

A Comparative Analysis of African and Asian Migrants' Effect on Trade

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Abstract The possible trade creation effect of migrants is among the many research topics that interest a number of development economists. Using a gravity model for a ten-year interval panel dataset of 136 countries for the period 1970 to 2000, I evaluated African migrants' impact on their home country's import and export. As opposed to earlier studies, this research study used bilateral trade and bilateral migration stocks and flows of a large sample of countries. Additionally, this research introduced bilateral, exporter-year and importer-year fixed effects on parameter estimations in order to address the issue of endogeneity that might have arisen due to omitted variable bias. In line with earlier studies, this research's findings reveal that generally, migrants positively affect export and import trade. However, this research's results show that the sub-sample of African migrants have no statistically significant effect on their home country's exports, while the Asian sub-sample reveals that Asian migrants have a positive and significant impact on their home country's exports. This research study's results also reveal that African migrants promote export of homogeneous goods, while Asian migrants are more inclined to facilitate the export of manufactured and differentiated products. However, unsurprisingly, both African and Asian countries positively and significantly impact their home countries' imports from the migrants' destination countries, in both total and differentiated products.

Key Words: Migration. Trade. Diaspora Externality. International trade. Africa. Asia. Gravity Model. Macro data.

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1. Introduction

Studies show that business and social networks are important in facilitating international trade. These networks overcome informal trade barriers such as inadequate information about trade opportunities or weak international legal institutions. Ethnic groups living outside their countries of origin create formal or informal associations to which co-ethnic business people from both the host countries and the home country have access. In other words, these migrant networks serve as information exchange nodes (Rauch & Trindade, 2002). As such, migrants can potentially foster international trade by reducing trade costs.

Migrants, through their intervention as an information node, can reduce negotiation costs, contracting costs, or costs related to information barriers. In other words, migrants, through their trusted networks can reduce the costs of negotiating, enforcing contracts, and can deter opportunistic behaviour in weak institutional environments. This is possible because migrants have sufficient knowledge of their home and host country's languages, regulations, market opportunities, and informal institutions. Informal trade transaction costs are large and can inhibit trade flows (Anderson & Van Wincoop, 2004; Chaney, 2011; Allen, 2014; Greif, 1993; Gould, 1994; Rauch, 1999; Rauch, 2001; Rauch & Trindade, 2002 & Dunlevy, 2006).¹

A number of studies have investigated the impact of migrants on trade and their findings reveal that migrants indeed increase international trade. However, there is no study that focuses on and examines the impact of African migrants on trade. This study addresses this and investigates the issue in comparison to Asian migrants for two reasons. Firstly, unlike their Asian counterparts, African migrants are mainly destined for low income countries. Secondly, although the two regions started from almost the same level of economic growth in the 1960s, Asian countries are experiencing growth while most African countries not. As a result, Asian countries are able to export manufactured and differentiated goods while most African countries mainly export homogeneous commodities.²

Econometrically, I employed a gravity model on a ten-year interval panel dataset of 136 countries for the period 1970 to 2000. The data consists of bilateral trade and bilateral migration stocks and flows from a large sample of countries. Unlike prior studies, this research addressed

¹ If a business owner violates an agreement, he is blacklisted, which is worse than being sued, because the entire community will refrain from doing business with him.

² For example, the percentage share of African food product exports in 1990 was 48%, while the figure for the Asian region was significantly lower. On the other hand, Asian countries' share of the export of manufactured items was well over 35%, while that of Africa was only about 5% (Table 28).

the major issue of endogeneity due to omitted variable bias by incorporating bilateral pair, exporter-year and importer-year fixed effects in the gravity model. To the best of my knowledge this is the first paper that attempts to investigate African migrants' effects on trade with regard to the role of the home country and the host country networks in reducing search, matching, and negotiation costs.

The results reveal that while African migrants' networks are found to have no impact, Asian migrants have significant and positive effects on their home countries' exports to their destinations. On the other hand, migrants' impact on imports in both regions is positive and significant. The differences in the trade effects of networks in Asia and Africa suggest that both the structure of the export sector in the home country and the nature of migration that mainly affect the migrants' impact on home country exports.

This study's research results might be attributed to the following reasons. Firstly, the fact that fewer African migrants in comparison to Asian migrants are destined for high income countries might not affect the export catalyst capability of African migrants. In support of this assertion, Egger, Von Ehrlich, and Nelson's (2012) study indicates that the trade-inducing effect of migrants is strong when the first migrants from a particular origin arrive, and then the impact declines to zero for migrant stocks greater than 4000. Secondly, Asian countries export more differentiated products while African countries export homogeneous commodities. For example, in 2000, the World Bank dataset reveals that the manufacturing exports as a percentage of merchandise exports in SSA was 26.84 % while for the EAP region it was 85.66 %. Similarly, the high-technology exports as a percentage of manufactured exports was 3.76 % for SSA, while it was 33.25% for the EAP region.³ Moreover, studies show that it is not the revenue generated from foreign trade but rather the remittances home that provide resilience in Africa in times of disasters and conflicts (Naude, 2010).

The remaining topics are organised as follows. Section 2 deals with the review of related literature, while section 3 elaborates on the methodological frame work adopted for the study. The main findings of the analysis are presented under section 4, while section 5 presents the conclusion.

³ The data retrieved from World Bank WITS UNSD COMTRADE database: <http://wits.worldbank.org>.

2. Impact of Migration on Trade

4.2.1 Comparison of the Nature of Migration of Asia and Africa

Despite starting from a similar level of real GDP per capita, Africa and Asia have taken different economic growth trajectories. From the 1960s onwards, the African region experienced a sharp decline in its average growth rate, while most Asian economies were able to sustain a positive average growth rate.⁴ This difference in economic growth significantly affects both the nature of migration and the export structure in both regions. The majority of African migrants settle in low-income countries while the relatively larger proportion of Asian migrants (in comparison to African migrants) settle in developed countries (Fig 1).⁵ Both the relative and absolute migration stocks of Asian migrants in developed countries is higher than that of Africa. African countries' migration is mainly within the low-wage African countries, because African migration is mainly driven by conflicts, environmental pressures, and artificial borders.⁶

There are major differences in the reasons for migration and the destinations that African and Asian migrants choose. Studies show that African migration is mostly forced in nature. In other words, the significant determinants of African migrations are armed conflict and lack of job opportunities. International migration flow from SSA countries is very volatile and usually destined for other SSA countries. There is relatively less migration from low-wage African countries to high-wage regions than migration within low-wage Africa (Naude, 2010).⁷

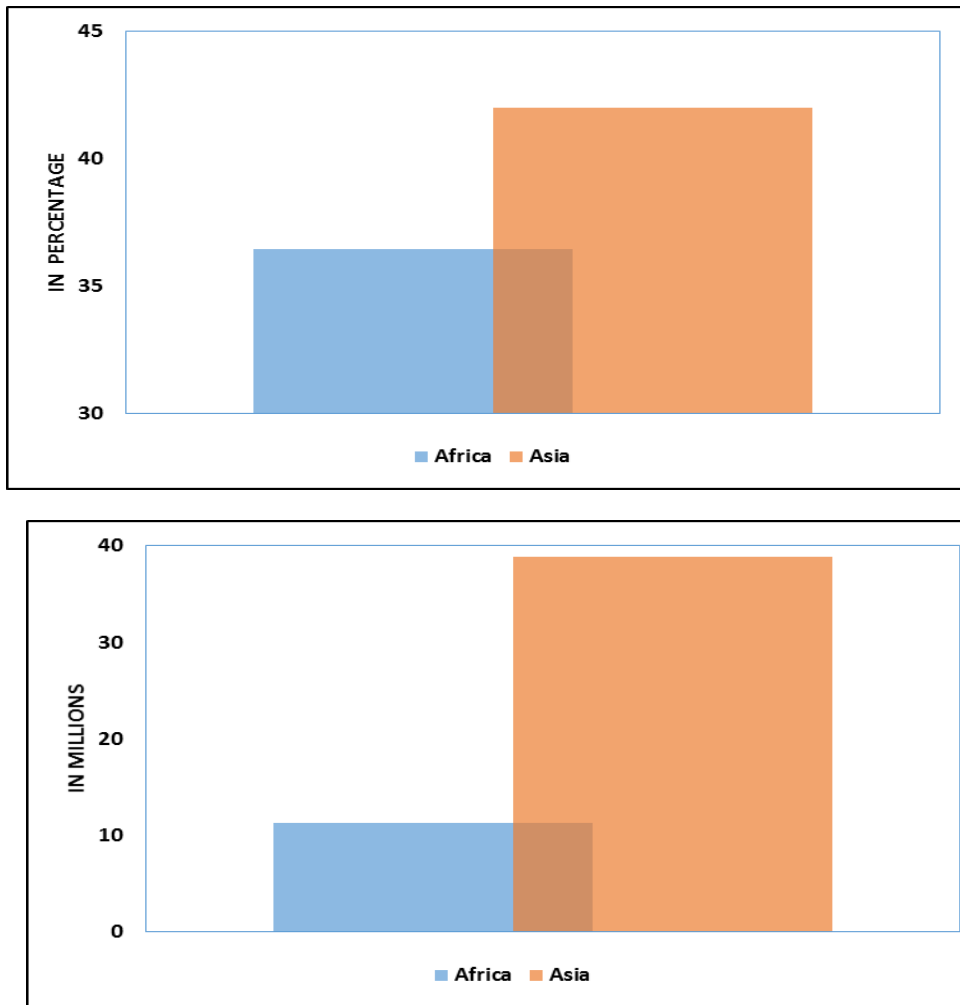
⁴ Although the rate of economic growth in Africa has risen recently, this region still remains the lowest income region in the world.

⁵ More workers from Asian countries migrate to non-OECD countries (mainly within the region) as well. However, the skills of Asian migrants to OECD and non-OECD countries differ. Unlike the non-OECD countries, labour migration to OECD countries is mainly highly skilled (Xing, Dumont & Baruah, 2014).

⁶ Remittances to Africa do seem to increase significantly after a natural disaster. Poorer countries tend to receive more remittances than richer countries (Naudé & Bezuidenhout, 2014).

⁷ The same study shows that an additional 1% reduction in relative growth is found to reduce emigration by 1.5 per 1,000 inhabitants

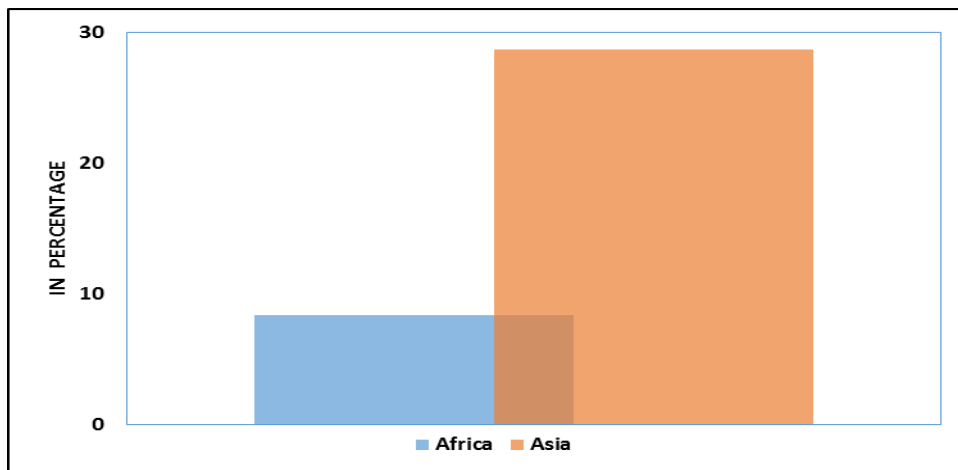
Figure 1: African and Asian migrants stock in developed countries



Source: United Nations, Department of Economic and Social Affairs (2013). Trends in International Migrant Stock: Migrants by Destination and Origin (United Nations database, POP/DB/MIG/Stock/Rev.2013).

Given that migration is costly, most African migrants from low per capita income countries cannot travel too far (Naude, 2010). On the other hand, absence of conflicts and relatively better per capita income in Asian economies means that Asian migration is mainly driven by the income effect.

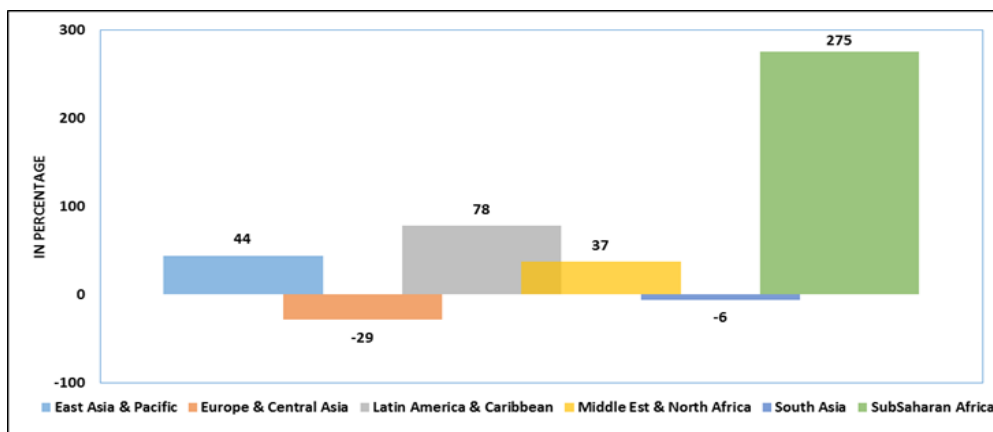
Figure 2: Share of African and Asian migrants in developed countries



Source: United Nations, Department of Economic and Social Affairs (2013). Trends in International Migrant Stock: Migrants by Destination and Origin (United Nations database, POP/DB/MIG/Stock/Rev.2013).

Out of the total migrant stock, the percentage of African migrants in developed countries is only 8%. The corresponding figure for the Asian migrants is 30% (Fig 2). There are also significant differences in net migrations⁸ between African and Asian regions. Hosting the second-largest population of international migrants, Africa is the region with the highest growth rate in net migration in the world (Fig 3).

Figure 3: Changes in net migration by region (2000-2005)



Source: Naude (2010)

4.2.2 Impact of Migration on Trade

The complementarity between trade and migration was recognised by trade economists only few decades ago (Head & Ries, 1998 & Gould, 1994). However, doubts persist as to whether trading partners' cultural affinities or bilateral economic policies drive the observed positive correlations (Lucas, 2005; Hanson & McIntosh, 2010 & Hanson, 2010). Such complementarity

⁸ The net migration is the difference between immigration and emigration, and is also quite different for SSA migrants.

has been shown to prevail mostly for trade where ethnic networks help to overcome information problems (Rauch & Trindade, 2002).

The main channels through which migrants increase trade is through information and the trust or contract-enforcement channel. Lack of information about international trade and investment opportunities is one of the informal barriers to trade. Migrants provide relevant information about available products and tastes for the right differentiated products, thus reducing information costs, and as a result help to increase trade (Rauch, 1996). Migrant networks provide this trust through cultural proximity, repeated transactions, and knowledge of implicit business rules (Guiso, Sapienza & Zingales, 2009). However, migration could also have a negative effect on bilateral trade when the trade substitution migration effect occurs. In other words, migrants can apply their knowledge about technology or production methods and about tastes and preferences to host-country production or transmit them to local producers in such a way that previously imported goods could be substituted by local production (Rauch, 1996).

Migration may also facilitate the formation of the types of business links that lead to foreign direct investment (FDI) project deployment in a particular location. Migrants' sheer presence in the host country can be a catalyst to establish the required links to achieve efficient distribution, procurement, transportation, and satisfaction of regulations. In developing countries, migrants can be the bridge that solves uncertainties related to trade and investment opportunities.

Many studies found a positive correlation between migration and trade using augmented gravity models. The results of these studies reveal that the impact of a 10% increase in migrant population range from 0.1 to 2.5% rise on merchandise exports and 0.1 to 3.1% on merchandise imports (Felbermayr, Jung & Toubal, 2010; Herander & Saavedra, 2005; Dunlevy, 2006; White & Tadesse, 2008; Hatzigeorgiou, 2010; Peri & Francisco, 2010; Head & Ries, 1998; Felbermayr & Toubal, 2012; Girma & Yi, 2002; White, 2007; Koenig, 2009 & Tai, 2009).⁹

A few studies have pointed to a positive correlation between migration and trade, which is often interpreted as evidence of a positive migrants' externality. Nevertheless, the study on causality from migration to trade has yet to be conclusively established (Felbermayr, Grossmann & Kohler, 2012). The question whether it is trading partner's cultural affinity or

⁹ The study on the effect of the average length of stay of a migrant in the host area by Herander & Saavedra (2005) shows a positive effect on exports while its square has a negative effect.

bilateral economic policies that drive the observed positive correlations have not been established (Lucas, 2005 & Hanson, 2010).¹⁰

Migrants also affect trade indirectly via technology and knowledge transfers. The mechanisms of migrants effect on trade via technology transfer is discussed in Annex A2.

3. Data and methods

3.1 Data

The gravity model was estimated on a ten-year interval panel database of 137 exporting countries for the period 1970 to 2010. The study included 34 African, 23 Asian, and 80 rest of the world countries. The total number of observations is 28,796. The nominal bilateral trade data is sourced from UN COMTRADE while nominal GDP comes from the WB WDI database. Distance and other control variables are sourced from CEPII, while the data for migration comes from the WB's global bilateral migration database. The global bilateral migrants' stock database is a vast collection of destination country data sources detailing migrant stock from numerous origin countries and regions. It is constructed by combining over 100 censuses and population register records (UNECA, 2012). The nominal data of export flow and GDP are scaled by exporter GDP deflators to generate real trade flows and real GDPs. All the zero trade flows are excluded.

3.2 Estimation Method

It is well documented in the literature that the gravity model that uses bilateral- pair, exporter-year and importer- year fixed effects is likely to be the preferred gravity specification, because it controls time-variant multilateral resistance terms associated with the exporter and the importer. The bilateral migration rates from the same origin country to two or more destinations is influenced by the attractiveness of migration to other alternative destinations. The same applies to the migration flows originating from different origins and directed to the same destination country.¹¹ Some of the factors that drive migration, such as differences in the GDPs

¹⁰ In the literature dealing with migration effect of trade, it is generally argued that the immigrants positively influence bilateral trade flows. Migrants are in a privileged position to provide information about distribution networks and about demand in their home countries to host country exporters. They are also in a privileged position to provide the same type of information on the host country to home country exporters (Rauch, 1996 and Greif, 1993).

¹¹ For example, the EU-type supranational level of coordination of visa policy at destination country, which can exert a substantial influence on the scale of bilateral migration flows. Another example could be that the GDP at origin country can correlate to the GDP in some of the destination countries because of a partial business cycle synchronisation due to trade and investment flows or because of the exposure to common economic shocks. In addition, visa waivers depend on citizenship. Likewise, linguistic proximity that relies more closely on the country of birth and economic conditions in the country of last residence might also shape the incentives to migrate (Bertoli & Moraga, 2015; Hanson, 2010; Bertoli et al., 2011; & Bertoli & Moraga, 2013).

of origin and destinations of migrants may also affect trade, resulting in the error term correlating with the variable of our interest-making OLS, to provide biased estimations (Baier & Bergstrand, 2007; Bertoli & Moraga, 2015, Hanson, 2010, Bertoli, Moraga & Orgeta, 2011 & Bertoli & Moraga, 2013). The OLS equation is likely to yield biased estimates of the effects of migration on exports, because the explanatory variables of interest, such as $\text{Log}(\text{Migration}_{ijt}) * \text{Asia}$, $\text{Log}(\text{Migration}_{ijt}) * \text{Africa}$, and $\text{Log}(\text{Migration}_{ijt}) * \text{ROW}$ may be correlated to the error term ε_{ijt}^1 due to endogeneity resultant from the omitted variable bias.

To summarise, studies show that the determinants of migration include origin- or destination-specific factors such as income, and other dyadic factors such as networks that are correlated with unobserved cultural proximity of the pair countries (Rauch, 1999; Bertoli & Moraga, 2015; Karemera, Oguledo & Davis, 2000; Pedersen, Pytlikova & Smith, 2008; and Kim & Cohen, 2010).¹² However, these migration determinants also tend to explain trade flows between countries. Hence, when left uncorrected, the endogeneity may over- or under-estimate coefficients of interest. In other words, in gravity estimations, the error term may represent unobserved heterogeneity in trade flow determinants associated with the likelihood of migration.

Theoretically, omitted variables, simultaneity, and measurement errors can cause endogeneity. However, following Baier and Bergstrand's (2007) argument, the most important source of endogeneity—the omitted variable (and selection) bias—can be justified. My argument is as follows. Since migration is measured based on the count of people, the likelihood of measurement error of the variable is not that much a concern. As a result, this possibility may safely be ruled out. The possibility of simultaneity bias is probable, but it may also be argued to be less serious. Trade-inducing migration occurs mainly when migrants are destined for high income countries. Although the growth literature reveals that the GDP is theoretically endogenous to bilateral trade flows, there are some definite explanations that motivate a general disregard for the potential endogeneity of GDP and export.¹³ Nevertheless, other determinants of migration might also cause simultaneity bias. The best option to resolve the problem of endogeneity is of course to construct an exogenous instrument for migration. However, this is

¹² Increases in distance can be a proxies for increases in transportation cost and psychological cost.

¹³ Firstly, the GDP is a function of net multilateral exports, which on average tend to be less than 5% of a country's GDP, and its connection to gross exports is much less direct. Secondly, the gravity equation relates bilateral trade flows to countries' GDPs, which are a very small share of a country's multilateral exports. Thirdly, previous studies indicate that the potential endogeneity of GDPs with export is insignificant (Baier & Bergstrand, 2007).

beyond the scope of this study, and hence this research used the same method adopted in previous studies. Thus, this research focuses mainly on removing the endogeneity due to omitted variable bias. Anderson and van Wincoop (2003) clarify that the omitted variable bias arises by disregarding multi-lateral trade resistance terms that capture the idea that trade choices are established on relative rather than absolute prices. In a panel setting, the presence of country-pair and country-year dummies can be employed to treat endogeneity arising from the omission of multilateral resistance terms (Baier & Bergstrand, 2007 & Gil-Pareja et. al., 2014).

The estimation starts with the baseline OLS specification as shown under specification (1).

$$\begin{aligned}
 \text{Log}(Exp_{ijt}) = & \beta_0 + \beta_1 \text{Log}(Gdp_{it}) + \beta_2 \text{Log}(Gdp_{jt}) + \beta_3 \text{Log}(Dist_{ij}) + \beta_4 \text{Border}_{ij} \\
 & + \beta_5 \text{Language}_{ij} + \beta_6 \text{Currency}_{ijt} + \beta_7 \text{Landlocked}_{ij} + \beta_8 \text{RTA}_{ijt} \\
 & + \beta_9 \text{Log}(Migration_{ijt}) * \text{Asia} + \beta_{10} \text{Log}(Migration_{ijt}) * \text{Africa} \\
 & + \beta_{11} \text{Log}(Migration_{ijt}) * \text{ROW} + \varepsilon_{ijt}^1
 \end{aligned}
 \tag{1}$$

where the variables are defined as follows:

$\text{Log}(Exp_{ijt})$: the log of country i export to country j at time t.

$\text{Log}(GDP_{it})$ and $\text{Log}(GDP_{jt})$: the GDP of country i and country j at time t respectively.

$\text{Log}(Dist_{ij})$: the log of distance between the trading pairs.

Contig_{ij} : a dummy variable on whether the trading pairs share common borders.

Lang_{ij} : a dummy variable on whether the trading pairs have a common language.

Currency_{ijt} : a dummy variable on whether the trading pairs have common currency.

Landlocked_{ij} : a dummy variable on whether either the exporter or the importer or both are landlocked countries.

$\text{Log}(Migration_{ijt})$: the log of the stock of migrants of origin country i in the destination country j at time t.

$\text{Log}(Migration_{ijt}) * \text{Asia}$: the multiplication of the log of migration stock variable with Asia dummy (1 if the country is the migrants origin country is in Asia and 0 otherwise).

$\text{Log}(Migration_{ijt}) * \text{Africa}$: the multiplication of the log of migration stock variable with Africa dummy (1 if the country of origin of the migrant is in Africa and 0 otherwise).

$\text{Log}(Migration_{ijt}) * \text{ROW}$: the multiplication of the log of migration stock variable with rest of the world (ROW) dummy (1 if the country of origin of the migrants is in the ROW and 0 otherwise).

The baseline OLS specification was estimated with year dummies. In addition, the time invariant fixed effects through the incorporation of bilateral pair (β_{ij}) fixed effects with and without year dummies was also taken into account. However, similar to the OLS specification, these specification also lead to biased coefficient estimates, as these specifications failed to take into account time-varying fixed effects. I addressed the endogeneity (due to omitted variable bias) of $\text{Log}(\text{Migration}_{ijt})$ by including bilateral pair (β_{ij}), exporter-year (β_{it}), and importer-year (β_{jt}) dummies as shown in equation (2). This specification is my preferred specification hence the interpretation of the results is mainly based on this specification.

$$\begin{aligned} \text{Log}(\text{Exp}_{ijt}) = & \beta_0 + \beta_{ij} + \beta_{it} + \beta_{jt} + \beta_1 \text{Log}(\text{Gdp}_{it}) + \beta_2 \text{Log}(\text{Gdp}_{jt}) + \beta_3 \text{Log}(\text{Dist}_{ij}) \\ & + \beta_4 \text{Border}_{ij} + \beta_5 \text{Language}_{ij} + \beta_6 \text{Currency}_{ijt} + \beta_7 \text{Landlocked}_{ij} \\ & + \beta_8 \text{RTA}_{ijt} + \beta_9 \text{Log}(\text{Migration}_{ijt}) * \text{Asia} + \beta_{10} \text{Log}(\text{Migration}_{ijt}) \\ & * \text{Africa} + \beta_{11} \text{Log}(\text{Migration}_{ijt}) * \text{ROW} + \varepsilon_{ijt}^2 \end{aligned} \quad (2)$$

Also note that similar regressions to equation (1) and equation (2) were run where the dependent variable is the log of import ($\text{Log}(\text{Imp}_{ijt})$) and it was used to establish the results presented under section 4.2.

4. Results

The results of the study are presented in the subsequent sections. The results are first presented by correcting endogeneity and then by correcting it. Although the first set of results are biased and inconsistent, these give some idea as to the extent of bias if endogeneity is not addressed.¹⁴ However, the research mainly focuses discussion of the results based mainly on the unbiased estimations. In most tables, column (1) to column (4) contains biased estimates, since they do not take into account the multilateral prices terms that might potentially affect both migration and exports. The estimation that takes the issue of endogeneity into account effectively is presented under column 5. Some of the tables only present the equivalent of column 5 for convenience.

The main findings of this research's results show that African migrants do not have a significant effect on their home countries' exports to destinations, while Asian migrants do. However, this research's results show that both African and Asian migrants have positive and significant effects on their home countries' imports from destination countries. This reveals that it might

¹⁴ However, the results might be still biased because reverse causality has not been addressed.

be the structure of the home countries' export sector as opposed to the nature of migration that influences the impact of migrants on home country exports.

4.4.1 Migrants' Effects on Exports

The results shown under Table 1, column 5 reveal that the migrants' impact on exports for African and rest of the world is found to be insignificant.¹⁵ However, the coefficient estimate for Africa shown in column 5 has a negative sign, while it is positive for the rest of the world, although it is statistically insignificant. Africa's negative sign may be due to the fact that most African migration is forced in nature (a further explanation of the nature of African migration is presented in the Annexure). However, this research study's results show that Asian migrant studies reveal that migrant intake has a positive sustainable impact on their home countries' exports. For African countries, this research's finding does not empirically confirm that migration causes trade, while for Asian countries it was established that a 10% rise in Asian migrant stock is more likely to raise the migrants' home countries' export to the destination country by 0.7% (Table 1).

Table 1: Regional differences in migrants' effects on home country exports

VARIABLES	(1)	(2)	(3)	(4)	(5)
$\text{Log}(\text{Migration}_{ijt}) * \text{Asia}$	0.18*** (0.01)	0.16*** (0.01)	0.21*** (0.02)	0.19*** (0.02)	0.07*** (0.03)
$\text{Log}(\text{Migration}_{ijt}) * \text{Africa}$	0.07*** (0.01)	0.05*** (0.01)	-0.11*** (0.02)	-0.09*** (0.03)	-0.03 (0.03)
$\text{Log}(\text{Migration}_{ijt}) * \text{ROW}$	0.20*** (0.01)	0.14*** (0.01)	0.03** (0.01)	0.02 (0.01)	0.02 (0.02)
$\text{Log}(\text{Gdp}_{it})$	0.86*** (0.01)	0.98*** (0.01)	0.75*** (0.02)	0.94*** (0.04)	
$\text{Log}(\text{Gdp}_{jt})$	0.63*** (0.01)	0.72*** (0.01)	0.48*** (0.02)	0.59*** (0.03)	
$\text{Log}(\text{Dist}_{ij})$	-0.89*** (0.02)	-0.96*** (0.02)			
Border_{ij}	0.22*** (0.07)	0.18** (0.07)			
Landlocked_{ij}	-0.48*** (0.03)	-0.44*** (0.03)			
Language_{ij}	0.43*** (0.03)	0.60*** (0.03)			
Currency_{ijt}	0.76***	0.92***			

¹⁵ This might possibly be due to the labour movement, and social and human capital effects offset one another. The recent literature shows that migration has labour movement (substitute trade) and social and human capital movement (enhanced trade) effects. The labour movement effect reduces trade since it could equalise wages if migration was undertaken on a massive scale. On the other hand, the social capital and human capital movement effect increases trade since it provides market information. Hence, the net impact of migration on trade thus depends on which effect has the most weight, since the two effects work together to affect trade.

RTA_{ijt}	(0.10) 0.53***	(0.10) 0.69***	0.48***	0.46***	0.62***
	(0.05)	(0.05)	(0.07)	(0.06)	(0.06)
Constant	6.90***	6.42***	2.61***	0.04	13.63***
	(0.16)	(0.17)	(0.12)	(0.41)	(0.27)
Observations	27170	27170	27170	27170	28796
R-squared	0.62	0.63			
The gravity includes					
β_t	No	Yes	Yes	Yes	Yes
β_{ij}	No	No	Yes	Yes	Yes
$\beta_t + \beta_{ij}$	No	No	No	Yes	Yes
$\beta_{ij} + \beta_{it} + \beta_{jt}$	No	No	No	No	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable for specifications is the (natural log of the) bilateral trade flow.

To strengthen the validity of the claims made above, I eliminated possible regional outliers, i.e. regional countries that differ significantly from others in the region in terms of income. In other words, I ran the same regression excluding regional outliers (i.e. North African countries and Hong Kong, Macao and Brunei Darussalam) yet similar conclusions were reached. Like the previous results, I established that African migrants have statistically insignificant effects on their origin country's exports to their destination country. On the other hand, Asian migrants increase their home countries' exports. The results reveal that in African countries migration has a statistically insignificant effect on trade, while in Asian countries, a 10% increase in the number of Asian migrants in country j increases their home countries' export to their destination countries by 0.7%. (Table 2).

Table 2: Effect of migrants on export – possible regional outliers dropped

VARIABLES	(1)	(2)	(3)	(4)	(5)
$\text{Log}(\text{Migration}_{ijt}) * \text{Asia}^1$	0.17*** (0.01)	0.14*** (0.01)	0.23*** (0.03)	0.22*** (0.03)	0.07*** (0.03)
$\text{Log}(\text{Migration}_{ijt}) * \text{Africa}^2$	0.11*** (0.01)	0.10*** (0.01)	-0.12*** (0.03)	-0.10*** (0.03)	-0.04 (0.03)
$\text{Log}(\text{Migration}_{ijt}) * \text{ROW}$	0.19*** (0.01)	0.13*** (0.01)	0.02 (0.01)	0.01 (0.01)	0.02 (0.01)
$\text{Log}(\text{Gdp}_{it})$	0.88*** (0.01)	1.00*** (0.01)	0.75*** (0.02)	0.95*** (0.04)	
$\text{Log}(\text{Gdp}_{jt})$	0.63*** (0.01)	0.72*** (0.01)	0.48*** (0.02)	0.59*** (0.03)	
$\text{Log}(\text{Dist}_{ij})$	-0.88*** (0.02)	-0.96*** (0.02)			
Border_{ij}	0.20*** (0.07)	0.14* (0.07)			
Landlocked_{ij}	-0.49*** (0.03)	-0.46*** (0.03)			
Language_{ij}	0.41***	0.59***			

<i>Currency_{ijt}</i>	(0.03) 0.73***	(0.04) 0.84***			
<i>RTA_{ijt}</i>	(0.10) 0.55***	(0.10) 0.71***	0.48***	0.46***	0.62***
Constant	(0.05) 6.62***	(0.05) 6.14***	(0.06) 2.61***	(0.06) -0.01	(0.06) 13.93***
Observations	(0.16) 27,170	(0.17) 27,170	(0.12) 27,170	(0.41) 27,170	(0.25) 28,796
R-squared	0.62	0.63			
R-squared			0.43	0.43	0.55
The gravity includes					
β_t	No	Yes	Yes	Yes	Yes
β_{ij}	No	No	Yes	Yes	Yes
$\beta_t + \beta_{ij}$	No	No	No	Yes	Yes
$\beta_{ij} + \beta_{it} + \beta_{jt}$	No	No	No	No	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable for specifications is the (natural log of the) bilateral trade flow. (1) Excluding Hong Kong SAR, Macao SAR, and Brunei Darussalam. (2) Excluding North African countries.

In addition, I also checked their claims' stability by regressing and estimating the variables of their interest separately. Similarly, the results also reveal that the research's findings are consistent. In other words, African migrants are less likely to promote their origin country's exports to their destination countries while Asian migrants significantly promote their home countries' export to their destinations (Table 3).

Table 3: Effect of Migration on Export – Separate estimation

VARIABLES	(1)	(2)	(3)
<i>Log(Migration_{ijt}) * Asia</i>	0.05* (0.03)		
<i>Log(Migration_{ijt}) * Africa</i>		-0.06** (0.03)	
<i>Log(Migration_{ijt}) * ROW</i>			-0.00 (0.02)
<i>Log(Migration_{ijt})</i>	0.01 (0.01)	0.03** (0.01)	0.02 (0.02)
<i>RTA_{ijt}</i>	0.62*** (0.06)	0.62*** (0.06)	0.62*** (0.06)
Constant	13.94*** (0.35)	13.67*** (0.32)	14.28*** (0.33)
Observations	28,796	28,796	28,796
R-squared	0.55	0.55	0.55
The gravity includes			
$\beta_{ij} + \beta_{it} + \beta_{jt}$	Yes	Yes	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable for specifications is the (natural log of the) bilateral trade flow.

Earlier studies show that migration (mainly to OECD countries) create trade. I ran regression to investigate the effect of migrants destined for high income countries on their home countries' export. Since this procedure confirmed the results of earlier similar studies, it may assist me to

strengthen his earlier claims since it reveals that the research's model is sound. In line with this, I further checked whether migrants destined for high income countries create more trade links than migrants destined for other income destinations. Consistent with earlier studies, this research established that migrants destined for high income destinations seem to have a positive and significant effect on the migrants' home country exports to the migrants' destination countries. Specifically, this research reveals that a 10% rise of migrants in high income countries increase their origin countries' exports to high income destinations by 0.5% (Table 4).

Table 4: Effect of migration on export to high income countries destination

VARIABLES	(1)	(2)	(3)	(4)	(5)
$\text{Log}(\text{Migration}_{ijt}) * \text{High_inc_Dest}$	0.25*** (0.01)	0.18*** (0.01)	0.04** (0.02)	0.03* (0.02)	0.05*** (0.02)
$\text{Log}(\text{Migration}_{ijt}) * \text{Other_Dest}$	0.12*** (0.01)	0.09*** (0.01)	0.03** (0.01)	0.04** (0.01)	-0.01 (0.02)
$\text{Log}(\text{Gdp}_{it})$	0.83*** (0.01)	0.95*** (0.01)	0.76*** (0.02)	0.98*** (0.04)	
$\text{Log}(\text{Gdp}_{jt})$	0.63*** (0.01)	0.72*** (0.01)	0.48*** (0.02)	0.60*** (0.03)	
$\text{Log}(\text{Dist}_{ij})$	-0.88*** (0.02)	-0.94*** (0.02)			
Border_{ij}	0.33*** (0.07)	0.27*** (0.07)			
Landlocked_{ij}	-0.55*** (0.03)	-0.51*** (0.03)			
Language_{ij}	0.42*** (0.03)	0.56*** (0.03)			
Currency_{ijt}	0.59*** (0.10)	0.76*** (0.10)			
RTA_{ijt}	0.44*** (0.05)	0.61*** (0.05)	0.47*** (0.06)	0.47*** (0.06)	0.61*** (0.06)
Constant	7.02*** (0.16)	5.40*** (0.18)	2.56*** (0.12)	-1.20** (0.50)	16.13*** (0.07)
Observations	26,980	26,980	26,980	26,980	28,606
R-squared	0.63	0.64			
R-squared			0.43	0.44	0.56
The gravity includes					
β_t	No	Yes	Yes	Yes	Yes
β_{ij}	No	No	Yes	Yes	Yes
$\beta_t + \beta_{ij}$	No	No	No	Yes	Yes
$\beta_{ij} + \beta_{it} + \beta_{jt}$	No	No	No	No	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable for specifications is the (natural log of the) bilateral trade flow.

I checked the consistency and stability of their estimates as a robustness check on the effect of migrants on the export of differentiated products. The findings of the robustness analysis also strengthened my earlier claim that African migrants have an insignificant effect on their home

countries' exports while Asian migrants have a significant effect. This research established that migrants are more likely to promote the export of differentiated products than homogeneous products and manufactured products rather than agricultural goods.¹⁶

The migrants' effect on their home countries' export of agricultural goods is found to be statistically insignificant. For manufactured and differentiated products, Asian and the other international migrants have significant and positive effects on their home countries' exports, while African migrants have an insignificant effect. I also found that African migrants have a strong positive and significant effect on homogeneous product exports, while it is insignificant for Asia and rest of the world. Given that African economies have a relatively weak industrial base, this research's finding is highly plausible (Table 5). This study's results are consistent with earlier related empirical works. The literature reveals that migrants are more likely to promote the export of differentiated products than homogeneous products (Rauch & Trindade, 2002 & Bettin & Turco, 2012).¹⁷

A close investigation of the major export items from African and Asian countries strengthens this study's findings. African exports are predominantly comprised of homogeneous goods, while Asian economies mostly export differentiated and manufactured products. For example, the percentage share of food products export by Africa in 1990 was 48%¹⁸ while the figure for the Asian region was significantly low. In other words, the nature and structure of the African export sector explains why African migrants have a positive and significant effect on the export of homogeneous products.

Table 5: Robustness check – Migrants' effect on exports by product type

VARIABLES	Agricultural goods	Manufactured goods	Homogeneous goods	Differentiated goods
$\text{Log}(\text{Migration}_{ijt}) * \text{Asia}$	-0.01 (0.03)	0.08*** (0.02)	-14.59 (8.31)	0.05* (0.03)
$\text{Log}(\text{Migration}_{ijt}) * \text{Africa}$	-0.02 (0.03)	-0.02 (0.03)	2.73*** (0.84)	-0.03 (0.03)
$\text{Log}(\text{Migration}_{ijt}) * \text{ROW}$	-0.02 (0.02)	0.04*** (0.01)	-0.77 (0.58)	0.05*** (0.01)
RTA_{ijt}	0.60*** (0.07)	0.39*** (0.06)	7.73 (4.52)	0.54*** (0.06)
Constant	13.04*** (0.31)	12.73*** (0.35)	14.96*** (3.01)	13.46*** (0.52)

¹⁶ The products are classified using the Rauch Classification of Goods frequently used in international trade literatures.

¹⁷ According to Bettin & Turco (2012), the south-north migration and trade reveals that migration enhances the import of primary and final goods (preference channel), the export of differentiated goods, and low elasticity of substitution goods (information channel). However, their study shows that there is no evidence that migration influences the export of labour-intensive goods (technology channel).

¹⁸ As the data WB database <http://wits.worldbank.org> reveals, the structure of African export today is also the same.

Observations	24,729	26,705	1,772	25,322
R-squared	0.45	0.65	0.99	0.66
The gravity includes $\beta_{ij} + \beta_{it} + \beta_{jt}$	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable for specifications is the (natural log of the) bilateral trade flow.

I ran regressions of the entire sample to check consistency of his findings with earlier related empirical studies, and was able to conclude that his estimates are consistent with previous studies' findings. In other words, the research also establishes that generally migrants promote their home countries' exports to their destination countries. Additionally, the research established that migrants are more likely to promote the export of manufactured goods than agricultural products, and more likely to promote the export of differentiated goods than homogeneous goods (Table 6).

Table 6: Robustness check – Migrants' effect on exports by product type for all samples

VARIABLES	Export (Total)	Agricultural Export	Manufacturing Export	Homogeneous Goods export	Differentiated Goods Export
$\text{Log}(\text{Migration}_{ijt})$	0.02* (0.01)	-0.02 (0.01)	0.04*** (0.01)	0.15 (0.71)	0.04*** (0.01)
RTA_{ijt}	0.68*** (0.06)	0.60*** (0.07)	0.40*** (0.06)	0.65 (5.88)	0.55*** (0.06)
Constant	13.24*** (0.24)	13.02*** (0.37)	12.89*** (0.50)	11.11*** (2.32)	13.40*** (0.52)
Observations	34,620	24,729	26,705	1,772	25,322
R-squared	0.55	0.45	0.65	0.97	0.66
The gravity includes $\beta_{ij} + \beta_{it} + \beta_{jt}$	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable for specifications is the (natural log of the) bilateral trade flow. All regressions include country time and bilateral fixed effects.

This research study's results are comparable to the findings of earlier similar studies, since most of them reveal that the impact of a 10% increase in migrant population ranges from a 0.1 to 2.5% rise in merchandise exports, and a 0.1 to 3.1% increase in merchandise imports (Felbermayr, Jung & Toubal, 2010; Herande & Saavedra, 2005; Dunlevy, 2006; White & Tadesse, 2008; Hatzigeorgiou, 2010; Peri & Francisco, 2010; Head & Ries, 1998; Felbermayr & Toubal, 2012; Girma & Yi, 2002; White, 2007; Koenig, 2009 & Tai, 2009)

4.4.2 Migrants' Effects on Imports

The literature reveals that migrants not only promote their home countries' exports to a destination, but also facilitate imports from their home country to their destination countries (Head & Ries, 1998 & Girma & Yi, 2002). Similarly, the information advantage—and hence reductions in transaction costs—enables migrants to facilitate both the exports from the migrants' home countries and the imports to the migrants' destination countries. This research

study's results confirm that migrants also positively and significantly impact the imports to the migrants' home country from their destination countries (Table 7).

Table 7: Gravity estimation of the migrants' effect on imports

Variables	(1)	(2)	(3)	(4)	(5)
$\text{Log}(\text{Migration}_{ijt}) * \text{Asia}$	0.20*** (0.01)	0.17*** (0.01)	0.31*** (0.03)	0.29*** (0.03)	0.08** (0.03)
$\text{Log}(\text{Migration}_{ijt}) * \text{Africa}$	0.08*** (0.01)	0.06*** (0.01)	0.05* (0.03)	0.06* (0.03)	0.06** (0.03)
$\text{Log}(\text{Migration}_{ijt}) * \text{ROW}$	0.19*** (0.01)	0.13*** (0.01)	0.01 (0.01)	-0.01 (0.01)	0.02* (0.01)
$\text{Log}(\text{Gdp}_{it})$	0.78*** (0.01)	0.91*** (0.01)	0.57*** (0.02)	0.81*** (0.04)	
$\text{Log}(\text{Gdp}_{jt})$	0.65*** (0.01)	0.74*** (0.01)	0.61*** (0.02)	0.71*** (0.03)	
$\text{Log}(\text{Dist}_{ij})$	-0.83*** (0.02)	-0.91*** (0.02)			
Border_{ij}	0.22*** (0.07)	0.17** (0.07)			
Landlocked_{ij}	-0.13*** (0.04)	-0.05 (0.04)			
Language_{ij}	0.45*** (0.03)	0.60*** (0.03)			
Currency_{ijt}	0.89*** (0.10)	1.05*** (0.10)			
RTA_{ijt}	0.59*** (0.0467)	0.72*** (0.0483)	0.56*** (0.0572)	0.53*** (0.0579)	0.64*** (0.0588)
Constant	6.88*** (0.16)	6.45*** (0.16)	3.33*** (0.12)	-0.36 (0.51)	16.26*** (0.06)
Observations	25,720	25,720	25,720	25,720	26,934
R-squared	0.61	0.63			
Within R-squared			0.43	0.44	0.58
The gravity includes					
β_t	No	Yes	Yes	Yes	Yes
β_{ij}	No	No	Yes	Yes	Yes
$\beta_t + \beta_{ij}$	No	No	No	Yes	Yes
$\beta_{ij} + \beta_{it} + \beta_{jt}$	No	No	No	No	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable for specifications is the (natural log of the) bilateral trade flow.

Additionally, the analysis of the effect of product differentiation reveals that the migrants' effect is significant and positive for the total and manufactured goods' imports for all regions (Table 8). Given the structure of Africa's imports, the results are plausible. Most of Africa's imports are composed of manufactured products that roughly constitute 65% of Africa's imports (UN COMTRADE). This figure is not surprising since African countries have weaker industrial bases. In other words, given the classical and neoclassical trade theories, Africa's

import basket should rightly contain relatively more manufactured goods imported from regions with more developed and more complex industrial bases.

Table 8: Migrants' Effect on import to home country from destination country by region

VARIABLES	region				
	Import (Total)	Differentiated goods	Homogeneous goods	Manuf. goods	Agric. goods
$\text{Log}(\text{Migration}_{ijt}) * \text{Asia}$	0.08** (0.03)	0.11*** (0.04)	1.30 (0.99)	0.07** (0.04)	0.04 (0.04)
$\text{Log}(\text{Migration}_{ijt}) * \text{Africa}$	0.06** (0.03)	-0.03 (0.04)	-0.43 (0.97)	0.07** (0.03)	-0.01 (0.04)
$\text{Log}(\text{Migration}_{ijt}) * \text{ROW}$	0.02* (0.01)	0.02* (0.01)	0.26 (0.35)	0.03*** (0.01)	0.03* (0.01)
RTA_{ijt}	0.64*** (0.06)	0.60*** (0.06)	0.10 (5.51)	0.43*** (0.06)	0.68*** (0.07)
Constant	14.52*** (0.20)	13.79*** (0.53)	11.00*** (1.34)	13.63*** (0.35)	13.54*** (0.48)
Observations	26,934	24,938	1,996	25,601	24,071
R-squared	0.58	0.66	0.94	0.66	0.46
The gravity includes $\beta_{ij} + \beta_{it} + \beta_{jt}$	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable for specifications is the (natural log of the) bilateral trade flow. All regressions include country time and bilateral fixed effects.

It was established that the migrants' effect in facilitating their home countries' imports from the migrants' destination countries is stronger for manufactured products. Specifically, a 10% increase in migration results in a 0.4 % increase in manufactured goods imported by migrants' home countries from the migrants' destinations. Similarly, migrants also positively affect their home countries' imports from their destination country for the total imports as well as differentiated, manufactured, and agricultural product imports (Table 9).

Table 9: Migrants' effect on their destination country's imports

VARIABLES	region				
	Import (Total)	Differentiated goods import	Homogeneous goods import	Manuf. import	Agric. import
$\text{Log}(\text{Migration}_{ijt})$	0.03*** (0.01)	0.02** (0.01)	0.17 (0.32)	0.04*** (0.01)	0.02* (0.01)
RTA_{ijt}	0.64*** (0.06)	0.60*** (0.06)	1.06 (5.46)	0.43*** (0.06)	0.68*** (0.07)
Constant	14.45*** (0.23)	13.21*** (0.33)	10.54*** (1.31)	13.96*** (0.43)	13.58*** (0.45)
Observations	26,934	24,938	1,996	25,601	24,071
R-squared	0.58	0.66	0.94	0.66	0.46
The gravity includes $\beta_{ij} + \beta_{it} + \beta_{jt}$	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable for specifications is the (natural log of the) bilateral trade flow. All regressions include country time and bilateral fixed effects.

5. Conclusion

A number of studies have investigated migrants' impact on trade and found that migrants increase international trade. However, to date there has been no study that focuses on and examines African migrants' impact on trade. This dissertation investigated African migrants' trade creation effects in comparison to their Asian counterparts by using a gravity model on a ten-year interval panel dataset of 136 countries for the period ranging 1970 to 2010.

This research's results reveal that African migrants do not have a statistically significant impact on their home countries' exports. Conversely, Asian migrants promote their home countries' exports to their destinations. Specifically, this research study's results show that a 10% increase in the number of Asian migrants increases their home country exports to the migrants' destination countries by 0.7%. Both African and Asian migrants are found to have a positive and significant impact on their home countries' imports from their destination countries for both total and differentiated products. Given the differences in the structure of the export sectors and the main reasons for migration in Africa and Asia, I conclude that it might be the home countries' export sector structure and not the reason for migration that mainly influences migrants' ability to work as bridges between traders from their home and destination countries.

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Annex

A1. List of countries

Asian:

Bangladesh, Brunei Darussalam, Cambodia, China, Fiji, Guinea, Hong Kong SAR, India, Indonesia, Kiribati, Macao SAR, Malaysia, Myanmar, Nepal, Pakistan, Papua New, Philippines, Samoa, Solomon Island, Sri Lanka, Thailand, Tonga, Vanuatu, and Vietnam.

African:

Algeria, Angola, Benin, Burkina Faso, Cabo Verde, Cameroon, Central African Rep., Congo, Cote d'Ivoire, Ethiopia, Egypt, Gabon, Gambia, Ghana, Kenya, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Niger, Nigeria, Senegal, Seychelles, Somalia, Sudan, Togo, Tanzania, Tunisia , Zambia, and Zimbabwe.

ROW of the World:

Argentina, Australia, Austria, Bahamas, Bahrain, Barbados, Belgium, Belize, Bermuda, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Cyprus, Czech Rep., Denmark, Dominica, Ecuador, El Salvador, Faeroe Island, Finland, Germany, France, French, Guiana, French, Polynesia, Greece, Greenland, Grenada, Guadeloupe, Guatemala, Guyana, Haiti, Honduras, Hungary, Iceland, Iran, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kuwait, Lebanon, Malta, Martinique, Mexico, Netherlands, New Caledonia, New Zealand, Nicaragua, Norway, Oman, Panama, Paraguay, Peru, Poland, Portugal, Qatar, Rep. of Korea, Saint Lucia, St. Vincent & the Grenadines, Saudi Arabia, Singapore, Spain, Suriname, Sweden, Switzerland, Syria, Trinidad and Tobago, Turkey, USA, United Arab Emirates, United Kingdom, Uruguay, and Venezuela.

A2. Migrants' Effect on Trade via Technology Transfer

Migrants also facilitate technology transfer by providing information to their home countries' businessmen about importing possibilities of new and improved technologies that might in turn be used towards producing goods for the export market. In other words, migrants help diffuse technological spillover to their home countries because they maintain connections with their families and with other people in their home countries.¹⁹ The migrants can be an important source and facilitator of research and innovation, promoting technology transfer and skills development for a country exporting labour. Studies show that more industrialised labour-exporting countries with large skilled migrant populations were able use their expatriates to facilitate the technological spillover. These networks include networks of scientists and

¹⁹ Prior studies reveal that the technological level of firms' activities significantly affects their ability to compete in world markets.

research and development (R&D) personnel, the business networks of knowledge-intensive start-up businesses, and the networks of professionals working for multinationals (Saxenian, 2008 & Page & Plaza, 2006).

Page and Plaza (2006) indicated that a migrant's involvement in the transfer of technology in the sending countries' economies can take several forms. These include:

1. the licensing agreements between diaspora owned or managed firms in host countries and sending countries' firms to provide technology transfer and know-how;
2. the formation of a joint venture through direct investment in local firms;
3. knowledge spill-over effects when returnee migrants assume top managerial positions in foreign-owned firms within their country of origin;
4. the return to permanent employment in the sending country after work experience in the host country;
5. the virtual return of professionals in the fields such as engineering and medicine through extended visits or electronic communications; and
6. the formation of networks of scientists or professionals to promote research in host countries directed toward the sending countries' needs (Page & Plaza, 2006).