

Does trade contribute to poverty reduction? If it does, where the benefit goes to?

Saera Oh^a and Sang Hyeon Lee^{b*}

^aDepartment of Global Cooperation Research, Korea Rural Economic Institute, South Korea;

^bDepartment of Global Cooperation Research, Korea Rural Economic Institute, South Korea

*Corresponding author.

Sang Hyeon Lee: 82-61-820-2037 Email: shlee@krei.re.kr

Department of Global Cooperation Research, Korea Rural Economic Institute,
601, Bitgaramro, Najusi, Jeollanamdo, 58217, Korea

Saera Oh: 82-61-820-2042 Email: aminail@krei.re.kr

Department of Global Cooperation Research, Korea Rural Economic Institute,
601, Bitgaramro, Najusi, Jeollanamdo, 58217, Korea

Saera Oh is a researcher in the Department of Global Cooperation Research, Korea Rural Economic Institute. Sang Hyeon Lee is a research fellow in the Department of Global Cooperation Research, Korea Rural Economic Institute.

Does trade contribute to poverty reduction? If it does, where the benefit goes to?

The linkage between trade and poverty reduction is one of the controversial debate topics. Many studies were conducted and focused on national level poverty but this paper aims to investigate how the effect of trade differs in regional level (rural and urban) in developing countries. The result indicates that 1) an increase of export share contributes to national and urban poverty reduction in Asia and Central and South America but not the rural poverty; 2) an increase of import share is found to be beneficial for poverty reduction especially in Central and South America.

Keywords: Trade, poverty reduction, rural poverty, urban poverty, Developing country

JEL classifications: I32, F69

1. Introduction

World trade volume has been greatly increasing from 8.8 trillion US dollars in 1990 to 43.1 trillion US dollars in 2015 with the active flow of trade liberalization since 1990s.¹ The role of international trade in world economy became more substantial in that the trade value share of world GDP increases from 39.1% to 58.3% in respective year. According to World bank data, the absolute poverty rate which is the percentage of world population living under less than 1.90 US dollar a day has fallen from 35% in 1990 to 9.6% in 2015(projection). That of developing countries where the most of the extreme poverty took place has dropped by 11.9% in 2015(projection) from 42.2% in 1990.

Looking over the trade expansion and economic growth with poverty reduction trend, a question about trade and poverty relationship arises: Does trade contribute to poverty reduction? In regard with this question many empirical studies attempted to identify the trade and poverty interaction and still it is a contentious debate. The approaches of trade and poverty studies can be classified into two categories. First, trade and poverty relationship is strongly mediated by

economic growth (see Bhagwati and Srinivasan 2002; Berg and Krueger 2003; Dollar Kraay 2004). Second, trade affects poverty through various channels such as impact on market, wage and employment and so on (see Winters et al. 2004; Goldberge and Pavcnik 2004; Bacchetta et al. 2009)

One step further, some studies (Cain et al. 2010; Krishna et al. 2010) point out that benefit of trade may be different among regions or industry sector because of lack of capacity to capture advantages. Cain et al.(2010) has done Indian case study and finds that the gain from trade openness largely goes to the state with more flexible labour market and Krishna et al.(2010) finds the evidence that positive effect of trade liberalization on poverty reduction is smaller in lagging region in South Asian countries. These studies bring up thought that the benefit of trade may not always identical depending on where the poverty resides.

Therefore, we aim to assess the impact of trade at national and regional (rural and urban) level poverty and find whether there is difference by continents(Asia and Central and South America). This study is organized as follows: Section 2 reviews relevant literatures guided by a research question: what is the relationship between trade and poverty and does benefit equal across region? Section 3 introduces the data and its description and empirical method. This paper uses two-way fixed effect model to detect the effect of trade on poverty at both national and regional level. Section 4 describes the results of regression. Finally section 5 concludes.

2. Theoretical Framework

2.1. Trade and Poverty Nexus

As reviewing previous literatures, the perspective on trade and poverty nexus can be classified around two main branches.

1) Trade-Growth-Poverty.

Bhagwati and Srinivasan(2002), Berg and Krueger(2002), Dollar and Kraay(2004) and many other subsequent studies assume that trade powerfully or generally triggers the economic growth and in turn a poverty alleviation. In this perspective, Trade-Growth and Growth-Poverty linkage should be defined. However they are not decisive yet and bring many disputes in empirical literatures. In case of Trade-Growth(Figure 1-①) linkage, previous studies dominantly support the positive effect of trade on growth (see Dollar and Kraay 2004; Lee et al. 2004; Busse and Königer 2012). Against, other side of study is conservative. They hold a view that the relationship is conditional and hard to be generalized (see Rodriguez 2007; Mendoza 2010) or the trade is not the only contributor to growth (USTR 2016). Growth-Poverty(Figure 1-②) linkage has been documented and majorities including various international development agencies take the view which is that the economic growth is the most effective way to deliver the better life to the poor (DFID 2008; Roemer 1994). However there is remaining doubt that if the growth gains are more captured by the non-poor than the poor, the growth effect on poverty reduction might be attenuated (Ravaillion 2005).

[Figure 1 near hear]

2) *Various Channel.*

Trade-Poverty link is expected to operate via various channels (Figure 1-③) (Winters et al. 2004). OECD(2007) clarifies the six main trade-poverty transmission mechanism (Figure 2). According to the OECD(2007), changes in trade and trade policy bring the changes to the poor through taxes and transfer system, price, assets, employment and access to goods and services and authority(understandable as governance) channels. Here, we will briefly review literatures related to price and employment channels which seem to have direct effect on the poor's income and expenditure.

[Figure 2 near here]

Price. Price channel includes the changes the consumer price, input price and also the changes of interest rates. The shift in relative price in economy induced by trade in the economy affects households or individual's income and consumption and real price change particularly in staples or inputs directly affect the poor (OECD DAC 2010).

Wage and Employment. Many studies note that trade can affect poverty via the impact it has on employment (and wage). In aspect of wage, traditional trade theory suggests that trade liberalization is associated with poverty and inequality reduction in developing countries via increasing the wage of unskilled workers based on Heckscher-Ohlin model and Stolper-Samuelson theorem. Some of empirical studies are inconsistent with traditional framework because of such reasons that the skill-biased wage premium accompanied by trade liberalization or the employment creation which requires new skill (Winters et al., 2004; Nicita 2006). In addition, Cain et al.(2010) investigates the impact of trade openness on poverty in India and they

find that the tariff reduction is beneficial for the poor but it depends on the labour market flexibility. The type of employment (formality, informality and self-employment) is also considered. Goldberge et al.(2004) explains that when import increases, unemployment and informality are likely to rise in import competitive sector and it is associated with poverty increase with high incidence. Export increase operates opposite. Popli(2010) studies the impact of liberalisation on income inequality and poverty among Mexican self-employed workers and finds regional differences.

Price, wage and employment are also closely connected. According to Krivonos and Olarreaga (2005) which simulates the impact that the sugar liberalization in OECD countries on Brazilians, workers in sugar industry and living in main producing regions get a chance of wage increase when the sugar price increase. Particularly, poor households gain income as moving out from unemployment.

2.2. Poverty in Rural and Urban

Many studies in the field of ‘poverty’ call attention to an aspect of regional difference. Accumulated evidence with this point says that the poverty is predominant phenomenon in rural area. Fan et al.(2005) notes that one country’s development strategy has disproportionately focused on resources in the urban sector and increased the development gap between rural and urban areas.

[Table 1 near here]

Table 1 is the Multidimensional Poverty Index (MPI) developed by Oxford Poverty and Human Development Institute (OPHI) and UN Development Programme. MPI assess poverty with health, education and living standard which are non-monetary measure and to some extent, it shows deprivation of basic principles in the region or country. Every continent group in Table 1 has higher number of the poor in rural rather than urban and the share of the rural poor among the rural population is over 60%. Less chances of improving labour productivity and income per capita are expected in rural areas and consequently it is increasing the concentration of poverty among the rural population (Fan et al., 2005).

In this regard, the effect of trade may appear dissimilarity in rural and urban area and in many cases the poor in rural take less advantage than the urban poor. Topalova(2007, 2010) examines the effect of India's trade reform on poverty rate and concludes that rural areas in which employment concentrated in sector exposed to larger tariff reduction experienced substantially less poverty reduction than unexposed area while relationship between trade and poverty in urban India is not significant or weak. In short, Topalova suggests that the poor in rural do not gain from trade openness as much as the poor in urban area. Similarly, Krishna et al.(2010) finds that the positive relationship between trade and poverty reduction is weaker in lagging states in India. Cockburn(2002) uses CGE model to analyse impact of trade liberalisation to the poor and finds that the price reduction in agricultural products caused by liberalisation benefits the urban poor but harms the rural poor.

3. Data and Methods

In order to examine the effect of trade on overall national poverty and regional (rural and urban) poverty and observe whether the effect of trade is different depending on continents we compose the macro level dataset using various World Bank's database. The dataset is cross-country and annual time-series data for 20 countries from 1990 to 2015. Selected 20 countries (see Appendix 1) are developing countries according to IMF's World Economic Outlook (2015) which have national, rural and urban poverty data for at least 5 year period. Due to the limited data availability the dataset is unbalanced.

Considering heterogeneity, we performed two-way fixed effect model to control both country-specific and time-specific effects. It is simply generated by addition of year dummies in general fixed effect model.

An equation for estimating the effect of trade on poverty is basically defined as (1).

As already stated, an empirical objective of this study is investigating how differently the trade influences the poor living in rural and urban area. So we conduct separate regression on national, rural and urban poverty using equation (1).

$$poverty_{ct}^k = \alpha_c + \beta_1 EXP_{ct} + \beta_2 IMP_{ct} + \beta_3 pGDP_{ct} + \beta_4 inf_{ct} + \beta_5 FD_{ct} + \beta_6 rl_{ct} + \beta_7 edu_{ct} + yr_t + \varepsilon_{ct} \quad (1)$$

$poverty_{ct}^k$ is the poverty rate in country c in year t and the superscript k denotes the region (overall, rural and urban). RHS of equation (1) are fixed effect term (α_c), independent variables ($EXP_{ct}, IMP_{ct}, pGDP_{ct}, inf_{ct}, FD_{ct}, rl_{ct}, edu_{ct}$), year dummies (yr_t) and error term (ε_{ct}). Independent variables are selected based on lessons from previous studies (Le Goff and Singh 2014; Thelle et al. 2015; Dollar and Kraay. 2004) and also known as factors affecting

poverty. Additionally, as seen in the Table 1 national poverty and regional poverty levels vary across the continent groups. Therefore we divide samples into continent groups-Asia and Central and South America- and then repeat regressions.

Dependent variables ($poverty^k$) are national, rural and urban poverty rate. All Poverty rate data is obtained from World Bank's World Development Indicator (WDI) database. The measure of poverty rate is headcount ratio below country-specific poverty line estimated from household survey. Overall national poverty headcount ratio is the percentage of the national population living below the national thresholds. Rural poverty and urban poverty headcount ratio are the percentage of the rural and urban population living below the national thresholds. The summary statistics of all observation is listed in Table 2 and Table 3 shows summary of country groups.

[Table 2 near here]

[Table 3 near here]

Independent variables include two trade variables which are export share (EXP) and import share (IMP) and, other control variables such as GDP per capita ($pGDP$), Inflation (inf), Financial depth (FD), Rule of law (rl), Primary education completion ratio (edu). Trade variables are export and import share (of GDP) which are took from World Bank's WDI database. There are two types of openness measure broadly used (Ahmed 2012). One is the sum of export and import share of GDP or its log form (Ravallion 2005; Dollar and Kraay 2004) which means trade volume and another is tariff or non-tariff barrier (Cain et al. 2010; Topalova

2007) as reflecting trade policy. But many studies have criticized the reasonability of the proxy of trade openness or protection measure when using cross-country data (Rodriguez and Rodrik 2001; Hayashikawa 2009), this paper focuses on the nature of trade performance so that we use the export share (Santoss-Paulino 2015) and import share of GDP as trade variables (Thelle et al. 2015). According to Harrison(2007), export share tends to be associated with poverty reduction while an increase of import share or import tariff reduction tends to be associated with increasing poverty. GDP per capita (*pGDP*) is in constant 2010 US dollar and it represents the economic growth level of countries. Inflation (*inf*) indicator reflects annual percentage change of the consumer price index. The argument between inflation and the poor is still controversial, but many studies and logical frame demonstrate that the poor suffers more from inflation than the rich and high inflation rate is tending to increase poverty rate (Easterly and Fischer 2001). Source of GDP per capita and inflation rate is also World Bank's WDI database. Financial depth (*FD*) is one of the indicators to assess the financial environment, which is measured by domestic credit to private sector as share of GDP and meant the growth opportunity of private sector. It is obtained from World Bank's Global Financial Development database. Although attempt to figure out the relationship between financial development and income distribution (inequality and poverty etc.) is quiet nascent (see Ben Naceur and Zhang 2016), there are several studies focused on financial depth and poverty reduction. Beck et al.(2007) and Rajan and Luigi (2003) suggest that improvement in financial depth contributes to poverty reduction by stimulating the income growth of the poor. Rule of law (*rl*) is one of the governance indicators from Worldwide Governance Indicator in World Bank database. It captures judicial dimension (for example the protection of property rights) of governance and generally ranging from -2.5 to 2.5. Good governance is emphasized as a prerequisite for poverty reduction especially in developing

countries (United Nation 2005). Khan(2009) shows that there are negative correlation between the level of rule of law and poverty. Kwon and Kim(2014) tests correlation by continent group and finds negative correlation in East Asia, Latin America and Middle East countries but, the marginal effect shows adverse effect to poverty reduction. Impact of rule of law on poverty reduction is an unsettled point (Early and Scott 2010). As education factor (*edu*), we use the primary education completion ratio well-known poverty determinants. This can be explained as gross intake rate to the last grade of primary education according to the definition. In some countries, this value is exceed 100% due to who enter primary school late or early or repeat grade. It is obtained from World Bank's Education Statistic database.

4. Result

The results of regression using full sample are listed in Table 4. First, see the column 1 national poverty, the estimation obtained indicates that an increase of export share contribute to poverty reduction as Thelle et al.(2015) and Santoss-Paulino(2015) suggest. When GDP per capita and the level of financial depth increase, the poverty rate is reduced. These are in line with the result in Le Goff and Singh(2014) and Talukdar(2012). Thus, we can say that economic growth and private sector activation can effectively alleviate poverty in developing countries. And if inflation rate becomes higher the more people leave behind the poverty line. It is consistent with the result of Ben Naceur and Zhang(2016). Next, in case of regional poverty, an increase of export contributes to poverty reduction both in rural and urban area. The effect of import is not significantly observed in these regressions but the result of other variables holds same as of national poverty regression. To sum up, result of full sample regression does not show any difference between national level and regional level poverty in regard with the effect of trade.

[Table 4 near here]

We carry out analysis for Asian countries and Central and South American countries separately and the results are presented in Table 5. Above all, we find that trade factors affect poverty rate differently across the region and, interestingly, the impact of import share is significantly observed and several differences are found between country groups.

Columns 1, 3, 5 of Table 5 are regression results of Asian countries. Export share does not affect national poverty but at regional level, an increase of it contributes to urban poverty reduction. In contrast, the result shows that an increase of import share worsens the national poverty and urban poverty. However, none of trade variables show apparent effect on rural poverty. GDP per capita growth, improvement in the level of financial depth and rule of law index are found to be favourable to both national and regional poverty reduction. The marginal effect of rule of law on poverty is different from Kwon and Kim(2014) and Thelle et al. 2015. Higher rule of law means that personal and civil liberties are more protected, gender equity is more achieved, public safety is secured, and access to justice is ensured (UN 2004). In this regard the result is complying with expectation. Inflation rate and education have no effect on Asian countries' poverty.

[Table 5 near here]

Columns 2, 4, 6 of Table 5 are regression results of Central and South American countries. An increase of export share has an effect on national poverty reduction. At regional level, it significantly contributes to urban poverty reduction. An increase of import share contributes to

both national and regional (rural and urban) poverty reduction in Central and South American countries and this result is distinguishing point compared to Asian countries. In both national and regional level, GDP per capita growth is reducing poverty rate and inflation soar is increasing poverty rate. Lastly, impact of primary education completion rate on poverty rate is only statistically associated with urban poverty in negative way of poverty reduction.

The result of regression using country level data of 20 developing countries shows that an increase of export share in one's economy contribute to poverty reduction at both national and regional level. Santoss-Paulino(2015) supports our result saying that the positive effect of export has the potential of enhancing country's economic capacity and in doing so reducing poverty.

We demonstrate that trade factors differently affect poverty rate across the region through continent group regression. In case of national poverty, an increase of export share benefits the poor to move out of poverty in Central and South America countries but there is no effect in Asian countries. And interestingly the import share increase tends to reduce poverty rate in Asian countries whereas it tends to reduce poverty rate in Central and South American countries. We guess that the reasons could be the differences in labour market characteristic especially in import competitive sector and industry structure etc. At regional poverty, we find that the rural poverty is ruled out of the benefit of export in both country groups in contrast to urban poverty. The effects of other variables on poverty are mostly in line with previous studies and meet our expectation. There are two thought-provoking points with the result of regression by continent. One is that the inflation is significant in Central and South American countries. This result is understood by that the poor in Central and South American countries are more vulnerable to consumer price volatility than Asian countries. Another is about the effect of rule of law. It is only effective in Asian countries' poverty reduction.

5. Conclusion

Considering the importance of trade in one's economy it is necessary to think about whether the benefit is proportionally distributed. World Bank and World Trade Organization (WTO) emphasize the role of trade in ending poverty through spurring economic, technology development, employment and other various channels in WTO report 'The role of trade in ending poverty'. Also WTO has led an international development initiative called 'Aid for Trade' build up on the concept of the trade as the leverage to overcome the poverty since 2005.

There are various studies trying to identify the connection between trade and poverty. One perspective is that trade leads poverty reduction through growth but systemic relationship of trade and growth is still controversial part in many literatures. Another is focusing on contextual factors engaged in the transmission of trade benefit to the poor. Trade is somewhat beneficial to poverty reduction but it may not be an overriding factor (Hayashikawa 2009).

Despite the ambiguous causality between trade and poverty transmission and insufficient data availability, this paper makes attempt to find how the effect of trade could be difference by region and continent in context of poverty reduction. As a result, an increase of export share contributes to national and urban poverty reduction in Asia and Central and South America but the effect of export was not beneficial for the poor in rural area. And an increase of import share is associated with poverty reduction in Central and South America.

Based on our empirical results, we can gently suggest that the export-oriented strategy or policy can help the poor in developing countries in Asia and Central and South America. Furthermore, to prevent the isolation of rural poor from the benefit of export, the country should concern the adequate policy as a complement.

Further research is needed to help right interpretation of the effect of trade especially the import share in this study with understanding the countries' industry structure and employment and wage system.

Appendixes

[Appendix Table A near here]

Notes

1. Data source is World Bank

References

- Ahmed, M. M. (2012). *Openness, institutions, and economic growth: Empirical evidence from panel estimation*, North Carolina State University.
- Alkire, S., Chatterje, M., Conconi, A., Seth, S., & Vaz, A. (2014). Poverty in rural and urban areas: Direct comparisons using the global MPI 2014. Oxford poverty and human development initiative
- Bacchetta, M., Ernst, E., & Bustamante, J. P. (2009). *Globalization and informal jobs in developing countries* International Labour Organization.
- Beck, T., Demirgüç-Kunt, A., & Levine, R. (2007). Finance, inequality and the poor. *Journal of Economic Growth*, 12(1), 27-49.
- Ben Naceur, S., & Zhang, R. (2016). *Financial development, inequality and poverty: Some international evidence*, International Monetary fund.
- Berg, A., & Krueger, A. (2002). Trade, growth and poverty. *Annual World Bank Conference on Development Economics, Washington, DC*,
- Bhagwati, J., & Srinivasan, T. N. (2002). Trade and poverty in the poor countries. *The American Economic Review*, 92(2), 180-183.
- Busse, M., & Königer, J. (2012). Trade and economic growth: A re-examination of the empirical evidence. *Available at SSRN 2009939*,
- Cain, J., Hasan, R., & Mitra, D. (2012). Trade liberalization and poverty reduction: New evidence from indian states. *India's reforms: How they produced inclusive growth*, 91-185
- Cockburn, J. (2002). *Trade liberalisation and poverty in nepal: A computable general equilibrium micro simulation analysis* University of Oxford, Centre for the Study of African Economies.

- DFID. (2008). *Growth: Building jobs and prosperity in developing countries*. London: Department for International Development
- Dollar, D., & Kraay, A. (2004). Trade, growth, and poverty. *The Economic Journal*, 114(493), F22-F49.
- Early, L., & Scott, Z. (2010). *Assessing the evidence of the impact of governance on development outcomes and poverty reduction*. Technical Report. University of Birmingham, Birmingham, UK.
- Easterly, W., & Fischer, S. (2001). Inflation and the poor. *Journal of Money, Credit and Banking*, 160-178.
- Fan, S., Chen-Kang, C., & Mukherjee, A. (2005). *Rural and urban dynamics and poverty: Evidence from china and india* IFPRI Washington, DC, USA.
- Goldberg, P. K., & Pavcnik, N. (2004). *Trade, Inequality, and Poverty: What do we Know? Evidence from Recent Trade Liberalization Episodes in Developing Countries*,
- Gutierrez, C., Orecchia, C., Paci, P., & Serneels, P. M. (2007). Does employment generation really matter for poverty reduction? *World Bank Policy Research Working Paper Series*, Vol,
- Harrison, A. (2007). *Globalization and poverty: An introduction*, University of Chicago Press
- IMF. (2015). *World Economic Outlook*
- Khan, M. H. (2009). *Governance, growth and poverty reduction*
- Krishna, P., Mitra, D., & Sundaram, A. (2010). *Trade, poverty and the lagging regions of South Asia* (No. w16322). National Bureau of Economic Research.
- Krivosos, E., & Olarreaga, M. (2009). Sugar prices, labor income, and poverty in brazil. *Economía*, 9(2), 95-123.
- Kwon, H., & Kim, E. (2014). Poverty reduction and good governance: Examining the rationale of the millennium development goals. *Development and Change*, 45(2), 353-375.
- Le Goff, M., & Singh, R. J. (2014). Does trade reduce poverty? A view from africa. *Journal of African Trade*, 1(1), 5-14.
- Lee, H. Y., Ricci, L. A., & Rigobon, R. (2004). Once again, is openness good for growth? *Journal of Development Economics*, 75(2), 451-472.
- Mendoza, U. (2009). Trade and growth in the post-2008/2009 crisis world. *World Economics*, 11(4)

- Nicita, A. (2006). Export led growth, pro-poor or not? evidence from madagascar's textile and apparel industry. Evidence from Madagascar's Textile and Apparel Industry (February 1, 2006). *World Bank Policy Research Working Paper*, (3841)
- OECD. (2007). Practical guide to ex-ante poverty impact assessment, Paris
- OECD DAC. (2010). Trade and pro-poor growth, JLP-PPG Briefing note 5, OECD DAC POVNET joint learning event
- Popli, G. K. (2010). Trade liberalization and the self-employed in mexico. *World Development*, 38(6), 803-813.
- Ravallion, M. (2006). Looking beyond averages in the trade and poverty debate. *World Development*, 34(8), 1374-1392.
- Rajan, R. G., & Zingales, L. (2003). The great reversals: The politics of financial development in the twentieth century. *Journal of Financial Economics*, 69(1), 5-50.
- Rodríguez, F. (2006). Openness and growth: What have we learned.
- Rodriguez, F., & Rodrik, D. (2001). Trade policy and economic growth: A skeptic's guide to the cross-national evidence. *NBER macroeconomics annual 2000, volume 15* (pp. 261-338) MIT Press.
- Roemer, M., & Gugerty, M. K. (1997). Does economic growth reduce poverty? *Caer Ii*, 499
- Santos-Paulino, A. and Thornquist D. (2015). Estimating the impact of trade specialization and trade policy on poverty in developing countries, UNCTAD
- Talukdar, S. R. (2012). *The effect of inflation on poverty in developing countries: A panel data analysis* (Doctoral dissertation, Texas Tech University).
- Topalova, P. (2007). Trade liberalization, poverty and inequality: Evidence from indian districts. *Globalization and poverty* (pp. 291-336) University of Chicago Press.
- Topalova, P. (2010). Factor immobility and regional impacts of trade liberalization: Evidence on poverty from india. *American Economic Journal: Applied Economics*, 2(4), 1-41.
- United Nation. (2005). Poverty reduction and good governance united nation, New York, United Nation Publication
- USTR. (2016). U.S Trade Preference Programs: Reducing poverty and hunger in developing nations through economic growth, Washington D.C
- Winters, L. A., McCulloch, N., & McKay, A. (2004). Trade liberalization and poverty: The evidence so far. *Journal of Economic Literature*, 42(1), 72-115.
- WTO. (2015). The role of trade in ending poverty

Figure 1. Trade-Poverty nexus

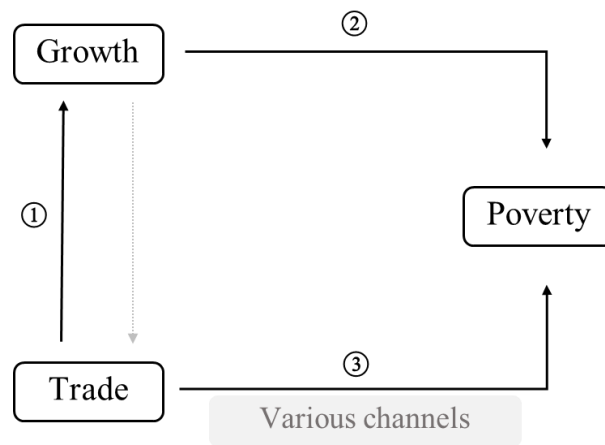
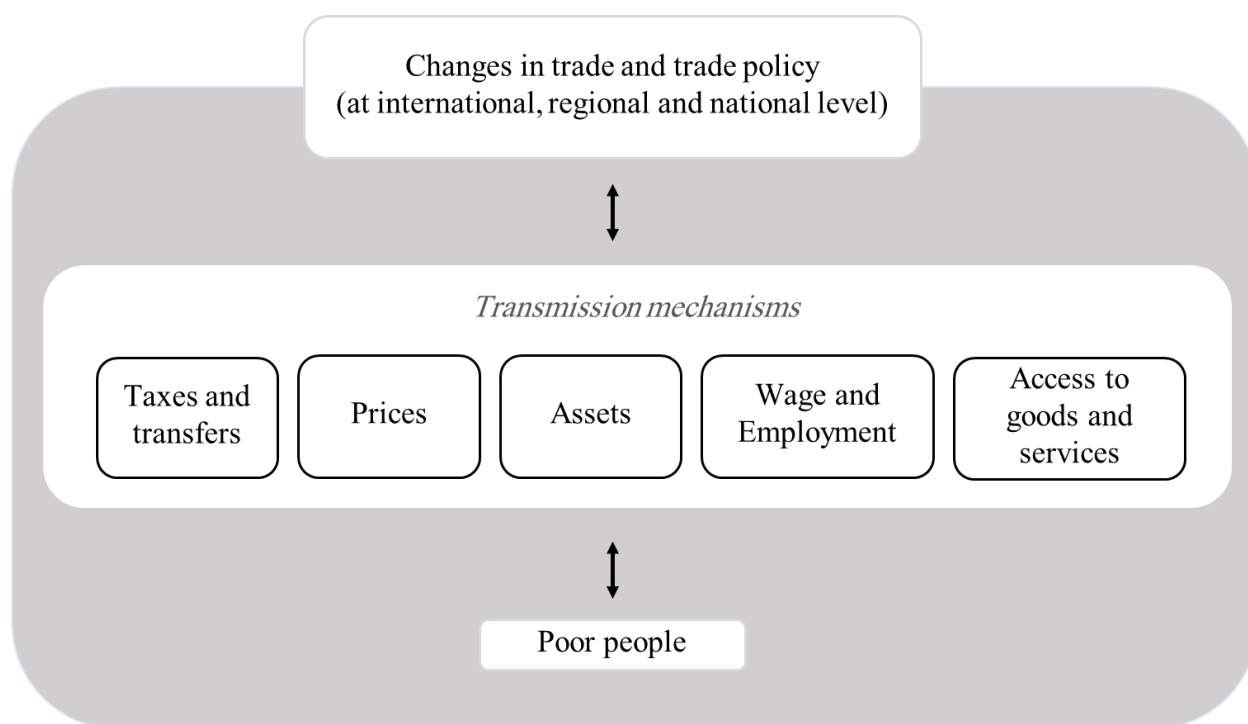


Figure 2. Schematic representation of various channels of trade-poverty linkages



Source: Modified OECD DAC(2010)

Table 1. MPI poverty by Region

	Number of countries	Total population	Number of MPI poor	Number of rural poor	Number of urban poor	MPI poor living in rural areas (rural share)
Unit		1,000	1,000	1,000	1,000	%
All	105	4,001,345	1,433,456	1,214,322	219,134	84.7
East Asia & Pacific	9	514,360	64,663	46,863	17,800	72.5
Europe & Central Asia	17	233,731	8,820	5,543	3,277	62.8
Latin America & Caribbean	15	469,739	28,697	19,953	8,744	69.5
Middle East & North Africa	9	206,909	25,345	19,074	6,271	75.3
South Asia	8	1,606,945	833,946	719,496	114,450	86.3
Sub-Saharan Africa	38	789,187	469,342	402,637	66,705	85.8
High income Countries	9	180,474	2,643	756	1,887	28.6

Source: Alkire et al.(2014)

Table 2. Summary statistics for the estimation samples (no. of observation=158)

Variable	unit	Mean	Standard Deviation	Minimum	Maximum
National Poverty Headcount Ratio	%	31.19	16.93	0.6	66.5
Rural Poverty Headcount Ratio	%	40.48	21.56	1.6	87
Urban Poverty Headcount Ratio	%	24.85	15.63	0.3	63.6
Export share (of GDP)	%	37.42	17.684	14.81	115.37
Import share (of GDP)	%	41.62	19.916	17.76	95.27
GDP per capita	\$	4,938	3,148	504	14,364
Inflation		6.77	8.906	-0.94	96.09
Financial depth		36.03	21.931	7.21	121.82
Rule of law		-0.55	0.559	-1.36	1.35
Primary education completion ratio	%	98.90	8.158	66.38	124.10

Table 3. Summary statistics for the estimation samples by continent groups

Asian countries (observation=65/ countries=9)					
Variable	unit	Mean	Standard Deviation	Minimum	Maximum
National Poverty Headcount Ratio	%	18.76	12.892	0.6	50.2
Rural Poverty Headcount Ratio	%	23.84	14.384	1.6	58.4
Urban Poverty Headcount Ratio	%	12.42	9.388	0.3	35.4
Export share (of GDP)	%	44.07	21.57	15.04	115.37
Import share (of GDP)	%	48.35	23.758	21.35	95.27
GDP per capita	\$	4,998	3,657	504	10,851
Inflation		7.21	4.771	-0.94	24.99
Financial depth		38.32	28.558	7.21	121.82
Rule of law		-0.53	0.570	-1.36	0.64
Primary education completion ratio	%	98.23	7.556	66.38	113.82
Central and South American countries (observation=93/ countries=11)					
Variable	unit	Mean	Standard Deviation	Minimum	Maximum
National Poverty Headcount Ratio	%	39.88	13.725	11.5	66.5
Rural Poverty Headcount Ratio	%	52.11	17.799	3	87
Urban Poverty Headcount Ratio	%	33.53	13.047	12	63.6
Export share (of GDP)	%	32.78	12.520	14.81	59.00
Import share (of GDP)	%	36.91	15.160	17.76	84.42
GDP per capita	\$	4,896	2,757	1,616	14,364
Inflation		6.46	10.922	0.19	96.09
Financial depth		34.43	15.721	14.71	106.02
Rule of law		-0.57	0.554	-1.20	1.35
Primary education completion ratio	%	99.37	8.560	77.82	124.10

Table 4. Impacts of Trade on poverty rate

Independent Variables	Dependent Variables		
	Total Poverty Headcount Ratio	Rural Poverty Headcount Ratio	Urban Poverty Headcount Ratio
Export share	-0.445*** (0.104)	-0.414*** (0.126)	-0.434*** (0.094)
Import share	0.090 (0.121)	0.203 (0.147)	-0.033 (0.110)
GDP per capita	-0.006*** (0.000)	-0.007*** (0.001)	-0.006*** (0.000)
Inflation	0.270*** (0.052)	0.197*** (0.064)	0.303*** (0.048)
Financial Depth	-0.267*** (0.068)	-0.308*** (0.082)	-0.225*** (0.062)
Rule of law	-2.769 (3.450)	-2.570 (4.177)	-2.211 (3.143)
Education	0.126 (0.086)	0.093 (0.104)	0.114 (0.078)
Constant	76.505*** (13.739)	89.466*** (16.637)	71.999*** (12.516)
Observations	158	158	158
Countries	20	20	20

Note 1: all of regression equation includes year dummies

Note 2: * significant at 10% level; ** significant at 5% level; *** significant at 1% level; Absolute value in parenthesis is standard error.

Table 5. Impacts of Trade on poverty rate by country group

Independent Variables	Dependent variable					
	Total Poverty Headcount Ratio		Rural Poverty Headcount Ratio		Urban Poverty Headcount Ratio	
	Asia	Central and South America	Asia	Central and South America	Asia	Central and South America
Export share	-0.216 (0.152)	-0.465*** (0.165)	-0.161 (0.180)	-0.098 (0.212)	-0.242** (0.108)	-0.607*** (0.155)
Import share	0.435** (0.186)	-0.527*** (0.194)	0.348 (0.221)	-0.751*** (0.248)	0.334** (0.133)	-0.434** (0.182)
GDP per capita	-0.004*** (0.001)	-0.007*** (0.001)	-0.007*** (0.001)	-0.005*** (0.001)	-0.003*** (0.001)	-0.006*** (0.001)
Inflation	0.080 (0.204)	0.282*** (0.051)	-0.002 (0.242)	0.171** (0.066)	0.107 (0.146)	0.334*** (0.048)
Financial Depth	-0.380*** (0.084)	-0.247** (0.114)	-0.442*** (0.100)	-0.038 (0.146)	-0.280*** (0.060)	-0.355*** (.107)
Rule of law	-16.002** (7.596)	0.521 (4.100)	-18.766** (9.016)	1.429 (5.251)	-10.889** (5.432)	-0.909 (3.849)
Education	-0.129 (0.185)	0.106 (0.092)	-0.085 (0.219)	0.000 (0.119)	-0.215 (0.132)	0.152* (0.087)
Constant	59.681** (24.179)	103.488*** (14.543)	80.914*** (28.698)	115.694*** (18.625)	60.069*** (17.290)	93.598*** (13.654)
Observations	65	93	65	93	65	93
Countries	9	11	9	11	9	11

Note 1: all of regression equation includes year dummies

Note 2: * significant at 10% level; ** significant at 5% level; *** significant at 1% level; Absolute value in parenthesis is standard error.

Appendix

Appendix Table A. List of countries in dataset

	Asia	Central and south America
1	Armenia	Bolivia
2	Cambodia	Chile
3	Georgia	Colombia
4	Indonesia	Costa Rica
5	Kazakhstan	Dominican Republic
6	Kyrgyz Republic	Ecuador
7	Malaysia	El Salvador
8	Thailand	Honduras
9	Turkey	Paraguay
10		Peru
11		Uruguay