Economical With The Truth

A review of *HM Treasury analysis: the long-term economic impact of EU membership and the alternatives*

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Introduction

When the Treasury (HMT) had to consider whether the UK passed five tests set by the Gordon Brown to determine whether UK should join the euro, it opened its doors and minds to obtain the best economic advice available from around the world. It considered what they were told in a seemingly open-minded and even-handed manner, drew conclusions from it, and published all the evidence on which their final verdict was based, as if to acknowledge that in a decision of such magnitude they had obligation, above those to the Chancellor and the government, to the British people at large.[1]

On April 18th 2016, they entered the debate about membership of the EU in an altogether different spirit, neither open-minded nor even-handed, nor attempting to discover expert economic opinion, and with not the least sign that they recognise any higher obligation to the British people. They seem simply concerned to provide data that would support the decision taken by the government of the day.[2]

The case they make does not depend on a rigorous analysis of what has happened over the past 40 years, since HMT has declined to regularly monitor and analyse the impact of the EU membership on the UK economy. Individual government departments have conducted hundreds of *ex ante* impact assessments of EU directives and regulations, in which they estimate as best they can the costs and putative benefits. These are, however, narrow, ad hoc and rather formulaic exercises, and never followed by any *post facto* studies to discover whether the supposed costs and benefits were ever realised. They have never been combined into any annual or cumulative assessment, at least not by any government department.[3]

As far as we can tell from research that has come into the public domain, HMT appears to have been more concerned about providing analysis for speeches by ministers called on to sell the EU and government policies to the British public. Hence their present case has nothing whatever to say about the questions that may help us make an informed choice about the merits of continued membership. Why, for instance, has the EU had such a distinctively high rate of unemployment and a distinctively low rate of GDP and productivity growth? Why has the Commission preferred for so long to negotiate trade economies with only small countries? Why have so few of its agreements included services when those of several small countries routinely do so? Why have the trade benefits of membership for the UK been declining since the start of the Single Market?

All these and many other important questions are ignored in the treasury report, in favour, for the most part, of the calculations and predictions derived from a gravity model of trade, pressing home an argument, using the predictions of a model, in a way that has long been practised by the EU. Every major step towards ever closer union, every major project, every trade agreement has been preceded by model predictions of the future gains in trade, employment or GDP. Equally well institutionalised is the custom that, once the prediction had served its purpose by persuading the doubtful and unwilling, the predictions are forgotten. *Post facto* assessments of them are extremely rare.[4]

Some of the calculations and predictions in this report are not easily amenable to empirical verification or falsification, but even if they were, it is quite certain that none will be tested or disproven before the referendum. This note does not attempt to do so. Its aim is simply to report evidence drawn from the databases of authoritative publicly accessible sources such as the UN, the WTO, World Bank, OECD and IMF, which refers to the variables about which HMT has made certain claims but which does not quite square with the case that the Chancellor and HMT wish to make.

A shadow over gravity model predictions

Before any data is presented, we may say a word on the first question asked of any economic model, namely whether it, and those making use of it, can be trusted. In this instance, the authors have declined to put our minds at rest by showing the exemplary track record of the model they are using. Since it soon becomes clear that those making use of the model are endeavouring to make a case for their political superiors we have some reason to be sceptical of their claims.

An earlier occasion when HMT made use of a gravity model is not reassuring. It happened at the start of the debate on the merits of the euro, when a UC Berkeley professor, Andrew Rose, announced that his gravity model showed that '… *that countries with the same currency trade over three times as much with each other as countries with different currencies.'*[5]

Supporters of the euro in the UK were naturally delighted to hear of his findings. *The Guardian*, *The Independent* and *The Economist*, and *Financial Times*, all reported his findings with the FT adding that his predictions were 'based on his established model of trade patterns in single currency areas', not mentioning that his 'established model' had been devised and presented only months before, nor any of the currency unions involved.[6] The UK lobby of British and foreign multinationals that favoured entry to the euro, *Britain in Europe*, commissioned a further report from Rose. This confirmed that his original estimate of past currency unions would apply to the UK, if it were to simultaneously, with others, join the euro currency union. 'British trade with euroland', he suggested, 'may eventually triple as a result of British entry into EMU, conceivably resulting in… a 20% boost to British GDP in the long run.' Rose therefore urged the UK to 'seriously consider whether it wishes to forgo this historic opportunity for an enormously beneficial expansion of its European trade.'[7]

There were one or two critical voices from fellow economists, which attracted no media attention in the UK, but large numbers of them greeted Rose's predictions as path-breaking research and replicated his 'seminal' work.[8] It also attracted attention from other countries either contemplating joining the euro and from others elsewhere in the world which were considering potential currency unions.

HMT was aware of, and apparently impressed by his research since he was invited to contribute his thoughts to their team applying the five tests to determine whether the UK should join the euro. In his submission, published by HM Treasury in 2003, he stuck to his guns and his model, and reiterated his basic message: British trade with euroland may eventually triple because of British entry into EMU.[9] HMT was clearly converted.

When the Chancellor announced that the UK would not join the new currency, he made it clear that this was only because the UK was not yet ready to join, rather than on the grounds of principle or merits of membership. His decision did not therefore reflect at all adversely on Rose's model and its predictions.[10] On the contrary, when giving his reasons to the House of Commons, the Chancellor seems to have had Rose's research very much in mind, even to claim part ownership of it, when he said 'Our assessment makes it clear that, with the advent of the single currency, trade within the euro area has already expanded and that, with Britain inside the euro, British trade could increase substantially with the euro area — perhaps to the extent of 50% over 30 years.'[11]

Over the next few years, as trade in the euro could be measured, the predictions of increases that might be attributable to it were progressively scaled down until one thorough study in 2008 decided that aggregate trade in the eurozone had been 'boosted by about 2%' and 'trade with non-members by 3%.' Rose himself remained silent on the subject for many years. In June 2015, however, with one of his co-authors Reuven Glick, he made a startling *mea culpa* saying that, after studying 15 years of EMU trade data 'we find no consistent evidence that EMU stimulated trade… Indeed [by one of their methodologies] the net effect of EMU on exports is negative.' Still more importantly perhaps, they were forced to conclude that ‘econometric methodology matters so much that it undermines confidence in our ability to estimate the effect of currency union on trade.’[12]

This is a serious and considered conclusion, the product of research extending over many years. One would have thought that HMT would make particular effort to reassure readers that this time around, their methodology is more trustworthy. If anything, they make light of the failings in Rose’s earlier work, attributing them, in a footnote, to an inappropriate dataset, which is not what Rose himself said.[13] They then go on to directly contradict him, stating that after ‘including a dummy variable to capture the impact of euro membership [they find] the euro to have had a statistically significant positive impact on trade between its members’, albeit with ‘little additional effect over and above the estimated impact of EU membership.’ But Rose has, as just noted, acknowledged that econometric methodology undermines confidence in our ability to estimate the effect of currency union on trade’.

This is not an encouraging start to an investigation of the effects of EU membership on trade. They might perhaps have reassured the reader by showing that they are able to correctly predict trade in 2005, or 2010 or 2015 from 1999 data so that we might confirm the accuracy of their estimates. Failing that, they might have warned readers that their predictions are high risk, and to be treated with considerable caution. Instead, they decide, like any salesman simply to commend their own ‘rigorous and objective analysis’.

Unfortunately, this is not the only occasion in the present publication when one feels the authors have been less than candid. It contains assessments of the trade benefits of EU membership without mentioning that it had made an earlier assessment of them, in 2005. This was in one of the very few pieces of research it conducted over the 43 years, and it only became public because of a Freedom of Information request.

This 2005 assessment was made ‘by using a standard gravity model to estimate the trade flows between EU and non-EU members, controlling for the size of country, the population and the real exchange rate, we should be able to determine the isolated effect that EU membership, subsequent accessions, the creation of the single market, and trade effects from other trade agreements (e.g. NAFTA) have had on trade flows between EU Member States, and between the UK and the EU, thus disentangling the “EU effect” from other influences such as the global growth of trade.’[14]

Their verdict was that ‘EU membership shows a significant and positive impact on the UK’s trade-membership initially boosted UK trade with the EU by 7%, outweighing trade diversion.’ However, it also found that ‘after this initial boost from accession, straightforward comparisons of UK trade with the EU 15 and the rest of the world from 1970 to date do not immediately highlight the significant boost in trade amongst the EEC members that one might have expected, particularly over the period of implementation of the Single Market.' They do, however, estimate a further Single Market effect for intra-EU trade as whole of 9%, adding hopefully that 'this may be an under-estimate.'

1. On the supposed trade benefits of Single Market membership

HMT does not refer to this earlier effort in their report, and though it appears to have used a similar methodology, it has now arrived, no doubt to the Chancellor's relief, at dramatically different conclusions. It now estimates that EU membership has increased UK trade by between 68% and 85% or 'by three quarters'. For corroboration, it mentions a number of independent researchers who have found that it increased trade by between 104% and 51%, and therefore feels comfortable that its estimate is in the middle.[15]

It went on to measure the impact of the EU on the three alternative trading relationships open to post-Brexit UK. They are, in descending order of attractiveness; first, the EEA relationship of Norway and Iceland which has, HMT decided, boosted their trade with the EU by somewhere between 35-53%; second, bilateral agreements, like that of Switzerland, have lifted trade by between 14-21%. Third, the least attractive post-Brexit option, the baseline is trading merely as a most favoured nation under WTO rules, which provides no boost to trade at all.

The report thereafter divides the world into these four kinds of country, and translates the supposed loss of trade over the next 15 years of the three post-Brexit alternatives - there being no possible benefits by its calculations - to UK GDP and income *per capita*, and then to George Osborne's headline figure of lost £4,300 income per household by 2030.[16]

Table 1 returns to the real world and shows the growth of goods exports of the 24 non-member countries whose exports over the 20 years 1993-2012 to 11 founder members of the EU Single Market exceeded one billion dollars per month in 2012. To eleven members rather than twelve, because in this analysis we hope to see how the UK compares with various kinds of non-member. It is therefore treated for the moment as an outsider, exporting to the other 11 members, and so to preserve comparability the UK is too excluded from the exports of the 24 non-members. The

EU mean, including the UK, is included as a measure of the rate of growth of intra-EU exports, but there too, of course, exports can only be to eleven other members.

Table 1: Real growth of non-members and members exports to the founder members of the Single Market 1993-2012 in US(1993)$

Partner country	Trading relationship	Monthly value in billions US Dollar (2012)	%Real Growth 1993 to 2013
Ukraine	WTO/MFN	1.2	471
United Arab Emirates	WTO/MFN	2.8	399
China & Hong Kong	WTO/MFN	14.9	398
Russia	WTO/MFN	8.1	376
Brazil	WTO/MFN	3.4	347
India	WTO/MFN	3.1	311
Turkey	Bilateral	6.0	267
Australia	WTO/MFN	2.6	235
Algeria	Bilateral	1.9	211
South Africa	Bilateral	1.9	195
Mexico	Bilateral	2.5	191
Korea	WTO/MFN	3.0	188
Malaysia	WTO/MFN	1.2	178
Morocco	Bilateral	1.6	166
Singapore	WTO/MFN	2.4	162
Canada	WTO/MFN	2.3	138
United States	WTO/MFN	23.2	128
Saudi Arabia	WTO/MFN	2.4	119
Switzerland	Bilateral	11.5	103
Egypt	Bilateral	1.3	101
Norway	EEA	2.6	100
Tunisia	Bilateral	1.1	95
EU-11 weighted mean	EU Members	140.4	75
Thailand	WTO/MFN	1.2	75
UK	EU Member	23.6	72
Japan	WTO/MFN	4.7	53

Source: OECD http://stats.oecd.org Dataset trade in value by partner country

The trading partners are ranked in order of the rate of their growth over the 20 years, and the kind of trading relationship they enjoyed with the EU is given by name and indicated by colour. Korea is left as trading under WTO rules, even though it concluded a bilateral agreement with the EU which came into force in 2011, since for most of this period it was trading with the EU under WTO rules.

Other things being equal, one would expect to find the growth rates of the exports to the EU following roughly the same order as the HMT model's calculated benefits, with exports between fellow members increasing most. Followed by those of the non-EU EEA members like Norway, followed by countries with bilateral agreements like Switzerland, and finally, slowest of all would be the exports of those who trade simply as WTO members.

In the event, the growth order is almost exactly the reverse of that HMT leads us to expect. The top of the table is dominated by the least advantaged trading partners, supposedly the worst post-Brexit alternative for the UK. HMT never mentioned these thirteen countries which have had to encounter all tariff and non-tariff barriers, which HMT predicts would severely limit post-Brexit UK trade, and whose exports nonetheless grew at a faster rate more than those of the UK and other EU members. It therefore never had to explain why post-Brexit UK would not be able to emulate them.

The other, slow growth bottom of the table is no less surprising since it is occupied by members of the EU trading with each other, and the UK trading with the other eleven, all of whose exports should, according to HMT, have benefited more than the non-members above them.

Other things, we may safely conclude, were most definitely not equal over these years, meaning there are critical variables which the HMT model has ignored or underestimated, since this evidence upends the message they wished to convey. It suggests that access to the Single Market as a member, far from being a benefit that must be preserved at any cost, has not proved advantageous in terms of the growth of UK goods exports, and that trading under WTO rules has not been much of a handicap. Far from it.

If, as HMT claims, it is the default post-Brexit option, the UK would be joining the more successful exporters to the EU, while shedding the costs of membership. What's not to like?

The table refers only to two decades of the Single market, while HMT refers to membership over 43 years. It may be, since we know the two decades of the Common Market were periods of particularly strong export growth, the case that if we extended the period of growth under review those two extra decades might compensate for, or even outweigh, the two decades of slow and declining growth under the Single Market from 1993 to 2012. They might leave us with a more positive view of the UK's 43 years of membership, which is consistent with the HMT arguments and estimates.

Unfortunately, once we decide to go further back to examine evidence from 1973 the publicly accessible data refers to a more limited range of partner countries. It will be drawn from the IMF Direction of Trade Statistics used by HMT, which have the considerable advantage of allowing us to continue to 2015. Like the previous OECD table, this one follows HMT by distinguishing four types of country, in terms of their trading relationship with the EU: members, EEA members, countries with bilateral agreements with the EU, and countries trading without any kind of beneficial arrangement, merely as most favoured nation under WTO rules. We are reduced, however, to just four in the last group, Australia, Canada, Japan and the U.S., all severely disadvantaged according to the gravity model, by virtue of their distance from the EU, an unavoidable bias which will help HMT argument. Those with least benefits in its view will be still further disadvantaged. Table 2 presents the available evidence.

Table 2: Real growth of goods exports to EU 11 by 20 nations according to their trade relationships with the EU during the Common Market, Single Market (and pre-crisis Single Market) years in US (1960)$

Exports of goods to EU 11	1973-1992		1993-2015		1993-2008		1973-2015	
	% Real Growth	CAGR	% Real Growth	CAGR	% Real Growth	CAGR	% Real Growth	CAGR
By UK	191	5.79	24	0.98	73	3.74	185	2.53
By EU 12	130	4.48	66	2.34	130	5.70	212	2.75
By 2 EEA countries	184	5.65	133	3.91	296	9.61	463	4.20
By 2 w/bilat. agrmts	180	5.57	117	3.58	144	6.11	442	4.11
By 4 under WTO rules	105	3.85	29	1.16	64	3.37	127	3.80

The two EEA countries are Norway & Iceland, the two with bilateral agreements are Switzerland & Turkey, and the four trading under WTO rules are Australia, Canada, Japan and the U.S.
Source: IMF Direction of Trade Statistics (DOTS) accessed 04/05/2016 at http://data.imf.org

The growth of goods exports to the EU 11 of 20 nations, split into four groups, is compared over two periods, 20 years of the Common Market, and 23 of the Single Market. It adds a third period, covering the pre-crisis Single Market years, 1993-2008, because figures which do not take account of the crisis are commonly explained or excused by reference to it. They incidentally provide a measure of the impact of the crisis and allow us roughly at least, to discount for it. Export growth over the entire period is summarized in the right-hand columns, enabling us to draw conclusions from this IMF evidence about the EU experience as a whole, and to compare them with those of HMT.

Since the table compresses a great deal of evidence, each of the four periods will be discussed in turn.

Export growth under the Common Market decades, 1973-1992

In an attempt to maintain a uniform set of countries throughout the periods being compared, the table has includes a number of anachronisms. In 1973 there were only nine members of the EU or EEC not 12, and the bilateral agreements with Switzerland and Turkey had not yet come into force, and they were therefore over most of these years trading under WTO rules.

The first two columns show a rough correspondence with the calculations from HMT's model, in that the goods exports of the UK grew more over these 20 years and at a higher rate than those of the EEA, those of countries which were later to conclude bilateral agreements with the EU, and those of WTO countries. The growth of four of these groups of countries corresponds to the HMT estimates of the benefits they enjoyed by virtue of their trading relationship with the EU. The fifth group, that is the EU 12 trading with each other, is the odd one out. According to the HMT, they, like the UK enjoyed great benefits by virtue of their EU membership, but if they did they are not visible in their performance over these 20 years'.

It would be wrong to attribute the UK's such a high rate of growth to EU membership, since UK exports to these same 11 countries had grown by 137% over the 13 years preceding entry at the higher compound annual growth rate (CAGR) of 7.45%. The rate of growth of UK goods exports to member countries did not climb after entry into the European Communities. It fell, though as may be seen it nonetheless remained higher than that of other countries

Suspecting that the anomalous position of the EU 12 exports to each other might be due to the inclusion of the three latecomers, Greece, Spain and Portugal, it was recalculated without them. Growth of exports between the nine fell to 118% and the CAGR to 4.19%, even less consistent with HMT estimates than the table suggests. To find that HMT calculations were inconsistent with known, indisputable recorded evidence from the past is disconcerting, but HMT evidently did not feel they had anything to explain.

There is, as mentioned, a small measure of agreement with HMT calculations, in that the growth rates of three post-Brexit alternatives types of country are in the same order as that suggested by HMT, though one should not make too much of this, since the IMF evidence shows only marginal differences between them. The CAGR of the EEA countries' exports was 0.14% lower than that of the UK, and the bilaterals' just 0.21% lower over these 20 years. By contrast, HMT calculated benefits to trade of around 75% for membership, 45% for EEA membership and 17% for a bilateral agreement, leading one to expect rather larger differences between the three types of country.

Export growth under the Single Market years, 1973-2015

Growth over the Single Market years, in the blue column, shows a remarkable transition for the UK. Having grown the fastest under the Common Market, their exports have recorded the slowest growth during the 23 years of the Single Market, and have been far surpassed by those of the EEA countries, by the two bilaterals, and marginally by the four countries trading under WTO rules without any kind of benefit. While the UK may have been exceptional, growth of other EU members' exports to each other was also comfortably exceeded by EEA countries and by those trading with the help of bilateral agreements. Having provided some guide to the Common Market years, the HMT model estimates of the trading benefits of the four groups of countries has little bearing on their export performance under the Single Market, a result that corroborates the result of the OECD table.

The only item of evidence in this period that is consistent with the HMT estimates is that EU members' exports to each other have exceeded the four 'WTO rules only' countries. It is, however, a small crumb of comfort. Many of the 'WTO rules only' high flyers included the OECD table had to be omitted since their data does not extend back to 1973, and the growth of the remaining four has been dragged down by the sleeping giant, Japan. Without Japan, they recorded real growth over the 23 years of 66%, that is exactly the same as the growth of EU exports to each other. With Japan aside, there has been no significant difference in the growth rate of the exports to the EU of three countries trading under WTO rules, and that of EU members trading with each other in the Single Market.

This evidence suggests that there is something fundamentally wrong not only with the rhetoric of the Single Market, but also the reality and the position of the UK within it has been especially unfavourable. It gives no sign whatever that the UK has enjoyed any benefits from it, and if we leave Japan out of the picture, from the point of view of UK export growth, all the post-Brexit alternatives would be preferable to remaining an EU member.

Export growth under the pre-crisis Single Market years, 1973-2008

The third set of figures shows that the crisis affected the exports of every country in the table, and the UK perhaps slightly more than the others. However, these figures do not prompt any drastic revision of the conclusions drawn from the 1993-2015 results. Until the crisis, the UK had marginally higher growth than the four 'WTO rules only' countries, but once again only thanks to the inclusion of Japan. The remaining three had real growth of 91% by 2008, and a CAGR of 4.40%, meaning the UK growth was exceeded, as the OECD table indicated, by all non-EU member countries other than Japan.

Export growth over 42 years, 1973-2015

The fourth set of figures is a summary of the entire period of the UK's EU membership, and confirms the picture of the Single Market years shown in the earlier table, rather than amend it as we thought it might. The compound annual growth rate of the exports of the UK and other EU members to each other has been lower than that of all the other countries who export to them, whatever their trading relationship with the EU might be, despite the benefits and protection provided for its members by the EU's tariff and non-tariff barriers. HMT spends a great deal of time describing these barriers to warn of the fate that awaits the UK if they were to join the EEA, or the countries with bilateral agreements, or those who trade under WTO rules without any kind of negotiated agreement. Contrary to what it says, the evidence shows that they have all done well, better than the UK. For the UK the figures of exports of goods are clear, it has been downhill all the way.

It is a startling, deeply depressing finding. For all the sound and the fury, the treaties and opt outs, the directives and regulations, the rhetoric and debate, for all the summits, speeches and press conferences, it turns out that the exports of EU members trading with each other have not been able to grow as fast as those of countries who have avoided the entire circus, as well as the rule-making and the membership fees. It is a finding comprehensively at odds with HMT estimates of the past, present and future benefits of EU membership for UK trade.

Just how far at odds may be seen by the HMT view of the history of the Single Market which emerges, in a passage in an annex, after their model-building was completed. They went on to say:

> Tests for a structural break confirm the differential impact of EU membership over time: the EU membership effect is found to be considerably more positive after implementing the 1987 Single Market Act than in the preceding years. For example, *the impact of EU membership on goods trade post-1987 is approximately double that of the pre-1987 impact...* If the impact of EU membership was a one-off increase in the level of trade, all the lagged coefficients would be zero. The lagged dummy variables are all positive which suggests that *the trade benefits from EU membership increase over time,* suggesting the estimates used may underestimate the overall impact of EU membership.[17]

The italics highlight the precise points of conflict between the OECD and IMF databases and the Treasury model. HMT shows that the growth in UK goods exports has declined, as shown in the IMF table above. If growth of goods exports is included among the 'trade benefits from EU membership', as one assumes they must be, then the IMF and OECD data directly contradicts the Treasury, whatever these organisations' heads, Ángel Gurría and Christine LaGarde, may say to support Mr. Osborne.

Who is to be believed? Who is the more trustworthy? The impassive, moving finger of the OECD and IMF databases which anyone can check for themselves? Or the Treasury model-builders producing a result which so pleased the Chancellor?

In the Appendix an attempt is made to understand why the database search could arrive at an exactly opposite view to that of the Treasury model. It may also help to answer those questions.

2. On the supposed disadvantage for Swiss & Norwegian services exports

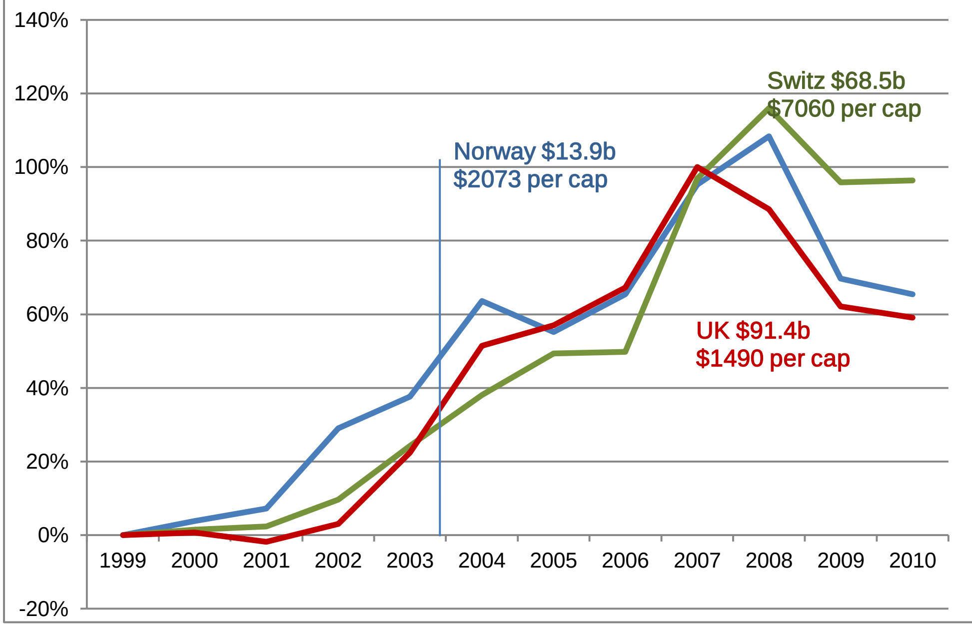
Corresponding to their claims about the benefits of EU membership for UK trade in goods, HMT makes claims about how the services trade of non-members have suffered, even when they have services agreements with the EU like Switzerland and Norway. These are intended to serve as a warning about how UK services would suffer were Brexit to be followed by EEA membership or by a negotiated bilateral services agreement with the EU.[18] They appear to think, or at least want the reader to think that the services exports of these countries have been handicapped by not being a member country, while those of the UK have prospered mightily.

Since services data is limited and uneven, we sometimes have to use, as we have done below in a comparison of UK, Swiss and Norwegian services exports to the EU, what the World Bank calls a ‘mirror technique’, that is to use the more comprehensive data of imports by EU members in lieu of the missing or fragmentary data of exports of Switzerland and Norway to the EU 15. The UK data, however, is of exports to other EU members.

There is one added hazard. The OECD datafile reports imports to the EU 15 from 1999-2003, and then imports to the EU 27 from 2004-2010. However, one can replicate this shift, more or less, by giving UK exports to the EU 15 till 2003, and then giving exports to an EU 21, the figures for the other six being incomplete. However, much the greater part of the exports to the EU of all three countries are to the EU 15, In the UK case, the additional exports to the six 2004 entrants added less than 5% to total EU exports.

Figure 1 shows the results. Imports by the UK from Norway and Switzerland, have been excluded, so that we have an equal number of partner EU countries in all three cases.

Figure 1: Real growth of services exports of Norway, Switzerland and the UK to the EU 15 1999-2003, and EU 26 2004-2010 in 1999 US$



The total value of services exports in 2010, in US(2010)$, are given, as well as their *per capita* value. UK exports were the largest in total value, but lag far behind in *per capita* value. Norway's exports have been some 70% higher than those of the UK, and Swiss exports being well over four times as large. The Treasury's claim that the UK services exports enjoy great benefits because of EU membership, which it would sacrifice by choosing an EEA and bilateral trade relationships post-Brexit, seems a little ridiculous. This is an argument that has had a very long run, but is long past time for it to be retired.

The omission of evidence of this kind is hard to explain. It would appear to be a deliberate decision to exclude evidence that contradicts the Chancellor's message, either that or they are simply ill-informed and careless in their research. There are many other occasions when one is faced with the same alternatives. They inevitably throw doubt on the integrity of their analysis as a whole.

3. On the supposed benefits of EU trade agreements with third countries

Throughout the report, much is made of the 50 or more EU trade agreements with 'third countries' around the world, of the difficulties that the post-Brexit UK would face in simultaneously renegotiating them all, and the possibility that it might not be able to do so at all. There is therefore a risk of a temporary and even permanent loss to UK exporters.[19]

The reader is left to infer that because of the large number of these agreements, and that there would be a considerable diminution or loss of export markets. The Treasury gives no figures and appears not to have studied these agreements at all.

Over the past 43 years, the EU has consistently preferred to negotiate with small states. It has few agreements even with medium-sized economies. Korea is the largest, and that agreement only came into force in 2011. Currently, there are 34 EU trade agreements with 58 countries in force, apart from the EEA and bilateral agreements with Switzerland. The vast majority of them refer only to goods. Together these 34 agreements cover, excluding the EU, EEA and Switzerland, just 6% of all UK goods exports.[20]

Services are referred to in 15 of the agreements in force in 2016. These are listed in Table 3, which also gives the GDP of the partner countries in the agreement, the value of UK exports to those partners in 2014, in both US dollars and as a proportion of UK's total services exports in that year. In total, these cover just 1.8% of UK services markets.

It is by any reckoning a dismal record, especially when compared with those of small independent countries like Singapore, Chile, Korea and Switzerland.[21] The proportion of UK export markets, of both goods and services, covered by EU agreements is therefore small, and the proportion of the UK goods trade which is likely to incur protective tariffs, if post-Brexit UK has to trade under WTO rules, still smaller.[22]

Table 3: Trade Agreements in services negotiated by the European Commission with foreign countries, 1973-2016

Partner	Year in force	GDP 2014 (US$bn)	UK services exports 2014 (US$bn)	as % of total UK services exports ($361.6bn)
Albania	'09	13.4	0.03	0.008
Bosnia & Herzegovina	'14	18.34	0.07	0.018
CARIFORUM States 14	'08	131.4	1.06	0.294
Central America 6	'13	210.9	0.28	0.077
Chile	'05	258.1	0.36	0.101
Colombia	'13	377.7	0.26	0.071
Georgia	'14	16.5	0.03	0.010
Korea, Republic of	'11	1410.4	2.89	0.800
Mexico	'00	1282.7	0.89	0.246
F.Y.R. Macedonia	'04	11.3	0.14	0.038
Rep. of Moldova	'14	7.9	0.07	0.020
Montenegro	'10	4.6	0.05	0.015
Peru	'13	202.9	0.28	0.077
Serbia	'13	43.9	0.09	0.024
Ukraine	'14	131.8	0.18	0.050
Total for 15 Agreements		$4121.8bn	$6.69bn	1.849%

Source: Regional trade agreements information system of WTO, http://rtais.wto.org/. GDP from World Bank http://data.worldbank.org/indicator. Export data from OECD Statistics on International Trade in Services database, EBOPS 2010, www.oecd-ilibrary.org.

At the end of the day, however, the loss depends on how beneficial the agreement has been. The UK government has never studied the impact of any EU agreements on UK, so HMT could not have the least idea whether they have been good for the UK exports or not. The European Commission has only recently begun to commission research on the effectiveness of EU agreements, but has no interest in discovering what their impact on the UK, or any other individual member country, might have been.[23]

The signs from a pilot study which measured whether EU agreements were followed by an increase in UK exports to the partner country were not encouraging. In 10 of the 15 EU agreements where there was sufficient data and time to compare pre- and post-agreement exports, UK exports actually fell. This compares unfavourably with the scores of Chile, Korea, Singapore and Switzerland as shown in Table 4.[24]

Table 4: An FTA effectiveness scorecard: export growth before & after trade agreements came into force in 5 countries

	No of agreements examined	Pre-agreement mean growth (CAGR) %	Post-agreement mean growth (CAGR) %	No of gains	No of falls	Gain/ fall ratio
Chile	17	16.0	7.4	5	12	-0.4
Korea	5	3.3	6.8	4	1	4
Singapore	12	8.3	13	8	4	2
Switzerland	15	2.6	7.2	11	4	2.75
UK (EU)	15	5.0	3.6	5	10	-0.5

Source: United Nations Commodity Trade Statistics Database, COMTRADE. www.comtrade.un.org

On this issue, as on others, HMT makes its case for remaining in the EU by looking optimistically to the future. While referring specifically to services agreements, though not mentioning that they presently cover just 1.8% of all UK services exports, it claims that ‘they are some of the most advanced external FTAs in the world’. It did not say which of the above it had in mind, or what it meant by ‘most advanced’. One guesses it was referring to human rights and environmental clauses in the agreements.

The report then hurries on to say, ‘…completing all the deals currently under negotiation would mean that 82% of the UK’s current exports will be with either the

EU or to markets with which the EU has external trade deals.' [25] Since the EU currently takes about 35% of UK services exports, this means that, sometime or other, when all the deals currently under negotiation are completed, there will be a jump of 40% plus in the services coverage of EU agreements. However, if the coverage in these new agreements, is as qualified as the HMT says the Canada agreement is, (when seeking to show how difficult post-Brexit life will be) it would unwise to assume that they will have much of UK services exports, no more impact in fact than their goods agreements have had.[26]

In his report on his renegotiation of the House Of Commons, Mr Cameron provided unwitting support for the view that the trade negotiation strategy of the EU has over the past 43 years been less than satisfactory from a UK point of view, and contradicts the absurd Treasury's enthusiasm for its achievements in this report. Somewhat as an afterthought to his major themes, he added that 'We have secured commitments to complete trade and investment agreements with… the USA, Japan and China, as well as our Commonwealth allies India, New Zealand and Australia.' Sometime in the future, it seems, the EU intends to catch up on what should have been its agenda for the past 40 years.

4. On the supposed reduction of EU regulations

HMT wishes to show that EU regulation is declining, and will decline in the future, and to convey this message is willing to ignore research that contradicts it.

The starting point for any discussion of the impact of regulation on the British economy must be the Open Europe report 'Out of Control' published in 2008, which was followed up more selective study of the 'Top 100 EU rules' in 2015.[27] This is, by a country mile, the most thorough, comprehensive and impartial piece of research on the subject, which applies a rigorous methodology to measure the present and future costs of regulation, and to assign them, as fairly as possible, to the UK government or to the European Commission.

Since neither the UK government, nor the European Commission, nor anyone else, has conducted a study on a remotely comparable scale, nor ever spent as much time discussing how regulation might best be measured and analysed, one might expect HMT's 'objective and impartial analysis' to pay some attention to it, and if it wishes to reject its conclusions to give reasoned grounds for doing so.

It decides instead to take another tack, and rather than address this research, or even mention the cumulative cost of £148.2 billion that Open Europe suggested it had reached by 2008, HMT argued 'that a number of studies have attempted to quantify the impact of EU regulation on the UK' which 'tackle the challenges in this area in different ways, and, as a result, there are a large range of estimates.'[28] Open Europe is mentioned in a footnote to this comment, alongside a number of studies that have mentioned regulation, but none of which even began the arduous task to analysing and counting thousands of impact assessments.

HMT then decided, that because there were 'a large range of estimates', it did not have to examine any of them, claiming that many external studies focus primarily on the costs of EU regulation, without full attention to the benefits, which is conspicuously untrue of the Open Europe research. It then decided it could rest its case on an opinion casually expressed in a study from LSE's Centre for Economic Performance which had noted: "It is unclear whether there are substantial regulatory benefits from Brexit. The UK already has one of the OECD's least regulated product and labour markets. 'Big ticket' savings are supposedly from abolition of the Renewable Energy Strategy and the Working Time Directive (WTD)145 – both of which receive considerable domestic political support in the UK" Open Europe had already analysed and published a detailed analysis of the domestic political support for 100 EU regulations, and assessed the likelihood of their continuation post-Brexit.[29]

HMT shows itself on this issue to be brazenly indifferent to the best available research about the costs of current EU regulation, and the best estimates of the likely reduction in regulation post-Brexit. Having decided there are no possible gains post-Brexit, it continues to make its case. It rests, for the record, though the Treasury does not extend the same courtesy to others, on the following propositions:

- That 'the flow of EC regulations and directives has decreased' pp.9, 57, 61, 82. True, from 3000 in 1995-1999 to 1500 in 2010-2014, though a reduction in the current flow says nothing about their scale, or about the impact of existing regulations and directives.

- That the OECD Product Market Regulation Index shows that regulation in EU countries is declining, p.54, which is encouraging to be sure, and the one piece of hard evidence HMT can muster, though the decline is only marginally greater than other OECD countries.

- That 'the overall costs of specific EU regulations are outweighed by the benefits of reduced regulatory barriers associated with the Single Market', p.55, but presumably they are not outweighed for the 95% of British companies who do not export to the EU.

- That a Declaration of the European Council in May 2015 said it would reduce regulation, p.82, which fails to mention the many previous declarations of similar intent. The Open Europe study mentioned was *inter alia* an attempt to evaluate the impact of the Better Regulation Agenda of 2005.

- That 'the EU applies the subsidiarity and proportionality principles', and there is a new annual mechanism to review compliance, p.82. In the past, these principles have been applied by the European Commission, whose opinion has never yet been successfully challenged. Whether this new EC-administered mechanism will make any difference remains to be seen.

5. On the supposed loss of FDI after Brexit

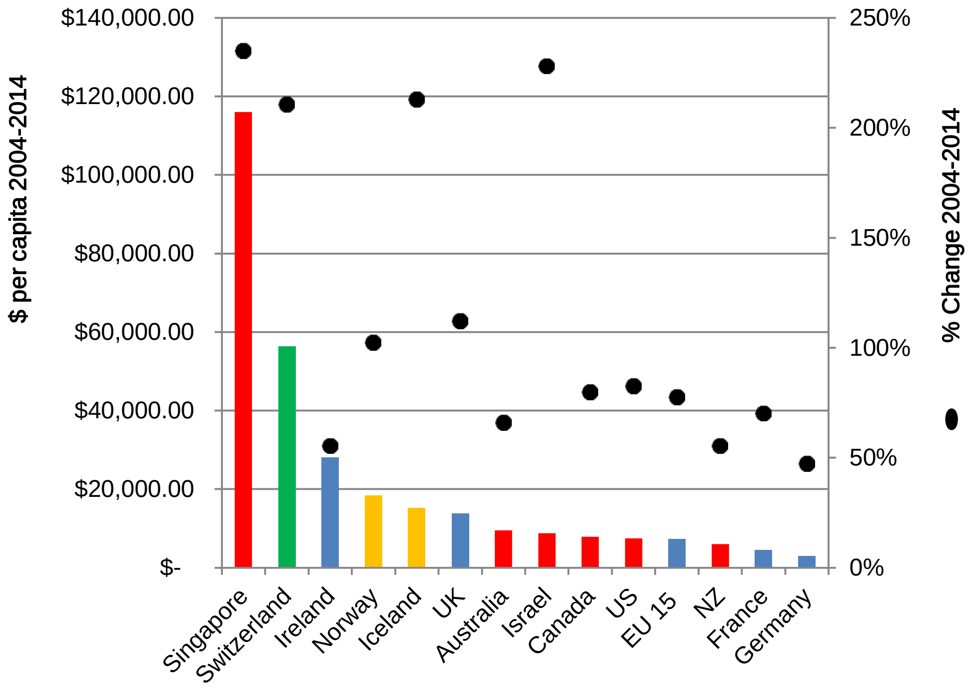
HMT claims that Brexit would mean a loss of inward Foreign Direct Investment (FDI). Since EU membership is one of the factors that is sometimes, though not always, mentioned as making the UK an attractive investment location for some investors, it sounds like a plausible argument. However, after years of research, no one knows with any certainty the determinants of investors' decisions. Equally plausible sounding arguments were popular at the time of the debate about euro entry, which proved to be totally false.[30]

HMT incorporates an estimated decline of between 18-26% of FDI inflows over 15 years of its 'modelling horizon', but this is guesswork, since there is no knowing what action a post-Brexit government might take to encourage FDI. Moreover, the HMT case would have been more trustworthy had it mentioned the levels of inward FDI stock of countries inside the EU and those outside the EU, so that the FDI appeal of the EU can be seen and compared with that of independent countries.

In Figure 2, the columns give the *per capita* value of inward FDI stock over the period 2004-2014. The colour indicates their trading relationship with the EU. The red columns are countries which trade with the EU under WTO terms, the green columns are countries with bilateral agreements with the EU, the orange are the two countries within the EEA, the most attractive post-Brexit option in HMT's view, while the blue are members of the EU.[31]

These figures indicate that, contrary to the long-standing popular view, the EU has not proven to be especially attractive to foreign investors, as has been acknowledged by the European Commission.[32] If it had been, the *per capita* mean of the EU 15 and its growth rate over the decade 2004-2014 would, one imagines, have been higher than those of independent countries in Europe and beyond.

Figure 2: FDI inward stock per capita 2004-2014, with % growth since 2004, measured in US dollars at current prices and current exchange rates per capita



To get the value of FDI inward stock from 2004 to 2014 shown in the columns, the 2004 figure was subtracted from the 2014 figure for each column. Source: UNCTAD Database, FDI inward stock, US$ at current prices and current exchange rates per capita.

6. On the supposed influence of the British in EU decision-making

At many points, the report is anxious to show that the British have exercised a decisive influence on EU policies, and that Brexit will be costly because of the loss of this influence. In the next section we, will consider its attempt to quantify the costs to Norway of its loss of influence when it voted to remain outside the EU in 1985. The following examples were mentioned by HMT, all of which but it decided in each case to be economical with the truth.

The Single Market – seen selectively

The best example of British influence is probably the Single European Act in 1986, which set out the steps towards the Single Market, and the passporting of financial services which allows companies that have satisfied the regulatory authorities in any one member state to operate in another.[33] The report mentions it on several occasions. However, British influence on the creation of the Single Market can easily be exaggerated. On this exceptional occasion, British aims happened to coincide with the aims of those member states who hope to create a European superstate.

Whether HMT are right to emphasize how the UK has ‘used its influence to maximise the benefits of the Single Market’ is doubtful.[34] Neither HMT nor any other UK government department, nor the UK representatives on Committee of Permanent Representatives in Brussels appear to have noticed the deceleration in the growth of UK exports of goods over the life of the Single Market. This does not suggest any of its benefits have been ‘maximized’. Nor do they appear to have noticed that a Single Market in services barely exists, though successive British Prime Ministers have called for it to be ‘deepened’ or ‘completed’. These words are a sure sign that those using them, like the Prime Minister and HMT have never studied the available evidence. The preceding section on the services exports of Switzerland and Norway shows that the UK has not benefited nearly as much from the Single market as these two non-member countries.

Financial regulation – half the story

A second example is the pre-crisis financial regulation, which has been carefully documented, but which HMT barely mentions.[35] Which is just as well since post-crisis has been a different story In a speech barely a year before this report was written the Chancellor sought to show how robustly he was defending British interests by announcing that:

> We’re going to court over the financial transaction tax, the bonus cap and short selling as well as the action I mentioned against the ECB on clearing houses……We have a good argument in all these cases.[36]

This report does not mention three of these four cases, because, good argument or not, they were all subsequently lost in court. It only mentions the fourth, on the location of clearing houses.[37] However, this was won not on the merits of the case, but on a technicality of the regulatory jurisdiction of the ECB, so it is probably best seen, though HMT does not mention it, as a provisional victory.

Trade Agreements – less than half the story

HMT argues that the UK 'influences the EU's trade priorities'. Maybe the present continuous tense was chosen with care, since the report is not then required to reflect on the past 42 years. Over those years, EU Trade Agreements have, as noted earlier, primarily been with small and very small countries, have seldom included Commonwealth countries and only a minority include services. The notion that the succession of UK Trade Commissioners, Soames ('73-77), Brittan ('93-99), Ashton ('08-09) and Mandelson ('04-08) steered EU negotiation strategy is a direction favourable to the UK is therefore fanciful. Then they are not supposed to favour their own country, and the record of the EU's trade agreements suggests they were all exemplary in their neutrality, though it is not clear how this negotiating strategy served the greater Community interest. The British Permanent Representative also seems to have done little to shift the Commission's trade strategy towards agreements that might help UK exporters.

The emphasis throughout this report is therefore on TTIP (the Transatlantic Trade and Investment partnership) and the future. Even though the negotiations have not yet been concluded, HMT nonetheless mention its estimated benefits. Whether it should be taken as an example of UK influence is debatable. Gordon Brown referred to trans-Atlantic free trade more than 12 years ago, during the euro debates, so the UK obviously has not been able to rush fellow members. Moreover, negotiations only finally went ahead in 2013 after the French lifted their veto after the eliminating audio-visual and media from the negotiations. The UK thereby sacrificed the trade interests of one of its industries in the interests of solidarity.

British influence at its high point

The Prime Minister's renegotiations probably show British influence at its highest point since behind them lay the threat of Brexit, and the loss of one of the largest net contributors to the EU budget. Few observers think that Mr Cameron got anything remotely close to his original goals, or indeed very much at all. And since the EU normally proceeds by horse-trading, we have yet to learn of what he conceded to get what little he did get.

If these re-negotiations are an indication of British influence at its high point, it seems fair to conclude that normally has rather little, and no more than one member of a club of 28, who has opted out of many of the institutions other members hold dear, should expect.

7. On supposed consequences for Norway's productivity of its lack of influence within the EU

When putting together their argument about 'the additional economic costs and risks of losing the ability to influence EU policy', HMT admitted these costs 'are hard to quantify but may be particularly important in the case of the EEA alternative.' They therefore turned to 'recent academic work' which 'looked at the Norwegian experience in the EEA since 1995 compared with Sweden, Austria and Finland… the main finding' of which 'was that if Norway had joined the EU in 1995 along with the 3 other countries, productivity levels would have been 6% higher in an average Norwegian region between 1995 and 2000.'[38]

On the back of the comparison of these four countries, these researchers went on to claim that they could also measure the increase in productivity of six other later-joining member countries. In the UK's case, they said that accession had led to an 8.6 percent increase in GDP per person after 10 years, and from 1973 to 2008 to an increase of 23.7%.[39] They did not explain why despite these benefits productivity remains consistently lower than in other OECD countries, nor why EU GDP has grown at a slower rate. Indeed they did not refer to these larger questions at all.

These researchers were making use of the 'synthetic counterfactual' method, which consists of creating an artificial control counterpart of the societies under examination. This is done by combining and weighting what appear to be the most relevant variables from a donor pool of other countries so that they match the subject country before 'the intervention' that is the subject of the investigation as closely as possible. In this case 'the intervention' is accession to the EU, hence the emphasis on those who joined after the six. The synthetic UK, was apparently similar in every relevant respect to the real UK, except that it did not join the EU in 1973, and can then be compared with the real UK over the post-accession years. The differences between the two provide measures of the impact of EU membership on the selected variables. Quite simple really.

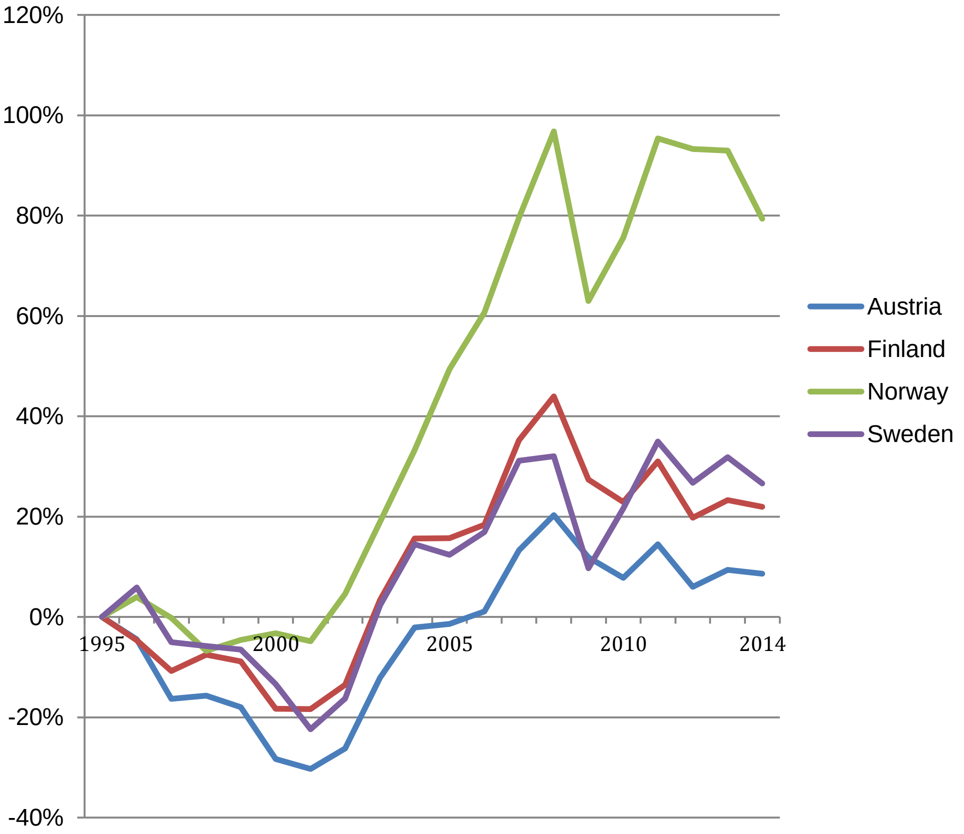
When first presented this method was greeted by some observers as imaginative and ingenious, though not yet to be taken entirely seriously, much like, it must be said, first reactions to Rose's work in which predictions were made about EMU from evidence about the currency unions of Burkina Faso and Chad, Vatican City and San Marino, and Tuvalu and Tonga.

All the interesting issues, hazards and risks raised by this pioneering methodology can be put on one side, as they are no interest to HMT. They apparently take the comparisons between the synthetic UK and the real UK entirely seriously, and think nine synthetic member countries provide convincing proof of how much the *per capita* GDP of the UK, and eight other member countries has increased as a result of EU membership.

We may see whether they were wise to do so, by returning to the real world, and to the issue that first prompted the appearance of these synthetic countries: the cost to Norway's GDP of not joining the EU in 1995 and not having any influence over its decisions, comparable to that of Austria, Finland and Sweden.

The graph below compares the real growth of the four countries' *per capita* GDP from 1995. It suggests that far suffering additional economic costs from an unwise decision, Norway has in fact benefited from remaining outside the EU, making a decisive advance to higher growth of GDP *per capita* than the other three countries, a few years after its people voted to remain independent. Anyone looking at this evidence would not think that the problem worth explaining was Norway's but that of the three member countries, especially as their low productivity growth has been shared by most EU members.

Figure 3: Real growth of GDP per capita 1995-2014, Norway vs Austria, Finland and Sweden in US (1995)$



The real world cannot, of course, disprove the claim derived from this synthetic counterfactual method of course, since Norway might have grown by a further 6% more had it become an EU member. However, the fact that it cannot be disproved reminds us that we are dealing with calculations that are not subject to normal canons of scientific inquiry.

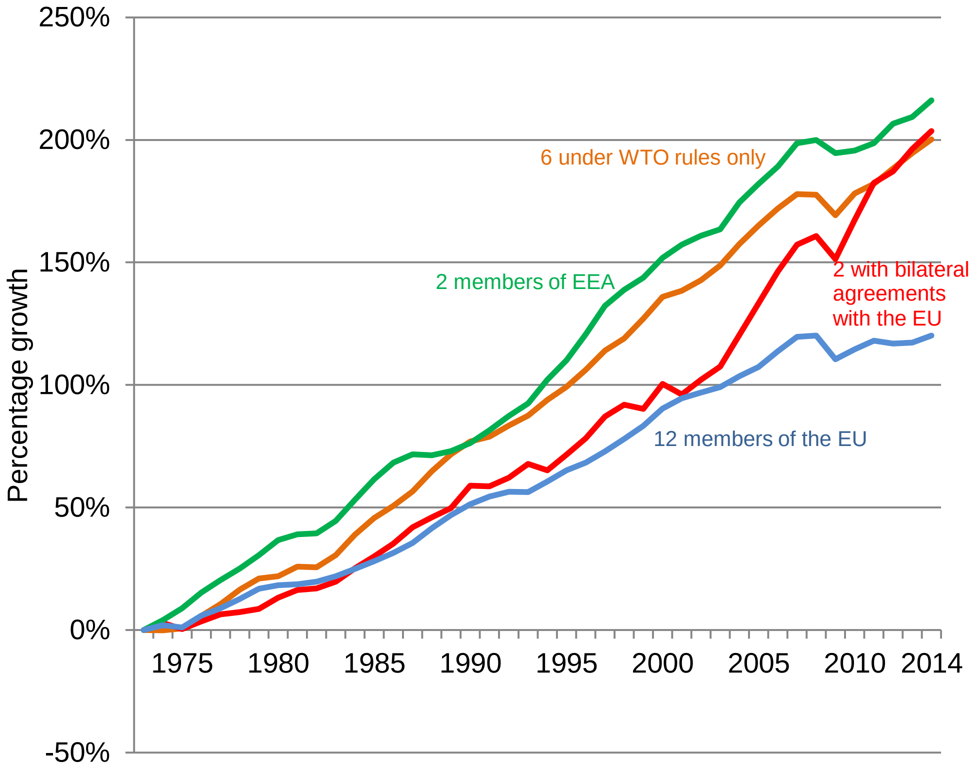
What makes HMT's use of this research is less than honest is that they did not refer to the evidence in the graph at all, and therefore could avoid offering any explanation of how the evidence from the four synthetic countries might be reconciled with it. By failing to do so, and still more by failing to present the data about the productivity of the UK and other members over the life of the Single Market EU, they leave a misleading impression of productivity gains in inside the EU and losses outside. We know the exact opposite to have been the case. The EU has been distinctive since the inauguration of the Single Market in 1993 for its low rate of productivity growth versus non-member countries in the OECD, and indeed by comparison with the three types of country which HMT is desperate to show have been disadvantaged by not being members of the EU.[40]

8. On the supposed benefits of membership for GDP growth

The main aim of all the arguments, calculations and predictions in the HMT publication is to show that the GDP of the UK, and therefore the livelihoods of the British people, have benefited from membership of the EU, and that they would suffer if the UK were to leave.[41]

That being so, one might think that HMT would prove its main point by showing how the GDP of the UK has fared over the years of EU membership by comparison with non-member countries. It never does so. Figure 4 does.

Figure 4: Real GDP growth of 4 kinds of trading nations, 1973-2014, measured in GDP at market prices (constant 2005 US$)



It shows the mean growth of the GDP of the EU 12 over the years of UK EU membership 1973-2014, in constant 2005 US$. It is compared with the three kinds of non-member countries which HMT thinks have been at differing kinds of disadvantage when trading with the EU.

Table 5 shows the growth of individual member countries, and UK GDP has grown over these years by 135%, 15 points above the EU mean of 120%. However, the striking difference in the graph is that the mean GDP growth of all three kinds of non-member countries, whatever their trading relationship with the EU, is significantly higher than that of the EU 12, even though two smaller EU member countries have, as the table shows, recorded exceptionally high growth that exceeds the non-member means.

Table 5: Real growth of GDP of the 12 founder members of the Single Market 1973-2014 in %	
Ireland	487
Luxembourg	316
Spain	146
UK	135
Netherlands	134
Portugal	130
France	123
Belgium	121
Germany	110
Denmark	94
Italy	89
Greece	62

Source: World Bank, World Development Indicators, GDP at market prices in constant 2005 US$.

The main argument of the HMT is that EU membership has and will continue to contribute to the growth of UK GDP, and that leaving it and trading with the EU as an EEA member, under a bilateral treaty or under WTO rules will lead to a significantly lower GDP. This is estimated to be 6.2% lower by 2030 than if we remained members of the EU. Bearing in mind that these other countries have all had higher rates of growth than the UK since 1973, this is one more Treasury argument that cannot be readily reconciled with the historical record.

Conclusion

There will be no commemorative decennial seminar and celebration for this Treasury report, as there was for that on the five tests, for no one, I imagine, could feel proud of it, or want to claim authorship of it. It has forgotten, obscured and concealed too much evidence about the impact of EU membership that the British people have the right to know. Unlike the five tests research, it has declined to recognize any obligation to the British people, higher than that to their present superiors, and has instead decided to present data that they think will persuade people to vote in the referendum as the Prime Minister wants them to.

HMT work for the five tests legitimized the decision to not to join the euro long before events subsequently corroborated their decision. This report will, by contrast, do the exact opposite. It will serve as a permanent reminder of the ways in which the Chancellor and Prime Minister used government resources to confuse the electorate and to subvert the democratic process, when those resources ought to have been used to inform them in an impartial manner. Should they succeed, it will provide good grounds for a second referendum.

The Chancellor's words on another occasion

'We knew there was a competitiveness problem in Europe before the crisis. But the crisis has dramatically accelerated the shifts in the tectonic economic plates that see power moving eastwards and southwards on our planet.

'Over the last six years, the European economy has stalled. In the same period, the Indian economy has grown by more than a third. The Chinese economy by nearly 70%.

'Over the next 15 years Europe's share of global output is forecast to halve.

'Make no mistake, our continent is falling behind. Europe's share of world patent applications nearly halved in the last decade. Unemployment... a quarter of young people looking for work can't find it.

'We can't go on like this.'

From a speech to the Open Europe Conference, January 2014
https://www.gov.uk/government/speeches/extracts-from-the-chancellors-speech-on-europe

Appendix: How could such divergent views of the impact of the EU occur?

The main text provides examples of assertions, claims, and estimates in this report about the benefits of EU membership which are plainly at odds with this historical record as published by OECD, IMF, UN Comtrade and World Bank databases.

They raise questions, quite apart from their accuracy. How is it possible that competent model-builders would publish their estimates and predictions without bothering to check them against these publicly available records? And then allow a Chancellor to use the authority of his office to make wild, high risk predictions based on inadequate and mistaken data that can only mislead the British people?

These questions can only be answered by someone within the Treasury who participated in the preparation of this report. One day perhaps a whistleblower will tells us what went on. The present note merely describes some of the ways in which the methodology of the Treasury model builders differs from that of the database search which produced the evidence in this note, in the belief that part at least of the explanation of their divergent conclusions may be found in their differing methodologies.

To explore these differing methodologies, it will be best to put on one side explanations for the divergence resting on the competence or the honesty of HMT researchers, or the pressure that subordinates in organizations often feel to produce results that their superiors want to hear. This is not always easy to do. It is, for instance, difficult to believe that anyone at the Treasury would not know about the low intra-EU rate of export growth, or its low rate of GDP growth, or the high rates of services of exports of Norway or Switzerland compared with the UK before writing repeatedly about the difficulties facing services exporters outside the EU or post-Brexit, or that they had never noticed that pre-TTIP the EU has always preferred to negotiate with small and mini-states. However, in the hope of discovering methodological reasons why the HMT model departs so far from the historical record, these researchers are deemed to be wholly competent and honourable people, who never write to order, or to gain favour with Mr Osborne.

One may begin with, the obvious differences. A database search is intended to find out what happened in the past, though it can only do so via the limited number of variables selected from those provided by various international agencies that can be conveniently handled, both mentally and manually, by the researcher.

A model is a search for the future, and takes the past for granted, since it arrives in the form of databases, and the researcher can accept as many variables as the model requires, and is under no pressure to select or limit their number, which is one imagines the thrill of the exercise in that all the variables that might affect the outcome under consideration can be considered simultaneously. These are fed into the model, so that the relationship between the variables can be explored and extrapolated to predict the future.

Once described it will be clear that as one moves from the rather two-dimensional world of the database search to the multi-dimensional of the model-builder that the risks of error increase at an exponential pace. The researcher has to be sure that the relationships between the variables have been correctly specified and if they not, or if they depend on assumptions and estimates that are in fact wide of the mark, then the errors are transmitted across the model. Moreover, data sources are themselves of vary quality, and the model builder is prone to contagious errors, as one poor or inadequate dataset infects all the other calculations in the model. By contrast, the database searchers are immune to such errors, since they work with fewer variables, for the most part in quarantined compartments, and usually have a very limited number of interrelationships, usually of time or value.

Anyone can search a database, whereas to create or refine a model requires a certain mathematical competence, and hence arises a further fundamental difference. The results of a database search can be replicated and verified by almost anyone, and since they are usually reported in graphs, tables or figures, they have, in addition to any peer review, a wider public common sense review. The chances of being misled for long are accordingly reduced.

The model builder, by contrast, is part of a small, closed community. Only other members of the community can take a view on the plausibility of the equations that structure the model, and it may well avoid such scrutiny for years. Given the multiple variables involved, outsiders have no means of replicating and checking its findings, and in any case the results, the estimates, the predictions are given in the form of coefficients which are not readily intelligible. Hence, it happens that though the risks of errors are far higher, the chances of noticing and correcting the error are far smaller.

Models often, therefore, have to be taken on trust, and the chances of being misled are very high indeed, as HMT should know having itself been misled by one for many years. This is, no doubt, why the Chancellor preferred to have assessments of the likely consequences of budgetary decisions made by the independent Office of Budgetary Responsibility which he created after he was appointed. There is a certain irony in the fact that he himself did not entirely trust the Treasury models' predictions, but now expects the voters to do so.

In this note, sections of the historical record have been retrieved from various agencies, OECD, IMF, World Bank, WTO and UNComtrade and UNCTAD, and then assembled and presented piece by piece. This procedure makes it almost impossible to ignore certain fundamental distinctions between goods and services, between imports and exports, and indeed the passage of time, since the number of entries in a graph or table must vary with the size of the EU. All the data has been retrieved and reported in terms of them. By contrast, such basic distinctions are blurred, merged or confused in the coefficients produced by the Treasury's model, and seldom re-emerge in the authors' commentary on them.

Goods and services

HMT's claims, estimates and predictions refer to trade (imports and exports), seemingly in both goods and services, whereas the evidence in the preceding table refers exclusively to the export of goods.

No doubt HMT preferred to work in terms of trade because the gravity theory on which its model, claims and estimates ultimately depend refers to trade. However, it has only become 'widely adopted' and 'long-standing' as the Treasury puts it, with reference to trade in goods. Its use for services is still exploratory and tentative, for the very good reason that services trade data is far limited and uneven compared with that for goods. No one could sensibly say what the impact of EU membership on UK trade in services might have been since there is no comprehensive dataset until 1999, and the necessary comparative data is still more recent. If HMT wished to use the gravity theory to make claims about trade in services, it would have been sensible, and more candid, to conduct a separate analysis, warn the reader that it is stepping on to shaky ground and that any predictions and claims made should be treated with extreme caution.

It decided not to do so, and with a hasty caveat decided to throw services into the hopper with the goods data in an attempt to see the benefits 'UK trade' has derived from EU membership.[42] This is high risk, slapdash, couldn't care less, as long as no one notices, methodology. To present no separate estimates for trade (or exports) in services versus those in goods, when they like everyone else, knows that the UK has a chronic deficit in goods and a modest surplus in services is discourteous, and given the importance of issue for voters, less than honorable.

Exports and imports

From a policy point of view, the growth of exports of goods and services is much the most significant metric when evaluating the merits of EU membership. The UK did not join the Common Market because it wanted to increase its imports, and while it might reasonably be said to have hoped it would increase in its trade, that was taken to be a means by which it might increase its exports. And nobody today would defend the political and economic costs of EU membership on the grounds that it has helped to increase UK imports, nor even simply its trade. The case that HMT itself tries to make throughout this report acknowledges the primacy of export growth. It refers to the UK jobs that are tied to exports, rates the post-Brexit alternatives as unattractive because of their impact on exports, quotes the Bank of England's concerns about post-Brexit export growth, and so on and on throughout the report

As long as there is a rough balance between imports and exports, using trade data does not matter too much because imports, exports and the sum of the two move, more or less, in sync, and therefore readily convertible one to another. However, as the growth of UK exports of goods to the EU has declined during the Single Market, they are no longer in sync. By 2015, exports to the EU 11 were just 37.95% of total trade in goods, and hence there is a realistic possibility in the future, of an increase trade being accompanied by a decrease in exports. It happened in 2006-7 and 2012-13.

Imports and exports both of course benefit employers, employees and consumers of a trading country, but in different ways and to different degrees. To proceed as if an increase in imports is as much of a benefit to the UK as an increase in exports, as if consumers, taxpayers and voters will be as pleased to pay significant political and economic costs for one as for the other is misleading. To refer merely to trade is therefore to obscure rather than illuminate what has happened, and what might happen.

HMT never explains whether or how the gravity model took account of this steady long-term decline in the growth of UK exports to the EU, and how in the face of them it could still arrive at such extremely high estimates of the benefits of membership in the past and future, even though, just ten years earlier, before the decline in the growth of goods exports was really established, they had given a very modest estimate of benefits, and complained how the Single Market had not lived up to expectations.[43]

They are paying the price, one might add, for many years in which they have neglected to analyse the impact of the EU on the UK economy, and have seem themselves as salesmen for the EU project.

Common vs Single Market

Judging by its own 'research' papers that have come into the public domain, HMT has seen itself as the advocate or sales representative of the EU project. Over 40 years, it has therefore never subjected the EU regard to this project, it has never paid the least attention to the 'binding guidance' for all public projects laid down in its own Green and Magenta Books. These rule books were published more than a decade ago, which were intended to ensure that public policy and projects were evidence-based. The EU project isn't. It is the great exception. HMT therefore has no established body of analyses or evidence or argument on which to draw when producing this report, other than the short note in 2005, which, for obvious reasons, it declines to mention. It is therefore peculiarly dependent on its model, which contains history incorporated in time series data.

As a result, this report is curiously indifferent to changes over time, though in an annex, it tells us that 'Tests for a structural break confirm the differential impact of EU membership over time' which is a model-generated historical judgement. It found that 'the EU membership effect is… considerably more positive after implementing the 1987 Single Market Act than in the preceding years. For example, the impact of EU membership on goods trade post-1987 is approximately double that of the pre-1987 impact.'[44]

As mentioned above, it is at points like this, that we would like to know whether this means a sharp increase in imports. I guess it depends on how we interpret the word benefits or the phrase 'considerably more positive'. If we assume that Treasury means, or at least includes, exports in these words, and that is most certainly what it wants us to assume, their claim is directly contradicted by OECD and IMF data both provide incontrovertible evidence of high growth of goods exports during the Common Market decades 1973-1992, followed by more or less continuous decline under the Single Market since 1993.[45]

This is indeed a curious model whose authors do not even bother to check that it is consistent with the known facts in the past before launching into predictions about the unknown future. The database searcher can take no such liberties, so this is another methodological difference with serious consequences for the findings and trustworthiness of any research.

References

[1] The process is described by the Chief Economist in a video of a seminar at the Mile End Group. Dave Ramsden, 'The Euro: 10th Anniversary of the Assessment of the Five Economic Tests' published June 27 2013.

[2] *HM Treasury analysis: the long-term economic impact of EU membership and the alternatives*. HM Government, April 2016. Hereafter *HMT*

[3] Though Open Europe memorably sought to do so in 2009 when seeking to measure the costs of EU regulation http://archive.openeurope.org.uk/Content/documents/Pdfs/outofcontrol.pdf and in 2015 conducted a follow-up study of the 100 most costly regulations http://openeurope.org.uk/intelligence/britain-and-the-eu/top-100-eu-rules-cost-britain-33-3bn/. Their reports are discussed below.

[4] The European Commission acknowledges only one, but there are two. See n.23.

[5] p.17, A.K. Rose 'One money, one market: The effect of currency unions on trade', *Economic Policy*, 15 (30) (2000)a. By his own account, he had first circulated the paper in 1999.

[6] However, it did mention the uncertainties surrounding the ancillary prediction of the increase in UK GDP that might result from joining the currency. A guide to these press reports, to his many publications on this theme, and to some criticisms thereof, is given on his website http://faculty.haas.berkeley.edu/arose/RecRes.htm#CUTrade

[7] p.13, Andrew Rose, EMU's Potential Effect on British Trade: A Quantitative Assessment, 2000b

[8] Rose's model had spawned a considerable literature, and he co-authored a meta-analysis of 34 similar predictions, and found that their consensus was that 'currency union increases bilateral trade by between 30% and 90%, with three rating its impact as zero.[8]

[9] pp.203-210, 'The Potential Effect of EMU Entry on British Trade', HM Treasury, *Submissions on EMU from leading academics*, EMU Study 2003, www.hm-treasury.gov.uk. One of his collaborators kept the flag flying. Jeffrey Frankel, 'The estimated effects of the euro on trade: Why are they below historical evidence on effects of monetary unions among smaller countries?' ASSA meetings, San Francisco, January 2009, http://www.hks.harvard.edu/fs/jfrankel/EuroTradec-ASSA-SF.pdf

[10] However, the views of HM Treasury team were not spelt out.

[11] 9th June 2003, http://www.publications.parliament.uk/

[12] Reuven Glick and Andrew K. Rose, Currency Unions and Trade: A Post-EMU Mea Culpa* Revised Draft: June 16, 2015 http://faculty.haas.berkeley.edu/arose/Glick2.pdf

[13] Their comment about his dataset is in *footnote 18*, p.159, *HMT*

[14] HM Treasury, EU Membership and Trade 2005, pp.6-7, http ://www.hmtreasury.gov.uk/d/foi_membership_trade.pdf

[15] pp.38, 129, *HMT*

[16] pp.138-142, *HMT*

[17] pp.164-5, Annex A – Modelling openness, *HMT*

[18] pp.10, 85, 105-6, *HMT*

[19] p.9, 105,127-8, *HMT*

[20] pp.273-282, M. Burrage, 'How difficult would it be for post-Brexit UK to replace existing EU trade agreements?' *The Eurosceptic's Handbook*, Civitas, London, 2016.

[21] Comparison with the four countries mentioned pp.152-160, M. Burrage, *Myth and Paradox of the Single Market*, Civitas, London, 2015. and pp.188-196, M. Burrage, *The Eurosceptic's Handbook*, Civitas, London, 2016.

[22] pp.273-282, M. Burrage, *The Eurosceptic's Handbook*, Civitas, London, 2016.

[23] Itaqa Sarl, 'Evaluation of the economic impact of the Trade Pillar of the EU-Chile Association Agreement', Final report, for the European Commission, Directorate General for Trade, March 2012: http://trade.ec.europa.eu/doclib/docs/2012/august/tradoc_149881.pdf. This refers to itself, and is referred to elsewhere by the EC, as 'the first wide-ranging, ex-post assessment of a specific bilateral trade agreement carried out at the request of the European Commission.' p.29, ibid. There was an earlier six-nation assessment, which seems to have been considered a pilot. Copenhagen Economics, 'Ex-Post Assessment of Six EU Free Trade Agreements, An econometric assessment of their impact on trade', prepared for the European Commission, DG Trade, February 2011: http://trade.ec.europa.eu/doclib/docs/2011/may/tradoc_147905.pdf

[24] For a full account of the methodology of the study see pp.154-160, Burrage, Myth & Paradox, *op.cit.*

[25] pp.45, 108, *HMT*

[26] p.106, *HMT*. For a comparative analysis of the effectiveness of 15 EU trade agreements on UK goods exports see pp.154-160, M. Burrage, *Myth & Paradox*, *op.cit.*

[27] http://archive.openeurope.org.uk/Content/documents/Pdfs/outofcontrol.pdf and the follow up is http://openeurope.org.uk/intelligence/britain-and-the-eu/top-100-eu-rules-cost-britain-33-3bn/ .

[28] p.61, *HMT*

[29] p.61, *HMT*

[30] Some research about the determinants of investors' decisions and the debate about euro entry is reviewed pp. 75-90,108-122, Michael Burrage, *Where's the Insider Advantage?,* Civitas, 2014.

[31] Although Luxembourg, Belgium and the Netherlands record high *per capita* inward stock, they have been omitted because they appear to include a high proportion of Special Purpose Financial Entities as distinct from authentic FDI to establish and run a business under the control of the investor. See *Ibid,* pp.86-90.

[32] The evidence about FDI in the UK and EU since 1973 is examined in *Ibid*, pp. 75-155.

[33] pp.74-75, *HMT*

[34] pp.10, 24, *HMT*

[35] pp.82-94, Europe Economics, *Optimal Integration in the Single Market: A Synoptic Review*, A Europe Economics report for BIS, April 2013.

[36] https://www.gov.uk/government/speeches/extracts-from-the-chancellors-speech-on-europe

[37] p.75, *HMT*

[38] p.140, *HMT*

[39] The eye, the needle and the camel: Rich countries can benefit from EU membership Nauro F. Campos, Fabrizio Coricelli, Luigi Moretti 05 April 2014

[40] pp.138-141, M. Burrage, *The Eurosceptic's Handbook*, Civitas, London, 2016.

[41] pp. 121, 131, 138, 142, *HMT*

[42] Their caveat, though it hardly merits the label, is that the IMF Trade in Services database 'provides bilateral trade data covering 195 countries for the period 1981 to 2009, albeit

with limited data for some countries.' The data is, in fact, severely limited for many countries. Great Britain is one of the more complete, and yet it has data between 1981-1984 for no partner countries, from 1985-1991 for two, Japan and the U.S., for 1992-1995 they are joined by eight more, only one of which is an EU member country, Poland. A full set of the EU 12 is only available for the years 1999-2011, and a comparison with a bilateral country such as Switzerland is only possible for the years 2004-7. https://www.imf.org

[43] HM Treasury, *EU Membership and Trade 2005*, pp.6-7, http://www.hmtreasury.gov.uk/d/foi_membership_trade.pdf

[44] pp.164-5, *HMT*

[45] The contrast between the Common and Single Markets is documented pp.21-28 Michael Burrage, Where's the Insider Advantage? Civitas, 2014 and in pp. ??? A Eurosceptic's Handbook, Civitas, 2016