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## **Abstract**

Much of the recent discussion on the impact of immigrants on the host economies relate to the costs they impose on the host country's public finances and the labour market rather than their contribution to the growth of incomes, technology and trade. This paper analyses the contribution of immigrants into the UK to the exports of the country. The analysis suggests that immigrants make a significant contribution to the growth of exports of services from the UK. Exports of services account for more than a third of UK's exports and the immigrants. The statistical analysis suggests that Whilst both the immigrants from the EU contribute to the growth of exports of services from the country the contribution of the immigrants from the Commonwealth is somewhat more than that of the EU immigrants mostly because of the recognised presence of the Commonwealth immigrants in professional and technical occupations in the services sector.

Key words; Immigration, Services, The A8 immigrants, Old and the New Commonwealth, services exports.

## **Introduction**

Debates on the impact of immigration on the economies of developed countries are now as intense as those in the recent past on the impact of FDI on the economies of the developing countries. The debate though is not about skilled immigrants, it is about the so called unskilled immigrants. As Jagdish Bhagwati puts it, developed countries have an appetite for skilled immigrants, not the huddled masses (Bhagwati 2004). Even so, the contribution of immigrants to the economies of the host countries is rarely talked about, it is the supposed costs of immigrants to the economies of host countries that make the headlines. The threat to jobs and wage rates of the locals the immigrants are supposed to pose and the pressure they exert on the public finances of the country have figured prominently in the media and the agendas of political parties contesting the impending elections in the UK. None of them though acknowledge the contribution of immigrants to the UK economy, they are all about costs. Indeed, carefully designed statistical studies, such as those by Christian Dustmann (2014), that identify the positive contribution of the immigrants to the public finances of the UK are summarily dismissed by the right wing press and opponents of immigration as defective in their methodology and erroneous in their conclusions.<sup>1</sup> This paper attempts to identify one amongst the varied contributions of the immigrants to the UK economy. It argues that the contribution of immigrants to international trade, specifically exports, of the trade dependent UK economy is considerable and the origin of the immigrants may also influence the size and nature of the impact.

## **Theory**

Trade theorists and labour economists have written extensively on the impact of immigration on factor prices and changes in the volume and composition of output and trade (Mundell, 1957; see Gaston and Nelson, 2013 for an extensive survey of the literature). Whilst labour economists emphasise the impact of immigration on wages of labour in the host country, trade theorists mostly emphasise changes in the composition and volume of output. In general, research by labour economists finds that immigration has, if at all, a very small

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<sup>1</sup> Both the Daily Telegraph and the Daily Mail assert that Dustman's statistical methodology is fallacious. See Dustmann's convincing rebuttal "Response to comments on fiscal impact of immigration on the UK, Centre for Research and Analysis of Migration (CREAM), University College, London, 26 November 2013.

negative effect on wages and employment of unskilled labour (Wadsworth 2010, Dustmann et al, 2005) Trade theorists working with the traditional Heckscher-Ohlin (HO) 2 goods and 2 factors model with all its assumptions, including constant returns to scale production functions, emphasise the impact of changes in factor endowments on output. Well known in this context is the demonstration that with a given international price ratio for traded goods and all the assumptions of the HO model, an increase in one of the factors of production results in an expansion of output of the good that uses the factor intensively and a contraction of the good that uses the other factor intensively. This theorem, well known as the Rybczynski theorem in the trade literature, assumes that there are no differences in the skill endowments of the existing and the newly added factor of production. Though it is purely a theoretical construct, the theorem's deduction, based on its assumptions, that changes in the volume of factor endowments result in changes in output rather than factor prices is of significance for analysing the impact of immigration on trade.

Immigration of labour may also induce technological change, which in turn may impact upon both the volume and composition of output. Thus, labour utilising technological change may absorb the immigrants and result in the growth of labour intensive goods and services. If this were the case, immigration may not have any significant impact on wages. Output changes may also occur if immigrant labour increases domestic production of import competing labour intensive goods. In this case domestic production would be a substitute for imports. Imports may also complement immigration of skilled labour.

Technological change may be induced, amongst other factors, by the formation of clusters of firms or agglomeration of production units. One of the features of the new trade theory developed initially by Krugman (1979) incorporates increasing returns to scale and imperfect competition in the trade model in place of perfectly competitive markets and constant returns to scale production function assumptions of the traditional trade theories. These assumptions enable the new theory to explain the presence of trade between countries with similar factor endowments. Trade in differentiated products is the explanation for trade between countries with similar endowments. Imperfectly competitive markets are characterised by the production of differentiated products by firms in similar industries. Firms producing differing varieties of products are likely to locate in regions with relatively cheap labour. This they would do if transport costs of products to consumers do not outweigh labour costs. Agglomeration of firms in

specific locations in turn results in external economies of both the technological and pecuniary varieties. A variety of factors promote such economies. Technological economies result from the interaction of workers in the industry with each other. The fact that the firms in the industry produce differentiated products allows workers to interact with each other without loss of knowledge specific to their firms. Pecuniary externalities may result from the fact that whilst each of the firms in the industry may not experience increasing returns to scale, the industry as whole may do so because of the presence of a large number of firms producing differentiated products. It is noteworthy that these sorts of economies follow from agglomeration of firms in a specific region.

The relevance of all these insights to immigration and trade is that agglomeration of firms may grow with the arrival of immigrants. Immigrants may seek to locate in regions with existing clusters of firms simply because of job opportunities and participation with workers with skills similar to their own. Indeed, immigration of skilled workers may also initiate agglomerations or clusters. They may introduce new products or attract locally owned firms and workers to locations they inhabit. Such contribution to the birth and growth of clusters promotes increased output of goods and services and exports.

In sum, trade theories, old and new, suggest that immigration may result in an increased volume of output and changes in the composition of output. These changes in output are most likely to have an impact on international trade of the country host to immigrants.

## **UK Immigration and Trade**

UK's experience with immigration and trade reflects the broad generalisation of the impact of labour augmentation on output and trade suggested by the theories.

Trade theories do not explicitly identify the channels through which labour immigration impacts on output and trade. The similarity of socio-economic characteristics between the host and home countries of the immigrants would facilitate technological change with an impact on trade. These similarities include ease with which immigrants are able to communicate with those with whom they work in the host country, adapt to the work styles of host country labour and share with the hosts a background in education and training. It is this

confluence of socio-economic factors that generates new products for both the home and export markets and also reduces costs of production of existing products.

Immigrants into the UK in general fall into two broad classes- those from the old and the new Commonwealth countries and the immigrants from the EU including those from the so called A8 Countries. The ties of the former group with the citizens and institutions of the UK are likely to be varied and stronger than that of the latter group. Immigrants from both the old Commonwealth (Australia, New Zealand, Canada) and the New Commonwealth (former colonies of the UK in Asia and Africa) into the UK, share several socio-economic traits of their host country including language, business practices, financial institutions, sports, and in some cases, a political framework based on democracy and parliamentary rule. This is so because of historical reasons stretching back to the colonial era when Britain introduced and developed several of these institutions including Universities and the English language in the colonies. All this now facilitates a confluence between the immigrants from the Commonwealth and citizens of the UK. Skilled immigrants into the UK from India consisting of software engineers, physicians, scientists, especially those specialising in pharmaceuticals, provide an excellent example of immigrants who promote a confluence with the citizens of the host country. They not only forge a trade relationship between their home countries and the host country but also promote foreign direct investment from the UK in countries such as India. Members of the diaspora often head the firms of their host countries investing in their home countries. In addition, the so called to and fro immigrants, those who frequently visit their home countries, can keep their host country firms abreast of market developments in their home country.

It is noteworthy that the confluence of the immigrants with the labour and business community of the host country not only promotes both exports and imports between the home and host countries but also with third countries. Immigrants from Uganda and India are well versed in sales and market development side of business that promotes exports to emerging markets such as China. Added to all of these features of the immigrants into the UK is the fast growing FDI from India in technology and human capital intensive industries in the UK. It is likely that the Indian diaspora in the UK have facilitated the growth of FDI from their home country. These Indian owned

firms in the UK such as the Tatas, with its acquisition of Jaguar cars, have promoted exports to fast growing markets such as China.

We have hitherto confined most of the discussion to immigrants from the Commonwealth countries into the UK. In recent years immigration from the EU, especially from the so called A8 countries such as Poland into the UK has increased. No doubt the EU immigrants also promote UK's trade, especially so because of the freedom of movement of goods and factors across member countries of the EU. The socio-economic confluence between the UK and the Commonwealth countries, though, is of the sort that is likely to have a relatively strong impact on trade. Whilst not neglecting the contribution of the EU immigrants to UK's trade, we argue that the impact of the Commonwealth immigrants on trade of the UK is likely to be much more significant than that of the immigrants from the EU countries irrespective of the skill disparities between the two groups. In other words, the impact of Commonwealth immigrants on trade of the UK is likely to be much more significant than that of the EU immigrants even if skill levels of the latter are similar to that of the former. This would be so for the reasons stated earlier.

Foremost of these is language-most if not all of the immigrants from the Commonwealth are educated in the English language and can effectively communicate with citizens of the host country. Proficiency in English on the part of immigrants is reported to substantially increase employment opportunities and earnings in the UK (Dustmann and Francesca, 2003). Much more significant is their familiarity with the trade related institutions including financial institutions in the host country. Added to this is their affinity to the culture of the host country. Apart from Cricket, the national sport of several of the Commonwealth countries, they are familiar with the literature, bureaucratic procedures and political institutions of the host country.

It is likely that export of services benefit much more than the export of merchandise goods from the presence of immigrants, especially Commonwealth immigrants, in the country. This would be so for two reasons. First, a majority of citizens of most Commonwealth countries, especially those from India, are well versed in services, especially trade and finance. This is an endowment from history and the institution of the joint family. The involvement of Indian businessmen in trade much more so than in production dates back to colonial times (Roy, 2011). Second, since the mid-eighties India has carved a niche in IT related services especially software. It is to be noted that the impact of

Commonwealth immigrants on UK's exports is not confined to the country's exports to the Commonwealth countries but extends to the totality of exports of the UK. This argument is based on the special socio-economic features of Commonwealth immigrants discussed earlier in the paper.<sup>2</sup>

### **Trends in Immigration**

Historically, UK has been one of the most popular destinations for migrants. According to the estimates of the Migration Policy Institute (MPI), UK ranks 6<sup>th</sup> in the world amongst all the destination countries. Total migrant population in the UK increased from around 2.4 million in 1975 to nearly 14.6 million by 2013 with a steady inflow of migrants every year. In terms of absolute size of the migrant population, the Commonwealth nations have always dominated the EU. However, the share of the commonwealth countries in the total number of migrants in the country has remained stable at around 29% for the last four decades (Table 1).

**Table 1: Stock of immigrant population from the Commonwealth Nations and the European Union in the UK ( Millions)**

Year	CW migrant Population	EU migrant population	Total migrant Population	CW immigrant population (% of total)	EU Immigrant population (% of total)
1975	0.720	0.205	2.426	29.68	8.46
1980	1.013	0.292	3.357	30.20	8.70
1985	1.253	0.372	4.345	28.85	8.57
1990	1.533	0.516	5.539	27.68	9.32
1995	1.803	0.669	6.683	26.98	10.02
2000	2.184	0.958	8.249	26.48	11.61
2005	2.886	1.291	10.448	27.63	12.36
2010	3.737	2.046	13.123	28.48	15.59
2013	4.212	2.507	14.602	28.84	17.17

Source: Office for National Statistics, UK. In this paper, any migration figure refers to gross migration.

EU's share of immigrant population in the UK more than doubled during the years 1975 to 2013 (Table-2) Yearly inflow of migrants from the EU

<sup>2</sup> It is worth stating that the qualifications, occupations and labour force participation rates differ considerably between Indian, African and old commonwealth immigrants and those from Pakistan and Bangladesh. Immigrants from the last two countries do not fare as well as the others in the UK labour market ( Dustmann etal 2003)



experienced a significant upsurge in 2004 when it increased from 61,100 in 2003 to 105,500 in 2004. This is due to the inflow of immigrants from the enlarged EU in 2004 with the inclusion of Hungary, Poland, Czech Republic, Estonia, Latvia, Lithuania, Slovakia and Slovenia (the A8 countries).

**Table 2: Yearly Inflow of migrants, from the Commonwealth Nations (CW) and the European Union (EU)**

Year	CW	EU
1975	56,600	18,400
1980	49,800	17,800
1985	54,400	24,200
1990	66,600	37,500
1995	55,600	42,200
2000	113,700	58,500
2003	142,300	61,100
2004	203,900	105,500
2005	171,500	118,400
2010	180,300	156,100
2013	91,000	186,000

Source: Office for National Statistics, UK

The academic qualifications of immigrants into the UK in general has increased over the years, noticeably so of the Indian and Chinese immigrants. As Dustmann et al (2003) report-

*“The black African, Indian and Chinese groups contain many more graduates than UK born whites and a correspondingly lower share of those with no qualifications. In 2000, around one third of the African and Chinese immigrant population living in Britain had a degree, compared to sixteen per cent of UK-born whites”.*

A high proportion of immigrants work in relatively low skilled occupations such as manufacture of food products and apparel manufacturing. It is, however, noteworthy that in recent years the proportion of immigrants working in human skill intensive occupations such as managers of manufacturing firms, pharmaceutical industry and hospitality related occupations has increased( Table-3)

**Table 3 - Top ten sectors of foreign-born workers, 2013**

Rank	Top10 Sectors by Workforce share,all migrants	%	Industry share (%)	Top 10 Sectors by workforce share, recent immigrants	%	Industry share (%)
1	Manufacture of food products	37.4	1.16	Manufacture of food products	14.5	1.16
2	Manufacture of wearing apparel	33.8	0.14	Accommodation	9.5	1.17
3	Domestic personnel	31.2	0.16	Manufacture of wearing apparel	9.4	0.14
4	Accommodation	27.8	1.17	Manufacture of pharmaceuticals	8.5	0.38
5	Food and beverage service activities	27.1	4.05	Food and beverage service activities	7.4	4.05
6	Services to buildings and landscape	23.3	1.93	Manufacture of furniture	6.5	0.3
7	Manufacture of pharmaceuticals	23.1	0.38	Computer programming and consultancy	5.7	2.04
8	Security & investigation activities	22.7	0.65	Employment activities	5.7	0.75
9	Warehousing & support for transport	22.5	1.18	Information service activities	5.4	0.1
10	Computer programming and consultancy	21.1	2.04	Forestry and logging	5.2	0.08

Note: sector share indicates the share of total employment represented by the occupations.

Source: Migration Observatory of the UK, 2014

The number of engineering graduates, software engineers and medical professionals has increased substantially in India and to a lesser extent in some

of the African countries. Indeed, in India the output of graduates specialising in science, engineering and IT has exceeded the number the economy can absorb. Press reports suggest that Indian universities and colleges produce 1.5 million engineers every year, many of whom cannot find jobs. Migration seems to be one option open to these graduates from prestigious Indian educational institutions such as the Indian Institutes of Technology. Whilst quite a few of these graduates find their way to the USA many of them have also settled in the UK. Readily available data shows that in the year 2000 a total number of 18,257 information technology specialists arrived from foreign lands into the UK, of this 11,474 were from India (Khadria, 2002). India with a share of 60.8% heads the list of all the immigrants in the UK working in professional services including IT services. The nearest contender to a top place in this list is the USA with 6.4% share of all the immigrants working in professional services. Indeed, 58% of India's immigrants into the UK, over the period 2000 to 2004, years for which data are available, were engaged in professional occupations (Tables 4 and 5) In addition to the immigrants, software experts from India and other countries work in British firms on short term contracts as guest workers. It is this presence of Commonwealth immigrants, principally from India, Australia, South Africa and Canada in high skilled occupations, that has had a marked impact on the exports of services from the UK.

**Table 4: Non-EU immigrants by occupations, 2000-2004 (number of permits Issued by the UK Government for entry of immigrants into each Occupation)**

	Old Commonwealth			New Commonwealth					USA	Japan
	Australia	Canada	South Africa	India	Malaysia	Nigeria	Pakistan	Of which India (%)		
Science and technology professionals	622	369	547	14808	359	201	284	94.6	1562	770
Health professionals	107	25	303	1470	93	122	267	75.3	33	6

Teaching and research professionals	703	331	414	244	35	87	76	21.5	744	85
Associate professional and technical occupations	327	117	218	531	192	31	180	56.9	479	74
Total Professional Occupations	1759	842	1482	17,053	679	441	807	86.7	2,818	935
b) Other Occupations	2469	1043	2921	12208	732	864	2076	80.6	6370	1468
<b>Proportions of occupation by nationality (%)</b>										
Science and technology professionals	14.7	19.6	12.4	50.6	25.4	15.4	9.9		17	32
Health professionals	2.5	1.3	6.9	5	6.6	9.3	9.3		0.4	0.2
Teaching and research professionals	16.6	17.6	9.4	0.8	2.5	6.7	2.6		8.1	3.5
Associate professional and technical occupations	7.7	6.2	5	1.8	13.6	2.4	6.2		5.2	3.1
<i>Total</i> Professional Occupations	41.6	44.7	33.7	58.3	48.1	33.8	28		30.7	38.9
b) Other Occupations	58.4	55.3	66.3	41.7	51.9	66.2	72		69.3	61.1

Source: Salt and Millar (2006)

**Table 5: Share of Indian immigrants amongst all Non EU Immigrants, 2000-2004**

	Old Commonwealth			New Commonwealth				USA	Japan
	Australia	Canada	South Africa	India	Malaysia	Nigeria	Pakistan		
Science and technology professionals	2.6	1.5	2.2	60.8	1.5	0.8	1.2	6.4	3.2
Health professionals	3.3	0.8	9.2	44.9	2.8	3.7	8.1	1	0.2
Teaching and research professionals	17.1	8	10.1	5.9	0.8	2.1	1.8	18.1	2.1
Associate professional and technical occupations	9.8	3.5	6.5	15.8	5.7	0.9	5.4	14.3	2.2
All Professional Occupations	5	2.4	4.2	48.6	1.9	1.3	2.3	8	2.7

Source: Salt and Millar (2006)

### **Trends in UK's Trade**

Over the previous three decades, foreign trade of the UK as a percentage of GDP has steadily increased. It was a substantial 49.60% in the year 1980 and, by 2013, it was as high as 61% of GDP. Whilst both export and import shares have increased the growth of imports has exceeded that of exports (Table 6).

**Table 6: Foreign trade of the UK**

Year	GDP (Billion, constant 2005 US\$)	Trade (% of GDP)	Export (% of GDP)	Imports (% of GDP)
1980	1241.1	49.64	25.94	23.7
1985	1385.9	53.75	27.48	26.26
1990	1647.6	48.03	23.15	24.88
1995	1789.4	53.9	27.17	26.74
2000	2087.4	54.59	26.31	28.28
2005	2412.1	54.12	25.75	28.37
2010	2477.5	59.75	28.68	31.07
2013	2578.6	61.56	29.84	31.72

Source: World Development Indicators, World Bank 2014.

UK's trade volume with both the regions- Commonwealth and EU- has also expanded at a rate faster than the growth of UK's total exports and imports. UK's total exports grew at an annual average rate of 7.49% during 1988-2013 whereas its exports to Commonwealth nations grew at a rate of 10.41% during the same period. Similarly, UK's total imports from the world grew at an annual average growth rate of 7.62% which is significantly lower than that from the Commonwealth (14.66%). Growth of UK's trade with Commonwealth nations also outpaces that with the EU. UK's exports and imports from EU have registered growth rates of 8.52% and 9.43% annually, higher than the growth in aggregate trade, but much lower compared to the trade with the Commonwealth countries (Table-7).

**Table 7: Total exports and imports of UK (billion US\$)**

Year	Total Export	Total Import	Export to CW	Export to EU	Import from CW	Import from EU
1988	263.37	268.72	9.39	72.91	6.47	100.55
1990	289.92	290.29	13.42	98.35	9.944	118.01
1995	379.4	342.41	19.94	135.02	17.16	153.89
2000	507.69	527.44	24.31	159.12	20.073	188.34
2005	621.26	684.24	28.99	203.54	33.104	278.95
2010	676.79	717.97	33.99	212.47	46.14	297.02
2013	723.55	751.7	37.56	228.92	43.96	354.89
AAGR	7.49%	7.62%	10.41%	8.52%	14.66%	9.43%

Source: World Development Indicators, World Bank 2015 and UN COMTRADE (various years).

Note: Both exports and imports are expressed in constant 2005 prices. AAGR is annual average growth rate.

Another feature of UK's exports is the significance of services in total exports from the UK. Exports of services accounted for 38% of all exports at £773,127 million in the year 2013. Total imports during the same year are reported at £53387 million yielding a surplus of £63806, unlike in the case of goods that has for several years registered a deficit. UK's exports of services consists mostly of high tech services such as Business and Professional services (30% of total services exports in the year 2013, Intellectual property services (10%) and computer and information technology services (13.95%). A large proportion of UK's services exports is accounted for by the EU and EFTA countries (43%) followed by the USA with a 28% share. The Asian countries (17%) headed by China are turning out to be fast growing importers of services from the UK.

These facts and figures relating to immigration of labour into the UK and its trade suggest that immigration has had a significant impact on the trade of the UK, especially exports of services that are growing fast. A large proportion of immigrants, more so the immigrants from the Commonwealth countries, are in occupations that directly and indirectly contribute to services. The contribution of immigrants may have had a significant impact on the exports of the UK. We proceed to statistically test these propositions.

## **Statistical Methodology**

Econometric models investigating the impact of immigration on trade are mostly in the gravity model of trade framework. Distance between trading countries along with the GDP of the trading countries is used to measure many of the factors that influence trade. The model, in its basic form, can be expressed as follows:

$$\text{Trade}_{ij} = F(\text{GDP}_i^{\beta_1}, \text{GDP}_j^{\beta_2} / \text{D}_{ij}^{\beta_3}) \text{ where}$$

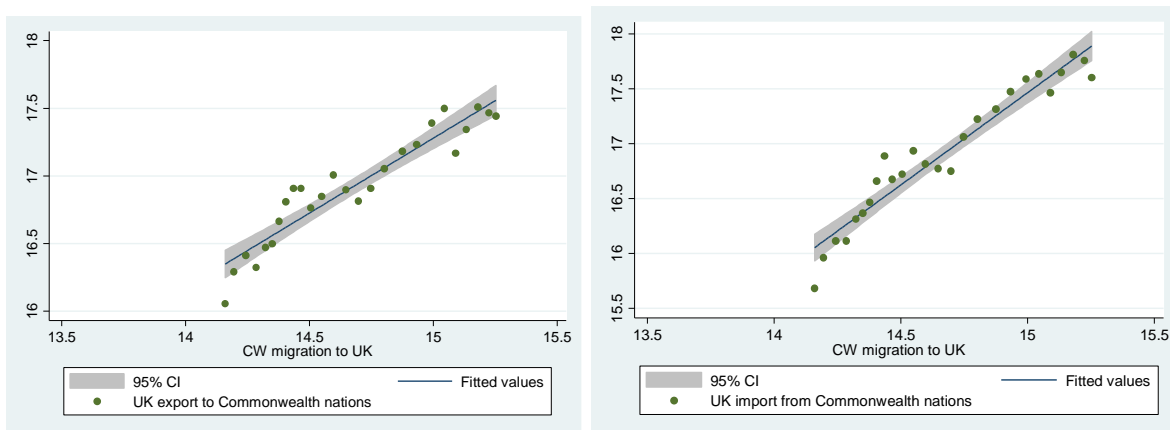
'Trade' denotes trade flow between country i and country j, 'GDP' corresponds to the GDP of the countries and 'D' stands for the distance between them. The model has been estimated by studies on the impact of immigration on trade, most recently for Sweden ( Hatzigeorgiou 2010). The results of the exercise identify a statistically significant impact of immigration on both imports and exports of Sweden with the former exceeding the latter. These results reflect the composition and geographical proximity of immigrants to their home country. Distance may not be a significant determinant of trade of the UK both because

of its long established trade and factor flows connections with distant Commonwealth countries and the significant contribution of services to the trade of the country. Services are more often than not delivered by the presence of the producers in the location of the consumers and in recent years several services are transmitted over the wire as it were.

The statistical estimates in the paper relate to both total exports of the UK and its exports of services. In both cases the propositions tested are two fold- first, that immigration has an impact on exports of the UK and second immigrants from the Commonwealth countries exercise a much more significant impact on exports of the country than immigrants from the EU countries.

Scatter diagrams (Figures 1 and 2) show a strong correlation between UK's trade and immigration from the Commonwealth nations. There is also a correlation between immigrants from EU and UK's trade with EU, the association, however, is marginally stronger in the case of Commonwealth's trade with the UK (0.86 vs 0.84 in case of EU).

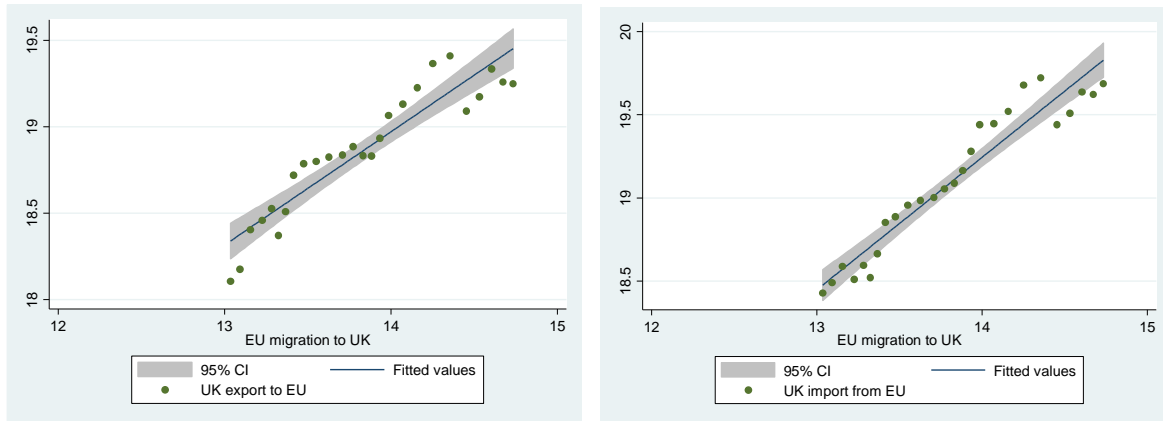
**Figure 1: UK-Commonwealth Trade-Migration Scatterplot**



Source: Authors' estimates. Commonwealth migration to UK refers to the total migrant population in UK whose home country lies in the Commonwealth Region. See Table 2 also.



**Figure 2: UK-EU Trade-Migration Scatterplot**



Source: Authors' estimates. EU migration to UK refers to the total migrant population in UK whose home country is in the EU.

The regression equations that are estimated are as follows. Apart from immigrants, growth rates of GDP in the importing countries are likely to impact on exports of services. As growth rates increase the share of manufacturing and services in the GDP are likely to increase as per the well-known Kuznets paradigm, hence our expectation that growth rates of GDP in the importing countries will have an impact on exports of services from the UK. For reasons stated earlier, FDI from the UK is also likely to contribute to the growth of services exports.

$$SE_t = \beta_0 + \beta_1 CWIMG_t + \beta_3 \Delta CWGDP_t + \beta_4 \Delta EUGDP_t + \beta_5 FDI_t + \beta_6 CWMFG_t + \beta_7 EUMFG_t + e_t \quad (1)$$

where, at time 't', 'SE' is exports of services from the UK, 'CWIMG' refers to Commonwealth immigrant stock, 'CWMFG' and 'EUMFG' correspond to manufacturing sector share in aggregate GDP of the Commonwealth and EU countries respectively, 'CWGDP' is rate of growth of GDP of the Commonwealth countries, 'EUGDP' is rate of growth of EU GDP and 'FDI' corresponds to Foreign Direct Investment from the UK. The time period considered in the analysis is 1981-2013.

We also estimate the equation with EU migrant stock (EUIMG) and total migrant stock (TOTALIMG) where each migration variable enters the equation individually. We re-run the model using UK's total exports as dependent variable. All the variables are expressed in natural logarithms except the GDP growth rate variables. Growth rates are negative in some years and, hence, they

cannot be expressed in logarithms. The estimated results are shown in the following table.

**Table 8: Estimated Results with Services Exports as the Dependent Variable**

Independent Variables	OLS (CW) (I)	Prais-Winsten (CW) (II)	OLS (EU) (III)	Prais-Winsten (EU) (IV)	OLS (Total) (V)	Prais-Winsten (Total) (VI)
CWIMG	0.313**	0.425**				
EUIMG			0.185**	0.282**		
TOTALIMG					0.257**	0.364**
$\Delta$ CWGDP	0.011	0.009	0.011	0.009	0.011	0.009
$\Delta$ EUGDP	-0.007	-0.003	-0.008	-0.002	-0.007	-0.003
FDI	0.407***	0.388***	0.418***	0.387***	0.413***	0.390***
CWMFG	1.860**	0.743	1.995***	0.683	1.910***	0.720
EUMFG	0.041	0.067	0.032	0.066	0.040	0.069
Constant	7.918**	3.922	10.154***	6.120**	8.720***	4.613
R <sup>2</sup>	98.4%	99.1%	98.3%	99.2%	98.3%	99.2%
Ramsey Reset Test	P-value=0.785		P-value=0.633		P-value=0.724	
Portmanteau test	P-value=0.00		P-value=0.00		P-value=0.00	

Note: The dependent variable is  $SE_t$ . \*, \*\*, \*\*\* denote statistical significance at 10%, 5% and 1% respectively. Heteroskedasticity-robust standard errors have been used. We initially included a time trend in our model but it came out to be statistically insignificant and consequently we dropped it from the model. It should be noted that exclusion of the trend does not alter our findings in any way. The mean variance inflation factor (vif) values are considerably lower than 10 for each of our estimating regressions which confirms the absence of any multicollinearity problem.

Ramsey Reset Test indicates that our econometric model does not suffer from any problem of misspecification or omitted variable bias. However, autocorrelation is seen to exist as indicated by the Portmanteau test. We, therefore, re-estimate the equations using the Prais-Winsten method (Columns II, IV and VI).

Both the variables indicating the stock of Commonwealth and EU immigrants in the UK exert a positive influence on services exports, with the estimated coefficient of CW stock of immigration variable higher than that of the EU stock of immigrants variable. The coefficient of the CW migrants stock variable is 0.425 whereas that on the EU stock of immigrants variable is 0.282 (see the Prais-Winsten estimates). Other than migration, only outward FDI flows from the UK seem to be a robust determinant of services exports. Share of manufacturing in the importing regions also exerts a positive impact on services

exports from the UK, but the effect is not robust and is sensitive to different estimation procedures. Growth rates of GDP in the equations do not show up as significant determinants of exports from the UK, perhaps because of the relatively short period of time to which the estimates relate. Particularly, the Commonwealth GDP growth rate does not come out to be significant because, as mentioned previously, most of UK's services exports go to EU and USA and hence Commonwealth's economic performance should not really act as a determinant of these exports.

We also assess the impact of migration on total UK exports using the same model (see Equation 1). The results do suggest a positive association between immigration and exports but unlike in the case of services exports, the impact is weak. The estimated results are presented in the table below.

**Table 9: Prais-Winsten Estimation Results with Total Exports as Dependent Variable**

Independent Variables	CW (I)	EU (II)	Total (III)	CW (IV)	EU (V)	Total (VI)
CWIMG	0.823***			-0.497		
EUIMG		0.711***			-0.420	
TOTALIMG			0.541***			-0.667
$\Delta$ CWGDP	-0.002	-0.002	-0.002	-0.003	-0.003	-0.003
$\Delta$ EUFGDP	0.009*	0.009*	0.009*	0.008***	0.008***	0.008***
FDI	0.023	0.020	0.013	-0.003	0.015	0.001
CWMFG	0.706*	0.788*	0.777*	0.746**	0.740***	0.753**
EUMFG	0.002	0.005	0.008	-0.004	-0.006	-0.009
Constant	16.168***	17.666***	21.035***	34.614***	32.532	37.079**
Trend				0.061***	0.066***	0.072***
R <sup>2</sup>	99.1%	99%	99.1%	99.1%	99.2%	99.2%

Note: 'Trend' stands for the time trend. \*, \*\*,\*\*\* denote statistical significance at 10%,5% and 1% respectively. Heteroskedasticity-robust standard errors have been used.

As before, each migrant terms enter the equation separately. Initially, we estimate the model without a trend term (Columns I-III) and later with a trend. The volume of UK's total export with the EU is much higher than that with the rest of the world as UK enjoys the benefits of free trade with the EU member countries. The sort of goods that the UK exports to the EU may not be highly reliant on services. As the EU is UK's major trading partner in goods growth rate of the GDP of the EU exerts an impact on total trade of the UK as is to be expected.

## **Conclusions**

The main conclusions of this paper can be briefly summarised. First, immigration of labour has an impact on the economy of the UK through various channels. This paper has chosen to analyse its impact on exports of the UK, a major trade dependent economy. In general immigrants do contribute to the exports of the UK but much more so in the case of exports of services than in the case of total exports consisting of goods and services. The major role of the immigrants from the Commonwealth, especially those from India and the old Commonwealth, is in professional services including information technology services. It is thus that they contribute significantly to the fast growing exports of services from the UK. Recent trade trends show that China and some of the other emerging economies are likely to emerge as major importers of services from the UK. Unfortunately the inadequacy of reported data on several aspects of immigration has inhibited a much more detailed analysis of the issues analysed in the paper. This is especially so with respect to the occupations that immigrants from the various Commonwealth and EU countries pursue.

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