THE ROLE OF INTERNATIONAL TRADE IN POVERTY REDUCTION: A CASE STUDY OF INDIA

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Abstract   *Although it is commonly believed that higher exports results in higher GDP, theoretically, the impact of international trade on poverty reduction is ambiguous. To resolve this ambiguity, this paper aims to examine the impact of India's exports intensity on poverty outcomes. With poverty as a focal point, the international trade in India is examined together with a wide range of macro variables in order to trace down the poverty-reducing impact of trade. Using a case study approach, time series data on India is taken for the post-globalization period of 1990–2012. The key dependent variable is poverty, which is measured as poverty headcount as wells as poverty gap. The model is regressed using classical Ordinary Least Squares (OLS) as well as system Generalized Method of Moments (GMM) estimator in order to control endogeneity and reverse causality in the model. The results using basic OLS regression state that poverty reduces as exports increases. When the model is tested using the GMM approach, the empirical results do not show any significant relationship between poverty and exports for the basic model. However, when interaction terms of control variables are brought in the model, the results change. The results thus suggest that globalized trade of goods may be an engine for poverty reduction in India, when it is complemented with the right domestic policies.*

Keywords: *Trade, Poverty, Inequality, Economic Growth*

INTRODUCTION

Why the poor people remain poor is said to be one of the most challenging and painful questions asked in political and economic research. This question gains more significance in the light of ever-increasing volumes of international trade and capital flows, thus triggering a continuing debate on the impacts of globalization on poverty.

To answer any research question, the general practice is to turn toward the theories underlying that subject. Hence, when we look at the traditional theories of International Trade, they suggest that trade facilitates economic growth of an economy by providing opportunities to expand markets, improving productivity and infusing new technologies. Moreover, the theories suggest that increased exports acts as boon for labor-abundant developing economies as higher exports leads to increased demand as well as wages of low-skilled workers. This unskilled labor is more likely to be living under extreme poor conditions because of lack of employment opportunities and meager wages. Thus, when the exports increase, the economic conditions of the semi-skilled and unskilled labor improves. Further, it is also contended that trade facilitates poverty reduction since developing countries which pursue an export-promoting

strategy are required to maintain macroeconomic stability. This resultantly reduces the variation in general price levels to which the poor of a country are most susceptible.

However, even though the traditional trade theory envisages these welfare gains from openness at the country level, the theoretical impact of trade on the poor remains indeterminate. Besides, even the empirical findings do not seem to converge on this point. According to Winters et al. (2004), increased exports lead to economic growth as access to larger markets allows individual producers to benefit from economies of scale, reducing unit-cost of production and increasing productivity, necessary for sustained economic growth. However, Aktar and Oztur (2009) studied the causality relationships between exports, poverty and GDP for Turkey, and concluded that exports do not have any impact on poverty, unemployment rate and economic growth in Turkey. Since economic theory fails to provide a framework for evaluating the poverty-reducing impact of trade, it becomes necessary to conduct an empirical analysis. Further, as apparent from the literature, the results are coming to be different for different economies. Hence, it makes more sense as to carry out the analysis at the country-level. Now, the next question that arises is: which country to choose so that the intertwined relationships between Poverty and

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International Trade can be studied. Hence, we have chosen India because according to the Millennium Development Goals Report (2015), the majority of the world's poor reside in developing regions of the world, led by India. Though poverty levels have come down substantially, the pace of poverty reduction in India has been very slow.

The Purpose of Study

In the wake of the above background, the identifiable aims are:

Aim 1: To empirically examine the impact of India's exports intensity on poverty outcomes.

Aim 2: To study the linkages between economic growth, trade and poverty.

Aim 3: To examine the impact of explanatory variables on the poverty-trade relationship.

THEORETICAL FRAMEWORK

Bhagwati and Srinivasan (2002) categorize the existing literature into the two broad strands – static and dynamic. The former strand explains the static relationship between trade and poverty with resources and technology as given while the latter explains the dynamic relationship between international trade and poverty via economic growth.

Static Framework

Hecksher-Ohlin (H-O) Theorem

This model give predictions about the impact of trade between countries having different resource endowments – for instance, in the case of trade between developed and developing nations. The H-O model says that "comparative advantage occurs from the differences in relative endowments of factors of production". Hence, a developing country will specialize in producing goods that employ more of labor being the relatively abundant factor and would import capital-intensive goods and services from developed countries where capital is more easily available. Another relevant theorem in the Hechsher-Ohlin model is the Stolper Samuelson theorem. This theorem states that an increase in the price of a good will cause an increase in the price of the factor used intensively in that industry and a decrease in the price of the other factor. Now, in poor countries, the most abundant factor is the less-skilled or unskilled class of labor. According to this theory, higher trade will benefit this low-skilled labor by increasing their wages. This increase in wages can act as a tool for reducing poverty.

New Trade Theories

The second strand of static framework is the "new trade theories". It is believed that the new trade theory (NTT) originates from the new growth theory (NGT) that emanated in 1990s. The NGT highlights that advanced technology as well as externalities emerging out of innovative ideas and new knowledge is an important variable in generating economic growth. Similarly, the NTT theory also emphasizes on the diffusion of knowledge and increased usage of technology in the production process. Now, we look at the dynamic framework explaining the trade-poverty relationship.

Dynamic Framework

Bhagwati (2002) argues that trade, by fostering growth, leads to higher incomes and in turn a reduction in poverty. This strand focuses on two relationships which are between trade and growth; and growth and poverty. We try to look at both the theoretical and empirical angles. The growth aspects of increased trade are detailed in the NGT given by Romer (1986) and Lucas (1988). However, empirical theorists started questioning the potential of growth offered by enhanced international trade. Further, the causality relationship is also questioned, as to whether higher trade leads to economic growth or enhanced growth leads to more international trade.

After dealing with the Growth-Poverty relationship, now we deal with the second aspect of the chain which is the growth-poverty linkages. It is believed that if the growth is unaffected by the distributional aspects and trade-openness leads to improved economic growth rates, then it can be implied that trade reduces poverty. But, the empirical evidences suggested that this relationship is far more complicated than assumed. This is because the above explanation assumes that fruits of economic growth are enjoyed by the poor and rich alike. Having discussed the static as well as dynamic theories on trade-poverty relationship, we now look at a brief overview of the trends related to poverty and trade in India.

INDIA - A BRIEF PRELUDE

India was a British colony until 1947; hence, India's economy as well as trade policies were majorly oriented accordingly. After Independence, because of the widespread poverty and exploited resources, India decided to remain an almost closed economy. Here, the exports were discouraged and imports were substituted in order to help the local producers. However, this strategy could not sustain for long and India had to undertake economic reforms in the form of LPG

policies in 1991. These reforms led to globalized movement of capital, goods as well as various services.

Trends in India's International Trade: Changing Importance

India's export growth has seen many ups and downs in the past decade. India was doing significantly good in 2007–08 when the "global financial crisis" hit the world economy. Indian exports could not remain insulated from these global shocks and hence started falling. However, they started picking up immediately in 2009 and rose to the highest point in 2011. But India could not sustain this rise in exports, because oil prices started rising and euro zone crisis set in. These exports have been hit in 2016–17, because of the currency demonetization as well as the teething problems of GST. Similar to exports, the imports have also observed various highs and lows in the past decade. However, the factors that drive imports are completely opposite to the factors that push exports. Indian imports majorly constitute oil and petroleum products and hence Indian imports become prone to the oil price shocks happening in the global economy. The imports fell sharply from 31.3% in 2011–12 to 0.3% in 2012–13 and became -8.3% in 2013–14 because of fall in non-oil imports. In the high growth years of 2015 and 2016, the imports witnessed corresponding increase. However, imports declined in 2016 and have been on a rise since then, because of higher oil prices.

Talking about the service sector, India has done tremendously well, not only in domestic market but also internationally. It has become one of the top five exporters of services among the growing economies. This gets reflected in the numbers as well, as Indian service exports have risen from a mere 0.6% market share in 1995 to 2.6% in 2007. Kothe and Sawant (2010) indicate that a causal relationship exists between service exports and economic growth in India, when studied for the period ranging from 1990–91 to 2007–08.

Trends in Poverty in India

Cambridge historian Angus Maddison (1971) has shown that India's share of world income collapsed from 22.6% in 1700, almost equal to Europe's share at that time, to as low as 3.8% in 1952. According to him, "India- the brightest jewel in the British Crown" was the poorest country in the world in terms of per capita income in the beginning of the 20th Century. After 25 years of independence, the percentage of population living under extreme poverty rose from 47 to 55% . This rate fell to 27.5% by 2004–05. Table 1 compares three-time frames highlighting different poverty trends in India using the Tendulkar method.

Table 1: Percentage and Number of Poor Estimated by Tendulkar Method, Using Mixed Reference Period (MRP)

Year	Poverty Ratio (%)			Number of Poor(million)		
	Rural	Urban	Total	Rural	Urban	Total
1993-94	50.1	31.8	45.3	328.6	74.5	403.7
2004-05	41.8	25.7	37.2	326.3	80.8	407.1
2011-12	25.7	13.7	21.9	216.5	52.8	269.3
Annual Average Decline: From 1993-94 to 2004-05 (percentage points per annum)	0.75	0.55	0.74			
Annual Average Decline : From 2004-05 to 2011-12(percentage points per annum)	2.32	1.69	2.18			

Source: World Economic Outlook (WEO), January 2016 updates.

Table 1 shows that the incidence of poverty declined from 37.2% in 2004–05 to 21.9% in 2011–12 on a country level. However, we can notice that there is a sharper decline in the number of rural poor as compared to their urban counterparts. Here, the rural poverty ratio declined from 41.8% in 2004–05 to 25.7% in 2011–12 whereas the urban poverty ratio declined from 25.7% in 2004–05 to 13.7% in 2011–12. In the next section, we review the extant literature studying poverty-trade relationship.

LITERATURE REVIEW

The literature on the factors directly determining poverty rates and reductions in them is comparatively smaller.

But in spite of extensive difficulties in identifying various variables, measuring and isolating them while studying the relationship between trade and poverty and in spite the lack of precise data on poverty, numerous studies have been made with cross-country data.

Exporting Generates Growth

Dollar and Kraay's (2002) study is by far the most extensive study carried out for establishing linkages between income, inequality and growth in terms of the volume of data processed. It has 953 observations collected over the period 1950–1999 and covers 137 countries. The authors conclude that the mean income of the poorest fifth moves in the same

direction proportionally as the mean income of the society taken together. Further, Dollar and Kraay (2004) conducted a study on developing economies by taking data from the post-1980 period in which they argued that as per capita income rises, because of growth in trade, there has been a reduction in absolute poverty in the previous 20 years.

McCulloch (2001) highlights the fact that though there is clear evidence of positive impact of growth on poverty, yet it is hard to establish linkages between trade and growth. This may be because of difficulty in measurement of trade barriers as well as measuring openness. Hasan, Quibria and Kim (2003) contend that policies and domestic institutions that help in maintaining a stable macroeconomic environment help in reduction of poverty. They use economic freedom as the dependent variable. The economic freedom is comprised of indicators namely price stability, government size, freedom to trade with foreigners, civil liberties as reflected in rule of law, etc. A study by World Bank (2011) reveals that those economies which have increased their export participation are the ones topping the charts of economic development. A major reason is that countries which follow autarky and abstain from exporting tend to lose out on growth and development.

The debate is incomplete without discussing the empirical literature on trade openness and growth. Berg and Krueger (2003) review the impacts of trade liberalization on export-led growth. They use a panel data covering 77 countries and concludes that trade openness is a significant determinant of economic growth. Dollar and Kray (2002) tests 100 developing and under-developed nations over the period of 1980s and 1990s, for examining the impact of participation in the international trade on economic growth. The results strongly indicate that greater involvement in trade is related to faster growth in developing countries.

Exporting Can Increase Productivity

In order to make the poverty reducing impacts of growth sustainable, enhanced productivity is needed. Wagner (2005, 2011) stresses that firms which are engaged in exporting are more productive as compared to non-exporting firms and these findings hold true for both developed as well as developing countries. The reasoning given by him is that firms in the export market undergo a self-selection process where only the productive firms are able to bear entry costs into foreign markets.

Van Biesebroeck (2005) finds convincing evidence in favor of self-selection as well as learning effects from exporting. The study reveals that about half of the productivity gap between non-exporters and exporters can be ascribed to

the ability of exporters to utilize economies of scale. In a similar study, Bigsten (2004) uses firm-level data from African nations and reports evidence which suggest that exporting increases productivity. A comparable study is done by Kraay (1999) and Blalock and Gertler (2004) on China and Indonesia, respectively, where they find a constructive relationship between exporting and improved productivity. Mengistae and Pattillo (2002) concentrate on exports and productivity in African countries and reports that the exporters dealing directly with foreign market are considerably more productive than those exporters which conduct trade with the help of a domestic trade intermediary.

Exporting, Wages and Poverty Outcomes

As noted by Winters et al. (2004), one of the most direct ways in which trade can impact on poverty is via the impact on wages, employment and profits from production. According to classical trade theories, exporting especially benefit the poor in developing economies. For instance, the Hechscher-Ohlin model states that economies which are relatively abundant in unskilled labor will have a comparative advantage in labor intensive products. (McCulloch, 2001) posited that the enhanced demand for unskilled labor will resultantly cause increased employment opportunities as well as increased wages for the low-skilled labor. Assuming that most of the poor are unskilled, the scope for direct poverty reduction via exporting should, therefore, be substantial.

McCaig (2011) in his study directly and convincingly tests the effect of increased market access to some developed countries on existing poverty rates. This study reveals that wage and employment linkages for the poor in developing nations can be directly impacted by market access to developed countries.

Studies in the Indian Context

The empirical literature for studies exploring the trade–growth–poverty nexus for India is very limited. Topalova (2005) is one such study where she assesses the impact of increased trade liberalization on inequality and poverty for India at the district level. She compared the poverty and inequality measures of the districts having liberalized industries with those districts whose industries are majorly protected. She concludes that reduced levels of tariffs have been related to considerably high levels of poverty, measured as the poverty gap and headcount ratio for rural India. However, no such substantial linkage could be established between trade openness and reduced poverty in the urban sector. Ravallion and Datt (1999) worked on finding the

determinants of poverty reduction across India's key states between the period of 1960 and 1994. They find that one percent increase in non-agricultural state domestic product leads to a 1.2% decline in poverty rates in the states of Kerala and West Bengal versus only 0.3% decline in Bihar.

Raghubendra Jha (2000) studies the influence of liberalization on inequality and poverty in India. He concludes that in the period post-1991, inequality was intensely aggravated, along with the rise in poverty due to the economic crisis of 1990–91 and then subsequently weakened although by an insignificant amount. Moreover, he reveals that the poverty in urban areas is higher than poverty in the rural regions, where high urban poverty can be positively linked to industrial growth.

A clear message from this review is that there is a consensus in the theoretical literature that trade promotes economic growth through exports and reduces poverty. This happens because trade acts as a channel through which surplus national production can be exchanged with the products from other countries.

MODELING THE IMPACT OF EXPORTS ON POVERTY REDUCTION

In this section, an empirical analysis is done with the objective of examining the impact of international trade on poverty rates in India. For doing so, we follow the methodology of a similar study done by Le Goff and Singh (2013), which studies the impact of increased trade openness on reduction of poverty in Africa. The outcome of their study elucidate that trade has poverty alleviating effects in a favorable policy environment. Also, from the literature review, it can be noted that a lot of empirical studies on the trade-poverty relationship have been conducted using cross country data analysis. However, we use a case study approach because it gives the opportunity to analyze the intertwined relationships between these variables in a detailed fashion. At this point, it becomes imperative as to understand how the key dependent variable- poverty is defined and used in the context of the present study.

Defining and Measuring Poverty

Definition

The key question that arises is who are the Poor? One simple way is to define the poor in terms of Income/Consumption Poverty. Here, a person can be defined as poor if his access to economic resources is not sufficient enough to acquire enough commodities and meet his basic needs (World Bank,

2000). This definition is inherently based on deciding the poverty line which can be defined as a level of income which is essential for acquiring a bundle of goods that fulfill the basic needs. Based on this concept, trade will help in alleviating poverty if the number of people falling below the poverty line is decreasing. Another definition is given by the United Nations Millennium Development Goals (MDGs), where they have included various dimensions of poverty comprising income, hunger, disease, lack of adequate shelter, gender inequality, as well as environmental sustainability. But despite of all these dimensions, the income poverty is considered to be the basic and most essential criteria of all, as the number of individuals falling below the threshold of poverty line of "$1 per day" count more than 1.2 million. Thus, poverty line is chosen for our study as it can help estimate the impact of trade on the economic environment.

Measuring Poverty

Poverty can be measured in connection to the forces of demand and supply, which are indicated by the income of an individual/household and the expenditure incurred by them. This can be best illustrated by the concept of Poverty line, thus four important measures of poverty are constructed. These are: The Watts Index, Poverty Gap Approach, Squared Poverty Gap and Headcount Ratio. The Watts index is calculated by dividing the poverty line by individual's income in a logarithm. On the other hand, the poverty gap index is calculated as the average of the ratio of the poverty gap to the poverty line, expressed as a percentage of the poverty line for a country (World Bank). This method basically measure the amount of income needed to bring the poor individuals/households living below the poverty line to the actual poverty line (Kanbur, 1985). The major shortcoming of this index is its insensitivity to the problem of fair distribution of income to the poor. To improve this, Squared Poverty Gap or is used, which is calculated as the square of the poverty gaps. Headcount Ratio is finally the most widely used method for measuring poverty and is denoted as . In this method, poverty is measured as the percentage of individuals whose income falls below the poverty line. The HCA approach is used to measure the intensity of poverty whereas the PGI approach helps explain the depth of poverty.

After weighing all the pros and cons of these measures, we decide to employ HCA approach as well as PGI in our current study. Now, after defining and measuring the poverty in terms of HCA and PGI, the next step for this study is to define the conceptual framework within which all the variables are interacting with each other.

Given below is a diagrammatic presentation of the conceptual framework.
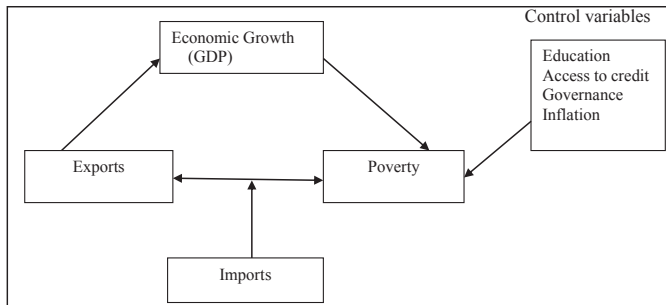
Source: Author

Diagram I: Conceptual Framework

Based on this conceptual framework, this study uses a baseline poverty model, as follows

Poverty, t = β1 Poverty t-1 + β2 Exports/GDP t + β3 Imports/GDP t + β4 X t + θ t + ε t – ... (1)

Where Poverty, t = Poverty in India in year t

Poverty t-1 = lagged poverty rates

Exports/GDP t = export intensity

Imports/GDP t = import intensity

X t = A set of control variables including education, inflation, access to credit and the Rule of law.

Here, all the estimator and estimating variables, with the exception of Rule of law are in log terms. They are taken in logs as it allows the coefficients to be interpreted as elasticity. The above-mentioned model is of a basic nature which helps in understanding the relationship between Poverty represented by Headcount as well as Poverty gap and other independent variables. Further, to observe whether the poverty reducing impact of international trade impacts are conditional on complementary policies, this basic model is extended in order to include the interaction terms between export performance and education, access to credit and the quality of bureaucracy respectively.

The Scope and Sources of Data

The empirical objective of the study is to examine how the exports reduce poverty in India and also to analyze whether these poverty-reducing effect of exports depend on a number of country-specific features. For this purpose, the sample covers time series data for India over the period 1996–2012. Poverty is measured as Headcount of Poverty and Poverty gap, the data for which is taken from World Bank database created by two researchers Martin Ravallion and Gaurav Datt (2016).

In order to control the country-specific characteristics, we focus on four key areas that are: access to finance, education levels, quality of governance and macroeconomic stability in India. These variables illustrate an economy's ability of utilizing the key resources in more productive sectors as compared to the lesser productive ones. As we noted in the International trade theories, such diversion of resources to more productive sectors, offers huge opportunities for expanding international trade as well as generating economic growth.

Variable Definitions and Measurement

Poverty

Poverty, simply defined in form of income/consumption poverty, describes people as poor if their access to economic resources is insufficient to acquire enough commodities to meet basic needs (World Bank, 2000; Khan, 2000). In order to evaluate the extent as well as intensity of poverty, the poverty headcount as well as the poverty gap is used as dependent variables. Poverty headcount is defined as the share of a country's population living below the international poverty line of $1.25 a day, whereas Poverty Gap is defined as the mean shortfall from the poverty line expressed as a percentage of the poverty line.

Exports/GDP

The research aims to evaluate the impact of India's export performance on poverty reduction. The export intensity of a country is defined as the exports of goods and services as a share of the country's GDP.

Imports/GDP

Imports affect the poverty outcomes as well as the value of exports. The major factor through which the imports affect the exports is the cost of imported intermediate goods used in the production of export goods. The more costly the imported raw material gets, the lesser will be the competitive advantage for the export goods of that country. The imports affect the poverty rates through the trade policy. If an economy follows liberalized trade policy, then the imports will increase. These increased imports can lead to crowding out of local producers and if these producers employ majorly cheap labor of their home country, then imports are actually causing more unemployment. This raised unemployment can raise poverty rates in short-run for at least some sections of the society. Thus, the role of imports needs to be studied in the model.

Control Variables

The discussion focuses on the four dimensions namely education, finance, inflation and governance which characterize an economy's ability to reallocate resources away from the less productive sectors to the more productive ones and, hence, take advantage of the opportunities offered by greater trade openness. The four important control variables are:

Access to Credit: The access to credit is defined as domestic credit to the private sector as a percentage of GDP. A more developed financial sector would let a faster recognition of new and assuring sectors and facilitate redirection of credit.

Education: A more educated population, as reflected by higher primary completion rates, would be more able to acquire the new skills demanded by growing sectors and adjust more rapidly to the new conditions of the labor market. Education is measured as the share of the population aged 15 or over with no education.

Governance: This is used for controlling the legal environment. This is defined as the strength of the legal system measured using the Rule of Law index, from the World Bank Governance indicators. The measure ranges from –2.5 to 2.5 with higher figures indicating better perceptions. The earliest year for which this data is available is 1996, constraining the time dimension of the analysis from 1996 to 2012 (with three year intervals).

Macroeconomic Stability: Consumer Price Index (CPI) is used as a proxy for inflation. The inclusion of inflation is justified because increase in general price level majorly affects the poor.

METHODOLOGY

According to the results of Hausman test (explained later), there exists endogeneity in the model which can be attributed to reverse causality in our case. That is, there are high chances of occurrence of reverse causality between poverty and exports and between the other control variables and poverty variables. This implies that the direction of the plausible effect between exports and poverty could not be clearly predicted. This can be understood with this logic that increased exports can lead to decrease in poverty rates and decreased poverty can lead to increase in exports. Thus, in order to control for this, we follow Le Goff and Singh (2013) and estimated the model using a system GMM estimator developed by Blundell and Bond (1998).

GMM Explained

The estimator estimates the model in a system of equations, where one is in levels and other is in first differences and the lagged levels of the endogenous variables are used as instruments in the first-differences equations (Blundel & Bond, 1998). Thus, the GMM estimator controls not only the possibility of fixed effects but also tackles the issue of reverse causality. The major advantage of GMM is that it is employed for the estimation of dynamic models, where the outcome in one period affects the outcome in the following period. Since the poverty rates are very likely to be found persistent over time, the lagged values of poverty are also included in the model.

Hansen Test of Over-Identifying Restrictions

To verify the consistency of the GMM estimator, it is to be made sure that the lagged values of the explanatory variables are valid instruments in the poverty regression. This issue is examined by considering the Hansen test of over-identifying restrictions. The no rejection of the null-hypothesis implies that instrumental variables are not correlated with the residual and are satisfying the orthogonality conditions required. Now, in order to test the hypothesis that increased exports coupled with better macroeconomic conditions leads to reduction in poverty; first of all, the data is checked for basic CLRM assumptions.

Testing for Autocorrelation

The data is tested for autocorrelation using Breusch-Godfrey LM test, having the null hypothesis as H0: no serial correlation. When the Dependent variable is Headcount Poverty, with lag (1) the value of chi-square is 0.200 (1 df) having Prob > chi2 = 0.6545. Whereas, when the Dependent variable is Poverty gap, with lag (1) the value of chi square is 1.803(1 df) having Prob > chi2 = 0.1794. Since the p-value is > 0.05, the null-hypotheses that there is no serial correlation of any order up to *p* can't be rejected. Hence, the data is not auto-correlated.

Testing Heteroskedasticity

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity is done which has the null hypothesis stating that Ho: Constant variance. When the Dependent variable is Headcount Poverty, the value of chi-square is 0.33 with Prob > chi2

= 0.5645 and in case of poverty gap the chi-square is 2.51 having Prob > chi2 = 0.1133. Since the p values are > 0.05, the null-hypothesis of constant variance cannot be rejected. Hence, the data is homoskedastic in nature.

Testing Multicollinearity

Variance Inflation Factors (VIF) is used to help detect multicollinearity.

Table 2: Testing Multicollinearity

Variable	VIF	1/VIF
Log exports	13.25	0.07547
Log imports	10.19	0.09813
Log credit	3.58	0.27932
Log GDP	3.89	0.25706
Log PCR	6.97	0.14347
Log inflation	2.66	0.37593
Rule of law	3.37	0.29673
Mean VIF 6.28		

Since, the values of 3 variables are coming above the accepted range of 4 as well as the mean VIF > 4, there exists the problem of multicollinearity.

Testing Endogeneity

If the causal relationship between Exports and Poverty runs in both directions, the estimation by the Ordinary Least Squares (OLS) would yield biased and inconsistent estimates of the structural parameters. Hence, we carry out the Hausman test to check the existence of endogeneity. First, we regress the model using OLS and then we regress the model using GMM estimator. The results of both the analyses are compared in the Hausman test, which says that if the null hypothesis is accepted, then the variables are exogenous and the results of OLS regression will be consistent. However, if the null hypothesis gets rejected, it will mean that there is endogeneity in the model.

Tests of Endogeneity

Ho: variables are exogenous

Durbin (score) chi 2(1) = 466.351 (p = 0.0368)

Wu-Hausman F (1,11) = 560.812 (p = 0.0266)

Since the p values are < 0.05, we reject the null-hypothesis. This means that there is endogeneity in the model and in our analysis it can be attributed to reverse-causality. Thus, the use of GMM is justified.

RESULTS AND FINDINGS

Data and Summary Statistics

In total the sample covers time series data for India over the period 1996–2012.

Table 3: Summary Statistics for Exports-Poverty Model

Variable	Observation	Mean	Std. Deviation	Minimum	Maximum
Headcount of poverty	17	34.86	10.63	13.82	52.65
Poverty gap	17	8.24	3.86	0.30	14.96
Exports / GDP	17	17.18	5.37	10.21	24.54
Imports / GDP	17	20.10	7.32	11.35	31.25
GDP	17	3224.40	872.77	2172.03	4826.66
Primary completion rate	17	81.66	8.30	68.93	95.93
Rule of law	17	0.09	0.12	-0.11	0.29
Access to credit	17	37.10	11.21	23.00	51.88
CPI	17	7.03	3.12	3.77	13.23

Source: Author's Computation

Table 3 shows the statistics in a summarized way for the entire sample. From this table, it can be seen that the average headcount of poverty, i.e. the average share of a population living below the international poverty line of $1.25 a day, is 35%. The average value of second poverty measure, the poverty gap, is 8%, meaning that the average gap between the income of those living below the poverty line and the poverty line is on average 8%. Also, the average share of exports in GDP is 17%.

Table 4 shows the correlation matrix between the variables used in study.

Table 4: Correlation Matrix for Exports-Poverty Model

	Education	Inflation	Poverty Headcount	Poverty Gap	Exports	Imports	Credit	GDP	Rule of Law
Education	1								
Inflation	.556[*]	1							
Poverty headcount	-.717[**]	-.182	1						
Poverty gap	-.715[**]	-.147	.995[**]	1					
Exports	.803[**]	.266	-.840[**]	-.818[**]	1				
Imports	.810[**]	.347	-.858[**]	-.832[**]	.992[**]	1			
Credit	.822[**]	.324	-.880[**]	-.857[**]	.987[**]	.987[**]	1		
GDP	.761[**]	.395	-.870[**]	-.844[**]	.950[**]	.969[**]	.968[**]	1	
Rule of law	-.440	-.076	.713[**]	.690[**]	-.629[**]	-.641[**]	-.662[**]	-.729[**]	1

Source: Author

[*]. Correlation is significant at the 0.05 level (2-tailed).

[**]. Correlation is significant at the 0.01 level (2-tailed).

This matrix shows that exports are negatively correlated with poverty headcount as well as poverty gap. Also, there is high correlation between poverty measures and other control variables justifying the significance of their inclusion in the model.

Now, after running the basic test for CLRM assumptions, we realize that the data is free from heteroskedasticity and autocorrelation. However it suffers from multicollinearity. Also, the Hausman test of endogeneity shows that basic OLS method can't be used for regression in the model and GMM is needed. Thus, the key econometric analysis begins with a look at the plots which compare the exports–poverty relationship. In both plots, there is a clear cut downwards pattern, showing that poverty reduces as exports increase.
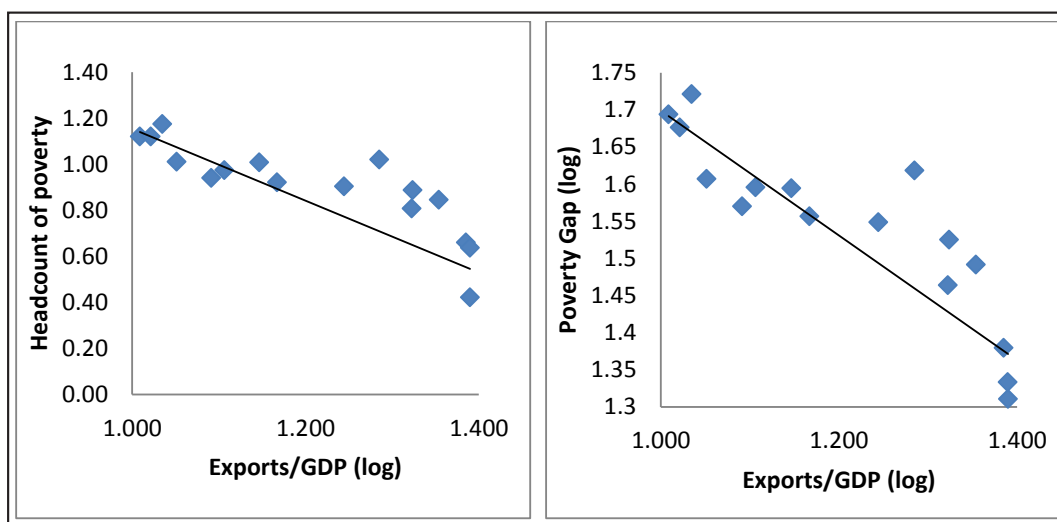

Fig. 1: Poverty and Export Intensity

Exports and Poverty: Static Model

To control for other poverty determinants and endogeneity issues, the model is now tested through an econometric analysis. Here, we turn to the regression estimates for analyzing the relationship as well as considering the likelihood of reverse causality between the dependent variables and various independent variables in our case.

Table 5: Base Line Results for Exports –Poverty Model

Dependent Variable	Headcount (log)		Poverty Gap (log)
	(1)	**(2)**	**(3)**
Variable	**Coefficient**	**Coefficient**	**Coefficient**
Exports / GDP (log)	-0.78864***	0.0311325*	0.040755
Imports / GDP (log)	3.83131	0.889288	2.714665
Share with no education (log)	3.0199***	0.21099***	0.18903***
Access to credit (log)	−2.14294	-0.579383	0.040755
Rule of law	−0.147443	0.107926	0.016492
CPI (log)	0.635331	0.042322	-0.462681
GDP (log)	−1.41882**	-1.113691	-2.303302
Constant	10.6712	7.884603	12.73494
Poverty in last period		0.020658***	0.420809**
Observations	136	136	136
R-squared	0.728293	0.749526	0.639301
Number of Instruments		9	9
Hansen Test (p-value)		0.187268	0.173305

Source: Author's Computation

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ respectively.

Here, the predicted variable is the log values of Poverty Headcount in columns (1) and (2) whereas it is poverty gap in column (3). The values are obtained using OLS regression in column (1). These values are provided only to facilitate the comparison with GMM values. These values are bound to be different since simple OLS regression does not control for the time-invariant factors at the country-level. The OLS regression method also ignores the problem of reverse causality. Hence, the results using system GMM are obtained in column (2) and (3). The results in column (1) reveal that higher exports intensity is accompanied with a reduced poverty count. But when the unobserved country specific factors are taken into account in the remaining columns, we witness no significant link between the values of these two variables. Thus, we are not able to establish any statistically significant relationship between export intensities and poverty values, whether measured as the Headcount of the individuals or defined in terms of Poverty Gap.

Further, it can be observed that the values in columns (2) and (3) show a strong correlation between recent and past poverty rates, which signifies that the poverty rates are highly persistent at least in the short run and should therefore be included in the model. This justifies the usage of GMM System estimator as the preferred regression method. Apart from the past poverty rates, the only other variable showing statistically significant value in columns (2) and (3) is the share of the population with no education. The impact of this

variable is positive and highly significant, indicating that poverty increases with the share of people with no education. In terms of extent, the results suggest that a 1% in increase in the share of people with no education is associated with an approximate increase of 0.2% in both the measures of poverty.

Exports and Poverty: Dynamic Model

By far, we only measured the static effect of the relationship between exports and poverty using GMM as well as with OLS for comparison purposes. Now, we introduced interactions between the dependent variables and the four control variables which are: a country's export intensity and credit availability, education attainment and the Rule of law.

In Table 6, the predicted variable is the headcount of poverty (log). Results are obtained using GMM estimator. The results in column (2) show that the impact of a country's export intensity on the headcount of poverty depends on the availability of credit. Since the coefficient for access to credit is negative, it means that poverty decreases as credit becomes more and more available to poor people. The results thus suggest that improved exports intensity can help in reducing poverty when the exports are facilitated with a greater access to financing. Also, the coefficients of poverty in last year are also coming to be significant; it again proves that lagged poverty rates should be included in the model.

Table 6: Extensions: Headcount of Poverty: Dynamic Exports-Poverty Model

Headcount of Poverty (log)	(1)	(2)	(3)
Variable	Coefficients	Coefficients	Coefficients
Exports / GDP (log)	-0.3838	1.0414483**	0.618
Exports / GDP (log) * No Education (log)	0.17084		
Exports / GDP (log) * Access to credit (log)		-0.39058**	
Exports / GDP (log)* Rule of law			0.413556
Imports / GDP (log)	-0.05454	0.654837	-0.30216
Share with no education (log)	-0.43114	0.407326***	0.16469**
Access to credit (log)	-0.7807	1.079867**	1.07306
Rule of law	0.141691	0.159694	0.31998
CPI (log)	-0.272851	0.590526	0.451
GDP (log)	-0.432577	-0.413644	-0.38471
Constant	1.01569	-4.025542	0.684826
Poverty in last period	0.897***	0.9581***	1.01998***
Observations	153	153	153
R-squared	0.699925	0.719474	0.761174
Number of Instruments	10	10	10
Hansen Test (p-value)	0.243	0.132	0.261

Source: Author's Computation

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ respectively.

Table 7: Extensions: Poverty Gap: Dynamic Exports-Poverty Model

Headcount of Poverty (log)	(1)	(2)	(3)
Variable	Coefficients	Coefficients	Coefficients
Exports / GDP (log)	-0.1838	1.0413**	-0.0618
Exports / GDP (log) * No Education (log)	0.07084		
Exports / GDP (log) * Access to credit (log)		-0.4905**	
Exports / GDP (log)* Rule of law			-0.1655
Imports / GDP (log)	0.0545	0.2548	0.0302
Share with no education (log)	0.04311	0.4073***	0.1646**
Access to credit (log)	-0.0580	1.0798**	0.07306
Rule of law	-0.04169	0.159694	0.3199
CPI (log)	-0.17285	-0.01032	-0.151
GDP (log)	-0.0106	-0.21644	-0.0348
Constant	0.569	-5.0255	0.78482
Poverty in last period	0.912***	0.768***	0.998***
Observations	153	153	153
R-squared	0.71825	0.6994	0.7311
Number of Instruments	10	10	10
Hansen Test (p-value)	0.143	0.237	0.189

Source: Author's Computation

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ respectively.

The explained variable in the above table is the log values of Poverty gap. Results are calculated using GMM estimator. From this table, we can again notice that access to credit and education are coming to be significant. This indicates that the intensity of poverty decreases as more and more access to credit and education is made available to the poor sections of the society.

CONCLUSION

After undergoing an extant literature review as well as conducting an empirical analysis, few key points are observed. The first observation is that while the theory portrays international trade as an efficient instrument in generating employment, its impact on poverty is uncertain. The existing empirical literature exhibits strong evidence supporting the growth enhancing effects of exports in particular and international trade in general. It is observed that increased international trade can lead to improved productivity and help in reducing poverty. This will happen through three channels, one is through increased productivity, second is through increased economic growth and thirdly through increased wages of the unskilled poor labor.

However, the empirical results of this study do not conform to the theory. The results using basic OLS regression states that poverty reduces as exports increases, in both the forms that is Headcount as well as poverty gap. But, the results are not robust, as the model suffers from multicollinearity and endogeneity issues. Because of these issues, the GMM approach is used. But the empirical result don't show any significant relationship between poverty and exports, when basic model is used. However, when interaction terms of control variables are brought in the model, the results change. Increased exports lead to poverty reduction when better access to financing available to poor people, when education levels are higher and the state of governance in our country is stronger. The results thus suggest that higher exports from India can reduce poverty when these exports are enabled with a greater access to financing.

These results follow the empirical literature stating that the benefits of international trade are not going to occur independently and that enabling policies to trade are very much required to reinforce these benefits. Poverty reducing impact of exports should therefore not be seen in isolation and additional policies will be needed to enhance its impact. The result from empirical analysis therefore suggests that globalized trade of goods may be an engine for poverty reduction in India, when it is complemented with the right domestic policies. The key takeaways are:

- Poverty can be reduced through International trade by improving labor efficiency and facilitating income distribution. The literature suggests that those firms which are involved in exporting are more productive and efficient compared to the ones catering only domestic markets. Now, once the economic gains from trade are generated, it is important to translate them into welfare gains, so that the poor people benefit from these gains. This is the aspect of distribution of income

and is central to the heart of poverty problem in India. This can be assured by including poor labor in the production of exported goods.

- The empirical findings of the study revealed that the benefits of increased exports seemed to bypass the poor. The study revealed that there has been little impact of exports on poverty reduction; however, the results change when interaction terms between control variables and exports are included in the model.

- Exports have a significant poverty-reducing impact, only when coupled with better domestic credit policies, since this enables more and more small scale exporters to enter the international market.

At this point, again it can be emphasized that the usage of case study has been justified. This is because in order to depict the local effects of a highly localized phenomenon called poverty, it is better to study specific local areas or a country at best. However, even in the present study, there is one limitation that the measures of poverty used in this paper are nation-wide averages. Since the poverty reducing impact of exports may be limited to a particular local area and may be arising only in developed urban areas or export promotion zones, it becomes difficult to paint the true picture about the country as a whole.

POLICY RECOMMENDATIONS

Based on these findings, we give a set of policy recommendations which are as follows:

- The Government policies should be designed to encourage exports in India. Specially, exports should be promoted in "labor-intensive" industries as they are supporting the growth of poor and marginalized sections working in these industries.

- The economic policies should include giving tax incentives to the firms involved in exporting. Even though we observe no significant association between exports and poverty reduction in current study, the literature emphasize that exports contribute to employment generation and economic growth in India.

- Training courses should be provided for the young and untrained labor, specifically for the rural people who are not skilled or educated because it is believed to boost the country's competitiveness particularly in this globally integrated world economy.

- It is very well documented in the literature that the amount that government spends on its citizens has a large impact on poverty. Hence, the government should increase its spending on infrastructure, health programs

for the poor and also on training and education of the unskilled poor labor.

However, the government also has limited funds on their ends in comparison to the requirement. An important role can thus be given to the private sector, especially to the foreign players. Thus, the private companies, be it foreign or domestic, can be motivated to invest in social welfare projects. This will ensure that the government is not restricted to rely upon its limited budget and can build more safety nets for the general public.

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