

Trade-Poverty Nexus in India: Empirical Evidence

Presentation by

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Questions raised

- To what extent has trade created Employment and incomes for the poor?
- Has trade affected employment and incomes in the informal or unorganised sector?
- How has trade affected unskilled labour in agriculture and manufacturing sectors?
- Can trade policies aim at inclusive growth?

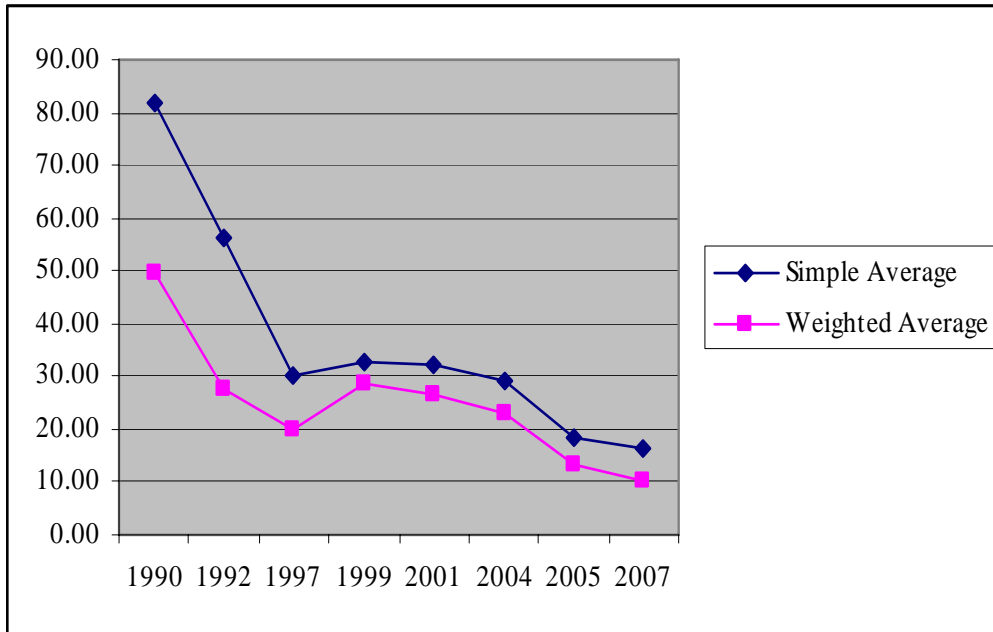
Trade-Growth-Poverty Nexus

- (a) the *static* relationship between trade and poverty with resources and technology given; and
- (b) which explains the *dynamic* relationship between trade and poverty, which exists via growth.
- *Trickle down Effects of Trade*

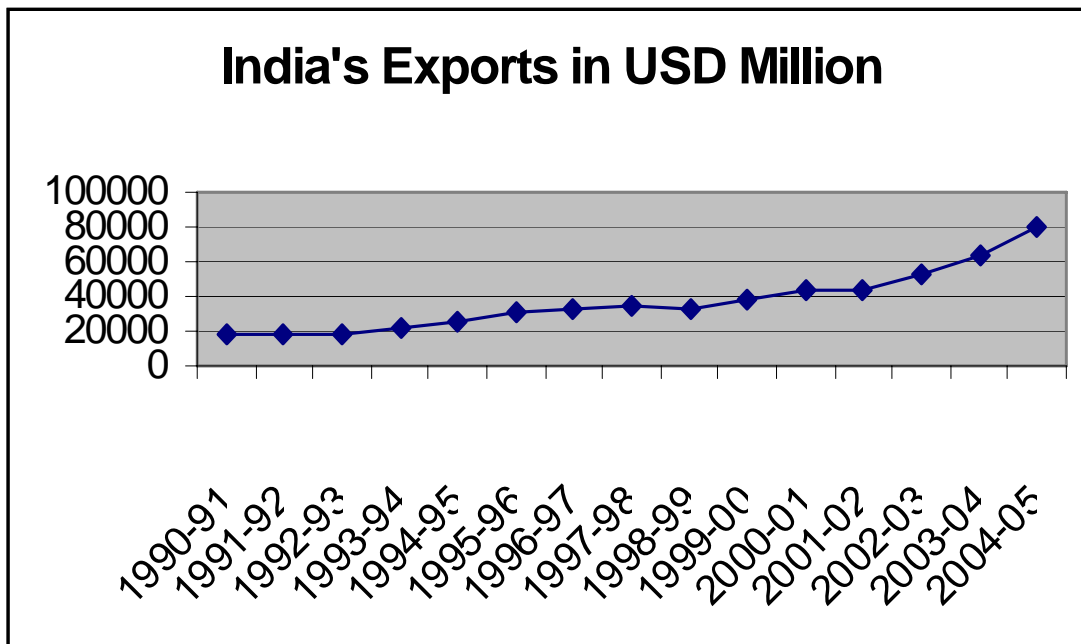
Review of Empirical Literature on Trade-Growth-Poverty Nexus in India

- Mixed results
- Pre and post reforms comparisons of Head Count Ratios and Gini coefficients -Jha (2004)
- Studies on impact of trade liberalisation - Topalova (2005)
- Sectoral studies-Chand (1999)
- Limitations:
- *Pre-post analyses or extent of trade liberalisation (tariffs declining) do not measure the impact of actual exports and imports on poor*

- **India's Tariff 1990-2009 have continuously declined since 1990s**

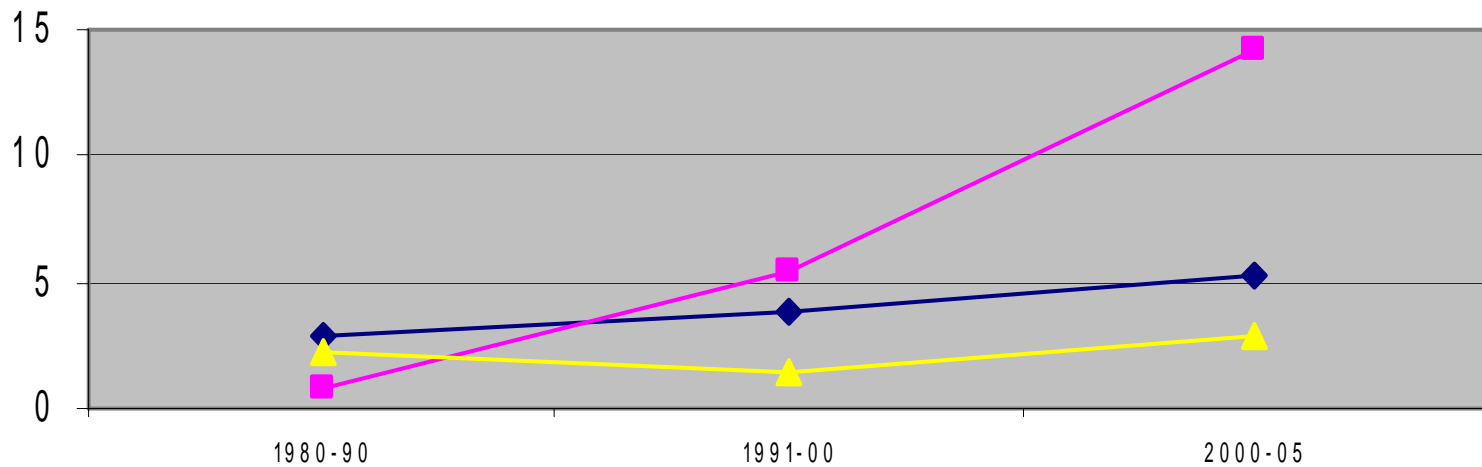


- **India's exports have increased exponentially since 1990s**



Trends in Trade, Income Growth and Employment

Growth Rates of Per Capita GDP, Trade/GDP and Employment (p.a.)



- ◆— Growth in Per Capita GDP
- Growth in Trade/GDP
- ▲— Growth rate of Employment p.a.

Trends in Poverty Ratios (%) and Inequality (Gini Coefficient)

Sr. No.	Category	1993-94	2004-05	1980 average	Early 1990s	Late 1990s	2004-05
By Uniform Recall Period (URP) Method							
1	Rural	37.3	28.3	0.293 (c)	0.315 (c)	0.378 (c)	0.368
2	Urban	32.4	25.7				
3	All India	36.0	27.5				

Trends in Human Development Index and Gender Development Index in India

Year	HDI	GDI
1980	0.450	
1985	0.487	
1990	0.521	
1995	0.551	0.424
1999		0.553
2000	0.578	
2003		0.586
2005	0.619	0.600

▶ To what extent has trade created
Employment and incomes for the
poor?

Employment and Incomes Generated by Exports

- Estimate the employment generated because of increase in exports in the period 2003-04 to 2006-07 in 46 sub-sectors of the Indian economy.
- Estimate the incomes generated by increased exports in these sectors for five expenditure categories in rural and urban areas.
- These include people in abject poverty and those below poverty line in rural and urban areas.

Impact of Exports on Employment: 2003-04 to 2006-07: Methodology

- Input-Output Matrix of 2003-04 has been used
- Change in exports in 46 sectors listed in the I-O matrix is estimated and deflated.
- Change in output due to change in exports in 46 sectors is generated (direct + indirect)
- Employment coefficients are applied to change in output to arrive at the employment generated by exports in this period.

Employment generated by Increase in Exports: 2003-04 to 2006-07

- The total increase in employment generated by rise in exports in the period 2003-04 to 2006-07 has been around 26 million person years.
- The maximum employment generated by exports in this period is in services sector, which is 12 million; followed by industrial sector (7 million) and then agriculture (6 million).

Employment generated across sectors

- Maximum increase in employment has been generated in domestic trade, followed by other services, food crops and other transport services.
- If exports of each sector rise by 10% from the level of 2006-07, additional employment of 1.81 million will be generated in agriculture, which has the maximum number of poor.

	employment in 2008-09	employment projection in 2009-10	employment projection in 2010-11
Ores and Minerals	-373,023	-440,961	936,824
Textiles&Products	-559,621	-253,810	260,172
Leather & Products	30,787	-21,102	54,784
Marine Products	-16,498	-96	16,484
Agriculture	373,148	159,070	2,468,094
Plantation	1,275,376	422,672	561,494
Engineering	665,445	-24,927	332,997
Chemicals& Products	45,114	-29,856	49,504
Gems&Jewellery	-217,151	-505,023	465,005
Petroleum Products	33,749	-54,045	79,445
Net Employment	1,257,327	-748,078	5,224,802
Job Loss	-1,166,293	-1,329,820	Nil

Expenditure classes into which PFCE is divided

Rural	Expenditure class (Rs. per month)	Urban	Expenditure class (Rs. per month)
RH1	000-255	UH1	000-350
RH2	255-340	UH2	350-500
RH3	340-525	UH3	500-915
RH4	525-775	UH4	915-1500
RH5	775- above	UH5	1500- above

- **RH1, RH2 and UH1, UH2-people in abject poverty and below poverty line in rural and urban areas**

*Impact of Rise in Exports in 2003-04 to
2007-08 on Incomes of the Poor (Rs Billion)*

RH1	24.00
RH2	92.09
RH3	289.08
RH4	360.34
RH5	504.27
UH1	15.41
UH2	64.58
UH3	262.24
UH4	311.78
UH5	440.51
Total increase	2364.3

Impact of Rise in Exports in 2003-04 to 2007-08 on Incomes of the Poor

- The total income generated has been of Rs 2,364 billion, equivalent to USD 55 billion.
- Out of the total income generated in the rural areas due to exports, only 2% reaches poorest of the poor (RH1); while 7% is generated for RH2.
- *The low income groups in rural areas get less than 10% of the total income generated in the rural sectors because of exports. In case of urban sectors, the situation is not much different.*

Distribution of Gains from Trade

- Total income generated for the people in the lowest income group (RH1 and UH1) is around 1.6% of the total income generated in the economy by exports in the period 2003-04 to 2006-07.
- The highest income group (RH5 and UH5) gets around 40% of the total income generated by exports,
- 70% of the total income generated goes to the top two income groups (rural and urban taken together).

Answer to Q1: To what extent has trade created Employment and incomes for the poor?

- The total increase in employment generated by rise in exports in the period 2003-04 to 2006-07 has been around 26 million person years and total income generated has been USD 55bn
- Due to global slowdown, 1.1. million job loses occurred in 2008-09 but expected recovery will lead to 5.2 million jobs in 2010-2011
- *The low income groups in rural areas get less than 10% of the total income generated in the rural sectors because of exports.*

▶ Has trade affected informal or unorganised sector?

Indian Labour Markets Characteristics

- *Dualistic nature*: where a large unorganised sector coexists with the organised sector.
- many regulations apply only to the “organised sector”
- *first*, fairly stringent rules relating to firing workers and closing down of enterprises,
- *second*, laws governing the use of temporary or casual labour enforce permanence of contract after a specified time of employment; and
- *third*, minimum wage legislation which raise the cost of hiring workers.

Relevance of the Unorganised sector in India

- **Unorganised sector in India employs around 80% of total workforce.**
- **In 2004-05, the unorganised sector contributed as much as 50% to GDP (NCEUS).**
- **Forward and backward linkages between organised and unorganised sectors have been established by many studies (in Mehta (1985), Samal (1990), Shaw (1990); Backward linkages being stronger.**

Unanswered Questions

- *Does the export-orientation of the industry, to which an enterprise in the unorganised sector belongs, affect its employment, wage rate and labour productivity?*
- *Does import-competition faced by the unorganised sector affect its labour market characteristics?*

Concordance Used

- To estimate the impact of trade on labour markets in the unorganised sector, the study uses Enterprise-Level data from the 62nd Round of National Sample Survey (NSS) for the year 2005-06.
- A concordance matrix has been constructed between six-digit product level data (DGCI&S) with three-digit level industrial data (ASI).
- The trade data for three digit industries is then matched to the enterprise data, to arrive at the export and import-intensity of the industry to which an enterprise in the unorganised sector belongs

Equations Estimated

- Labour demand =f(size, wage rate, export intensity of the industry, import intensity of the industry, rural-urban dummy, industry dummies, state dummies)
- Wage Rate =f (size, labour productivity, capital-labour ratio, export intensity of the industry, import intensity of the industry, rural-urban dummy, industry dummies, state dummies)
- Labour productivity =f (size, capital-labour ratio, export intensity of the industry, import intensity of the industry, rural-urban dummy, industry dummies, state dummies)

- Where,
- Enterprise (firm) size is captured by GVA,
- Capital labour ratio denotes market value of fixed assets per worker
- Labour productivity is GVA per worker,
- Wage rate is wage per hired worker,

Data Sources

- The equations have been estimated using data of the 62nd Round of NSSO for the year 2005-06. Data is provided for 83,000 enterprises. Analysis has been carried out separately for OAME, NDME and DME
- The data for concordance matrix has been taken from Annual Survey of Industries (ASI) and DGCIS.
- The state level export and import orientation has been constructed using state-level ASI data.

Models used

- The impact of exports and import competition on wages and employment has been estimated using OLS and 2SLS.
- 2SLS replaces the (stochastic) endogenous explanatory variable with an estimated proxy variable that is a linear combination of all the predetermined variables in the model (and hence is uncorrelated with the stochastic disturbance term) and uses this combination as the explanatory variable in lieu of the original endogenous variable.

	NDME (Employment Equation)	NDME (Wage Rate Equation)	DME (Employment Equation)	DME (Wage Rate Equation)
GVA	0.26*** (66.5)	0.46*** (38.72)	0.38*** (74.16)	0.17*** (15.69)
Wage Rate	-0.10*** (-24.83)		-0.32*** (49.96)	
Labour Productivity		0.34*** (25.56)		0.64*** (49.96)
Export Intensity	0.002*** (2.36)	0.008*** (4.31)	0.013*** (7.53)	0.02*** (9.41)
Import Intensity	-0.01 (-0.89)	-0.01 (-0.04)	-0.01* (-1.71)	-0.01* (-1.63)
Rural-Urban Dummy	0.008* (1.74)	0.007 (0.88)	0.13*** (14.41)	0.09 (0.20)
Constant	-0.65*** (-4.66)	-0.60 (-0.83)	0.73 (25.59)	0.42*** (10.20)
R-squared	0.33	0.65	0.42	0.85
F-Statistic	46770 (p = 0.00)	7247.82 (p=0.00)	1745.38 p= (0.00)	14669.36 (p=0.00)
n	17556	17556	9584	9584

Answer Q2: Has trade affected informal or unorganised sector?

- Export intensity of the industry in the organized sector increases employment of the enterprises in the unorganized sector.
- Enterprises in the unorganized sector belonging to export-oriented industries pay higher wage rates.
- Size of the enterprise matters.
- Import competition has a significant negative impact on employment of NDME and DME.
- It lowers the wage rate paid by DME in the unorganised sector

▶ How has trade affected unskilled labour in agriculture and manufacturing sectors?

Empirical Literature

- Empirical Results-Mixed:
- Krueger(1983) supports-inter country
- Feenstra and Hanson (1996, 1999) find outsourcing from North to South lead to rise in real wages of skilled workers as compared to unskilled workers in both sets of countries (but wages of unsk.rise).
- Winters (2004) –elasticity of supply of labour imp—zero implies wages rise not employment, if infinity then employment rise not wages
- Issue is more complex for India.

Estimation of Trade Impact on Unskilled Labour Markets in India

- ❑ Large part of unskilled labour in India-unorganised sector and agriculture
- ❑ Lack of consistent data for Agriculture sector on employment
- ❑ Large pool of unskilled labour in organised manufacturing sector

Empirical Estimations in the Paper

- **For Agriculture sector**, the impact of trade on **wages of unskilled** agricultural labour is estimated at the state level for total agricultural products and for three agricultural products separately, i.e., cereals; fruits and nuts; and vegetable, roots and tubers.
 - The period of analysis is 1990-91 to 1999-2000 for which the data on wages to unskilled agricultural workers is available (Ministry of Agriculture and Labour).
- **For Organised manufacturing sector** : Impact of trade on **wages and employment of unskilled labour** is undertaken.
 - The analysis has been undertaken for 54 industries at three-digit industry level for the period 1998-99 to 2004-05.

Wage Rate Equation for Agriculture

- *The equation to be estimated for agriculture sector is:*

- $$\ln W_{it} = \beta_1 \ln W_{i, t-1} + \beta_0 X_{it} + \lambda_i + u_{it}$$

- *where W = wage rate, X = explanatory variables, λ_i = state specific fixed effects*

- *$X_{it} = f(\text{SDP}_{it}, \text{RAINFALL}_{it}, \text{SHAREAGRI}_{it}, \text{IRRIGATEDAREA}_{it}, \text{NOTRACTORS}_{it}, \text{FERT}_{it}, \text{MINWAGES}_{it}, \text{EXPORTS}_{it}, \text{IMPORTS}_{it}, \text{State-specific fixed effects})$*

- *SDP = State Domestic Product, RAINFALL = Average annual rainfall received, SHAREAGRI = Share of agriculture in total SDP, IRRIGATEDAREA = Extent of gross irrigated area in the state, NOTRACTORS = Number of tractors used, FERT = Amount of fertilizers used, MINWAGES = Minimum wages of unskilled labour in the state, EXPORTS = Share of state in total exports of the product, IMPORTS = Share of State in total imports of the product*

Wage Rate Equation for Manufacturing Sector

- The equation to be estimated for manufacturing sector is:
- $\ln(w/p)_{it} = F [\ln(w/p)_{it-1}, \ln \text{SIZE}_{it}, \ln K/L_{it}, \ln LP_{it}, \ln \text{EXPORTS}_{it}, \ln \text{IMPORTS}_{it}; \text{Fixed Effects}] ..(2)$
- *SIZE = Size of the industry (Log of Output); K/L is capital-labour ratio; LP is labour Productivity; EXPORTS is export intensity of the industry; IMPORTS is the import intensity, i.e., imports of the finished goods produced by the industry divided by the total output of the industry. i represents the industry and t represents the time period*

Methodology Adopted

- *For the purpose of estimating the impact on wage and employment: Taking account of rigidities in the Indian labour market we estimate dynamic panel data (DPD) model using Generalised Method of Moments (GMM) following **Arellano and Bond (1991)**.*
- $y_{it} = \alpha y_{i,t-1} + \eta_i + v_{it}$
- where $i=1, \dots, N$; $t=2, \dots, T$; and $\alpha < 1$
- We use the conventional GMM test of overidentifying restrictions associated with Sargan (1958). Consistency of GMM estimates require no second order serial correlation of the residuals. The results of AR(2) test do not allow us to reject the hypothesis of validity of instruments used.

Data Construction

- Six digit product level data (HS 2002 codes) from DGCI&S have been matched to three-digit industry codes of ASI industry classification to create industry-specific trade data.
- The data is constructed for 54 industries at three-digit level industries for the period 1998-99 to 2004-05
- ASI changed its industrial classification from 1998-99.
- ASI provides separate data on 'workers' and 'employees' (which includes in addition to 'workers', non-production workers like supervisors, clerks etc.

Data Sources

- For agriculture, data from INDIAHARVET, C.M.I.E. database has been used for 14 states for the period 1991-92 to 2000-2001.
- Data on Wages of unskilled labour have been taken from Ministry of Agriculture and Labour

***Empirical Results:
Impact of Trade on Wages of Unskilled Labour
in Agriculture Sector***

- State Level Analysis for 14 states of India for the period 1990-91 to 2000-05.
- Analysis for four categories: All agriculture products; cereals; fruits and nuts and vegetables, roots and tubers.
- Impact of state export and import orientation on wages of unskilled labour

Empirical Results: Wages in Agriculture

- **With respect to agricultural products** as a whole, we find that exports have not had any significant impact on wages of unskilled labour,
- in other words, states with higher exports of agricultural products do not have corresponding higher wages for unskilled workers
- but higher imports of agricultural products have led to lower wages of unskilled workers in states where the production of the corresponding product is higher.
- Other variables used indicate that wages of unskilled labour are positively affected if state domestic product is higher, rainfall is higher, agriculture has lower use of technology and minimum wages of unskilled labour are fixed at higher levels.

Empirical Results: Wages in Agriculture

- The results show that after controlling for state specific variables that may impact wages of unskilled labour in agriculture,
 - **for fruits and nuts**, exports has increased wages but it is not statistically significant, however higher imports of fruits and nuts has led to a decline in wages of unskilled labour in agriculture.
 - **In case of cereals**, the results indicate that exports of cereals have led to a significant rise in wages of unskilled workers and imports have not had any significant impact.
 - **For vegetables**, we find that the results indicate imports of vegetables have led to a fall in wages of unskilled labour but impact of exports is not significant.

Results for Manufacturing Sector

- The results for the manufacturing sector indicate that exports have had a favourable impact on wages of unskilled labour but not on employment.
- Import competition does not seem to have displaced labour or adversely affected the wages.
- Strict labour laws and downward rigidity of wages in India may be a plausible reason for this result.

▶ Can trade policies aim at inclusive growth?

- Trade policy can be an efficient instrument for generating employment and incomes in the economy
- But a number of external factors, such as existing labour laws, regulations with respect to wages, etc. effect the distribution of gains of trade. For the gains of trade to be equitably distributed supporting policies are needed.
- The goal of trade policy cannot be net positive impact on poverty. But it should focus on *how the poor and dis-advantaged sections of the economy are affected by trade policies.*

- Policy space for protecting agriculture is essential, as losses in terms of lower wages due to displacement of labour appears significant .
- Gains from exports in terms of increased wages may not be sufficiently wide spread so as to warrant negotiating stance seeking opening of foreign markets, in lieu of providing market access in agriculture.
- Diversification of exports will lead to participation of larger number of people from different sectors. “New Products and new Markets” should be aimed at. 958 products have been identified by UNCTAD-India study

- For the gains of exports to percolate to the lowest income group, it is important for them to gainfully participate in trade. Linking poor to international markets should be aimed at by promoting exports of the products produced by poor.
- Registering geographical Indication (GI) for the products produced by poor can be an effective tool for making gains of trade more inclusive.
- All FTAs negotiated should be examined with respect to their impact on poor and disadvantaged section of the society.

- Adopt an effective mechanism to have broad based stakeholder consultations so as to incorporate the concerns of poor and protect their interests in negotiating FTAs.
- Sensitive lists or negative lists are effective instrument with policy makers for distributing the gains of trade more equitably.

Thank You