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THE AGGREGATE IMPACT OF TRADE AND MIGRATION ON ECONOMIC GROWTH AND ITS COMPONENTS: EVIDENCE FROM EMERGING ECONOMIES

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ABSTRACT

The study examines the combined effects as well as separate effects of trade openness and net migration on economic growth and the components of economic growth viz capital-labor ratio, total factor productivity, and labor employment ratio over the period 1960-2017 for the selected emerging economies. The study used two-stage least squares (2SLS) technique. The results reveal that trade openness positively related to economic growth while net migration is negatively related to economic growth. Moreover, the study discovered that trade openness positively impacts capital-labor ratio and total factor productivity and it is negatively related to labor employment ratio whereas net migration is negatively associated with capital-labor ratio, total factor productivity, and positively related to employment ratio. Overall, the study concludes that the flow of migrants hurts economic growth while trade openness aids economic growth in emerging economies. The findings may provide a better understanding and some guidance on policies about trade openness, net migration, and economic growth.

Contribution/ Originality: This study is one of very few studies which have investigated the separate as well as combined effects of trade openness and net migration on economic growth, capital-labor ratio, total factor productivity, and labor employment ratio for emerging economies. The study controls endogeneity problem by employing two-stage least squares technique.

1. INTRODUCTION

Trade openness and net migration are important to the process of globalization. The first phase of the globalization consists of the growth of new technologies in transportation and telecommunication, while the second phase is based on the liberalization through which the goods and services are being exchanged. The liberalization is the reason for the existence of the international organizations and treaties such as General Agreement on Tariffs and Trade (GATT), World Trade Organization (WTO), the South Asian Association for Regional Cooperation (SAARC), International Monetary Fund (hereafter IMF), the Organization for Economic Cooperation and Development (hereafter OECD), BRICS and more. Some researchers consider the liberalization as a warning to

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national sovereignty due to the increasing influence of the financial institution and the multinational companies (MNCs) on the policies of the developing countries. It may be witnessed that most of the national policies of the developing economies are being derived through such institutions like IMF and World Bank. Stiglitz and Greenwald (2003) being not against globalization, opposes the way IMF and the World Bank are implementing their policies in the developing economies. Similarly, most of the hardcore protestors of globalization are opposing globalization without any valid argument, yet the intellectuals in the developing countries and around the world are considering globalization as a tool of modern slavery promoted by IMF and the World Bank.

In contrast to anti-globalization views, many economists praise globalization for its benefits in terms of productivity gain, introduction to new goods and services, the managerial skills, labor mobility, and the openness of the market. Thus, it appears that trade openness and net migration are the outcomes of globalization, which in turn are crucial for economic growth. Similarly, economists believe that economic success is driven by its openness to investment, ideas, mobility of labor, and trade of goods with other countries. It is known that open economies adore the assistance of new thoughts, talent, and innovative products because of their openness in terms of trade and net migration. The open economies use the talent of skilled labor to increase their production and innovation, One of the best examples is the example of United States of America (USA) where a large number of Indian workers provide their services to the native population, but this kind of flow of immigrants is blamed for off-shoring of manufacturing jobs and it can affect the level of employment and lower the wage-rate. Similarly, in terms of trade openness, open economies are getting innovative goods from other countries and create a market for their products in the world. According to Kvint (2009) "An emerging country is a society transferring from dictatorship to free market-oriented economy with increasing economic freedom, gradual integration with the global marketplace and with other members of the Global Emerging Markets (GEM)". The emerging markets are also known as developing economies. However, these economies are capitalizing on more useful abilities, and from their history, it may be witnessed that these economies were used to be dependent on their traditional way of doing business such as exporting agricultural products and raw material to their trading partners. But in the current era, these economies are moving away from their traditional way of doing business to modern ones. Therefore, it is important to analyze the impacts of trade openness and migration on economic growth in these emerging economies to find out whether migration and trade openness is good for emerging nations. Thus, this paper aims to examine the effect of net migration on economic growth and its components (total factor productivity, capital-labor ratio, and employment-population ratio), and to discover the effect of trade openness on economic growth and its components (total factor productivity, capital-labor ratio, and employment-population ratio), and to explore the aggregate effects of trade openness and net migration on economic growth and its components.

The rest of the paper is divided as follows; section 2 provides the literature review. Section 3 presents data and methodology, the description of the variables, the sources of data, and the model. Section 4 reports the estimation results. Last section 5 presents a conclusion and policy recommendations.

2. LITERATURE REVIEW

The literature on the effects of globalization on economic growth can be parted into two divisions of trade openness and migration, but rare studies are available on the combined effects of both net migration and trade-openness on economic growth and its components. For example, Coe and Helpman (1995) explored the trade openness as a vehicle of information dispersal. Feenstra and Hanson (1999) and Alcalá and Ciccone (2004) have examined the impacts of trade openness on economic growth and aggregate productivity. The impact of migration on economic growth is studied through the impact of migrants on labor-market, to mention but few, Card (2001); Borjas (2003) have emphasized on the low skill of native workers. Rare studies on the combined effects are available, for example, Borjas., Freeman, Katz, DiNardo, and Abowd (1997) have studied the combined effect of migration and trade openness. Similarly, another study by Ottaviano, Peri, and Wright (2013) studied the impacts of the migrants

on the employment level when they are hired by the host country. There are several networks by which trade-openness can effect real per capita GDP growth. However, in the case of net migration, the impact of net migration is investigated through its impact on the labor market, wage rate, and the level of employment in the host country. (Borjas, 2003; Chassamboulli & Palivos, 2010; Ottaviano et al., 2013). It may change the industrial and potential structure of the host country (Cortes & Tessada, 2011; Peri & Sparber, 2009) and it may also change the production technologies and comparative capital-labor strength at firm and industry level (Dustmann & Glitz, 2015; Gonzalez & Ortega, 2011). A study by Friedberg and Hunt (1995) found that the impact of immigration on natives' employment and income growth is dependent on their level of human capital. Similarly, Card (2001); Borjas (2003); Chassamboulli and Palivos (2010); Gonzalez and Ortega (2011); Ottaviano et al. (2013); D'Amuri and Peri (2014); Etzo, Massidda, Mattana, and Piras (2017) showed that the migrants lower the wage rate in the host population, from an economic point of view, higher the supply of labor lower will be the wage rate.

Similarly, the impact of trade openness on economic growth is investigated in several studies such as Lee (1993); Lopez (1994); Edwards (1998); Frankel. and Romer (1999); Chen and Feng (2000); Melitz (2003); Alcalá and Ciccone (2004) found that trade-openness has a highly significant impact on of economic growth. Hence the economists believe that economic success is driven from its openness to investment, ideas, mobility of labor, and trade of goods. Though the literature on the combined effects of both trade and migration on economic growth and its components is very rare, only a few studies could manage to show that if a country is open for both trade and migration it would be better off.

Nevertheless, some studies argue that international migrants cause international trade the reason is that the migrants reduce the cost of the information, such reduction in the cost of the information implies further demand from their birthplace countries (Bowen & Wu, 2013; Girma & Yu, 2002; Gould, 1994; Head & Ries, 1998; Iranzo & Peri, 2009; Kangasniemi, Mas, Robinson, & Serrano, 2012; Ortega & Peri, 2001).

The existing literature on the effect of trade and migration on economic growth and its components has examined OECD and other developed countries and investigated separate effects of both trade and migration economic growth and its components, which leaves the two gaps in the existing literature; first, according to best of our knowledge, no study has been conducted for investigation of combined effects of both trade and migration on economic growth and its components. Second, no study has been conducted on the same subject for emerging economies. Therefore, this paper tries to fulfill this gap by investigating the combined effects as well as separated effects for both trade and migration on economic growth and its components for emerging economies. The outcome of this paper will allow us to gauge the significance of unlike networks by which the adjustment of the economies rises in trade-openness. There is some signal that all of these networks are at the effort, their relative rank not discovered yet. The result of this study will also be supportive in this regard since some of these tools will bring changes in the intensity of labor, whereas others will frequently activate by changes in total factor productivity or capital intensity.

3. DATA AND METHODOLOGY

3.1. Data and Sources

The paper uses unbalanced annual panel data of 23 emerging (destination) economies for the period 1960 to 2017. The selection of 23 emerging economies is purely based on the availability of data. The list of emerging economies selected in the study is published by IMF in 2018. The list of the emerging economies includes Argentina, Bangladesh, Brazil, Bulgaria, Chile, China, Colombia, Hungary, India, Indonesia, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey, Ukraine, and Venezuela. The discussion on dependent variables, explanatory variables, and control variables is given in the following sections.

3.2. Dependent Variables

The paper takes four dependent variables: economic growth and its components (total factor productivity, labor employment ratio, and capital-labor ratio).

3.2.1. Economic Growth (Growth)

Economic growth is defined as the percentage change in the country's gross domestic product (GDP) over time. The real per capita GDP growth is used as a proxy of economic growth which is calculated as a log difference of real per capita GDP growth. This variable is extensively used in empirical studies as a proxy of economic growth such as Bhatti, Haque, and Osborn (2013) and Ortega and Peri (2001).

3.2.2. Total Factor Productivity (TFP)

Total factor productivity is defined as the portion of output not explained by the traditional measures of inputs used in the production process. The relationship between TFP growth (TFPG) and migration is documented by Peri. (2012) which shows that immigrants' inflow is significantly affiliated with TFP growth. Similarly, the impact of trade openness on TFPG is studied by Edwards (1998) who concludes that the more open economies have a higher level of factor productivity growth.

3.2.3. Labor Employment Ratio (LER)

Labor employment ratio can be defined as the total labor force divided by the total population of a region. In this study, LER is calculated in the log form. There is a strong empirical relationship between immigration and the level of employment. This variable has been used in the empirical literature, such as Chiswick, Cohen, and Zach (1997); Card (2001); Gonzalez and Ortega (2011).

3.2.4. Capital to Labor Ratio (CAPLAB)

Capital to labor ratio is calculated as the capital stock percent of the total employed population, which is calculated in the log form. This variable has been used in empirical literature by several researchers such as Gonzalez and Ortega (2011) and Peri. (2012).

3.3. Independent Variables

This study has two main independent variables; the first independent variable is trade openness (TO) while the second is net migration (NM). However, the control variables include inflation, government expenditures percentage of GDP, private credit percentage of GDP, investment percentage of GDP, and human capital.

3.3.1. Trade Openness (TO)

Trade openness is the removal of the barriers to the free exchange of goods and services between countries. It is defined as the ratio of exports plus imports of GDP and it is important for economic growth and its components. The empirical literature shows that there exists a relationship between trade openness and economic growth, such as Lee (1993) and Chen and Feng (2000).

3.3.2. Net Migration (NM)

Migration is the movement of masses from one place to another place from one country to another country. To show the empirical relationship of net migration and economic growth we will mention those studies which are related to the labor market because the effect of migration is studied through its effect on the labor market. Borjas (2003) concludes that immigrants may reduce the wage of younger and old workers simultaneously. Due to the

scarcity of data on migration in the case of emerging economies, this study takes net migration which is calculated by data of migration divided by total population and multiplied by that hundred.

3.3.3. Inflation Rate (INF)

Inflation is defined as the persistent and continuous increase in the general price level. Inflation has a significant impact on economic growth and its components. Most of the studies have used inflation as a determinant of growth (Fischer, 1993; Ortega & Peri, 2001).

3.3.4. Human Capital (HC)

Human capital (HC) refers to the skill and capabilities of the human (Nik, Nasab, Salmani, & Shahriari, 2013). Empirical literature shows that there exists a strong relationship between human capital and economic growth (Barro, 1991; Benhabib & Spiegel, 1994; Gemmell, 1996; Noorbakhsh, Paloni, & Youssef, 2001).

Investment

Investment is the addition to the total capital stock of a country. Gross fixed capital formation (GCF) is used as a proxy for investment (Bhatti et al., 2013). There exists a strong empirical relationship between GCF and economic growth (Coutinho & Gallo, 1991; Khan & Reinhart, 1990; Serven & Solimano, 1990).

Government Expenditures (GOV)

Government expenditures are also known as public spending and it is calculated as government final consumption expenditures percent of GDP. In the empirical literature, it is shown to harm economic growth (Barro, 1991, 2001; Bhatti et al., 2013; Fischer, 1993; Mankiw, Romer, & Weil, 1992).

Private Credit (PRIV)

Table-1. Variables description and descriptive statistics.

Variable(s)	Description	Mean	Std. Dev.	Min	Max
Dependent variables					
Economic Growth (GROWTH)	The log difference of real per capita GDP	2.4264	4.602	-26.5276	40.6658
Total factor productivity (TFP)	TFP is defined as the portion of output not explained by the traditional measures of inputs used in the production process	0.1362	3.7392	-23.2	12.2
Labor employment ratio (LER)	The total labor force divided by the total population of a region	4.0142	0.1491	3.6511	4.335
Capital to labor ratio (CAPLAB)	Capital stock percent of the total employed population	1.0841	1.0207	-1.5086	3.269787
Independent Variables					
Trade openness (TO)	Trade percentage of GDP	3.6974	0.6919	1.5934	5.3954
Net Migration (NM)	The difference between immigration and emigration.	-0.2385	1.0072	-4.8357	2.9382
Inflation Rate (INF)	The persistent and continuous increase in the general price level	3.4204	0.7679	0.3259	5.115
Human Capital (HC)	Human capital index, based on years of schooling and returns to education	2.1049	0.5758	1.1223	3.3571
Gross Capital Formation (GCF)	Investment is the addition to the total capital stock of a country. (taken as a proxy of investment)	3.0956	0.3347	-1.2031	4.5572
Government Expenditures (GOV)	Public spending and it is calculated as government final consumption expenditure percent of GDP.	2.4693	0.3528	1.0904	3.3209
Private Credit (PRIV)	National credit to private sector refers to financial resources provided to the private sector by financial firms.	3.4204	0.7679	0.3259	5.115

National credit to private sector refers to financial resources provided to the private sector by financial firms, such as through loans, purchases of non-equity sanctuaries, and trade credits, and other accounts receivable, that establish a claim for refund. For some countries, these claims include credit to public originalities. The paper uses PRIV which is calculated as domestic credit issued by domestic commercial banks to the private sector percent of

GDP. Most of the empirical studies show a positive effect of PRIV on economic growth (Bhatti et al., 2013; Mbate, 2013; Olowofeso, Adeleke, & Udoji, 2015).

Data on variables of economic growth, total factor productivity, labor employment ratio, capital to labor ratio, trade openness, net migration, inflation rate, Gross fixed capital formation, Government expenditures, and Private Credit are taken from world development indicators (WDI), World Bank, while data on the variable of human capital is extracted from Penn World Tables (PWT). Table 1 summarizes the description of the variable and shows descriptive statistics of the variables used in the analysis.

3.4. Methodology

Following Ortega and Peri (2001) this study is based on a similar model where the economic performance of a country i in year t is symbolized with y_{it}. In what follows, y_{it} in its place views for income per person y_{it} or one of its components, such as its employment-population ratio e_{it}, its capital-labor ratio k_{it} or its total factor productivity A_{at}.

The study takes the Cobb-Douglas production function that combines capital and labor with a resistance of output to capital equal to α. In this case, the four outcomes defined above are related as follows.

$$y_{it} = A_{it} \, k_{it}^{\alpha} \, e_{it}$$

In the above equation e_{it} shows the employment-population ratio which précises the labor intensity, $the \; k_{it}$ shows the capital-labor ratio which is summarized intensity created by the labor in use of capital and A_{it} represents the measure of the quality-efficiency of capital and labor.

3.4.1. Model

Following the model used by Ortega and Peri (2001) this paper uses a similar model:

$$y_{it} = \alpha + \beta_x \, TO_{it} + \gamma_x \, NM_{it} + \gamma' Z + \mu_i + \varepsilon_{it}. \qquad (1)$$

Equation 1 is in the flow from where y is a log of real per capita GDP growth and its components for country i in year t, τ_{it} and m_{it} these are flow procedures of openness to international net migration and international trade into 23 emerging economies from 1960 to 2017. Z is the vector of control variables such as human capital (HC), inflation (INF), investment (INV), government size (GOV), private credit (PRIV), trade openness (TO), and net migration (NM).

To avoid the problem of endogeneity, the study estimates two auxiliary regressions each for trade openness (TO) and net migration (NM) using their determinants. The auxiliary regressions calculate net migration and bilateral trade using demographic information for the possible partner countries, and bilateral geographical (and cultural) variables. These regressions are thoroughly related to the highly fruitful gravity equations in the net

migration and international trade literature (Anderson & Van Wincoop, 2003; Grogger & Hanson, 2008). However, our forecasters contradict from the regular gravity regressions as shown in the following equation:

$$\ln TO_{ijt} = \alpha^{\tau} + b_1^{\tau} \ln P_{jt} + b_2^{\tau} \ln(dist)_{ij} + b_3^{\tau} C_{ij} + b_4^{\tau} L_{ij} + e_t^{\tau} \qquad (2)$$

Equation 2 expresses that the reliant on the variable is the totality of the two-sided trade between the two countries (exports from i to j plus exports from j to i) comparative to the target country's GDP. On the right-hand side, α^{τ} is an intercept, P_{jt} is the population in the country of source in year j, $(dist)_i$t is a bilateral distance, C_{ij} is an indicator for colonial ties, L_{ij} is an indicator for a common language, and e_t^{τ} is a zero-mean error term.

Similarly, we express the openness to net migration of country i vis-à-vis j by

$$\ln NM_{ijt} = \alpha^m + b_1^m \ln P_{jt} + b_2^m \ln(dist)_{ij} + b_3^m C_{ij} + b_4^m L_{ij} + e_t^m \qquad (3)$$

However, in the case of net migration, the equation would remain the same. Equation 3 expresses that the reliant variable is the sum of the two-sided trade between the two countries (exports from i to j plus exports from j to i) relative to the target country's GDP. On the right-hand side, α^m is an intercept, P_{jt} is the population in the country of origin in a year j, $(dist)_{ij}$ is a bilateral distance, C_{ij} is a gauge for colonial ties, L_{ij} is a gauge for a common language, and e_t^{τ} is a zero-mean error term.

3.4.2. Estimation Technique

For estimation, 2SLS fixed effects model is used to avoid the problem of endogeneity. In the first stage, an auxiliary regression is performed to deal with the problem of endogeneity, the problem of endogeneity can occur if independent variables such as net migration (NM) and trade openness (TO) correlate with the error term. Hence, to avoid the problem, we get the estimated values of both net migration and trade openness using the Random effect (RE) model. The independent variables, in this case, are population, distance, common language, and colonial ties; these all are gravity-based variables. The regression outputs are given in Table A4.1 Appendix.

In the second stage of our estimation, a fixed-effect model is estimated to investigate the impact of NM and TO along with other control variables on the economic growth (growth) and its components (capital-labor ratio (CAPLAB), labor employment ratio (LER) and total factor productivity growth (TFPG)). The control variables are human capital (HC), Inflation (INF), Gross fixed capital formation percent of GDP (INV), Private credit percent of GDP (PRIV), and Government expenditures percent of GDP (GOV). All of the variables are in log form.

4. ESTIMATION RESULTS AND DISCUSSION

The estimation process is categorized into two stages; the estimation of auxiliary regressions and the estimation of the main equation where the estimated values of NM and TO are used as instruments of NM and TO. The estimation results are shown in Tables 2, 3, and 4. Table 2 shows the impact of NM on growth and its components; Table 3 shows the impact of TO on growth and its components; while, Table 4 shows the combined effects of NM and TO on growth and its components.

4.1. The Separate Effects of Net Migration and Trade Openness on Economic Growth and Its Components

Table 2 shows the impact of net migration (NM) on economic growth (growth) and its components i-e labor employment ration (LER), total factor productivity (TFP), and capital to labor ratio (CAPLAB). Model (1) in Table 2 shows that net migration negatively impacts economic growth, the impact is highly significant at 1% level of significance. The negative impact refers to the fact that emerging economies have problems such as higher levels of unemployment, a lower rate of wage, higher level of poverty, due to this problem of brain drain occurs. Thus, the least skilled human capital and brain drain may be the causes behind this negative impact. However, net migration reduces economic growth in the same percentage as it increases the population. This finding is consistent with Dolado, Goria, and Ichino (1994) and contradicts with Frankel. and Romer (1999); Card (2001); Ortega and Peri (2001). The impact of government expenditure (GOV) and inflation (INF) on economic growth is negative and significant at 5% and 1% level of significance respectively. The reasons behind the negative relationship between government expenditure are multiple such as the large size of government, inefficient allocation of public goods, and high level of corruption, to be specific, most of the countries taken in our study have large government size with a higher level of corruption. The negative impact of inflation on economic growth is consistent with Fischer (1993) that suggested that the presence of cross-sectional and panel regression growth is negatively affected by inflation, the reasons behind this negative relationship are biased foreign exchange markets and large deficits. Auxiliary sign suggests that the causation runs from macroeconomic policy to growth. Furthermore, investment (INV) is positive and significant at a 1% level of significance indicating a strong positive relationship with economic growth. However, human capital (HC) and private credit (PRIV) are found to be insignificant. Following (Schumpeter & Redvers, 1934) extensive literature argues that well-functioning banks incentivize innovation in technology and products by guiding funds to their most productive use and hence generating higher growth. The variable of PRIV is found to have a negative sign implying that financial institutions are not well-functioning this is the reason it harms growth.

Table-2. The impact of net migration on Growth and its components.

Variables	Model (1) GROWTH	Model (2) LER	Model (3) CAPLAB	Mode (4) TFPG
NM	-2.9167***	0.0172	-0.4120***	-0.9997
	(0.005)	(0.337)	(0.001)	(0.174)
HC	0.3567	0.0621	1.2742***	-1.5075
	(0.64)	(0.154)	(0.000)	(0.307)
GOV	-2.2650**	0.0015	0.0232	-4.6112**
	(0.044)	(0.927)	(0.903)	(0.011)
INF	-1.5629***	0.0108	-0.0503	-1.6187*
	(0.002)	(0.299)	(0.138)	(0.067
INV	4.1026***	0.0389	0.0443	0.6851
	(0.001)	(0.238)	(0.755)	(0.603)
PRIV	-0.4312	-0.0108	0.1137	0.1804
	(0.560)	(0.300)	(0.281)	(0.855)
Constant	0.0537	3.7542***	-1.9350***	17.2562*
	(0.989)	(0.000)	(0.007)	(0.061)
Observations	904	501	904	517
R-squared	0.139	0.06	0.719	0.108
Countries	23	23	23	23

Note: ***, ** and * represent significance level at 1%, 5% and 10% respectively. NM is net migration, HC is human capital, GOV government expenditure, INF inflation consumer price index, and INV gross capital formation and PRIV private credits these are our independent variables. Our dependent variables are GROWTH economic growth, LER labor employment ratio, CAPLAB capital-labor ratio, and TFPG total factor productivity growth. We use the fixed effect method for the estimation of the above models. Further, we use robust standard errors as suggested by Newey and West.

Model (2) in Table 2 shows that the impacts of NM, HC, GOV, INF, and INV on LER are positive, but all are insignificant. However, net migration has a mild positive effect on the employment rate; and the impact of PRIV on LER is negative and insignificant. Model (3) shows that the impact of NM on CAPLAB is negative, and it is highly

significant at a 1% level of significance because the flow of immigrants reduces labor per worker. The economic theory shows that when the migrants invest or incentives the FDI into the economy can balance the drop in CAPLAB from birth. The facts and the condition show that the entry and exit of native-born people affect the labor force rate more than the arrival of the foreign-born worker. However, the HC is positively related to CAPLAB and highly significant at a 1% level. The impact of GOV on CAPLAB is positive but insignificant. The impact of INF is negative on CAPLAB and insignificant. The variables of INV and PRIV both are positively related to CAPLAB but insignificant. Model (4) shows that NM and HC are negatively related to TFPG and are insignificant. The modeling analysis suggests that the migrants may increase TFPG due to efficiency gains generated by increased hearsay in the labor force. The impact of GOV is negative on TFPG but significant at a 5% level. INF is negatively related to TFPG and significant at a level of 10%. INV and PRIV are negatively related to TFPG, but insignificant.

The impact of trade openness (TO) on economic growth (Growth) is shown in Table 3. Model (1) in Table 3 shows that the impact of TO on Growth is positive but insignificant. The impact is positive because it is beneficial in terms of productivity gain. For example, globalization introduces the new goods and services, the managerial skills, labor mobility, and openness of the market. This result is supported by most of the existing studies (Bhatti et al., 2013; Chen & Feng, 2000; Frankel. & Romer, 1999; Makki & Somwaru, 2004; Ortega & Peri, 2001). The impact of the HC on GROWTH is negative and insignificant. The impact of GOV is negative on growth, but it is highly significant at the 1% level of significance. The impact of INF is negative on growth and highly significant at a 1% level of significance. The results are consistent with Fischer (1993). Further, the impact of INV is positive and highly significant at a 1% level. The impact of PRIV is negative on GROWTH and insignificant. The results of the model (2) show that the impact of TO on LER is negative and significant at the10% level of significance while HC is positive and significant at level 5%. However, GOV, INF, and INV are positively related to LER, but all are insignificant. Furthermore, the impact of PRIV on LER is negative and insignificant. In model (3) only human capital (HC) is highly significant at a 1% level of significance with a positive impact on CAPLAB. While all other variables are insignificant. Model (4) shows that TO, INV and PRIV are positively related to TFPG but are insignificant while HC, GOV, and INF are negatively related to TFPG. Only GOV and INF are significant at 1% and 10% level of significance respectively. Overall, the impact of TO on GROWTH and its components is positive and insignificant; except for the impact of TO on LER which is negative and significant at a 10% level. Finally, the values of F-statistics indicate that overall our regressions are statistically significant.

Table-3. The impact of trade openness on Growth and its components.

Variables	Model (1)	Model (2)	Model (3)	Model (4)
	Growth	LER	CAPLAB	TFPG
TO	3.2341	–0.0730*	–0.091	4.1888
	(0.165)	(0.063)	(0.829)	(0.104)
HC	–1.4869	0.1047**	1.3523***	–4.0258
	(0.309)	(0.020)	(0.001)	(0.132)
GOV	–2.9557***	0.0058	0.0467	–4.9009***
	(0.008)	(0.727)	(0.81)	(0.006)
INF	–1.5379***	0.01	–0.0411	–1.5914*
	(0.001)	(0.309)	(0.214)	(0.052)
INV	4.0327***	0.0413	0.0311	0.5919
	(0.001)	(0.194)	(0.828)	(0.662)
PRIV	–0.135	–0.0164	0.1256	0.4808
	(0.858)	(0.107)	(0.277)	(0.658)
Constant	–6.6685	3.9348***	–1.7603	7.1364
	(0.278)	(0.000)	(0.177)	(0.406)
Observations	904	501	904	517
R-squared	0.138	0.079	0.709	0.121
Countries	23	23	23	23

Note: Standard errors in parentheses where ***, **, and * denote significance at the 1%, 5%, and 10% level respectively.

4.2. The Combined Effects of Net Migration and Trade Openness on Economic Growth and its Components

The combined effects of trade openness (TO) and net migration (NM) on economic growth (growth) and its components are shown in Table 4, where model (1) shows that TO and INV are positive and significant at 5% and 1% level of significance while NM, HC, GOV, INF, and PRIV are negative. NM, GOV, and INF are significant at a 1% level of significance while HC and PRIV are insignificant. The impact of TO on growth is positive because trade-openness facilitates more efficient production of goods and services by shifting production to countries that have a comparative advantage in producing them, the finding is supported by Frankel. and Romer (1999); Chen and Feng (2000); Makki and Somwaru (2004); Ortega and Peri (2001); Bhatti et al. (2013). Another reason for the positive impact is that the countries having open capital accounts had a suggestively larger increase in financial deepness and, over the 20 years, better economic growth. It is noted that TO has a positive and significant impact on GROWTH in the presence of NM. The impact of NM on GROWTH is negative which is similar to the finding in Table 2 and is consistent with Card (2001) and contradicts the findings by Frankel. and Romer (1999); Ortega and Peri (2001). Inflation is negatively related to GROWTH. This result is consistent with the recent empirical literature that has indeed originated an adverse pragmatic connection between growth and inflation (Bhatti et al., 2013; Fischer, 1993).

Table-4. Combined effects of trade openness and net migration on GROWTH and its components.

Variables	Model (1) Growth	Model (2) LER	Model (3) CAPLAB	Model (4) TFPG
TO	4.1799**	–0.0889**	0.0143	5.1341**
	(0.015)	(0.016)	(0.969)	(0.04)
NM	–3.7237***	0.0365*	–0.4148**	–2.1164***
	(0.000)	(0.067)	(0.011)	(0.004)
HC	–2.269	0.1154***	1.2652***	–4.6834*
	(0.106)	(0.006)	(0.001)	(0.091)
GOV	–3.1956***	0.004	0.02	–4.7904***
	(0.005)	(0.799)	(0.918)	(0.007)
INF	–1.6225***	0.0102	–0.0505	–1.5952*
	(0.001)	(0.305)	(0.11)	(0.05)
INV	4.1525***	0.0428	0.0445	0.5016
	(0.001)	(0.168)	(0.756)	(0.711)
PRIV	–0.2356	–0.0172*	0.1144	0.5245
	(0.763)	(0.088)	(0.30)	(0.639)
Constant	–8.4997*	3.9833***	–1.9643*	4.3226
	(0.092)	(0.000)	(0.098)	(0.594)
Observations	904	501	904	517
R-squared	0.155	0.089	0.719	0.128
Countries	23	23	23	23

Note: Standard errors in parentheses where ***, **, and * denote significance at the 1%, 5%, and 10% level respectively.

Model (2) in Table 4 shows that TO is negatively related to LER and it is significant at a 5% level of significance, whereas NM is positively related to LER and it is significant at a 10% level of significance. Similarly, HC is positively related to LER and it is highly significant at the significance at 1% level. Similarly, the impact of PRIV on LER negative and it is significant at a significance level of 10% while the rest of the variables are positive but insignificant. Model (3) shows that TO is insignificant with a mildly positive impact on CAPLAB while the impact of NM on CAPLAB is found to be negative and significant at a 10% level. HC is highly significant at the significance level of 1% and it is positively related to CAPLAB while GOV, PRIV, and INV are positive but insignificant. INF is negative and insignificant. Finally, model (4) shows that TO is significant and has a positive impact on TFPG. The impact of NM on TFPG is negative and significant at 1% level. The impact of HC is negative on TFPG, but it is significant at the 10% level. GOV is negatively related to TFPG, and it is highly significant at a 1% level. Similarly, PRIV is insignificant in the case of TFPG but it affects the TFPG positively. It is found that

INF is negatively related to TFPG but significant at the 10% level. However, INV is insignificant and positively related to TFPG which is consistent with our previous findings. Overall, our results from the combined effects of TO and NM show that TO has a positive and significant impact on Growth and its components except for the impact on LER. This finding is consistent with most of the empirical literature. However, the impact of NM on growth and its components is found to be negative and significant except the impact on LER.

5. CONCLUSION AND RECOMMENDATIONS

This study uses a panel data of 23 selected emerging economies, namely Argentina, Bangladesh, Brazil, Bulgaria, Chile, China, Colombia, Hungary, India, Indonesia, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey, Ukraine, and Venezuela. This study is conducted to investigate the aggregate impacts of both trade and net migration on economic growth and its components such as capital-labor ratio, the employment-population ratio, and total factor productivity growth. We use the 2SLS fixed-effect model. This model is chosen to escape the problem of endogeneity. Here we have used the gravity-based equations to get the estimated values of trade openness and net migration for final estimations.

This study is based on the central question in international economics: how trade openness and the flow of immigrants affect economic performance? Many theories attempt to answer this question; their emphasis differs on the product variety, technology, factor differences, and so on. The common concern of all these philosophies is the guesses about the effects of migrants' flow and trade-openness on real per capita income and its components. However, there are no cross-country studies that provide evaluations of the combined effects of both trade and net migration on economic growth and its components (employment rates, capital intensity, and total factor productivity).

Hence the imitative was taken by Frankel. and Romer (1999). Similarly, Ortega and Peri (2001) and several other studies have investigated the impact of international trade on income per person (Cavallo & Frankel, 2008; Frankel & Rose, 2002; Noguer & Siscart, 2005). These studies have focused on the long run and the level effect. However, these studies overlooked the role of international migrant's flows. Many of the elements of trade flow, especially geography are well known to determine the migration flows.

In this study, we have investigated the combined effect of both trade openness and net migration on per person income and its constituents. Our findings in the case of TO and its impact on GROWTH and its components remained the same as the results of Frankel. and Romer (1999); Ortega and Peri (2001) that is, the impact of TO on GROWTH and its components is positive and significant. However, in the case of net migration (NM), our results contradict the above-mentioned studies because these studies show that net migration has a positive impact on per person income but in our case, NM has a negative and significant impact on growth and its components. This negative impact may be due to the dominance of the "drain effect" over the "brain effect" because most of these countries are facing the problem of "brain drain". In our sample of emerging economies, the flow of emigrants may be more than the flow of immigrants which is evident from the negative average value of NM see Table 4 contrary to the developed countries. Hence, due to the negative drain effect NM leaves a negative impact on growth and its components.

Generally, it is believed by the policymaker that both trade openness and net migration are positively affecting the economic growth and its components because the previous literature shows most of its findings from developed countries like OECD countries. However, the existing literature may misguide the policymakers of the emerging economies because those studies are conducted in the case of OECD and developed economies which are showing that net migration has a positive impact on economic growth, but this study shows that net migration harms per person income in the case of the emerging economies.

This study is very important for the implementation of any new policy regarding trade openness and migrants in the case of emerging economies. As no study shows the combined impacts of trade openness and net migration on

growth and its components, this study provides a better understanding of the combined effects of both trade and net migration on economic growth and its components.

The present study has some limitations that we acknowledge. We have used the data of net migration instead of using the data of immigrant's flow. Our estimations are based on net migration data, only because of the non-availability of data on immigrants' flow into the emerging economies. In the future, if data on the flow of immigrants into the destination emerging economies becomes available, it would be fruitful to use it in our regression analysis.

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APPENDIX

Table-A4.1. Auxiliary regression.

Gravity Variables	Ln Trade Openness	Net migration
Population growth	-0.4297***	0.1259
	(0.000)	(0.299)
Distance	-1.5842***	-0.9808
	(0.000)	(0.381)
1.lang_d	-0.2122	-0.5309
	(0.342)	(0.183)
2.lang_d	-0.2617*	-0.0988
	(0.090)	(0.816)
3.lang_d	2.5417***	2.9107
	(0.001)	(0.157)
4.lang_d	2.0396***	2.5678**
	(0.000)	(0.032)
5.lang_d	-0.0133	1.0099*
	(0.946)	(0.054)
7.lang_d	1.9073***	1.4634***
	(0.000)	(0.000)
8.lang_d	0.4471***	1.0357***
	(0.000)	(0.000)
9.lang_d	2.6113***	2.8674
	(0.000)	(0.149)
11.lang_d	3.3706***	4.1023*
	(0.000)	(0.086)
12.lang_d	2.4968***	3.5883*
	(0.001)	(0.051)
13.lang_d	1.5864***	1.9268***
	(0.000)	(0.000)

14.lang_d	1.0862***	1.7925***
	(0.000)	(0.008)
15.lang_d	1.0746***	1.8683***
	(0.000)	(0.000)
16.lang_d	1.6135***	2.2617***
	(0.000)	(0.000)
1o.col_d	–	–
2.col_d	-0.6932*	-2.2580**
	(0.086)	(0.037)
3o.col_d	–	–
4.col_d	2.3141***	1.9342*
	(0.000)	(0.097)
5o.col_d	–	–
6o.col_d	–	–
7o.col_d	–	–
Constant	12.2052***	3.7658
	(0.000)	(0.519)
Observations	1,138	1,311
Number of pid	23	23

Note; in Table 4.1 we regress random effect model. Here the Dependent variables are TO and NM while the explanatory variables are gravity based variables. The gravity based variables includes Area, Distance, common language and colonial ties. For common language and colonial ties we have used col_d and lang_d simultaneously. . (*, **, ***) these signs are to check the level of significance where (*) shows significance level at 10 percent (**) two stars are for 5 percent level of significance and (***) three stars are for significance level at 1 percent.