, the EU's tariffs and other regulations raise the price of imports and all other goods sold in the EU above the free trade price. Therefore, if the UK leaves the EU and simultaneously removes all tariffs and non-tariff barriers, prices fall, making the average UK consumer better off.

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[4] We use such a model to analyse the consequences of Brexit in Dhingra et al (2016a), which builds on Ottaviano et al (2014). Minford (2016) is mistaken in thinking that general equilibrium effects are missing from this analysis. They are not missing; they are just incorporated into a richer (but more transparent) model than the one he uses.

The problems with this analysis stem from the assumption that all firms in an industry produce the same product. There are two main limitations with Minford's model:

1. *Exporters sell all their output at world prices.* In reality, exporters sell their output in many countries and face different trade barriers in each market. In Minford's model, following Brexit exporters sell all their output in a fictional world market. Consequently, the level of trade barriers with the EU after Brexit does not matter to exporters as they do not care whether trade goes to the EU or elsewhere. This feature of the model gets rid of the costs of Brexit from reduced access to the EU market. In reality, as our geographically closest neighbour, we will continue to trade with the EU. Brexit increases trade costs with the EU and this causes us to trade less with them. We cannot just sell everything to the rest of the world at the same price to make up for this loss. This is the primary cost of Brexit, but it is absent from Minford's model.

2. *Both imports and domestic output have the same price.* Therefore, the decline in import prices when the UK removes import tariffs leads to an equal fall in domestic prices. In the real world, domestic and foreign firms produce differentiated products, so a fall in import prices will reduce domestic prices to a smaller extent and the benefits from unilateral trade liberalisation are much smaller.

## Comparing Minford's approach with modern trade models

As noted in Dhingra et al (2016a, Table 2), we analyse the consequences of unilateral trade liberalisation following Brexit in a modern general equilibrium trade model that is consistent with the gravity equation. In this experiment, we continue to assume perfect competition, but allow for product differentiation. This means that there is not perfect substitution between the products of any given industry and thus the cheapest source country of a product is not necessarily the best source country of all products in the industry. Our model also allows for varieties of the same product to be sourced from different countries as consistent with different consumer tastes.

Under Minford's assumption that the UK trades simply under WTO rules and unilaterally removes all import tariffs, we find that the Brexit effect is equivalent to a 2.3% decline in UK income per capita. We conclude that Brexit would reduce UK living standards even if the UK unilaterally sets all import tariffs to zero.

We also consider what happens if the UK falls back on general WTO rules and imposes the EU's current 'most-favoured nation' tariffs following Brexit. In this case, Brexit is equivalent to a 2.6% decline in UK income per capita. Thus, Minford is right that there are benefits from removing import tariffs, but these benefits are around 0.3 percentage points – much smaller than the costs of Brexit resulting from increased trade costs with the EU.

In addition to satisfying the gravity equation, our model predicts that EU membership is trade-creating, which means that it increases the UK's trade. By contrast, Minford's model is hard-wired to predict that EU membership is only trade-diverting and Brexit would lead to higher trade.

Our work and that of the other economic studies relies on data that show what has actually happened to trade after joining the EU, rather than just asserting what *should* happen in a theoretically dubious model.

The empirical research literature supports the conclusion that EU membership is trade-creating. For example, Baier et al (2008) find that goods trade between EU members is 62% higher than

trade between otherwise comparable countries that have no trade agreement between them.[5] Using more recent data, HM Treasury (2016) finds that EU membership raises intra-EU goods trade by an even larger 115% relative to WTO membership.

There is little evidence that regional trade agreements lead to substantial trade diversion – see the recent reviews by Bagwell et al (2014) and Limão (2016). For example, Magee (2008, 2016) finds no evidence of trade diversion from economic integration agreements. Consistent with this evidence, HM Treasury (2016) finds no significant evidence of trade diversion because of the EU.

## Services

Services exports to the EU accounted for 16% of all UK exports in 2014 (ONS, 2015). UK services exporters benefit from lower trade barriers with the EU resulting from the Single Market. In particular, financial services firms can undertake business throughout the EU under the EU's 'passporting' rules. These rights would be lost if the UK left the Single Market. Minford does not take this into account.

## Foreign investment

Membership of the EU increases foreign direct investment (FDI) in the UK, which raises productivity and output (Dhingra et al, 2016b). Minford argues that there are no benefits from FDI, whereas the evidence points in the opposite direction. His views seem to be based on the fact that the empirical estimates are 'insecure' (Minford, 2016) without saying why.

## The role of empirical evidence in Minford's world

Minford's style of work was popular in some quarters in the 1970s. In those days, economics did not need to be well-grounded in facts and data, and could rely on highly simplified theories. The revolution over the last 40 years has been the explosion of data and empirical techniques for its analysis. Good theory has evolved in tandem with this new evidence.

Theoretical foundations, ranging from Ricardian comparative advantage to modern product differentiation models of imperfect competition, explain why the gravity model describes international trade flows (for example, Head and Mayer, 2014). The approach that we use in Dhingra (2016a) is to employ a model consistent with the basic facts of trade. It is a computable general equilibrium model and well-grounded in theory. The difference between our approach and Minford's is that the theories we use are based on the facts of life in trade, such as the gravity relationship, whereas his theory is unhinged from the most basic features of trade reality.

Minford's attitude seems to be that if empirical work is imperfect, it should be ignored. The voluminous evidence on the positive impact of the EU on trade is dismissed because of statistical concerns (Economists for Brexit, 2016b, p.20). Of course there are issues with all empirical work. Some of these problems might mean we over-estimate the EU's effect on trade and FDI; some might mean we under-estimate it.

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[5] This estimate comes from Table 6, column 1 of Baier et al (2008) where $62\% = e^{0.48} - 1$.

But to take the position that since no econometric work can be perfect, all inconvenient facts should be ignored is poor scholarship and bad science.

## Conclusions

Alternative economic models have different advantages and drawbacks and are suited for different purposes. Unfortunately, Minford's model is inconsistent with two basic facts about international trade; first that trade satisfies the gravity equation; and second, that the EU has been trade-creating, not simply a tool for trade diversion.

Consequently, Minford's model is not the right tool to use for predicting the consequences of Brexit for trade and living standards. When we analyse the same scenario considered by Minford using modern economics that incorporate advances in our understanding of international trade data since the 1960s and a more realistic assessment of how UK 'unilateral trade liberalisation' could actually work, we find (alongside just about everyone else) that Brexit leads to a decline in UK living standards.

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# ANNEX: Some other limitations of Minford's analysis

## How is the 10% higher prices in EU calculated?

Minford claims that UK goods and food prices will fall by 10% after Brexit. Where does this figure come from? He draws on the methods of a paper by Bradford (2003), which looks at prices of around 3,000 goods sold in several OECD countries from 1993. Minford and his co-authors have tried to update this using data up to 2002 (Minford et al, 2016). The average of the EU (Belgium, Germany, Italy, Netherlands and the UK) is estimated to be 21% above the lowest cost OECD supplier, half the level of the early 1990s. They extrapolate their 2002 numbers forward by another two decades to 2020, claiming protection levels now raise prices by 10%.

Before getting into the details of the methods, it is worth noting that:

- The estimates are based on 2002 data – 14 years out of date.

- EU prices have been falling much faster than those in the United States under this method. Since general cuts in tariffs are not enough to drive this, in Minford's view, this must be consistent with a gradual loosening of non-tariff barriers by EU countries relative to other countries.

- If the price effect was falling by at least ten percentage points a decade, then this implies that by 2020 price levels in the EU should be 0% above world prices not 10%.

Producer prices are not directly observed. So Minford's approach is to start from consumer prices and deduct a distribution margin and a trade costs adjustment (at a higher level of aggregation than the disaggregated product prices) to estimate 'producer prices'.

The weighted average EU tariff on goods is only about 3%, so the additional 7% comes from the assumption that there are various non-tariff barriers holding up the prices of EU goods. Minford gives no direct evidence of this, but offers various vague appeals to threats of anti-dumping actions, which would mysteriously end completely if the UK were to leave.

As we discuss above in the main text of this analysis, the regulations of the Single Market are in large part designed to harmonise standards across EU members, with the goal of reducing trade costs between them. Empirical evidence shows that this has been successful.

It is extraordinarily unlikely that all the cross-country price differences are really from trade protection rather than a multitude of other factors, such as quality differences, variation in producer mark-ups or measurement error in estimates of distribution margins.

The entire exercise is deeply flawed empirically and conceptually.

## Gravity

Fifty years ago economists could not explain the success of the gravity equation. Traditional trade models assume a perfectly competitive economy where all firms in an industry produce the same good. Such models do not predict that trade flows will satisfy the gravity equation. Instead, they predict that consumers in the UK purchase each good from whichever country is the cheapest supplier. For example, all cars purchased in the UK would come from whichever country could supply cars to the UK at the lowest cost. In reality, the UK imports cars from many different countries, not just the cheapest, because cars are of different qualities are styles.

Since the late 1970s, a series of breakthroughs in international economics have helped to explain why the gravity equation holds. The answer is product differentiation. Products produced by different countries or different firms are not the same. German cars are not perfect substitutes for Japanese cars; and consumers care whether their car is a BMW or a Toyota. Allowing for imperfect substitution in trade models (often also accompanied by imperfect competition) has enabled economists to explain why trade flows satisfy the gravity equation.

## Contrast with CEP modelling

Minford argues for the superiority of his approach over the modern gravity-based trade models (Minford, 2015).

He argues in favour of his theory-based computable general equilibrium (CGE) model rather than our gravity model. In fact, our model is a CGE model as well. It is also a theory-based general equilibrium model, but it is a more general set-up than Minford's. We have imperfect substitution of products within industries and across different countries, so that the Minford approach is a special case of our model. The idea that the gravity approach is not theoretically grounded is absurd. Minford may not like the theory, but it is a theory consistent with the basic facts of trade, which his model is not.

Minford argues that a problem with our approach is that we have to make assumptions over the responsiveness of trade flows to trade costs and that these trade elasticities may be wrong. He is correct in that there is uncertainty over the exact magnitude of the elasticities (they are laid out in Table A4 on p. 31 of the Technical Appendix in Dhingra et al, 2016a). We take these industry-specific elasticities from the best current estimates from peer-reviewed journals.

Minford is arguing that rather than take data-determined estimates, it is better to use his theory, which assumes that the elasticity for every industry is equal to infinity! In his world, a one penny difference in price induces everyone to buy every car from the other producer. This is an absurd position.

The data that we use for our model are much richer. His model considers four regions whereas ours considers 35 regions, which allows us to look at the effects in many other countries. We use trade flow data at a disaggregated level of 31 industries across all pairs of countries, so that we can accurately model changes in trade flows across industries and countries. Minford uses only three aggregate sectors: agriculture, manufacturing and services.

One thing his model allows for that ours does not is to solve for the market equilibrium in four factor inputs – capital, land, skilled labour and unskilled labour. Capital is assumed to be determined on the world market, but the other factors are in fixed supply on the home market. Hence, he models how factor prices change in response to tariff changes. We abstract away from these distributional effects in our modelling as we are focused on the overall welfare effects of Brexit. It is unclear what this more complex modelling structure buys him in terms of the effects of Brexit (except perhaps to highlight the increase in wage inequality that would occur).

## History repeating itself?

Building a model that does such violence to basic facts of economic life is why the 'Liverpool model' has such a poor record of accurately analysing major policy changes. Minford was predicting huge job losses from the introduction of the National Minimum Wage in 1999. In the event, multiple studies have shown there was effectively no increase in unemployment.

Minford's claims were based on models of homogenous workers and perfect competition. CEP analysis (http://cep.lse.ac.uk/pubs/download/cp290.pdf), by contrast, respected the data and developed models that allowed for labour market imperfections. We showed that minimum wages sensibly introduced could reduce wage inequality without increasing unemployment