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IMPACT OF TRADE ON INEQUALITY: EVIDENCE FROM DEVELOPING AND DEVELOPED NATIONS

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Abstract: 'Globalization: a boon or a curse' has always been in discussions amongst top bureaucrats, policymakers, economists, business houses, and others. The past decade has been a mini golden era of contemporary globalization. Not just the trade in goods and services grew but the capital flows also grew at a rapid rate. The rapid growth has come at a cost of growing inequality across the countries. In recent times, evidence that challenges theoretical predictions of the positive impact of globalization has become largely available. This paper is an attempt to address the subject using some empirical methods on the impact of international trade on income inequality.

We have used World Integrated Trade Solution (WITS) data for our analysis. We have constructed two panels, one for developing countries with data on 26 countries for 6 years (2012-2017) and another for developed nations with data on 25 countries for 6 years. Our results suggest that natural, political and social endowments contribute more towards income inequality than trade.

Index Terms **- globalization, international trade, income distribution, developing countries, developed countries.**

I. INTRODUCTION

The growing inequality worldwide has been a very serious concern for policymakers and researchers across the globe. The increasing income inequality has been the most contentious issue in the Presidential Elections of the United States (US). In the USA, the richest who are the 1% of the population increased from 8.95% in 1978 to 21.24% in 2014. The growing inequality has been a serious issue in developing countries as well including one of the fastest-growing economies in the world - India. The People's Republic of China (PRC) is an equally rapidly growing giant economy and has been successful in terms of economic growth but on theenvironmental and inequality front it has performed poorly as other developing nations.

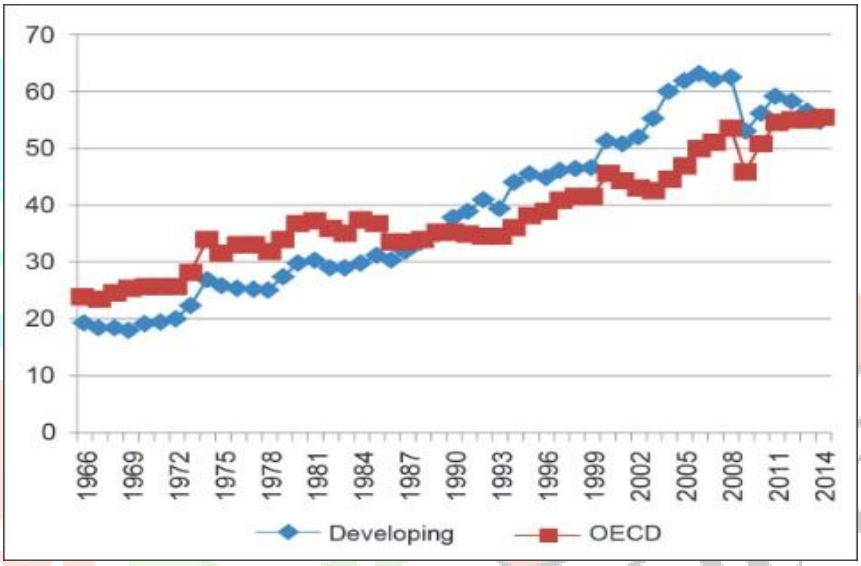
For the people, society, and government equity and balance in growth is very crucial. The increasing income inequality could cause instability in the political systems of the country, and unrest in the society which in turn could slow down the process of economic growth. The United Nations has also recognized the importance of tackling income inequality growing across the world and has therefore included reducing inequality as one of 17 sustainable development goals.

The world in the previous decades definitely witnessed growing inequality but along with that it also experienced the rapid integration of the world through economic activities by means of international trade and investments. From the 1960s onwards the proportion of trade (exports + imports) in the gross domestic product has been steadily increasing in both the developed and the developing nations.

Trade–GDP ratios for the developing and developed countries increased from 29.9 and 36.9% in 1980 to 51.3 and 45.7% in 2000, respectively, and then further to 55.2% and 55.3% in 2014. Major drivers of the increase in trade–GDP ratios include trade and FDI liberalization, and reduction in transportation costs by technological progress and deregulation in transportation services sectors (Hummels, 2007)

The objective of this paper is to critically examine the impact of globalization particularly in terms of international trade on inequality in both developing and developed countries. The inequalities can be classified into various forms such as wage inequality, asset inequality, regional inequality, income inequality, gender inequality, generational inequality, and others. Our focus shall be on income inequality while briefly touching upon the other forms of inequality.

Figure 1: Trade-GDP Ratios



Source: World Development Indicators, World Bank

II. RESEARCH METHODOLOGY

The data used for this analysis is obtained from WITS (World Integrated Trade Solution), which provides data published by the World Bank on various indicators of trade, growth rates and various development indicators for a large number of countries. For our analysis, that is to check the effect of trade on income inequality for developed and developing nations, we have divided the countries into developing and developed countries on the basis of income classification provided by WITS. All countries classified as high income countries are considered to bedeveloped while others are considered developing. We have used Gini Coefficient as a measure of income inequality and explanatory variables include-

Herfindahl – Hirschman Concentration Index (HHCI) : It is used to get an idea about market concentration. It approaches zero if the market is a perfect competition and reaches a maximumof 10000 if the market is a monopoly.

Export penetration index (EPI): It is used to see how much exports are affecting the markets abroad. A high value of this index means that exports are valuable to other nations and cannot beeasily replaced by competition. We have constructed two panels, one for developing countries with data on 26 countries for 6 years (2012-2017) and another for developed nations with data on 25 countries for 6 years. Sincethe number of cross section entities is more than time entities, our panel is a “Short panel”.

To understand the effects of trade on countries inequality we ran panel data regression on the dataset. Panel data is collection of observations across multiple cross section data assembled overmultiple time periods taken at equal intervals. We regress our data in 3 different methods - Pooled regression, Fixed effects regression, Random effects regression.

The method involves introducing a dummy variable for all time intervals and for all countries in our dataset. These dummy variables capture the fixed effect of that particular year and countries on Gini Coefficient making it independent of the variables we have taken into our regression. For pooled regression we apply the restriction that $\gamma_i = 0$ and $\gamma_t=0$. For random effects we apply the restriction $\gamma_t=0$ and we call the intercept as $\alpha_i(\alpha+\gamma_i)$.

Population Regression Function:

$$Gini_{i,j} = \alpha+\beta_1*tNXP_{i,j} +\beta_2*tNXG_{i,j} + \beta_3*tPopn_{i,j} +\beta_4*tInf_{i,j} + \beta_5*tGDP_{i,j} +\beta_6*tHHCI_{i,j} + \beta_7*tEPI_{i,j} +\gamma_t+\gamma_i + \varepsilon_{i,j}$$

Here subscript t represents mean corrected values

γ_t explains the effect of that particular year on the Gini coefficient.

γ_i explains the effect of that particular country on the Gini Coefficient.

$E_{i,j}$: Idiosyncratic Error term

TABLE 1: Variables and Description

VARIABLE	DATA TYPE	DESCRIPTION
GINI COEFFICIENT	CONITNUOUS	$G = \frac{2}{n^2\bar{x}}\sum_{i=1}^{n} i(x_i - \bar{x})$
NXP-NET EXPORT PARTNERS	CONITNUOUS	NO. OF EXPORT PARTNERS – NO.OF IMPORT PARTNERS
NXG-NET EXPORTED GOOD	CONITNUOUS	NO. OF PRODUCTS EXPORTED –NO OF PRODUCTS IMPORTED
INFLATION RATE	CONITNUOUS	% CHANGE IN PRICES
POPULATION GROWTH	CONITNUOUS	% CHANGE IN POPULATION
GDP GROWTH	CONITNUOUS	%CHANGE IN GDP
HIRFINDAHL HIRSCHMAN INDEX	CONITNUOUS	$HHI = \sum_{i=1}^{n}(MS_i)^2$
EXPORT PENETRATION INDEX	CONITNUOUS	TOTAL COUNTRIES WHICH EXPORT GIVEN GOOD/NO.OF COUNTRIES THAT IMPORT THAT GOOD

Theoretical framework

J David Richardsons(1995) tries to draw the connection between trade, technology, andinequality. Usually, general equilibrium models are used for such analysis. The model used for analysis by the author shows changes in growth among different sectors without changing actual rewards for labor. Simultaneously, it does show how trade, technology, and taste affect labor status. The models state the opening of trade, natural growth of the economy, exogenous growth in capital stock, exogenous sectoral technical change, and shift of taste away from investment goods as reasons why the volume of trade might increase. Among these 5, the paper concludes that the opening of trade and exogenous sectoral technical change would shift relative wages thereby increasing income inequality.

Elena Meschi and Marco Vivarelli 2009 test the distributional claims of standing Heckscher Ohlin theory empirically. They argue that for income inequality, what is important is not trade in general but trade with more advanced countries where the potential for technology diffusion originates. Their results show that trade with high-income countries worsens income distribution in developing countries. Contrasting evidence emerges for trade between two developing countries; import and export within the group of developing countries are probably unskilled biased and imply a falling within-country income inequality. This paper uses data on 65 developing countries over the 1980-99 period. As part of their methodology, they use dynamic specification with fixed effects which allows them to cancel time-invariant and quasi-fixed factors. Their specification also included lagged dependent variables as regressors to bring out inertia in the model. This research supports the idea that technology differential between trading partners plays an important role in explaining the distributive impact of globalization.

Dollar and Kraay (2001) study how globalization can impact inequality and poverty. The first step in their study was to identify a set of developing countries that are more actively participating in global trade and then compared them with relatively richer countries or the developed world. The research came up with a series of important and interesting results; i) countries that opened their economies for global integration post-1980 are catching up with the developing world while the rest of the developing countries are falling behind, ii) the study founda strong positive relationship between trade and growth, iii) with an increase in growth as a resultof the expansion of trade leads to an increase in the incomes of the poor and finally trade leads toexponential growth and poverty reduction in poor countries.

Stolper Samuelson (1941) predicts that if an economy is open to trade it leads to a decrease in inequality in developing countries and an increase in inequality in developed countries. Since the 1990s, several studies have pointed to limitations of the standard Hecksher-Ohlin model implications and provided mechanisms to explain why inequality patterns of country case studiesdo not necessarily follow the predictions of the Stolper-Samuelson theorem. For instance, off shoring and outsourcing of less-skilled production decrease the wages and bargaining power of less-skilled workers in advanced economies, but off shored and outsourced activities might be relatively skill-intensive from the perspective of the workforce in developing countries (Feenstra and Hanson, 1996, 1999).

Avik Chakrabarti (2000) models the effect of international trade on income inequality using cross-country regression analysis. The dependent variable being the Gini coefficient and the main independent variable is the trade-to-GDP ratio. The author uses a sample of 73 countriesfor the period of 1985. The author uses an OLS and an IV estimation for estimating the effect of trade on income inequality. The author provides a justification for the endogeneity of trade-related variables used. The author uses an instrumental variable constructed by Frankel and Romer (1999), which is based on the country's geographical characteristics (size and proximity to other nations) . This index satisfies all the properties of a desirable instrument and the results using IV regression are providing better results when compared to OLS. The main conclusions from the analysis are greater the magnitude of trade lower the inequality, the first conclusion doesn't arise due to the fact that selected countries have an egalitarian distribution of income andlastly it is argued that growth provides a channel via which trade affects inequality by raising income and future prospects of growth.

De Long and Summers (1991) agree that when international trade takes place among countries then, inequality is created because of differential returns on factors of production which arise from policies of the government and other distortions in the economy. Jones (1994) disagrees with De Long and Summers and argues that distortions on capital goods act as a tax on extra earnings and reduce income inequality.

III. RESULTS AND DISCUSSION

Has increased trade widened income inequality?

Trading among nations got a boost with liberalization and globalization but the relationship between liberalization, globalization, and income inequality is a complex and contentious issue. Some economists argue that globalization and liberalization have given a boom to trade which has added to income inequality, while others suggest that it has had a neutral or even positive effect on income distribution. One argument is that globalization has led to greater competition among workers and firms. This can exacerbate income inequality, particularly in developing countries where labor protections and social safety nets may be weaker. Additionally, globalization has enabled multinational corporations to shift production to countries with lower labor costs, further driving down wages in some industries and regions.

On the other hand, some economists argue that globalization has increased economic growth and created new opportunities for workers and firms, leading to higher incomes and living standards for many people around the world. For example, increased trade and investment can create new jobs and industries, boosting wages and reducing poverty. Moreover, globalization has facilitated the spread of technology, knowledge, and ideas, which can increase productivity and innovation, ultimately benefiting workers and consumers.

It is also worth noting that the impact of globalization on income inequality is not uniform across different countries and regions, and depends on a variety of factors such as the level of economic development, institutional quality, and policy choices. Some countries have been able to harness the opportunities of globalization while mitigating its negative effects on income distribution through policies such as progressive taxation, social protection programs, and labor market regulations. High-income economies and poor economies are diverging. The conditional convergence hypothesis applies to middle-income countries. For the majority of developing countries there has been a divergence in per capita income. It should be noted that the correlation between trade restrictions and income is different across countries, and the effect of a decrease in tariffs on income depends on the level of development.

We want to test the claim, whether acceleration in international trade and no. of trading partners have significant impact on within country income inequality. In the pooled model where all unobserved country specific factors are allowed to enter into error term, we see a perverse sign on NXP coefficient. With a significant coefficient of 0.04399 on NXP ,our estimates indicate thatrise in no. of exporting partners lead to rise within country income inequality .Similarly, coefficient on NXP under pooled model indicates that Gini coefficient rise by around 0.004 due to rise in volume of exported goods.

Under the pooled model, significant coefficient of NXP of 0.10780 indicates rise in gini coefficient due to increase in trade activity. However, under two ways fixed effect NXG of -0.00032 becomes insignificant in this case. Again to capture unobserved natural factors and social structures of the countries we apply fixed effects model. The regression shows decrease in the magnitude of NXP to -0.00038, moreover the variable loses its significance. NXG becomes significant and its magnitude increases to 0.00178 vis-a-vis pooled model.

TABLE 2: Developed Countries Estimates

COEFFICIENTS	POOLED MODEL	TWO WAY FIXED EFFECT	RANDOM EFFECTS
Intercept	32.35728* (1.3564576)		35.93512 (1.87256)
NXP	0.04399* (0.02148)	-0.016061* (0.00542)	-0.01360 (0.00563)
NXG	0.00448* (0.00117)	0.00028 (0.00076011)	0.00089 (0.00075)
Inflation_growth	0.51467* (0.30488)	0.203715 (0.07883)	0.07286 (0.05879)
Population_growth	1.44269* (0.60315)	-0.380297 (0.28194)	-0.19417 (0.28970)
GDP_growth	0.70832*** (0.18892)	0.02016 (0.05221)	-0.04698 (0.04370)
HH_conc_index	-0.88148 (4.47340)	-2.94014 (10.67774)	0.68761 (7.81823)
Export_penetration_index	-0.03485 (0.03840)	-0.41139* (0.16594)	−0.11694 ± (0.06766)

We suspect, factors like quality of institutions, financial stability, history and culture, social and political factors add to smooth working of markets. Systematic changes in any of the said factors can lead to failure of markets in various parts and sectors of the economy, thereby increasing income inequality and skewing income distribution.

To capture unobserved country specific factors like institutional quality, degree of democracy, culture and societal norms of a country, we have also estimated two way fixed effect model .we observe that under two way fixed effect model coefficient of NXP changes its sign and its magnitude is reduced vis avis pooled model ,which clearly conveys the fact that some unobserved country specific factors (above mentioned) which are possibly negatively correlated with NXP are taken into account. Coefficient of -0.01606(developed) and -0.00038(developing) indicates that rise in NXP leads to fall in income inequality after taking into account country specific factors among developed countries. Standard trade theory claims that international trade among developed countries (which have well functioning domestic markets) leads to Pareto improvement in the economy, this claim is supported by out empirical results as NXP has small but significant negative impact on income inequality , so total income must have increased on anaverage among developed countries because of trade and further have been used to balance income distribution.

A redistribution mechanism such as social welfare programs can help to decrease inequality and this happens gradually. Government should ensure the proper implementation of such programs. Philanthropy should be encouraged to narrow the inequalities. Intellectual property rights in developed countries widen inequality. The Intellectual rights holders do minor changes in products and or processes and keep on earning royalty for a long period of time. Appropriate steps should be taken by developing countries to invent new products and processes on their own. Employment programs, investment in the manufacturing sector, and adequate infrastructural development can employ a large labor force and once people are employedinequality squeezes.

Trade is not the only factor that affects income inequality. Many other factors such as types of goods and services traded, trade policies, size of the economy, resources within the economy, andvarious other factors also affect the intensity of inequality. When there is free trade, small industries are not able to compete with the global market, and workers employed there suffer in terms of lower wages or may

lose their jobs, while workers in export-oriented industries may see a rise in their wages. So trade can exacerbate income inequality, particularly for low-skilled workers.

TABLE 3: Developing Countries Estimates

COEFFICIENTS	POOLED MODEL	TWO WAY FIXED EFFECT	RANDOM EFFECTS
Intercept	41.32392*** (2.18921)		38.72482*** (1.83255)
NXP	0.10780*** (0.02525)	-0.00038 (0.01259)	0.01058 (0.01309)
NXG	-0.00032 (0.00116)	0.00178* (0.00098)	0.00058 (0.00089)
Inflation_growth	-0.37835*** (0.08144)	0.02200 (0.02097)	0.02568 (0.02278)
Population_growth	5.84552*** (0.71096)	0.46964 (0.59681)	1.62334** (0.59458)
GDP_growth	-0.13404 (0.19889)	0.09898* (0.05412)	0.12629* (0.05505)
HH_conc_index	12.60625* (5.62349)	6.21030 (5.00539)	8.11970* (4.84408)
Export_penetration_index	−0.22627* (0.13132)	0.63629* (0.29233)	-0.05968 (0.14058)

Hausman Test Table		
	Coefficient	p value
Developed Countries	11.832	0.1062
Developing Countries	19.225	0.007511

The Hausman Test is used to check which model to choose, fixed effects or random effects model. The null hypothesis in this test is that the estimators from both the models don't differ significantly. The test statistic of this test follows chi squared distribution. The rejection of the null hypothesis implies the

fixed model is better and vice-versa. The results suggest that for developing countries the fixed effects model is better and for developed countries random effectsis better.

Inequality always exists as it is part and parcel of society. But steps can always be taken to reduce inequalities in various sections of society. A few of them can be as follows-

Some economists argue that trade leads to creative destruction and thus contributes to income inequality by making innovators winners and outdated losers. Others argue that trade may contribute to reducing inequality by creating new job opportunities and thus helps in economic development. Free trade supports survival of the fittest and supports specialization which helps in increasing productivity and output, and this increases incomes of workers. Also, advancements and innovations have benefited consumers and gave a boost to trade and made the lives of workers better off.

From the consumer's point of view, trade can increase competition, which can lead to lower prices for consumers, and trade has increased access to goods and services. Policies of the government can make a difference and can help the government in reducing income inequality. It should be noted that policies should be altered with time and the ongoing situation of the economy.

REFERENCES

[1] Capital-goods prices and investment, 1870-1950 - jstor.org (no date). Available at: https://www.jstor.org/stable/2697855?googleloggedin=true

[2] *Equipment Investment and economic growth: How strong is the Nexus?* (no date). Available at: https://www.brookings.edu/wp-content/uploads/1992/06/1992b_bpea_delong_summers_abel.pdf?source=post_page-

[3] Feenstra, R.C. and Hanson, G.H. (1996) *Globalization, outsourcing, and wage inequality,NBER.* Available at: https://www.nber.org/papers/w5424.

[4] https://www.academia.edu/download/77520431/chakrabarti.pdf

[5] J David Richardsons "Income, Inequality and trade: How to think, What to conclude" Journal of Economic Perspectives:https://pubs.aeaweb.org/doi/pdf/10.1257%2Fjep.9.3.33

[6] Meschi, E. and Vivarelli, M. (1970) *Trade and income inequality in developing countries,World Development*. Elsevier. Available at: https://econpapers.repec.org/article/eeewdevel/v_3a37_3ay_3a2009_3ai_3a2_3ap_3a287-302.htm .

[7]*Rajeev H. Dehejia* (no date) *NBER*. Available at:https://www.nber.org/people/rajeev_dehejia.

[8] Stolper, W.F. and Samuelson, P. (1970) *Protection and real wages, Review of Economic Studies*. Oxford University Press. Available at: https://econpapers.repec.org/article/ouprestud/v_3a9_3ay_3a1941_3ai_3a1_3ap_3a58-73..htm .

[9] *Trade and income inequality in developing countries - core* (no date). Available at: https://core.ac.uk/download/pdf/83323.pdf

[10] *Unctad.org* (no date). Available at:https://unctad.org/system/files/official-document/tdr2022_en.pdf

[11] Urata, S. (2017) *International Trade and inequality, Asian Development Bank*. Asian Development Bank. Available at:https://www.adb.org/publications/international-trade-and-inequality

[12] *Trade and income inequality in developing countries - core* (no date). Available at: https://core.ac.uk/download/pdf/83323.pdf