

Towards a Framework for Trade and Investment Policy in post-Brexit United Kingdom

Paul Gretton
East Asian Bureau of Economic Research
Australian National University

David Vines
Emeritus Professor of Economics, Oxford
University

Abstract

The United Kingdom is entering into the Brexit process at a time when the global economy is gradually recovering from the effects of the global financial crisis. Current projections indicate that growth may continue to be sluggish in the medium term. Brexit will have many dimensions but key among these is the conditions under which the United Kingdom and the European Union elect to conduct merchandise trade. The choice on this matter will be important in setting the broader environment for the conduct of trade and commerce between the United Kingdom, the European Union and other countries into the future. The stark choices are between: (i) the United Kingdom remaining in the Single Market through continued membership of the European Economic Association (EEA); (ii) exiting the Single Market and seeking to negotiate preferential trade deals with other trading partners and trading blocs; and (iii) committing to full unilateral trade liberalization to place local business in the best position to compete locally and internationally. This paper looks into the economic implications of each of these alternatives. For rules of origin reasons and the extended time lags involved in negotiating preferential deals, the pursuit of the second option would be costly to industry and the community more broadly. While full unilateral liberalization would be difficult and the intention to leave the European Union has ruled out remaining in the Single Market, the United Kingdom would be best served by aiming for one of these seemingly impossible alternatives. Policy formulation that favoured greater trade openness and economic reform particularly in the area of capital-finance markets would help smooth the Brexit process and improve growth prospects. Given the complexity of the Brexit process, consideration could be given to the establishment of a national review body to investigate and raise public awareness in the United Kingdom of policies in the national interest during Brexit and beyond.

1 Introduction

The United Kingdom has enjoyed growth in living standards while a member of the European Union. This growth has been supported partly by preferential access to European markets and partly by its own domestic reform efforts. The period of growth came to an end, at least temporarily, with the global financial crisis now almost ten years past.

Going into the future, if the United Kingdom does not retain the preferential access to European markets that has been afforded by membership of the European Union, then its future prosperity and wellbeing will depend on its capabilities in global markets, including those of Asia, the Americas and Africa. On the other hand, if the United Kingdom were to retain preferential access to European markets of a kind resembling that afforded by EU membership, its prospects

would depend more heavily on its capabilities in that market. How the United Kingdom positions itself in trade policy will have material effects on its future prosperity.

With no end in sight to the conclusion of the Doha Round of trade negotiations, this paper suggests that the United Kingdom can pursue one of three trade policy options:

- (i) seeking to remain in the EU customs union and/or the Single Market, that would entail adopting the trade policy settings of the EU;
- (ii) withdrawing into a more protectionist environment vis a vis Europe but seeking the exchange of trade preferences — that is, preferential trade agreements — with selected non-European trading partners (what can be called the PTA option); or
- (iii) shifting to a more open trading environment in which the United Kingdom unilaterally opens its external borders, both towards Europe and elsewhere including, especially, the faster-growing Asia-Pacific region of the world (what can be called the unilateral MFN option).

It will only be possible for the UK to pursue options (ii) and (iii) if this can be made consistent with the UK's agreement to achieve regulatory alignment between Northern Ireland and the Irish Republic. This raises many difficult questions since it is possible that such regulatory alignment necessarily requires a continued membership of the EU customs union. We deliberately do not pursue those questions in this paper. We simply note that, if these questions cannot be resolved, the UK may find itself necessarily obliged to follow option (i).

Option (ii) is the route which is currently being pursued. We see two difficulties with this route. First, with the time taken to negotiate trade agreements, the difficulty in obtaining a significant exchange of preferences and the economic cost of rules of origin, it is questionable whether this option could reasonably be expected to provide substantive economic benefits in a timely manner. Second, given the more protectionist environment which this option involves, we see the possibility that it will also be associated with a decline in productivity and an increase in the risk premium associated with doing business in the UK.

We argue that these difficulties with option (ii) leaves the United Kingdom with a difficult choice. It may be necessary to either consider option (iii) seriously, with all of the associated political economy costs, or to reconsider option (i)

To provide a framework to assess questions of such national importance, the paper makes suggestions for policy review procedures and a new policy review institution that could help identify and raise awareness in the United Kingdom of national rewards from reducing its own domestic barriers to productivity improvements and the achievement of higher living standards. Such an institution could also be tasked with examining broader questions arising from on-going changes in technology or ways of working, changes in international trading conditions and wider social concerns.

2 Recent policy guidance from the G20

Part of the continued moderation in international economic policy cooperation, the backdrop against which the withdrawal of the UK from the EU is occurring, is provided by the G20 — a leading forum for international economic cooperation that brings together systemically important industrialised and developing economies, including the UK. The G20 aims for 2017 included the building of stability and resilience of economies and through this, the global

economy (G20 2017a). The priority areas for achieving this broad aim give weight to managing the global trading system in an open and non-discriminatory manner with the WTO at the centre, combined with other measures to support growth.

The Leaders Declaration of July 2017 gave further substance to these broad goals in the context of the benefits of globalisation and technical change for living standards, the enhancement of economic and financial resilience, the relevance of trade and investment to economic development, the facilitating role of a rules based international trading system and the role of digitization and SME's (box 1).

While not prescriptive, this guidance would favour national trade policies that support greater trade openness and productivity improving change.

Box 1: Some Key Quotes from the G20 Leaders Declaration July 2017

Globalisation and technological change have contributed significantly to driving economic growth and raising living standards across the globe. However, globalisation has created challenges and its benefits have not been shared widely enough. By bringing together developed and emerging market economies, the G20 is determined to shape globalisation to benefit all people. Most importantly, we need to better enable our people to seize its opportunities. (p.1, G20 Leaders Declaration 2017)

1. Prospering Global Economy: Current growth prospects are encouraging, though the pace of growth is still weaker than desirable. We reaffirm our commitment to international economic and financial cooperation to further strengthen growth and safeguard against downside risks. We will continue to use all policy tools – monetary, fiscal and structural – individually and collectively to achieve our goal of strong, sustainable, balanced and inclusive growth, while enhancing economic and financial resilience. (p.3, G20 Leaders Declaration 2017)

2. Trade and Investment: International trade and investment are important engines of growth, productivity, innovation, job creation and development. We will keep markets open noting the importance of reciprocal and mutually advantageous trade and investment frameworks and the principle of non-discrimination, ... (p.3, G20 Leaders Declaration 2017)

4. We underline the crucial role of the rules-based international trading system. We note the importance of bilateral, regional and plurilateral agreements being open, transparent, inclusive and WTO-consistent, and commit to working to ensure they complement the multilateral trade agreements.... (p.4, G20 Leaders Declaration 2017)10.

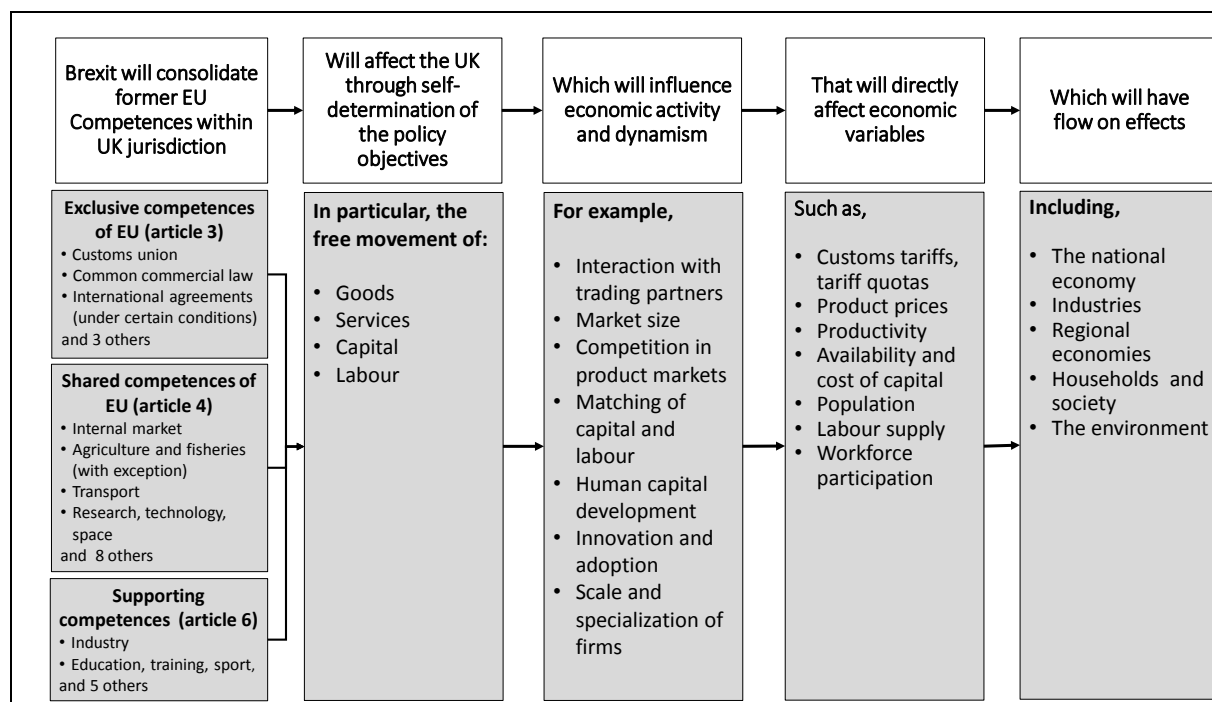
Harnessing Digitisation: ... We recognise the important role that SMEs and start-ups play in the development of a full range of new and innovative business models and will promote better access to financial resources and services and a more entrepreneurial friendly environment.... (p.5, G20 Leaders Declaration 2017).

3 Brexit will have many dimensions

At its core, Brexit will consolidate EU competences within UK jurisdiction, including what now are exclusive competences of the EU, shared competences and supporting competences (figure 1). The competences cover a wide range of economic, social and environmental matters, including jurisdiction over the EU customs union and international trade agreements which is an exclusive competence of the EU. Jurisdiction over the internal market is a shared competence meaning that the EU and EU countries are able to legislate and adopt legally

binding acts. The balance of EU and EU member legislation and hence the consolidation task on shared competences is governed by the subsidiarity principle.¹

Figure 1: **Stylized dimensions and effects of Brexit, broadly conceived**



Source: EU (2017) for listing of Competences.

The consolidation of the competences within UK jurisdiction, and the response by the EU to the UK withdrawal, will determine the movement of goods, services, capital and labour relative to the status quo (figure 1, second panel). This new legislative and regulatory environment will influence economic activity and dynamism in a wide range of ways (figure 1, third panel). For example, on leaving the customs union, the UK will have to set its own WTO tariffs and will not automatically have preferential access to EU products or supplies from trading partners with which the EU has preferential trade (including developing country preferences). More broadly, withdrawal from the Single EU market, will effect market size, competition and the matching of capital and labour, as well innovation and adoption.

Subject to these influences and legislative responses, the changes will flow through to affect economic variables including customs tariffs, product prices, firm productivity as well as the availability and cost of capital (figure 1, fourth panel). These economic changes will then flow through to affect the national economy, the industry and regional distribution of activity, as well as broader conditions in society and the environment (figure 1, fifth panel).

Ultimately, the effects will be wide-ranging, likely to be substantial and will take much time to be realized. Choices will be available between market preserving policies and policies affording preferment to selected activities, ways of working or groups in the community. The policy choice may not be straightforward from an economic or political perspective. Nevertheless, policies that reduce the productivity and income earning capabilities of the UK economy will also lower living standards and reduce capabilities to meet broader objectives.

¹ Under the subsidiarity principle, ‘the EU act only if — and in so far as — the objective of a proposed action cannot be sufficiently achieved by the EU countries, but could be better achieved at EU level’ (EU 2017).

Similarly, an environment that stymies the emergence of new technologies and activities will have flow-on negative impacts into the future.

Some of the early Brexit choices that the UK government will face concern trade policy and the conduct of finance with the European Union and other countries. These include decisions setting tariffs and tariff quotas which might need to be phased in gradually, and lie within the competence of the central government and choices to do with financial and factor market regulation, risk and institutions.

To illustrate the economy-wide some implications of Brexit and alternative trade policy options for the UK, the next section identifies potential longer-run effects on the UK economy of:

- alternative merchandise trade border protection (customs tariff) regimes that variously give effect to the WTO principle of non-discrimination; and
- alternative risk and productivity scenarios for capital markets and financial service provision.

Choices on these matters will set the basic terms under which commerce is conducted within the UK and with its trading partners. In so doing, it is likely to set the context for the broader consolidation of competences within the UK.

An ex ante method is adopted to illustrate these effects in an integrated way. The impact of policies is assessed by how far they move the economy away from the status quo in the longer run, that is, after the full adjustment of national capital stocks, given the national labour force and population within the UK and its trading partners. The theory-based method utilizes a modified version of the comparative static computable general equilibrium Global Trade Analysis Project (GTAP) model of the global economy (Gretton 2017, PC 2010a,b).² The model used delineates 27 countries (including the UK and all other G20 countries) and 5 multi-country regions, across 57 industry groups (appendixes 1 and 2, respectively).

4 Economy-wide effects of trade policy options for the UK

Customs tariffs on merchandise trade

The economic relationship between the UK and EU economies is heavily influenced by trade in merchandise goods and the conditions under which that trade takes place in the Single Market. An important, but not the only facet of the Single Market is the free movement of goods between members whereby, with exceptions, merchandise trade between the UK and the other Single Market economies is tariff and tariff quota free. The UK and other EU economies levy a common tariff on merchandise entering from outside the customs union. The external tariffs are subject to developing country preferences and preferential entry under regional trade agreements entered into by the EU. Exports from the UK and other EU economies would have reciprocal access to preferential entry to those economies under regional trade agreements. If the UK leaves the EU, there will be a loss of market access and agglomeration benefits from

² The modification enables the modelling of longer-run effects with national rates of return on capital, net of depreciation, assumed fixed and installed capital variable. Economies are assumed to be open with nominal exchange rates fixed. Adjustments in response to a policy or other economic change are therefore assumed to be affected by real exchange rate changes with labour and capital resources moving between activities on the basis of relative competitiveness.

membership of the Single Market. There will also be a need to establish protocols for the conduct of trade, including recognition of product standards that would otherwise be conferred by membership of the Single Market. These factors could raise the cost of trade between the UK and Single Market economies in addition to any tariff effects. (The impacts of such cost increasing (productivity reducing) effects of withdrawing from the Single Market are subsumed in the analysis of capital and finance market effects, below). On the other hand, there could be dynamic gains from increased flexibility and competition in the global market place.

How these relationships will be affected by changes in customs tariffs on Brexit is emphasised in commentaries on the implications of Brexit for industry. Membership of the Single Market receives greatest emphasis, although the flow-on implications of Brexit for trade between the UK and economies with preferential trade agreements with the EU, and the potential for preferential agreements with countries outside the EU bloc also gets attention. Commentaries variously highlight the importance of tariff concessions on imported inputs on the one hand and preferential market access to agreement partner economies on the other.

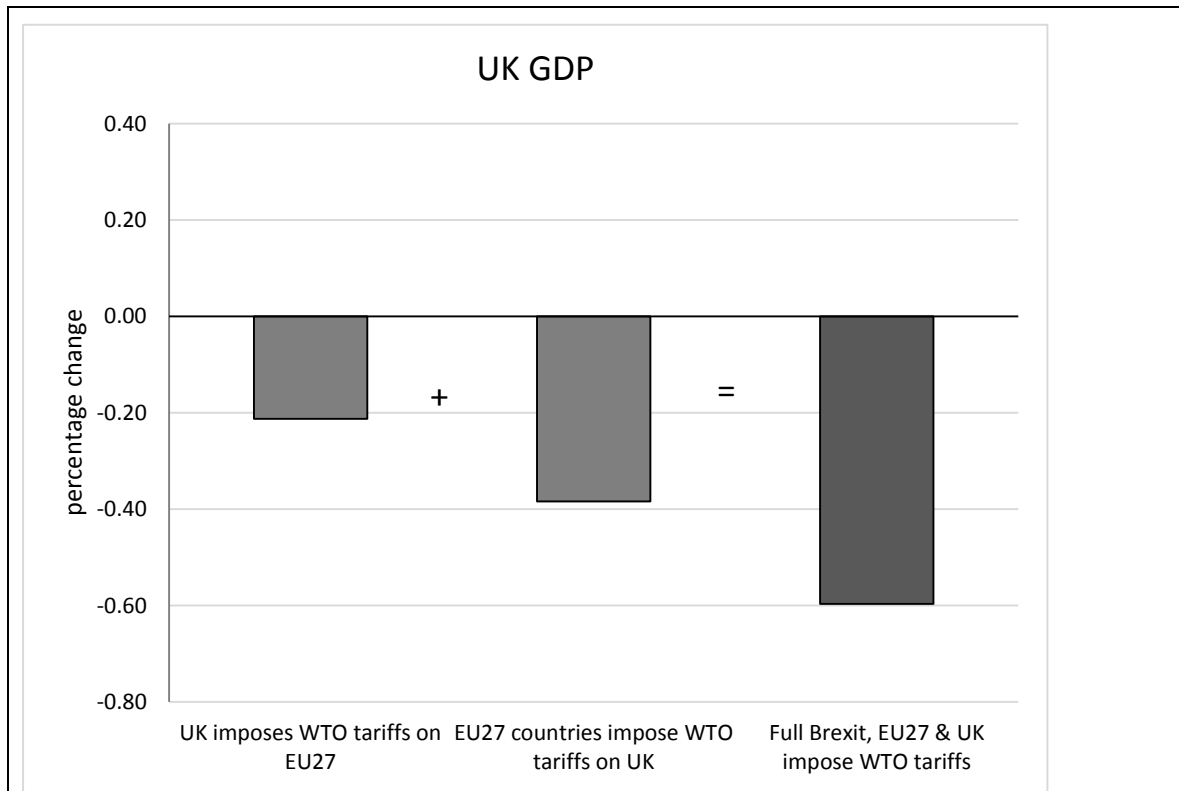
If on leaving the EU Single Market, EU-UK trade was conducted on an MFN basis at tariff rates levied according to current applied rates between the EU and its non-EU MFN trading partners, the Gross Domestic Product (GDP) of the UK economy might contract by 0.6 per cent in the longer run for this reason alone (figure 2). This projected contraction represents the combined effect of the imposition of tariffs on merchandise imports from remaining EU economies (negative 0.2 per cent) and the effect of the EU imposing tariffs on its imports from the UK (negative 0.4 per cent). There would be additional negative imposts on the UK economy of tariffs on imports from non-EU economies benefiting from preferential entry at zero tariff rates, such as DC preferences and preferences under bilateral and regional trade agreements in force, as well as exports to those areas.

These numbers are small for most industries, see table 1 below, column 5, simply because WTO tariffs are small for most commodities (see Appendix 3). But the effects are much larger than average in the agricultural sector, in textiles and clothing, and in heavy manufacturing which includes motor vehicles. And, as discussed below, the possible costs of Brexit will not be confined to the effects of tariff changes.³

Continued membership by the UK of the European Economic Association (EEA) Agreement may give the UK access to the EU internal market as occurs for Norway through its membership of the European Free Trade Association and a means of avoiding these economic costs. Withdrawal from the EEA because conditions of membership are not satisfied such as the intention to control migration or because of a desire not to be bound by decisions of the EU-member bloc in the EEA, may rule out this option, leaving options (ii) or (iii) as the only available strategic alternatives.

³ The effects of tariff changes may be larger/smaller than those computed here, because the theoretical structure of the model assumes constant returns to scale and competitive markets. It abstracts from the effects of increasing returns to scale which could raise the effects. The effects of imperfect market structures (such as information asymmetries, commercial and legal constraints, and language and cultural differences) can be reflected in the model Armington trade elasticities (i.e. the model parameters of effective product differentiation by country) and could also affect results.

Figure 2 Projected longer-run impacts of leaving the EU Single Market customs union, imposition of WTO consistent applied tariffs



Source: Author estimates based on GTAP model (version9a).

Seeking preferential trading agreements with non-EU trading partners (option ii)

On withdrawing from the EU Single Market, the UK could withdraw into a more protectionist environment and seek the exchange of trade preferences — that is, enter into bilateral and regional preferential trade agreements — with selected non-EU trading partners. Such an approach conforms to the emergence of bilateral and regional trade negotiation as the central instrument of trade diplomacy since the failure of the WTO summit in Seattle in 1999, collapse of the Doha Round of trade negotiations, and the declining emphasis on national economic reform.

There are many possibilities under this trade strategy, including negotiating with individual countries or country groups in Asia, the America’s or Africa and simply seeking to roll into UK trade diplomacy arrangements applying between the UK and third countries under EU trade agreements. In contrast to scenarios involving the application of MFN tariffs on withdrawal from the Single Market, seeking to negotiate agreements involving the exchange of preferences with selected non-EU trading partners would entail a time consuming and complex negotiating process with uncertain outcomes. Particular difficulties that would be faced include:

- the time that it takes to negotiate bilateral or regional preferential trade agreements;
- the difficulty of negotiating significant preferences, substantially free of carve outs and extended phasing periods; and
- the damage which is done by rules of origin in such agreements.

An area of particular concern is the effect of tariff preferences and the rules of origin used to determine eligibility for concessional entry or other benefits. In principle, RoO are intended to prevent trade deflection, that is, to ensure that goods being exported at preferential rates from one agreement partner to another originate from the area and are not transhipped. In practice, the rules impose business costs and affect sourcing decisions. They:

- add to the administrative and compliance costs of international trade;
- divert trade from lower-cost suppliers of competing products; and
- lead some firms to adopt a more costly input mix and higher cost structure in order to obtain preferential access for their products (PC 2004).

With changes in firm-incentives and market access arrangements, they can flow on to induce changes in the location of investment between members of a preferential agreement and between members and non-members. The rules also can add to the risk of doing business arising from the potential for delay in documentation and clearance and failure to meet origin requirements as well as from the complexity of doing business arising from procedures for conferring origin. Industries supported by origin rules would benefit from the protection the rules afforded and add to the pressures against further liberalization.⁴⁵

The economic costs of RoO are, however, uncertain and difficult to measure given the breadth and diversity of the regulations. The evidence is mounting though, that the costs are substantial, albeit variable, between product lines and agreements. For example, it has been estimated that the economic cost associated with rules of origin requirements could be as high as 25 per cent of the value of goods traded within the Association of Southeast Asian Nations (ASEAN) (APEC 2009, Manchin and Pelkmans-Balaoing 2007). Anson et. al. (2004) inferred that the administrative cost of meeting the NAFTA RoO are equivalent to around 40 percent of the margin of preference. International trade data for Australia indicates that the take up of preferences on eligible imports into Australia varies substantially between agreements, with about 40 per cent of imports in 2015-16 covered by the ASEAN-Australia-New Zealand, 60 per cent of imports under the Australia-US agreement and over 90 per cent of imports under the Closer Economic Relations agreement between Australia and New Zealand, receiving preferences under the respective agreements (Crook and Gordon 2017). There is also evidence that trade diversion between partners and non-partners can outweigh trade creation between agreement partners, particularly in bilateral agreements (PC 2010c, Barbelet et al. 2015, Armstrong 2015), while survey information is suggesting that the cost of rules of origin falls most heavily on small and medium sized enterprises (ITC 2015).

In an assessment of the potential impacts of the negotiated Trans-Pacific Partnership reported by the World Bank, it was conjectured that rules of origin could lead to the replacement of 40 per cent of imported inputs, on average, with higher-cost inputs from agreement partners, as members diverted trade to take advantage of preferential tariffs under such an agreement (Petri and Plummer 2016, World Bank 2016). An event study of the impact of NAFTA origin rules estimated that the rules on final goods reduced Mexican imports of business inputs from non-members of upward of 27 percentage points (over the period 1991 to 2003), distorting

⁴ Rules of origin for services and investment are also included in bilateral and regional preferential trade agreement. The clauses are characteristically referred to as 'denial of benefits'.

⁵ Rules of origin are classified as a Non-Tariff Measure in UNCTAD (2012).

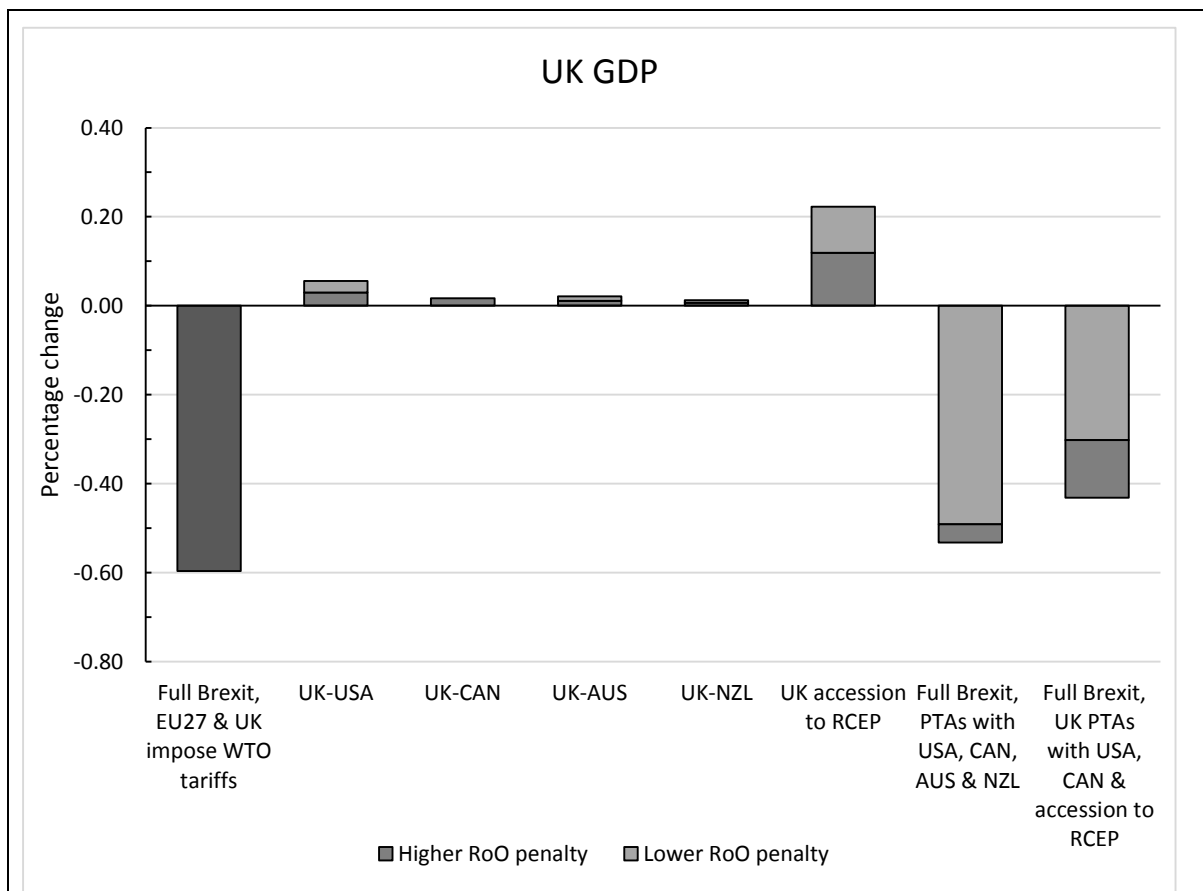
trade materially (Conconi et al. 2016). The assistance-raising effect of rules of origin led Conconi et al. (2016) to suggest that the resulting trade diversion led to preferential trade agreements violate Article XXIV of the GATT. That Article states that: ‘\the duties and other regulations of commerce maintained in each of the constituent territories and applicable at the formation of such free-trade area ... \shall not be higher or more restrictive than the corresponding duties and other regulations of commerce existing in the same constituent territories prior to the formation of the free trade area’.

While rules of origin impose economic costs, in the formation of preferential trade agreements, there is the expectation that the trade creating effects between members will outweigh the trade diverting effects between members and non-members to afford a net economic benefit to members. To consider the possible scale of such benefits to the UK of pursuing preferential agreement-making strategy, the cases of hypothetical bilateral trade agreements with Australia, New Zealand, Canada and the US are considered together with the case of hypothetical accession to the prospective Regional Comprehensive Economic Partnership (RCEP) regional agreement under negotiation between ASEAN and neighbouring economies (including Australia and New Zealand) are modelled.

Because these trading nations are outside the European area (‘factory Europe’ (Baldwin 2013) and part of other areas (factory Asia and factory North America), satisfying rules of origin requirements is likely to be problematic. Assuming that negotiated product-specific RoO reduce the efficiency of trade agreements by just 25 percent — for example, when higher-level 75 per cent of eligible imports qualified for preferential entry and there are no further efficiency losses — on full implementation, trade agreements with these areas could afford some economic gains to the UK and provide some offset to leaving the Single Market (figure 3). Because of the economic breadth of RCEP, including ASEAN economies, China, India, Australia and New Zealand, some with relatively high border protection, the prospective gains (estimated at around a 0.2 per cent increase in GDP, (figure 3, bar. 6)) are commensurately higher than available from the possible bilateral arrangements modelled. That is a ‘best case’ scenario. If eligibility and take-up of preferences were lower, say at 40 per cent (the prevailing average take up rate on eligible imports under the Australia-New Zealand-ASEAN agreement, the potential gains on full implementation would be about 0.1 per cent of GDP without carve outs and further efficiency losses (figure 3).

The difficulties calibrating trade policy to preferential trade agreement building are very great indeed, in particular, the third rules-of-origin problem. As a result, giving policy priority to the kind of preferential-trade agreement-building process suggested by conventional trade policy diplomacy and reflected in option (ii) would likely be a very disadvantageous choice.

Figure 3 Pursuing preferential trade agreements (PTAs) could provide some economic benefits on full implementation



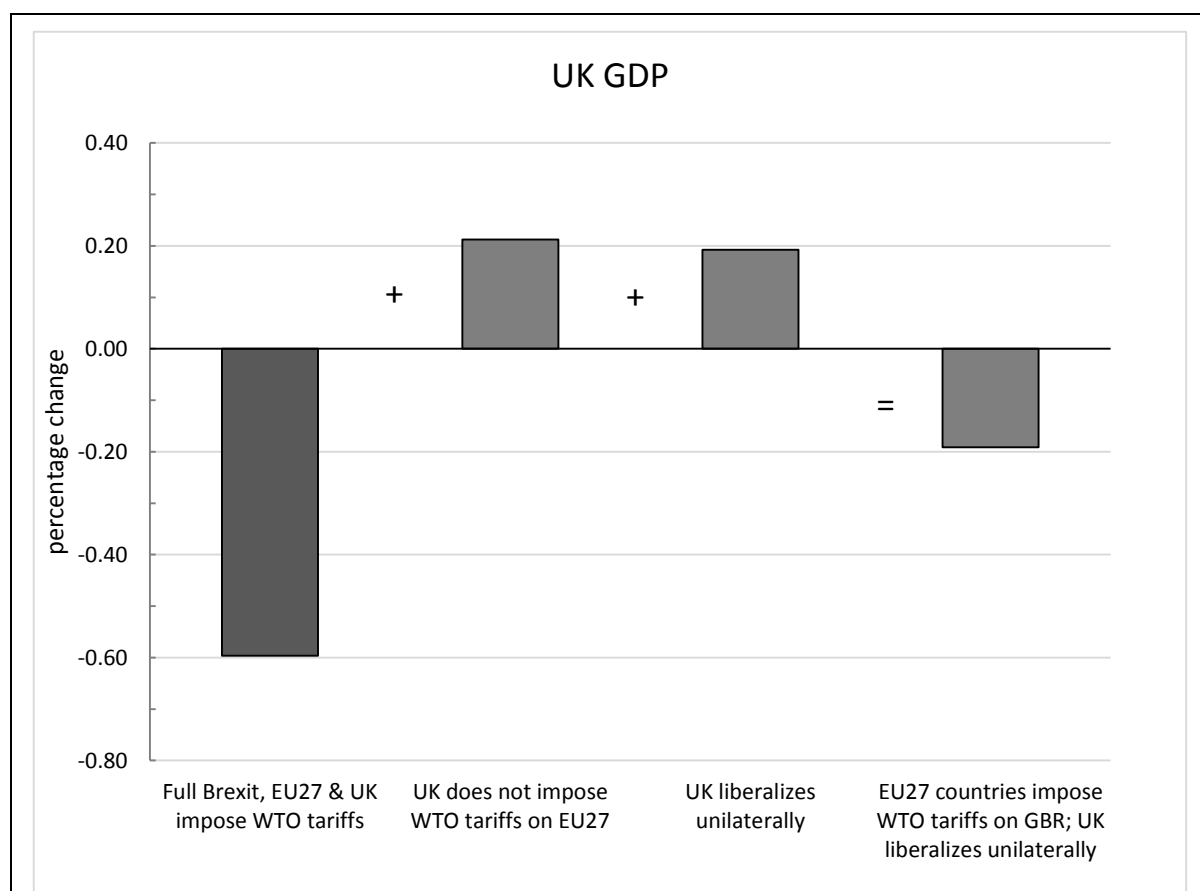
Source: Author projections based on: Gretton 2017; GTAP database version 9a, released 2016.

Shifting to a more open trading environment

The third scenario considers the situation where, on withdrawing from the EU Single Market, the UK shifts to a more open trading environment in which the UK unilaterally opens its external borders, both towards Europe and elsewhere. Under this scenario, the applied MFN tariff levied on imports from EU economies and other developed and developing economies would be set at zero. The scenario would still accept that EU applied tariffs on imports from outside the internal market would remain unchanged and would be applied to imports from the UK.

Access to imports from the EU on the same basis as before and lower cost imported supplies from outside the EU-area is projected to scale back the projected loss to the UK economy — from a negative 0.6 per cent to 0.2 per cent (figure 4, column 4).

Figure 4 Brexit will involve costs, but the trade strategy adopted will influence final outcome



Source: Author estimates based on GTAP model (version9a).

This would avoid the cost of border protection on imports from the Single Market (figure 4, bar 2) and provide an additional benefit from the removal of tariffs on non-EU area imports (figure 4, bar 3), lowering the cost of intermediate inputs to production and consumer products. It would also avoid the cost and uncertainty of rules of origin which would act as a drag on growth.

Discussion

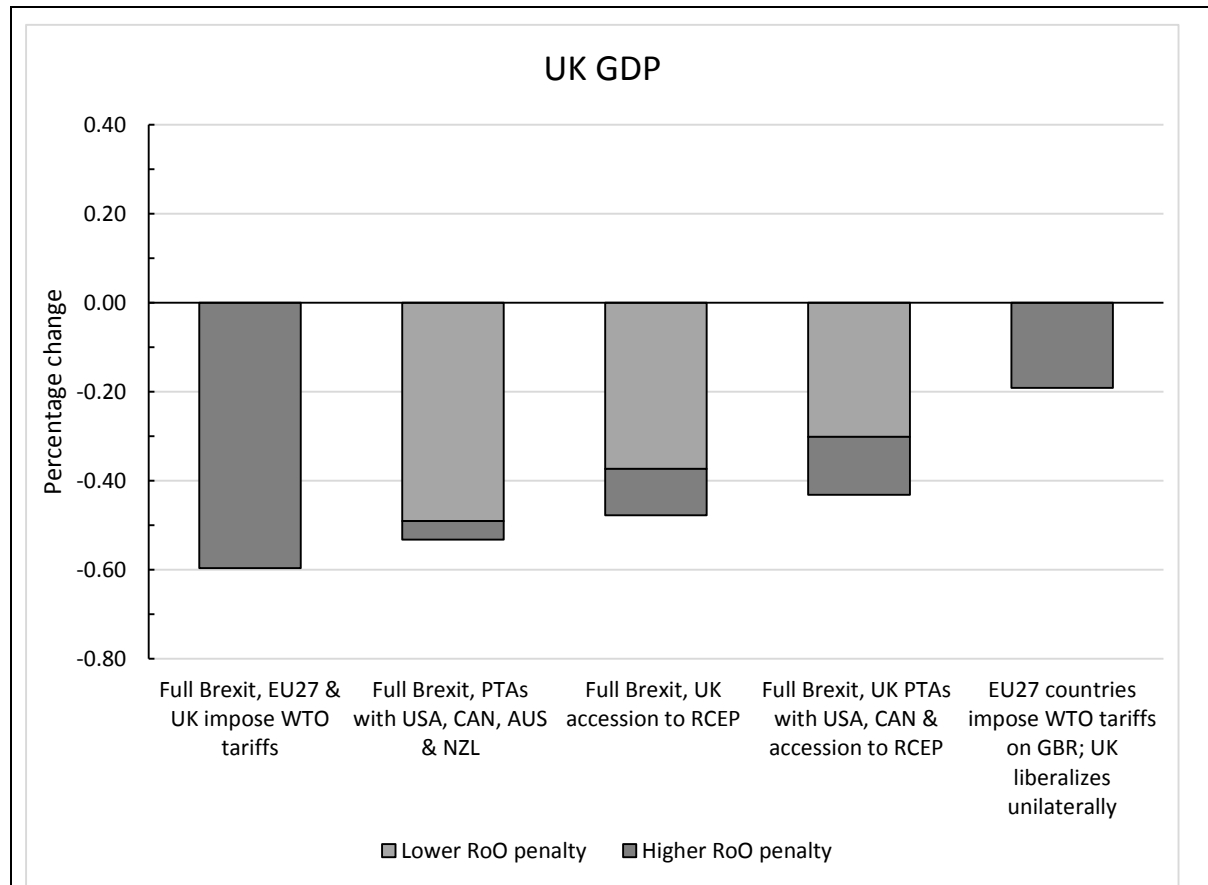
Implementation of option (ii) would involve lengthy negotiation periods and the addition administrative, compliance and rules of origin costs. For rules of origin reasons and the extended time lags in negotiating bilateral and regional agreements with rules of origin, the pursuit of this option would be costly to industry and the community more broadly.

Full implementation of scenario (iii) could be effected on withdrawal from the EU even though for some sectors this may need to occur gradually. The option would implement the non-discrimination principle of the WTO. But, with the UK then being outside the Single Market, it would incur tariffs and trade facilitation costs associated with customs clearance into EU economies.

The main feature of option (iii) compared with option (ii) is that it would avoid the cost of border protection on imports from the Single Market and provide an additional benefit from the removal of tariffs on non-EU area imports, lowering the cost of intermediate inputs to production and consumer products. It would also lead to a more depreciated real exchange rate

so as to increase export competitiveness in order to support the higher level of imports that result from the liberalisation. This is why the negative effects on some industries would be reduced, for example this is likely to happen in heavy manufacturing, (comparing column 7 with column 5 in Table 1) It would also avoid the cost and uncertainty of rules of origin and in so doing provide larger and more assured benefits (figure 5).

Figure 5 Benefits from unilateral liberalisation likely to outweigh any gains from PTAs in balancing trade costs of withdrawing from the EU



Source: Author projections based on: Grettton 2017; GTAP database version 9a, released 2016.

In the light of these considerations about border tariffs, it is suggested that the United Kingdom faces a stark choice between the extreme alternatives of:

Option (i) — continued membership of the Single Market /Customs Union; or

Option (iii) — go it alone with unilateral MFN-liberalisation.

However difficult, the UK would be better off to aim for one, or other, of the alternatives presented by options (i) and (iii).

Capital markets and financial service provision

The UK houses a major capital market and financial service centre. It is the leading global financial centre in a number of areas including cross-border bank lending and several forms of derivative trading activity, asset management and insurance services (BoFE 2015, p. 31). An IMF index of financial market development ranks the UK high by international standards and ahead of other G20 EU economies (Svirydenka 2016).

The imprint of the UK financial system on the UK economy is large by global standards, with total assets of the financial corporations sector amounting to more than 8 times (that is, 800 per cent) of GDP — materially higher than the G20 economies of the USA, France and Japan (BoFE 2015, p. 26). With the UK being a hub for the European headquarters of many of the world’s largest financial firms and a location for banks incorporated outside of the European Economic Area (EEA) as well as EEA-owned banks, the finance sector has a defining influence on the trading relations between the UK and other countries. In terms of domestic income generating activity, the UK finance sector contributes about 8 per cent of GDP and 3.5 per cent of employment (BoFE 2015, p. 31).

With regard to capital market and financial service provision, the UK benefits from access to the Single Market and particularly from having ‘Passporting’ rights. Passporting enables banks, insurance and investment firms authorised in a state within the European Economic Area (EEA) to provide services to clients in other EEA states without having to re-authorise — that is, receive regulatory approval, in the secondary state. The regime operates on the assumption that the regulatory frameworks of all member states are similar. Under the arrangement, if a firm’s practices comply with the regulations of one member state then this is sufficient for it to conduct operations in all other EEA states through a branch office or direct service provision. Passporting reduces the transaction costs involved in cross-border financial services trade and investment, and contributes to openness and competition in the provision of financial services within the EU. Many international financial intermediaries have their European headquarters in the UK and benefit from Passporting in the EEA.

The BoFE notes: The UK’s openness to financial services is also facilitated by the UK’s well-developed financial infrastructure, a competitive fiscal regime, the large pool of skilled labour located in London, a convenient time zone as well as the clarity and integrity of the rule of law. All of these factors, in combination with EU single market legislation — such as the passporting regime — are likely to have facilitated the increased openness of the UK financial sector’ (BoFE 2015, p. 23).

On leaving the EEA, the UK would become a ‘third country’. As a third country, UK-based firms would lose the Passporting right to provide financial services through a branch or directly, in EEA economies. Rather those firms would need to establish a subsidiary or transact under the regulatory frameworks of individual member states. Compliance with these additional non-tariff measures will in affect constitute a barrier to trade and finance for UK domiciled enterprises doing business with Europe and European businesses doing business with the UK. It could also make the UK less attractive as a headquarter location for international financial intermediaries and other businesses.

The potential economic costs of exit from the Single Market for capital and financial service provision, including the loss of Passporting, on the UK could include:

1. an increase in the required rate of return on investments, at given technologies, in the UK. Being outside the EU is likely to be associated with higher country risk in global capital markets. This is because as a medium scale, open economy the UK may be more exposed to fluctuations in the global economy than if it were part of a large financially integrated

economy such as the EU.⁶ The advantage of being both a global financial centre and being integrated with the co-located Single Market (including product standards and protocols for merchandise and services trade between member economies) would be lost. It could also face increased regulatory risk from being co-located but outside of the EEA and its regulation setting processes.

2. a decrease in productivity in the provision of financial services. The loss of Passporting rights and increase in Non-Tariff Measures (NTMs) would require financial intermediaries to expend more labour, capital and material resources to conduct transactions between the EU and the UK — of importance since many foreign banks are established in the UK for the purpose of conducting intra-EU business. A less attractive financial sector with associated less capital inflow to the UK could also mean decreased flows of ideas, technology and management practices further lowering productivity within the financial services industry more generally.
3. the technology and organisation of capital. Lower domestic capital accumulation and inward foreign investment with increased risk may flow on to reduce the flows of ideas, technology and management practices into the broader UK economy. This could cause a technological regression in the installation and use of all capital across all industries, flowing across to labour, particularly if there is a regression in the matching of both labour and capital with the most productive uses. This effect could be amplified if a more protectionist stance were to be adopted in merchandise trade (goods) and wider services markets by the UK or its trading partner economies (including through imposition of more costly processes for the recognition of product standards and other protocols of trade than conferred by membership of the Single Market).

Brexit could have adverse spillover effects on EU economies. The protection of continental capital and financial markets from competition from UK firms via NTMs is likely to increase country risk, service costs and lower the productivity of the newly protected market. While this cost may not be proportional to the cost to the UK economy, any additional costs are spread over the globally large productive base of the EU and so could have, if incurred, material impacts on regional and global economies.

Unlike border protection by tariffs and tariff quotas that can be measured in terms of applied tariff rates, the possible capital and finance market price and productivity wedges requires conjecture as there is no precedent for an event like Brexit. For the purposes of illustration an indication of the direction and possible scales of wedges, with lower and higher bound values, is adopted.

For required real rates of return on capital, one way to estimate the wedge is to compare real commercial interest rates in the UK with rates in another economy. For this illustration, Switzerland is adopted as a suitable comparator. It is a financial centre, has close economic ties with EU economies (European Commission 2017), but is not a member of the EEA and does not have Passporting rights to the EU. Switzerland is a member of the European Free Trade

⁶ This relationship between market size and higher risk, and less investment (and particularly FDI) is supported by empirical research based on the gravity model (for example, Bruno et al. (2016), Ali, Fiess & MacDonald (2010), Janicki & Wunnava (2004), and Trevino, Daniels and Arbelaez 2002)).

Area (EFTA). Its trading relations with the EU are mainly governed by a series of more than 100 bilateral trade agreements with the EU.

World Bank data shows that from 2000-2014, the Swiss real bank commercial lending rate was on average, 1.5 percentage points higher than the UK real interest rate (World Bank 2017). The UK's larger and pre-eminent finance sector, however, suggests that the effect of Brexit may not equate to the full differential. More generally, because of differing regulatory environments and operating conditions, any compression may only be partial. If, for example, there was a 10 percent compression of the average difference between UK and Swiss rates over period 2000 to 2014, the real UK lending rate could rise permanently by 15 basis points. If the average wedge between UK and Swiss rates was compressed by half, the UK real bank lending rate could rise by 77 basis points. Similar, but not identical, conjectures of change in the UK rate are indicated if the conjectures were benchmarked to US rates.

The higher of these conjectures falls close to the longer-term effects suggested in OECD (2016, p.20) of 70 basis points in investment and equity risk premia.⁷ The estimate also falls around the effects suggested by PwC of 50 basis points for debt and 20 basis points for equity, based on increased spreads of UK commercial debt securities during the Eurozone crisis (PwC 2016a, p.26). However, while PwC assumed that the changes would be temporary, it is assumed here that without further change in policy or economic conditions, the Brexit-induced changes would be permanent. Dhingra et al. (2016, p. 26) on the other hand, in an examination of the impact on Brexit on FDI flows into the UK assumed that any reduction would be in proportion to the empirically estimated increase of FDI into the UK. While Dhingra et al. assumed changes would be permanent, they did not examine the impact on required real returns to commercial finance more broadly.

For financial sector productivity, two indicators are considered. First, OECD information for the industry 'financial and insurance', indicates that labour productivity in the UK industry increased at an average annual rate of 3.9 percent between the sectoral productivity peaks of 1999 and 2009 (OECD 2017a). Over the same period labour productivity of the Euro area (excluding the UK) finance and insurance activities rose by an average of 1.5 percent per year. If leaving the single market eroded economies of scale and scope and this was fully reflected in a decline in total factor productivity of UK financial service provision equivalent to 10 percent of the total difference, productivity in the financial and insurance sector would decline by 2.4 percent (that is, 3.9 less 1.5).

An alternative approach to estimate the productivity wedge is to consider investment costs between regions, in this case between EU and non-EU economies. Data on the financial services industry suggests that NTBs increase the cost of investing from the US into the EU by 11 percent (Berden et al., 2009, p.25). This can be treated as a benchmark to estimate how much costs could rise for the UK to invest in the EU. The increase in investment costs can then be used to indicate by how much UK financial sector productivity could decline.

It is unlikely, however, that average financial sector productivity would decrease by the full 11 percent. First, gravity considerations — such as the fact that the UK is geographically closer

⁷ OECD (2016) also suggested investment and equity risk premia could be raised in the short term above these longer-term estimates reflecting uncertainties around policy outcomes following Brexit. The OECD also assumed that investment and equity risk premia in all EEA economies would increase by one quarter of the UK rate in the longer run. Contagion is not assumed in the modelling presented in this paper.

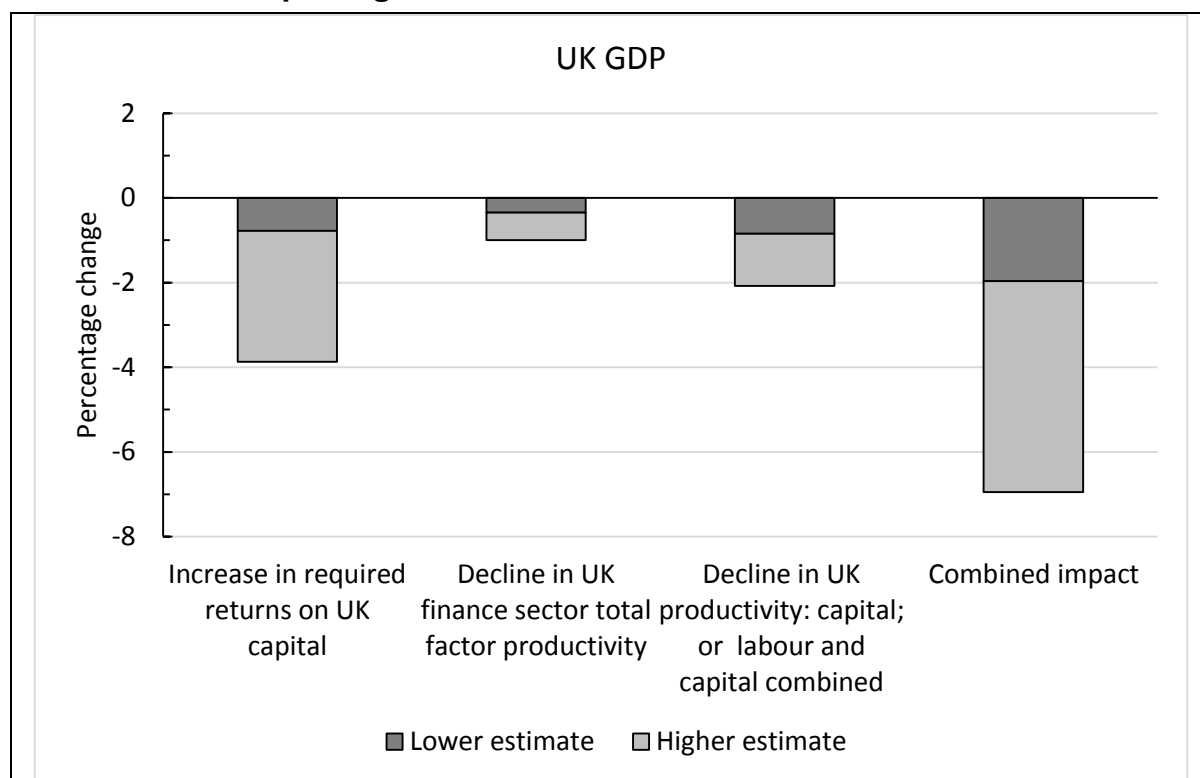
to the EU than the US — may reduce investment costs relative to those between the US and the EU. Second, the UK has other trading partners besides the EU and is and likely to remain a global financial centre. Third, investment costs are only one component of overall productivity while the benchmark estimates only related to cross border service provision. For these reasons, the illustrative value is halved to 5.5 percent. This can be considered a ‘higher case scenario’ while the estimate based on trend growth rates can be considered a lower-case scenario.

The third element of possible capital-finance market effects of leaving the Single Market and loss of Passporting is concerned with the technology and use of value adding factors of capital and labour in domestic production in all industries. OECD information indicates longer-term multi-factor productivity growth between the productivity peaks of 1987 and 2007 of around 0.7 percent per annum (OECD 2017b). Measuring growth between productivity peaks seeks to abstract from cyclic factors to provide an indicator of technological and organisational change at the national level. If Brexit were to lead to technological and organisational regression in the use of capital equivalent to 10 percent of multifactor productivity growth over this period, capital productivity could decline by around 1.4 percent, from levels that would otherwise be achieved (that is, equivalent to two years of productivity growth). If in addition to the decline in the productivity of capital used, there is contagion to labour markets such that both labour and capital is not matched with its best use, the productivity of labour and capital could jointly decline by the 1.4 percent. This represents a higher estimate, while confining the technological regression to just capital, represents a lower estimate.⁸

If on leaving the Single Market and foregoing Passporting, these costs were incurred in combination, valued added output in the UK could decline by close to 2 percent on the basis of lower bound estimates, and a possible higher estimated loss of close to 7 percent for the higher bound estimate (figure 6, bar 4). Of the components, the impact of higher required returns on capital is projected to be most prominent, reflecting the scale of the ‘shock’ relative to the other scenarios and the pervasiveness of the change. The second most prominent at the national level on the basis of the scenarios considered is the potential impact of technological and organisation regression, again reflecting the scale and spread of the shock.

⁸ OECD (2016) also conjectured separate productivity losses from lower research and development,

Figure 6 **Projected potential longer-run impacts of erosion of financial openness on leaving the EU Single Market and loss of Passporting**



Source: Author projections based on: Gretton 2017; GTAP database version 9a, released 2016.

An issue on withdrawal from the EEA is whether option (ii) involving a more protectionist environment and the pursuit of preferential trade agreements with financial market opening provisions or option (iii) involving shifting to a more open trading environment in capital and financial service markets, could ameliorate the possible adverse effects of withdrawal from the EEA, and in so doing, provide a basis for ongoing growth and prosperity.

Seeking preferential trading agreements with non-EU trading partners (option ii)

It is common practice to include financial service chapters in modern bilateral and regional trade agreements. The Comprehensive Economic and Trade Agreement between Canada, and the EU and EU Member States (CETA) which entered into force provisionally in September 2017, and the negotiated Trans Pacific Partnership (TPP) text, for example, both include a chapter on financial services. The financial services chapter in CETA provides preferential market access to EU and Canadian financial institutions and investors subject to prudential and regulatory standards in place in partner countries. In addition, the chapter allows qualifying partner-country firms to offer cross-border services in a limited range of insurance and non-deposit taking banking services (Annex 13-A). Eligibility for preferential market access is determined by the denial of benefits clause of the agreement (article 8.16, see Box). Under this section, amongst other things, eligibility requires that a firm is owned or controlled by a third party and does not represent a security or other risk (including with respect to human rights (by Annex 8-E). Under the negotiated text of the TPP, benefits could be denied if there is no substantial business interest in any party to the agreement as well as for security concerns (article 10.10, see Box). While CETA article would appear less restrictive and focused on

security rather than commercial issues, the TPP-text article introduces a commercial test that would act as an uncertain non-tariff barrier to capital-finance service provision in a global financial centre such as the UK.

The negotiation of CETA took almost five years. Negotiations on the TPP commenced in 2005 with additional countries joining in 2008. The agreement was signed in 2016, but with the withdrawal of the US in 2017 has been renegotiated as the Comprehensive and Progressive Trans Pacific Partnership (CPTPP). The CPTPP was by 11 countries and without the US in March 2018. The extended time periods and uncertain outcomes, suggests that any potential benefits from the pursuit of preferential trade agreements by the UK would be some way off and not assured.

Box : Examples of denial of benefit articles in modern trade agreements

CETA, ARTICLE 8.16

Denial of benefits

A Party may deny the benefits of this Chapter to an investor of the other Party that is an enterprise of that Party and to investments of that investor if:

- (a) an investor of a third country owns or controls the enterprise; and
- (b) the denying Party adopts or maintains a measure with respect to the third country that:
 - (i) relates to the maintenance of international peace and security; and
 - (ii) prohibits transactions with the enterprise or would be violated or circumvented if the benefits of this Chapter were accorded to the enterprise or to its investments.

TPP text

Article 10.10: Denial of Benefits (cross referenced in Article 11.2)

1. A Party may deny the benefits of this Chapter to a service supplier of another Party if the service supplier is an enterprise owned or controlled by persons of a non-Party, and the denying Party adopts or maintains measures with respect to the non-Party or a person of the non-Party that prohibit transactions with the enterprise or that would be violated or circumvented if the benefits of this Chapter were accorded to the enterprise.
2. A Party may deny the benefits of this Chapter to a service supplier of another Party if the service supplier is an enterprise owned or controlled by persons of a non-Party or by persons of the denying Party that has no substantial business activities in the territory of any Party other than the denying Party.

Shifting to a more open trading environment and a more holistic view

An increase in the willingness to save or an improvement in the allocation of savings would, other things remaining equal, add to economic growth (Schumpeter 1934, McKinnon 1973, Shaw 1973). According to this view, market preserving policies that improve the quality of the information gathering process and intermediation services of the finance sector, also increase the efficiency and effectiveness of the financial sector in matching value adding resources to their most productive uses.

In the more open trading environment of option (iii) on withdrawing from the EU Single Market and loss of EU Passporting rights, the UK would act unilaterally to seek to maintain

the efficiency and effectiveness of the UK finance service sector and the domestic environment for efficient investment. It would also seek to liberalize competences now communal to the EU and perceived to be unduly burdensome, subject to corporate regulatory and prudential controls.

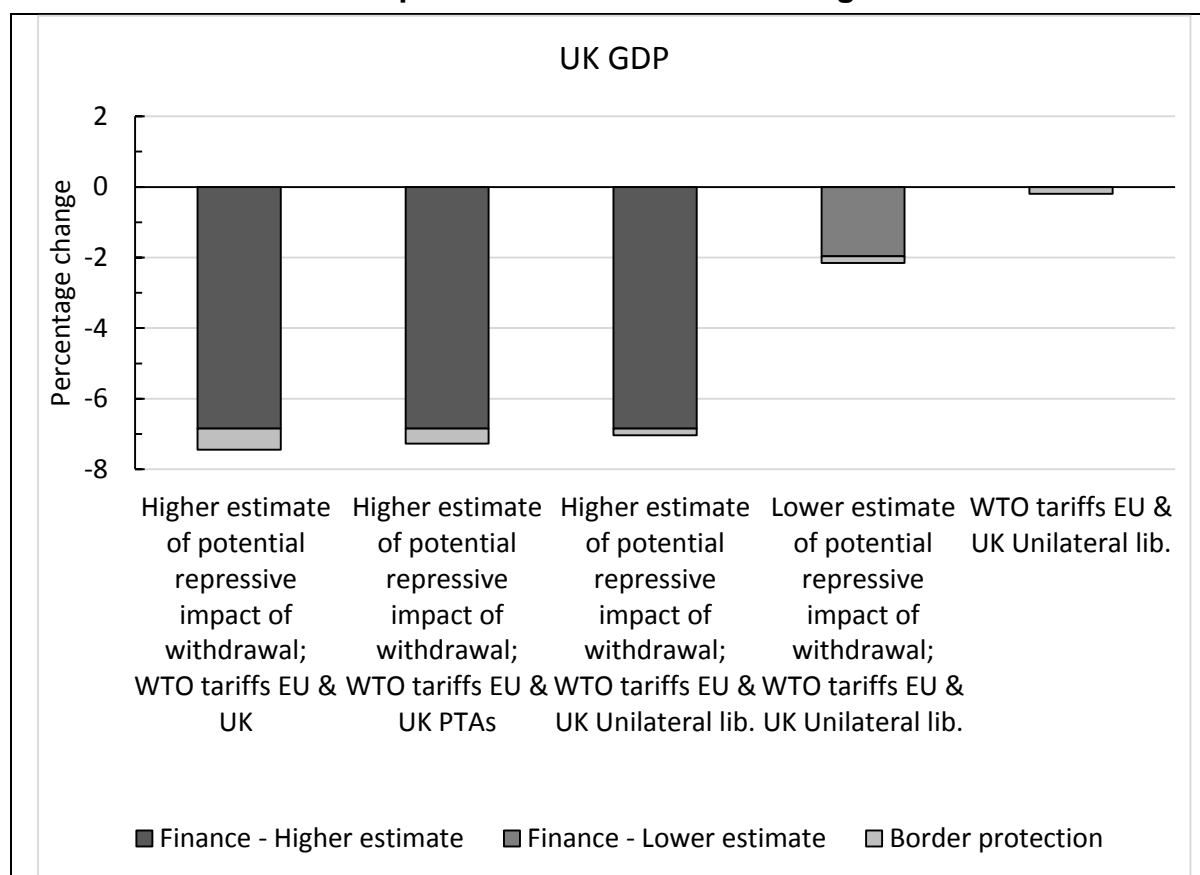
The illustration of the effects of tariff options shows that market preserving policies are likely to afford the greatest benefits or lowest cost alternatives. With Brexit market preserving policies in the capital-finance areas are likely to be more subtle, focusing on financial risk and integrity as well as the provision of information and other financial services to foster efficient investment and productivity improving change. They will be concerned with the broad policy environment and regulatory settings. To be fully effective in the context of the UK withdrawing from the Single Market, the policies and supporting regulation, should provide the commercial and operating credentials that make the UK at least as competitive internationally in capital market operations and financial service provision as it was as a member of the European Single Market. Possibilities for achieving this may seek to mirror unilateral tariff reductions on merchandise entering the UK through to rules for recognising foreign firms providing financial services in the UK (a kind of ‘one-sided’ passporting without reciprocity). They would also look, as far as practicable, to the implementation of WTO most favoured nation and national treatment principles in domestic regulation affecting financial service provision.

Such policies would need to avoid the introduction, either inadvertently or intentionally of new tariff or non-tariff measures in the UK that repressed the capital-finance markets or unduly restricted capital and labour being matched to their most efficient and productive uses. They would also seek to avoid impediments to technological and organisational change — the principle source of longer-term economic growth and rising living standards. Market preserving policies capital-finance markets should be linked with and complementary to measures that reached beyond the financial sector, including on the recognition of product standards and protocols for merchandise and services trade.

If, however, the UK and the EU were to adopt a more protectionist stance through the imposition of tariffs at current rates and the strong assumptions about the increased risk of investing in the UK and productivity are realized, UK output could be eroded by 7.4 percent from levels that would otherwise prevail (figure 7, bar 1). By far the main part of this projected decline is due to the potential repressive effects of leaving the Single Market and loss of Passporting discussed above. Impacts of this order would assume that there is little or no potential benefits from resuming sovereignty over competences now communal to the EU. More severe assumptions about the costs of withdrawing from the EU would raise the projected economic loss even further.

Some marginal gains may be available from the UK seeking preferential trade agreements with like-minded economies, however, for rules of origin reasons and the length of time to negotiation, such agreements are not modelled as reducing the negative risk and productivity effects accruing from the loss of access to the Single Market (figure 7, bar 2).

Figure 7 **Benefits from unilateral financial market deepening could make inroads into possible costs of withdrawing from the EU**



Source: Author projections based on: Gretton 2017; GTAP database version 9a, released 2016.

Unilateral liberalization by the UK on merchandise would provide a larger and more assured gain, but alone would not make material inroads into the higher potential economic costs of withdrawing from the single market (figure 7, bar 3). UK liberalization of merchandise trade, and exposure in global markets, however, would afford a strong policy environment in favour of wider market preserving policies. To the extent that such a policy environment led to a lowering of the economic costs of withdrawing from the Single Market and loss of Passporting, the potential repressive effects could shift towards the lower-cost bound discussed above (figure 7 bar 4). If they were to be fully overcome when the UK gains full regulatory sovereignty, the main negative effects could be accounted for by tariffs on merchandise trade (figure 7, bar 5) and other non-tariff barriers (not explicitly modelled). Further productivity improvements or a reduction in country risk, could actually outweigh these negative effects. For example, for every 1 per cent improvement in the productivity of capital and labour in the UK — a level equivalent to a little over one year’s average annual multifactor productivity growth over the period 1987 to 2007 — that could be achieved through financial deepening and market preserving policies, GDP for the UK is projected to increase by around 1.5 per cent in the longer run.

While any estimates are a product of the modelling assumptions underpinning them, the estimates provided in this framework paper fall across the range suggested by other studies.⁹

⁹ Using a gravity modelling approach based on the NiGEM model, HM Treasury (2016) estimated the GDP impacts of a UK withdrawal from the EU of between -3.4 and -9.5 percent in the longer term, OECD (2016) -2.7

They add to previous studies by delineating possible trade, capital-finance and productivity effects and identifying how these may vary with alternative trade policy strategies. (The modelling framework also enables a consideration of sectoral implications, reported below.)

Discussion

As with the consideration of border protection options alone, on withdrawal from the Single Market, implementation of option (ii) for financial markets would involve lengthy negotiation periods. It would also involve additional, albeit uncertain administrative, compliance and rules of origin costs.

Because of the time delays involved in the pursuit of bilateral and regional agreements and the need for functioning financial market regulation in the UK on withdrawal from the Single Market and loss of Passporting, a form of scenario (iii) is the default alternative to remaining in the EU (option i). To draw a parallel with border protection policies, market preserving policies that do not impede the flow of capital-finance to the most competitive domestic activities, and the avoidance of costly tit-for-tat non-tariff measures is likely to be most advantageous. Measures that repress the operation of the finance market or are joined by protective policies in the real sector would likely erode growth and elevate the economic losses from withdrawal from the Single Market.

Financial market deepening and market opening should, over time improve the trading position of the UK with non-EU countries ahead of the trading position which may have been possible if the UK remained a continuing member of the Single Market.

Industry implications

The effects of the policy scenarios and market responses on the withdrawal of the UK from the EU are likely to fall on UK industries differently. The impacts will depend on factors such as trade exposure, protection afforded by EU trade and industry policies (particularly the Common Agricultural Policy (CAP) and industry tariffs) and industry costs.

If the only effects to accrue were from the EU and the UK imposing tariffs on imports from their respective jurisdictions at current applied MFN rates, UK producers and consumers would pay more for their intermediate inputs and consumption purchases from the EU. Producers would face tariff barriers on their exports to the EU. These two-way effects would disadvantage producers, to varying degrees, depending on the impact of higher tariffs on their effective protection and the source of their materials and destination of outputs. It would interrupt cross-Channel value chains. The most severely affected activities are projected to come within grains, crops and forestry, textiles and clothing and heavy manufacturing industries — those activities afforded highest border protection within the EU customs union (table 1, col. 4, appendix 3).

and -7.7 per cent, Dhingra et al. (2016) -6.3 and -9.5 percent, while Ebell and Warren (2016) estimated -1.5 and 3.7 (without productivity effects. Ebell and Warren also included negative productivity effects to estimate a cost of 7.8 percent. A comparison of estimates based on the NiGem model is provide in Ebell and Warren (2016, p.134). PwC (2016b) estimated an impact of between -1.2 and -3.5 percent using a CGE approach. Pisani and Caffarelli (2018) using a three region, three sector DSG model to argue, found, amongst other things, that the macroeconomic costs of Brexit are particularly high if the lower UK trade openness resulting from the imposition of tariffs reduces the UK's total factor productivity. On the other hand, and in contrast to these negative estimates, Bootle et al. (2018), reported that shifting to a Canada+ agreement with the EU and formation of FTAs with the rest of the world would provide positive benefits to the UK, relative to the status quo. Estimates in the range of 2 to 4 percent increase were noted.

The joint imposition of tariffs could also *add* to effective protection for some activities including in food processing and upstream livestock activities (such as meat and process milk manufactures, and poultry, animals and raw milk). The overall negative effects on trade exposed activities is projected to flow through to services through higher input costs and lower demand. Nevertheless, the within-UK resource relocation effect of such an imposition of tariffs is projected to benefit financial and business services, all else being equal.

Table 1 Indicative longer-run industry implications of UK withdrawing from the EU, by industry sector

Industry gross output weighted								
Repressive financial market and productivity impact of withdrawal from EU, at the:								
Industry sector	Higher estimated effect with:				Lower estimated effect with:	No financial market repression or productivity impact on withdrawal from EU		
	WTO tariffs EU & UK	WTO tariffs EU & UK PTAs	WTO tariffs EU & UK Uni-lateral lib.	WTO tariffs EU & UK Uni-lateral lib.	WTO tariffs EU & UK	WTO tariffs EU & UK PTAs	WTO tariffs EU & UK Uni-lateral lib.	WTO tariffs EU & UK Uni-lateral lib.
1 Grains, Crops, Forestry	-7.5	-9.1	-12.1	-9.2	-2.6	[-4.2]	-7.2	
2 Livestock, fishing	-3.9	-6.1	-18.4	-15.5	1.2	[-1.0]	-13.2	
3 Mining	-4.1	-3.3	-1.3	1.3	0.0	[0.8]	2.7	
4 Processed food	-6.0	-6.4	-12.4	-9.2	-0.1	[-0.5]	-6.6	
5 Textiles and clothing	-12.4	-12.7	-17.9	-12.6	-3.4	[-3.7]	-9.0	
6 Light manufacturing	-8.9	-8.4	-7.8	-2.9	-0.4	[0.0]	0.7	
7 Heavy manufacturing	-11.3	-9.8	-8.8	-3.8	-2.9	[-1.4]	-0.5	
8 Utilities	-8.1	-7.8	-7.8	-3.8	-0.9	[-0.6]	-0.6	
9 Trade, transport & Comm.	-6.2	-6.0	-6.0	-2.7	-0.2	[0.1]	0.1	
10 Financial, business services	-10.5	-10.0	-9.4	-3.1	0.1	[0.6]	1.2	
11 Construction, Other services	-3.0	-3.0	-3.1	-2.5	-0.2	[-0.2]	-0.3	
12 Dwellings	-11.8	-11.7	-12.0	-5.6	-0.7	[-0.5]	-0.9	
Corresponding projected change in GDP	-7.4	-7.3	-7.0	-2.2	-0.6	-0.3	-0.2	

Source: Author projections based on: Grettton 2017; GTAP database version 9a, released 2016.

The negotiation of preferential trading agreements (trade policy option ii) would have the two way effect of increasing competition locally from agreement partners and providing preferential export market access for local producers to partner economies. Users of materials from PTA partners could also benefit from lower input costs. However, and as discussed above under trade policy option (ii), any projected effects of PTAs, particularly at the sectoral level, needs to be highly qualified for rules of origin reasons, lengthy negotiating periods, as well as the incidence of carve outs and lengthy phase in periods for sensitive products. These strong

qualifications are reflected by the projected sectoral effects of the PTA scenario being reported in square brackets (table 1, col. 6). Noting this strong qualification, agricultural and processed agricultural, and textiles and clothing products are projected to face a net increase in competition if PTAs were concluded with the USA and Canada and accession to RCEP were achieved. Nevertheless, some specific benefits from market access may be available, for example, through preferential access for UK dairy products to the Canadian domestic market, if negotiated. Access to lower cost materials from possible PTA partners is projected to afford some net benefits to light and heavy manufacturing. Were increased competitiveness in the traded-good sector to be achieved, services could benefit through lower input costs.

If the UK were to liberalize unilaterally (trade policy option iii), adjustment pressures would fall most heavily on those activities with higher average assistance including agricultural and processed agricultural, and textiles and clothing (table 1, col. 7). Other manufacturing activities in the groups light and heavy manufactures would benefit from lower tariffs on inputs and are projected to contract less or possibly expand. Nevertheless, the more assisted activities within these groups, such as passenger motor vehicles, while still benefiting from lower-cost inputs, could face greater adjustment pressures than reflected in the industry group average. Service activities and particularly financial and business services, are projected to benefit from a more liberal border protection regime. The larger projected adjustments for the most assisted activities combined with lower-cost imports of intermediate and final goods across all activities underpins the projected lower national cost for the UK of withdrawing from the Single Market.

While changes in border protection are projected to be material and more substantial for some activities than others, the economic costs of financial market repression and productivity erosion could dominate border protection effects (table 1, col. 1 compared to col. 5). These costs are likely to fall most heavily on trade exposed and capital intensive activities in the manufacturing sector, particularly textiles and clothing and heavy manufacturing. For example, for heavy manufacturing, the projected decline in output could increase from 2.9 percent with only the imposition of tariffs by the EU and UK to 11.3 percent with financial market repression and loss of productivity.

Those factors and the loss of Passporting is modelled as also negatively impacting on financial and business services activities which is projected to contract around 10 percent in the higher effects scenario (table 1, col. 1).¹⁰ For most activities, the broader economic effects (that is, financial markets and productivity) generally dominate border assistance effects, although this is not so for the more highly assisted activities covered by the CAP and textiles and clothing (table 1, cols 1-3).

To the extent that trade policy favours more economic productive and internationally competitive activities, and that this extends to trade policies that moderates country risk and productivity effects, the longer-run negative impacts of withdrawing from the Single Market

¹⁰ PwC (2016a, p.4) project a longer-term decline in financial services activities (a component of the finance and business services sector reported in table 1) of -4 percent in the longer term and -9.5 percent in the shorter term for a 'WTO scenario' (that is, where no FTA is reached with EU and reciprocal MFN tariffs are applied). These estimates compare to lower and upper bound estimates in this study for financial services of -6.8 and -18.4 percent. The main reason for the higher longer term estimates in this study is that it assumes country risk is permanent whereas (as noted) the PwC study assumed them to be short term, and this study assumes contagion of productivity losses to the domestic financial service provision whereas the PwC assumes that the losses are quarantined to the UK-EU service trade.

on industry could also be substantially moderated (table 1, col. 3 compared to col. 4). For example, the output of the heavy manufacturing group is projected to decline by 8.8 percent under the higher estimate of financial market repression and productivity loss — provided there is the cost reducing influence of unilateral liberalization of UK border protection. If the less protectionist trade policy environment moderated the country risk and productivity costs of withdrawal from the Single Market to the lower estimates considered, this projected decline would be moderated towards 3.8 percent (table 1, col. 4). Similar favourable (that is, less negative) effects are reported across all industries. As noted in the previous section, further productivity growth could outweigh the negative effects of withdrawal from the Single Market to generate industry output growth (as opposed to contractions), all else remaining equal.

More broadly, the UK will withdraw from the EU in the context of ongoing economic and technological change. For some activities withdrawal would provide increased commercial opportunities at home and abroad, particularly if the withdrawal strategy included measures that lowered input costs and supported investment in internationally competitive activities. For other activities, the implications of Brexit (whether positive or negative) may be within the bounds of normal commercial adjustment. However, for other activities such as those conferred with higher levels of support from EU trade policies such as the CAP or tariff protection (including textiles and clothing and passenger motor vehicles) and/or subject to higher adjustment pressures due to global trading conditions or technological change, adjustment pressures may go beyond normal commercial adjustment and be politically sensitive.

5 A national policy review institution could have merit for the UK

The preceding sections indicate that the policy direction on Brexit will have material economic effects and define how the UK will trade globally into the future. As recognised, there will be potentially sensitive regional and distributional effects within the UK. This section considers a possible policy review institutional framework that may have merit for the UK during the withdrawal process and beyond.

Brexit will require United Kingdom governments to resume exclusive and shared competences formerly within the jurisdiction of the EU under the Lisbon Treaty. Brexit will also test the optimality of national competences within the exclusive jurisdiction of the United Kingdom.

Some of competences may be perceived as having neutral or favourable effects in post-Brexit United Kingdom. Others may be perceived as a drag. Some may have material distributional effects. The transfer and consolidation of many competences (including on the recognition of standards and trading protocols) in the first instance with minimal change could minimise disruption, while some substantive policy changes, of the kind discussed above, would counter some of the adverse effects of leaving the Single Market and set a trade policy framework for the post-Brexit United Kingdom.

The competences inherited may not be configured optimally, however, requiring review and possible policy change. A United Kingdom policy review institution would have merits as a means of effectively reviewing policy settings and identifying options and policy solutions designed to maximise community-wide benefits (or minimize costs), for consideration by government. This would not in itself involve new trade liberalization commitments. The

institution's function would be to raise awareness within the United Kingdom of the national rewards from reducing its own domestic barriers, without having a direct role in the policy-making process. Its successful operation could also serve as a model that other countries could consider adopting.

Such a policy review institution would be actively involved in identifying policy issues, establishing desired policy objectives, assessing policy alternatives and undertaking extensive consultations with all relevant stakeholders, recommending an option that yields the greatest community benefits, and outlining an implementation strategy for the government. As part of its task, the institution could conduct post-implementation reviews to assess the performance of key policies.

The government would determine what should be reviewed. It would do this in a transparent manner through a direction to conduct an inquiry supported by a public terms of reference outlining the objectives and scope of each inquiry. To be effective, the institution would need the resources and analytical capability to ensure that its output is of the highest quality and respected by peers. This would afford credibility and influence within the community, and within the government's decision-making process and, as appropriate, in the international community.

A public inquiry and reporting process would be intended to ease political constraints on policy efficiency. It would help ensure that difficult but worthwhile reforms are identified, prioritised, initiated, implemented and sustained. The findings and recommendations of the institution could be used by government and oppositions alike, and would inform public debate and discussion both inside and outside political processes.

An independent national policy review institution should have the attributes of statutory independence, a community-wide perspective and transparent processes. Each of the attributes would be established through government legislation. Statutory independence would allow the institution to scrutinize government policy without undermining the sovereignty of parliament. Nevertheless, the authority of the institution would rest with parliament through the institution's enabling legislation and longer-term funding. The institution would have a statutory mandate to adopt a community-wide perspective. In its inquiries, it would consider questions such as: are the country's resources being put to the best use; are regulations unduly increasing costs to businesses, households or government; what are the distributional effects of policies; and is a policy beneficial to the community as a whole. It would place sectional interests in the context of national interests. Finally, reviews would be undertaken through a transparent process. Public hearings would be encouraged to facilitate public participation. Reports would be published.

An example of such an independent governmental research and advisory body is the Australian Productivity Commission. A parallel commission has also been established in New Zealand. The modern Australian Productivity Commission grew out of the recognition of a need to review and reform Australia's high tariff structure applying mostly to manufactures (PC 2003). The functions of the Commission then broadened to examine assistance to industry more generally, such as through quotas, price and income support schemes, local content schemes and bounties and subsidies. Later, the focus was broadened further to include the efficiency of service provision, with a particular focus on the delivery of public services such as electricity, water, transport and its infrastructure, and communications. Much of this work can be linked

to Australia's National Competition Policy and related reforms (PC 2005, Gretton 2013). The Commission's remit then evolved to provide greater focus on economy-wide and social issues, with inquiries conducted into a wide range of areas including competition policy, occupational health and safety, national disability support, research and development and intellectual property.

This evolution to the modern Productivity Commission was peculiar to the Australian experience. The Brexit process is placing strains on the United Kingdom's policy and decision making processes with the likelihood that these will continue into the future. There would be merit in the United Kingdom considering the creation of its own standing policy review organization to undertake independent, transparent reviews conducted with a statutory requirement to adopt a community-wide perspective to help manage these strains in the interests of the community as a whole. Such a review organization would have relevance regardless of the trade policy option finally adopted. The priority inquiry issues and ongoing functioning of the review body, though, would be influenced by the policy direction taken.

6 What form could a transparent review take?

The full set of Brexit policies will take time to develop and implement. For a combination of reasons, some policy choices may be subtle while others will be of strategic importance as illustrated by a consideration of the trade policy options above. Yet others will be determined by conditions negotiated for the withdrawal of the United Kingdom from the European Union. While there are operational imperatives to 'get on with it' there would also be merit in adopting a routine procedure to fully evaluate the economic implications of Brexit decisions from a community-wide perspective. Such a routine procedure could be embedded in a national policy review institution as described above, which should have utility across all Brexit options. This section suggests a possible review framework that would have applicability to trade policy and wider analysis.

A full economic evaluation can be derived from the method adopted by the Australian Productivity Commission to assess the impacts of economic reforms and trade policy strategies (box 2). The methodology is comprehensive. In applying it to the consolidation of EU competences within the UK's jurisdiction, the methodology would take into account the impact of Brexit on product, labour and capital markets as well as transitional and ongoing administrative costs, such as those arising from legislative drafting, intergovernmental negotiation and government administration.

Such a comprehensive methodology would identify the policy options, relevant laws and regulations as well as sections in the economy likely to be most affected. Against this, it would then assess the likely economy-wide (or country) effects in a series of steps beginning with the identification of liberalisation and reform potential, intended incremental changes needed to achieve that potential, the economic effects of change, and distributional effects. The framework fully implemented would lead to an overall assessment of what can practically be achieved in a policy cycle and also, importantly, the scope for further improvement (Figure 8). The natural benchmark for what would be achievable from border protection liberalisation would be the 'unassisted' case, that is, the case where all border protection is removed within the jurisdiction of an analysis. The natural benchmark for other reforms could be a measure of 'best practice'.

Box 2 An applied approach for assessing the impacts of economic reforms and trade policy strategies: the Australian example

Economic and trade reforms in the Australian federal system were gradual, extending from the mid-1960s to into the 1990s and beyond (Gretton 2013). The reforms focused initially on opening the economy to trade and investment, and moved on to liberalizing domestic product and factor markets to improve the efficiency and productivity of the Australian economy. Steps in the review process were typically accompanied by a public inquiry and public advisory process with the Australian Productivity Commission playing a central role.

An important feature of Commission processes supporting the case for reform in Australia has been its economy-wide analysis of the impacts of reforms on national output and incomes. The studies have been ex anti and ex post and have taken a number of dimensions. A study in 1995, examined the national output implications of Australia's National Competition Policy (NCP) and related reforms and the government revenue implications that may flow from these (IC 1995). A later report examined the implications of selected reforms on rural and regional Australia in response to concerns that the reforms were unduly harmful to rural and regional areas (PC 1999a,b). These exercises were concerned with the potential impacts of policy change, that is, they were ex anti studies.

Later, in 2005, the Commission was asked to report on the benefits that had accrued from NCP and related reforms, giving amongst other things emphasis to the distributional effects of change and new areas for reform (PC 2005a,b). With most of the NCP reforms in place and in view of an ageing population in Australia, global competition and ongoing technological change, the Commission was requested to undertake a new ex anti study of the potential benefits of a new reform agenda (termed the National Reform Agenda) that encompassed competition policy and also human capital issues pertaining to education, health and workforce participation (PC 2006). The report focused on what might be achievable at the 'outer-envelope' through the implementation of best practice benchmarks. However, it did not provide projections of individual policy actions. In 2012, this report was followed up by an ex post study of the impacts of selected regulatory and vocational education and training reforms (PC 2012).

The methodology adopted in each of these studies, entailed delineating potential, or actual, policy changes and tracing through the immediate (or direct) effect on economic variables such as price, productivity and workforce participation, then drawing conclusions about the economy-wide implications of change. Through the public inquiry process and the Commission's research processes, the studies also considered economic reform gaps and potential. Each study involved a combination of qualitative investigation and quantitative economy-wide modelling of impacts.

Each of these studies was concerned with reform of domestic product and factor markets within Australia. The Commission's 2010 report on bilateral and regional trade agreements (PC 2010), adapted and applied a similar methodology to examine and compare the implications of alternative trade liberalization strategies, including the relative benefits of bilateral and regional preferential agreements versus unilateral liberalisation.

The application of such a framework would seek to improve UK trade policy formulation at the national and more widely at the regional and global levels. This would be achieved through evidence to bolster the case for policies that reduce impediments to efficient investment, the matching of labour and capital with their most efficient uses and improvements in productivity. In the area of trade policy, this would generally be achieved through greater openness and avoidance of more protectionist policies, as indicated by the above analysis of trade policy options under Brexit.

Figure 8: Stages of a comprehensive evaluation and possible evaluation indicators

Comprehensive evaluation	Some potential evaluation indicators
Identify the scope for liberalisation and economic reform, and the legislation and regulations affected	Possible instruments available to achieve liberalisation or reform potential
Estimate the likely direct economic effects of liberalisation and reform options, possible time scales for implementation and likely adjustment costs	Potential import, export and product price changes and productivity changes achievable under the reform option
Project the economy-wide and where relevant global impacts of product price and industry productivity changes	Quantitative projections of the economy-wide and distributional impacts of change and qualitative assessments of the broader implications of change
Overall assessment	Potential net benefits of proposed and alternative approaches against the potential that would be afforded by full liberalisation

Based on: IC 1995; PC 1999a,b; PC 2005a,b; PC 2006; PC 2012 ;and PC 2015, figure 4.3.

7 Conclusion

Brexit is occurring in an era of rising protectionist sentiments. Economic analysis supported by careful economic modelling can help identify strategies to move faster and to a more desirable end. Pursuit of provisions that can be implemented by unilateral liberalization and that are market promoting are likely to deliver greater and more immediate gains than long drawn out negotiations for partial liberalization options. Forfeiting early market promoting domestic liberalization and reform opportunities in order to retain negotiating coin for possible future negotiation of bilateral and regional trade agreements is likely to be costly to the community of the United Kingdom.

The establishment of a national policy review body could contribute to the development of trade and other economic policies in the national interest. Such a body could raise awareness in the United Kingdom of policies in the national interest during Brexit. It could also could help raise awareness of the implications and benefits of on-going technological and organizational change and changes in the global trading environment. The authority for an independent and transparent national review body to report in the national interest would be conferred by parliament.

Full economic evaluations could be undertaken of the impact of Brexit on product, labour and capital markets. Such evaluations would consider not just the impact of particular policies but also trade liberalization, reform gaps and opportunities for improvement. A comprehensive evaluation methodology could be undertaken by a national policy review institution.

Appendix 1 Country/region mapping adopted

<i>Regions in database</i>	<i>G20</i>	<i>Code</i>	<i>Country(s) in database region</i>
1 Australia	G20	AUS	Australia
2 New Zealand		NZL	New Zealand
3 China	G20	CHN	China
4 Hong Kong		HKG	Hong Kong
5 Japan	G20	JPN	Japan
6 Korea	G20	KOR	Korea
7 Taiwan		TWN	Taiwan
8 Indonesia	G20	IDN	Indonesia
9 Malaysia		MYS	Malaysia
10 Philippines		PHL	Philippines
11 Singapore		SGP	Singapore
12 Thailand		THA	Thailand
13 Vietnam		VNM	Vietnam
14 India	G20	IND	India
15 Rest of Asia & Oceania		ROA	Cambodia; Iran; Kazakhstan; Kyrgyzstan; Laos; Myanmar; Pakistan; Sri Lanka; Bangladesh; Rest of East Asia; Rest of Oceania; Rest of South Asia; Rest of Southeast Asia; Rest of Western Asia
16 Canada	G20	CAN	Canada
17 United States	G20	USA	The United States
18 Mexico	G20	MEX	Mexico
19 Brazil	G20	BRA	Brazil
20 Argentina	G20	ARG	Argentina
21 Rest of America		ROM	Bolivia; Caribbean; Chile; Colombia; Costa Rica; Ecuador; Guatemala; Nicaragua; Panama; Paraguay; Peru; Uruguay; Venezuela; Rest of Central America; Rest of North America; Rest of South America

Continued next page

Appendix 1 Country/region mapping (continued)

<i>Regions in database</i>	<i>G20</i>	<i>Code</i>	<i>Country(s) in database region</i>
22 France	G20	FRA	France
23 Germany	G20	DEU	Germany
24 Italy	G20	ITA	Italy
25 United Kingdom	G20	GBR	United Kingdom
26 Rest of European Union (28)	G20	REU	Austria; Belgium; Bulgaria; Cyprus; Czech Republic; Denmark; Estonia; Finland; Greece; Hungary; Ireland; Latvia; Lithuania; Luxembourg; Malta; Netherlands; Poland; Portugal; Romania; Slovakia; Slovenia; Spain; Sweden
27 Turkey	G20	TUR	Turkey
28 Russia	G20	RUS	Russian Federation
29 Rest of Europe		ROE	Albania; Armenia; Azerbaijan; Belarus; Croatia; Georgia; Norway; Switzerland; Ukraine; Rest of EFTA; Rest of Eastern Europe; Rest of Europe; Rest of Former Soviet Union
30 Saudi Arabia	G20	SAU	Saudi Arabia
31 South Africa	G20	ZAF	South Africa
32 Rest of World		ROW	Rest of Africa and the Middle East, and other countries not separately identified.

Source: Author's GTAP data base aggregation.

Appendix 2 GTAP industries and industry sectoring adopted

No.	GTAP code	Modelling industries	No.	Presentation groups
1	pdr	Paddy rice	1	Grains, Crops, Forestry
2	wht	Wheat	1	Grains, Crops, Forestry
3	gro	Cereal grains nec	1	Grains, Crops, Forestry
4	v_f	Vegetables, fruit, nuts	1	Grains, Crops, Forestry
5	osd	Oil seeds	1	Grains, Crops, Forestry
6	c_b	Sugar cane, sugar beet	1	Grains, Crops, Forestry
7	pfb	Plant-based fibres	1	Grains, Crops, Forestry
8	ocr	Crops nec	1	Grains, Crops, Forestry
9	ctl	Cattle, sheep, goats, horses	2	Livestock, fishing
10	oap	Animal products nec	2	Livestock, fishing
11	rmk	Raw milk	2	Livestock, fishing
12	wol	Wool, silk-worm cocoons	2	Livestock, fishing
13	frs	Forestry	1	Grains, Crops, Forestry
14	fsh	Fishing	2	Livestock, fishing
15	coa	Coal	3	Mining
16	oil	Oil	3	Mining
17	gas	Gas	3	Mining
18	omn	Minerals nec	3	Mining
19	cmt	Meat: cattle, sheep, goats, horse	4	Processed food
20	omt	Meat products nec	4	Processed food
21	vol	Vegetable oils and fats	4	Processed food
22	mil	Dairy products	4	Processed food
23	pcr	Processed rice	4	Processed food
24	sgr	Sugar	4	Processed food
25	ofd	Food products nec	4	Processed food
26	b_t	Beverages and tobacco products	4	Processed food
27	tex	Textiles	5	Textiles and clothing
28	wap	Wearing apparel	5	Textiles and clothing
29	lea	Leather products	6	Light manufacturing
30	lum	Wood products	6	Light manufacturing
31	ppp	Paper products, publishing	6	Light manufacturing
32	p_c	Petroleum, coal products	7	Heavy manufacturing
33	crp	Chemical, rubber, plastic products	7	Heavy manufacturing
34	nmm	Mineral products nec	7	Heavy manufacturing
35	i_s	Ferrous metals	7	Heavy manufacturing
36	nfm	Metals nec	7	Heavy manufacturing
37	fmp	Metal products	7	Heavy manufacturing
38	mvh	Motor vehicles and parts	7	Heavy manufacturing
39	otn	Transport equipment nec	7	Heavy manufacturing
40	ele	Electronic equipment	7	Heavy manufacturing
41	ome	Machinery and equipment nec	7	Heavy manufacturing

Continued next page

Appendix 2 GTAP industries and industry sectoring adopted (continued)

No.	GTAP code	Description	No.	Description
42	omf	Manufactures nec	6	Light manufacturing
43	ely	Electricity	8	Utilities
44	gdt	Gas manufacture, distribution	8	Utilities
45	wtr	Water	8	Utilities
46	cns	Construction	11	Construction, Other services
47	trd	Trade	9	Transport and communication
48	otp	Transport nec	9	Transport and communication
49	wtp	Sea transport	9	Transport and communication
50	atp	Air transport	9	Transport and communication
51	cmn	Communication	9	Transport and communication
52	ofi	Financial services nec	10	Financial services nec
53	isr	Insurance	10	Financial services nec
54	obs	Business services nec	10	Financial services nec
55	ros	Recreation and other services	11	Construction, Other services
56	osg	Public administration, defence, education, health	11	Construction, Other services
57	dwe	Dwellings	12	Dwellings

Source: GTAP data base version 9a.

Appendix 3 Estimates of border assistance for the UK and EU countries adopted in the illustrative modelling

Rules for conjecturing import price effects of Brexit

Tariffs on imports classified by GTAP product from France (FRA), Germany (DEU), Italy (ITA) and the rest of the EU27 (REU) economies into the UK (GBR) are conjectured to be equal to the maximum tariff (or tariff equivalent of border protection) on imports to GBR from Australia, Canada and the United States. These economies are selected on the grounds that the products they export to the UK could well be similar in range to those exported by EU economies.

Tariffs on imports from the UK to France, Germany, Italy and the rest of the EU27 are conjectured to be equal to the maximum of the rates from Australia, Canada and the United States, as well as New Zealand.

The tariff rates so obtained are shown in the table to this appendix. The tables show that there is substantial between-country variation suggesting the final rate at Brexit will be sensitive to the product mix within GTAP product groups. Selecting the maximum rate across the trading partners Australia, Canada and the United States (and from New Zealand for imports to EU27 economies), as is done for this illustrative framework study, is intended to be a conservative approach.

In GTAP, changes in tariffs are modelled using the concept of the power of the tariff (see box). The modelling assumes that there is no ‘water in the tariff’ and there is full pass-through of tariff induced prices changes to the price of imported inputs and merchandise for final consumption. To the extent that there is water in the tariff or not complete price pass-through, the model estimates would overstate actual effects.

Power of tariff

In GTAP, the power of tariffs and other border taxes is calibrated to the landed value (cost, insurance and freight (cif) cost of imports. It should be noted that tariffs are frequently levied on the free-on-board (fob) value of imports. For this reason, tariff rates in the GTAP data base will differ from rates in national tariff schedules.

GTAP uses CES functions to model import demand by product, source and destination at two level:

Level 1 – regional demand for disaggregated imported commodities by source is determined by the total demand for the commodity and the price of that commodity from one source relative a composite price from all sources.

Level 2 – each industry and final use category demand for disaggregated import commodities is determined by the total demand for the commodity (by use) and the price of imports relative to a composite price from domestic and foreign sources

A national model would typically include a representation of Level 2 while the GTAP multi-regional model includes Level 1 to differentiate between products by source.

Appendix 3 table Illustrative estimates of possible increased border assistance on UK and EU economies with Brexit

GTAP product code	GTAP product description	UK imposes tariffs on imports from EU	EU imposes tariffs on imports from GBR			
			France	Germany	Italy	Rest of EU
1 pdr	Paddy rice	3.85	3.85	3.98	24.80	24.70
2 wht	Wheat	19.80	12.70	9.92	8.71	19.80
3 gro	Cereal grains nec	4.58	17.00	33.70	12.00	44.00
4 v_f	Vegetables, fruit, nuts	4.80	8.41	9.40	7.75	9.15
5 osd	Oil seeds	0.00	0.00	0.00	0.00	0.00
6 c_b	Sugar cane, sugar beet	0.00	0.00	39.00	0.00	0.00
7 pfb	Plant-based fibres	0.00	0.00	0.00	0.00	0.00
8 ocr	Crops nec	2.65	8.48	7.30	3.40	6.73
9 ctl	Bovine cattle, sheep, goats, horses	3.90	6.41	5.82	1.35	3.96
10 oap	Animal products nec	11.90	6.21	6.44	0.33	5.80
11 rmk	Raw milk	0.00	0.00	0.00	0.00	0.00
12 wol	Wool, silk-worm cocoons	0.00	0.00	0.00	0.00	0.00
13 frs	Forestry	0.30	0.66	2.41	2.24	2.20
14 fsh	Fishing	8.69	8.39	10.00	10.10	8.72
15 coa	Coal	0.00	0.00	0.00	0.00	0.00
16 oil	Oil	0.00	0.00	0.00	0.00	0.00
17 gas	Gas	0.00	0.00	0.00	0.00	0.00
18 omn	Minerals nec	0.08	0.03	0.07	0.06	0.21
19 cmt	Bovine meat products	74.70	68.50	72.20	71.10	64.40
20 omt	Meat products nec	24.20	33.90	32.30	40.60	27.60
21 vol	Vegetable oils and fats	6.50	14.50	14.50	45.30	28.00
22 mil	Dairy products	41.50	174.00	172.00	65.20	66.90
23 pcr	Processed rice	21.00	21.20	21.20	21.20	20.70
24 sgr	Sugar	38.50	7.95	58.70	61.90	44.60
25 ofd	Food products nec	16.80	13.90	17.30	14.80	17.10
26 b_t	Beverages and tobacco products	7.68	6.38	8.00	7.10	6.98
27 tex	Textiles	7.46	6.31	8.14	5.86	6.35
28 wap	Wearing apparel	11.00	10.60	11.30	11.10	10.20
29 lea	Leather products	6.75	5.52	9.70	4.85	9.42
30 lum	Wood products	1.09	1.96	1.72	2.01	2.52
31 ppp	Paper products, publishing	0.01	0.05	0.06	0.00	0.21
32 p_c	Petroleum, coal products	2.05	2.21	1.95	2.09	2.09
33 crp	Chemical, rubber, plastic prods	2.70	1.98	5.05	3.45	4.33
34 nmm	Mineral products nec	4.79	4.23	3.26	4.82	3.62
35 i_s	Ferrous metals	0.70	0.87	0.71	0.14	0.39
36 nfm	Metals nec	1.66	3.59	2.96	2.26	2.76

Continued next page

Appendix 3 table Illustrative estimates of possible increased border assistance on UK and EU economies with Brexit (continued)

GTAP product code	GTAP product description	UK imposes tariffs on imports from EU	EU imposes tariffs on imports from GBR			
			France	Germany	Italy	Rest of EU
37 fmp	Metal products	2.02	3.02	2.50	3.23	2.74
38 mvh	Motor vehicles and parts	4.74	5.33	9.06	8.55	7.15
39 otn	Transport equipment nec	1.61	1.10	1.33	1.53	1.69
40 ele	Electronic equipment	2.10	1.36	1.28	1.75	0.76
41 ome	Machinery and equipment nec	1.64	1.87	1.69	1.69	1.44
42 omf	Manufactures nec	1.44	1.91	1.38	1.43	1.28

Source: Author estimates based on GTAP data base, Version 9a.

References

- Ali, F. A., Fiess, N., & MacDonald, R. (2010), 'Do institutions matter for foreign direct investment?' *Open Economies Review*, 21(2), 201-219. doi:10.1007/s11079-010-9170-4
- Anson, J., Cadot, O., Estevadeordal, A., de Melo, J., Suwa-Eisenmann, A., and Tumurchudur, B. (2004), 'Rules of Origin in North-South Preferential Trading Arrangements with an Application to NAFTA', Forthcoming, *Review of International Economics*, <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.515.3657>.
- APEC (Asia Pacific Economic Cooperation) (2009), *APEC Elements for Simplifying Customs Documents and Procedures Relating to Rules of Origin*.
- Armstrong, S. (2015), 'The economic impact of the Australia-United States free trade agreement', *Australian Journal of International Affairs*, Volume 69, Issue 5.
- Baldwin, R. (2013), 'Global Supply Chains: Why They Emerged, Why They Matter, and Where They Are Going', in *Global Value Chains in a Changing World*, D. K. Elms, and P. Low (eds), Geneva, World Trade Organization.
- Bank of England (2015), *EU Membership and the Bank of England*, Retrieved 14 November 2017, from <http://www.bankofengland.co.uk/publications/Documents/speeches/2015/euboe211015.pdf>
- Barbalet, F., Greenville, J., Crook, W., Gretton, P., and Breunig, R. (2015), 'Exploring the links between bilateral and regional trade agreements and merchandise trade', *Asia and the Pacific Policy Studies*, Volume 2, Number 3, pp. 467-484.
- Berden, K. G., Francois, J., Tamminer, S., Thelle, M. and Wymenga, P. (2009), 'Non-Tariff Measures in EU-US Trade and Investment: An Economic Analysis', report commissioned by the Commission of the European Communities, ECORYS Nederland BV.
- Bootle, R., Lyons, G., Jessop, J. and Minford, P. (2018), 'Alternative Brexit Economic Analysis', mimeo, February.
- Bruno, R., Campos, N., Estin, S. and Tan, M. (2016), 'An econometric analysis of the FDI effects of EU membership', in Centre for Economic Performance *BREXIT 2016 Policy analysis from the Centre for Economic Performance*, CEP, London School of Economics and Political Science (LSE).
- Conconi, P., Garcia Santana, M., Puccio, L., and Venturini, R. (2016), 'From Final Goods to Inputs: the Protectionist Effect of Preferential Rules of Origin', CEPR Discussion Paper 11084.
- Crook, W. and Gordon, J. (2017), *Rules of Origin: can the noodle bowl of trade agreements be untangled?* Productivity Commission Staff Research Note, Canberra, May.
- Dhingra, S., Ottaviano, G., Sampson, T., and Van Reenen, J. (2016), 'The impact of Brexit on foreign investment in the UK', in Centre for Economic Performance *BREXIT 2016 Policy analysis from the Centre for Economic Performance*, (CEP), London School of Economics and Political Science (LSE).
- Ebell, M. and Warren, J. (2016), 'The Longer-Term Impact of Leaving the EU', Institute of Economic and Social Research, May.
- European Commission (2017), 'Countries and regions: Switzerland', accessed November 2017 from <http://ec.europa.eu/trade/policy/countries-and-regions/countries/switzerland/>.
- G20 (2017), 'G20 Leaders Declaration: Shaping an interconnected world', Hamburg, 7-8 July.

- Gretton, P. (2013), 'National Economic Reform in a Federal System: The Case of the Australian National Competition Policy and Related Reforms', in Stephen Howes and Govinda Rao (Eds) *Federal Reform Strategies, Lessons from Asia and Australia*, Oxford, New Delhi.
- Gretton, P. (2017), 'Bilateral and Regional Trade Agreements: Disentangling the noodle/spaghetti bowl', EABER Working Paper Series, ANU, Canberra.
- ITC (International Trade Centre) (2015), *The Invisible Barriers to Trade: How Businesses Experience Non-Tariff Measures*.
- IC (Industry Commission) (1995), *Growth and Revenue Implications of National Competition Policy Reforms*, A Report by the Industry Commission to the Council of Australian Governments, Canberra, AGPS.
- Janicki, H. and Wunnava, P. (2004), 'Determinants of foreign direct investment: empirical evidence from EU accession candidates', *Applied Economics*, 36(5), pp. 505-509.
- Manchin, M., & Pelkmans-Balaoing, A. (2007), 'Rules of Origin and the Web of East Asian Free Trade Agreements' World Bank Policy Research Working Paper 4273.
- McKinnon 1973, *Money and Capital in Economic Development*, The Brookings Institution, Washington D.C.
- OECD (2016), *The Economic Consequences of Brexit: a Taxing Decision*, OECD Economic Policy Paper No. 16, OECD Publishing, April.
- (2017a), OECD.Stat, Productivity and ULC by main economic activity (ISIC Rev.4), Data extracted on 16 Nov 2017 from OECD.Stat
- (2017b), OECD.Stat, Multi-factor productivity, Data extracted on 2 Oct 2017 from OECD.Stat
- Petri, P.A. and Plummer, M.G. (2016), 'The Economic Effects of the Trans-Pacific Partnership: New Estimates', PIIE (Peterson Institute for International Economics) Working Paper Series WP16-2, January.
- PwC (2016a), 'Leaving the EU: Implications for the UK financial services sector', Report commissioned by TheCityUK, April.
- (2016b), 'Leaving the EU: Implications for the UK Economy', Report commissioned by The Confederation of British Industry (CBI), March.
- Pisani and Caffarelli (2018), 'What will Brexit mean for the British and euro-area economies? A model based assessment', Working paper No. 1163, Banca D'Italia, Rome.
- PC (Australian Productivity Commission) (1999a), *Impacts of Competition Policy Reforms on Rural and Regional Australia*, Inquiry Report No. 8, Canberra, September.
- (1999b), *Modelling the Regional Impacts of National Competition Policy Reforms*, Supplement to Impacts of Competition Policy Reforms on Rural and Regional Australia. Inquiry Report No. 8, Canberra, September.
- (2003), *From Industry Assistance to Productivity: 30 Years of 'The Commission'*, Productivity Commission, Canberra, December.
- (2004), *Rules of Origin under the Australia-New Zealand Closer Economic Relations Trade Agreement*, Research Report, Canberra, May.
- (2005a), *Review of National Competition Policy Reforms*, Inquiry Report No. 33, Canberra, February.

- (2005b), *Modelling Impacts of Infrastructure Industry Change over the 1990s*, Supplement to Review of National Competition Policy Reforms, Inquiry Report No. 33, Canberra, February.
 - (2006), *Potential Benefits of the National Reform Agenda. Canberra: Report to the Council of Australian Governments*, Canberra, December.
 - (2010a), *An Econometric Analysis of the Links Between the Formation of Trade Agreements and Merchandise Trade*, Supplement to Research Report on Bilateral and Regional Trade Agreements, Canberra, November.
 - (2010b), *A CGE Analysis of Some Economic Effects of Trade Agreements*, Supplement to Research Report on Bilateral and Regional Trade Agreements, Canberra, November.
 - (2010c), *Bilateral and Regional Trade Agreement*, Research Report Canberra, November.
 - (2012), *Impacts of COAG Reforms. Business Regulation and VET Canberra*, Research Report, Volumes 1 to 3, Canberra, April.
 - (2015), *Trade & Assistance Review 2013-14*, Annual Report Series, Canberra.
- Schumpeter, J. A. (1934), *The Theory of Economic Development*, Sixteenth printing, Rutgers, New Brunswick.
- Shaw (1973), *Financial Deepening in Economic Development*, Oxford, New York.
- Stratford, K. (2015, October 28), 'Bank Underground', Retrieved from <https://bankunderground.co.uk/2015/10/28/why-has-world-trade-been-so-weak-in-recent-years/>.
- Svirydzenka, K. (2016), 'Introducing a new broad-based index of financial development', IMF Working Paper, WP/16/5, Annex 1 *2013 Country Rankings on Financial Development*.
- Travena, L.J., Daniels, J.D. and Arbelaez, H. (2002), 'Market reform and FDI in Latin America: an empirical investigation', *Transnational Corporations*, Vol. II, No. 1, April 2002, UNCTAD/ITE/IIT/29.
- UNCTAD (United Nations Committee for Trade and Development) (2012), *International Classification of Non-tariff Measures*, New York and Geneva: United Nations.
- World Bank (2016), 'Potential Macroeconomic Implications of the Trans-Pacific Partnership', *Global Economic Prospects*.
- World Bank 2017, World Bank Data, 'Real Interest Rate', at: <https://data.worldbank.org/indicator/FR.INR.RINR>, accessed 18/9/2017.