

International Trade, Poverty and Income Inequality
The Indian Experience during the Reform Period: 1985-2000

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1. Introduction

Globalization and trade liberalization affect poverty and income inequality in two ways. First are the changes wages and other factor returns through changes in production pattern and, therefore, composition of output. This is the short run effect. There is also the indirect or long run effect on wages that work through the impact on growth of output, both sectoral and aggregate. However, free trade is not necessarily a pro-poor strategy. Trade creates both winners and losers in the short run, and sometimes that may be quite unfavourable for the lower income groups. That is, in the short run, trade liberalization acts more like an (indirect) income-redistribution policy than a poverty-alleviating policy. Rather, the long run or growth impact of trade liberalization is more important for poverty alleviation. With acceleration of growth of output, opportunities for upward income mobility for the lower income groups gets stronger.

All said and done, trade liberalization and globalization per se cannot be effective in alleviating poverty and changing the income structure to any sustaining extent unless domestic and policy environments are conducive for such potential effects to work. I would here stress upon three such constraints: Education or human capital formation; physical infrastructural constraints; and quality constraints on exports.

The paper is divided in three parts. The first part examines trends in poverty and inequality indices. The entire data set, as reported by various researchers, has been divided into two parts for the statistical analysis. First is the period 1960-1973 and the other is the period 1986-1997. The choice of these periods, though are intended to characterize pre and post economic reform periods in India, has been mainly constrained by non-availability of continuous time series data for the period 1974-1985 and after 1997.

The second part of the paper summarizes the country studies and provides some new and additional evidence on the nexus between globalization, inequality and poverty based on traditional wisdom as well as on the new theories and methodologies. Finally, I shall draw some policy conclusions based on both these received wisdom and new results.

2. Measures of Poverty and Inequality

The crudest index of poverty is the head-count ratio (H) which measures the percentage of population who are poor. The poor are those who have income or consumption expenditure lower than a predefined cut-off level, called the poverty line. Thus the head-count ratio is just the proportion of population living below such a poverty line⁴. Despite its wide use, the limitation of this measure is well known. It captures the magnitude of poverty but not the depth of poverty, as it does not distinguish between the poor and the poorest of the poor. Thus, the policies which

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⁴ The Planning Commission has defined the *expenditure* poverty line (EPL) as per capita monthly expenditure of Rs. 49 for rural areas and Rs. 57 for urban areas, both in terms of 1973-74 prices. The nominal value of urban poverty line is taken to be higher than that of the rural poverty line because of higher cost of living in urban areas than in rural areas. These cut-off expenditures permit intakes of 2400 calories and 2100 calories respectively at 1973-74 prices.

favour a particular group among the poor by raising their income level but not above the poverty line, do not get reflected in this measure. The second measure, the poverty gap (PG), is based on this particular aspect of poverty. More precisely, the PG index is the aggregate income shortfall of the poor as a percentage of the poverty line normalized by the population size. A third measure is the squared poverty gap (SPG) which takes the aggregate of square of income shortfalls as a percentage of the poverty line and then normalizes it by the population size.

Economic inequality, on the other hand, is a very complex concept. On a narrower interpretation, it may mean disparities in personal income and wealth at any point of time. I shall here confine myself with this particular meaning of economic inequality. Even then, however, disparities may be of various types, and one should be very precise on this to arrive at any well-defined and meaningful measure of economic or income inequality⁵. The most commonly used summary measure of income inequality for which both time series and across-the-state data are available is the Gini coefficient. The value of Gini coefficient varies from 0 to 100 with an increasing value of it indicating rising inequality. Essentially the Gini measures the area between the Lorenz curve and the egalitarian line. Thus, increase in the value of Gini for two distributions (say, over time) will indicate growing inequalities only if the corresponding Lorenz curves do not cross over each other. Otherwise, values of Gini will not be Lorenz-consistent and, therefore, would fail to provide us correct and conclusive evidence regarding the *change* in inequality.

3. Methodology, Estimates and Trends

3.1 All-India Poverty estimates based on NSS

Majority of poverty and inequality estimates in India are based on the expenditure distribution of Indian population provided by the National Sample Survey (NSS) in its various rounds of surveys. Estimates arrived at by the Planning Commission (PC) and other researchers, however, differ from each other primarily because of different methods of price indexation used to adjust the poverty line for inflation for successive years. In some cases, use of slightly different poverty line than defined by the Planning Commission also explains such differences in estimates.

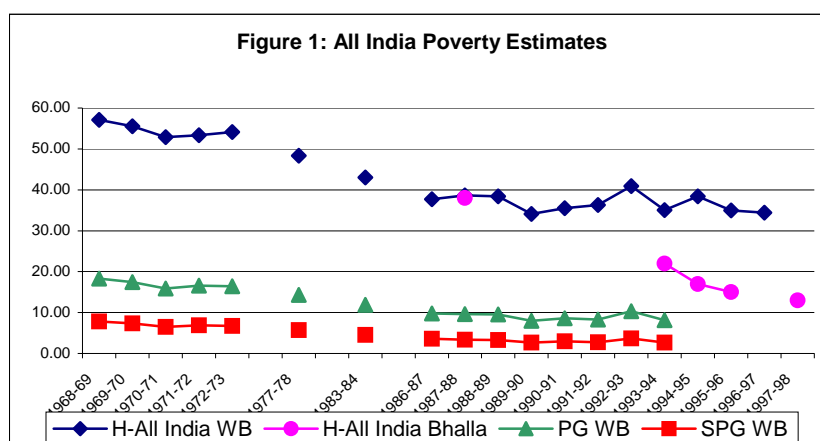
During the 55th Round of its survey, the NSS has introduced some significant changes in the sample design and methodology. In all rounds of surveys including and before the 50th Round, the recall period was uniform with each respondents asked about their consumption expenditures in all categories in the past 30 days. During the 55th Round, a 365-day recall period has been used for consumption of durable clothing, footwear and institutional health, whereas alternatively two recall periods of 30 and 7 days have been used for food consumption. This has been the cause of concern for many researchers and observers. Recent estimates of rural and urban poverty by Sen and Himangshu (2004), however, make poverty ratios somewhat comparable with earlier Rounds.

By the World Bank estimates based on the NSS data, there had been three distinct phases of movements in head-count measure of poverty. First is the phase of increasing poverty rate from 46.54 percent in 1961-62 to 62 percent in 1966-67. The overturn of this increasing incidence of poverty occurred in late 1960s and marked the beginning of a period of sharp decline in all-India poverty rates that continued till mid 1980s. In the period thereafter, poverty rates have hovered around the early 1990-level of 34 percent with a lot of fluctuations (see Figure 1). But, estimates arrived at by Bhalla show a clear and marked decline in poverty rates in the 1990s.

The PG ratios as estimated by the World Bank study group (and Jha (2002)) show similar movements: increasing during 1960s, then decreasing till mid 1970s, though not coming down below the level of 13.6 percent in 1961-62. During 1985-1995, on the other hand, the PG ratio has remained more or less stable just below 10 percent, which when compared to figures in earlier decades show a marginal improvement in poverty. However, whether a different adjustment rates for inflation in successive years would give us a more conclusive evidence on poverty by the PG measure cannot be checked for because the other studies like Bhalla, Planning Commission, and IGIDR do not provide estimates of PG ratio.

⁵ Essentially, it is desirable for any measure of income inequality that captures disparities in personal income and wealth, to satisfy four basic criteria or principles: anonymity principle, population principle, relative income principle and Dalton principle. For an excellent explanations of these principles, see Ray (1998).

But the estimated time trends are not statistically significant either for the head-count ratio or for the PG ratio. Thus, there are lots of fluctuations in poverty rates without any statistically significant trend increase or decrease during either 1960-1973 or the reform period 1987-1997.



Source: Based on estimates reported in Lal et al. (2001) and Jha (2002).

3.2 Rural-Urban poverty

Table 1 reports the changes in rural and urban poverty as estimated by different researchers. The urban poverty trends reported by all these studies show marked decline after 1993, with adjusted estimates of Deaton and Dreze recording lowest incidence of urban poverty. From Figure 2 it is clear that rural poverty has been much higher than urban poverty in almost the entire period after mid 1970s. Even if we take into account the adjusted estimates of Deaton and Dreze (2002), based on their revised poverty lines, though the urban poverty comes down by almost 50 percent, the trends in rural and urban poverty are similar to the World Bank estimates.

The difference between the World Bank estimates and the adjusted estimates of Deaton and Dreze are, however, more pronounced in case of the urban PG ratio. The adjusted estimates are almost 50 percent smaller than the World Bank estimates for urban population. But once again the overall trend in the PG ratio is declining in both the cases during 1987-2000.

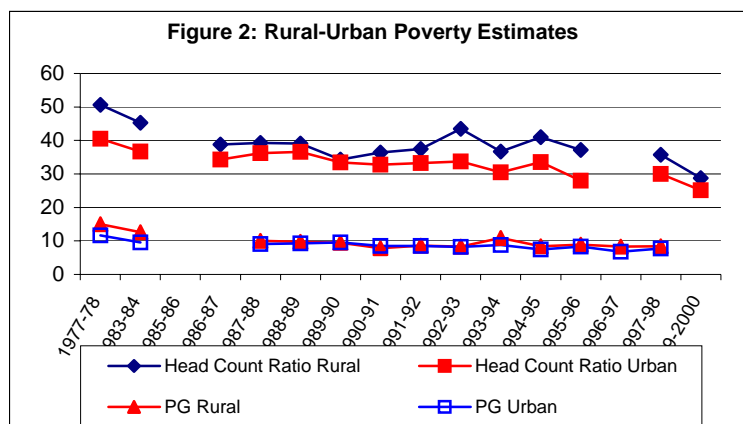
Table 1: Rural-Urban Poverty Ratios (HC)

YEAR	PC	WB	IGIDR	Deaton-Dreze	Sundaram-Tendulkar	Visaria
RURAL						
1977-78	53.07	50.6	50.64		54.47	
1983-84	45.65	45.31	45.32		49.02	
1985-86						
1986-87		38.81	38.9		45.21	
1987-88	39.09	39.23	39.52	39.40	44.88	
1988-89		39.06			42.23	
1989-90		34.3	34.3		36.69	
1990-91		36.43	36.43		37.48	
1991-92		37.42			40.07	
1992-93		43.47	43.47		46.12	
1993-94	37.27	36.66	38.7	33.00	44.19	
1994-95		41.02	34.22		39.65	22.8
1995-96		37.15	35.44			19.1
1996-97						
1997-98	38.5(a)	35.78	34.22			20.7
1998	45.2(a)					23.6
1999-2000		28.8*		26.30		

URBAN					
1977-78	45.24	40.5	40.5		42.86
1983-84	40.79	36.65	35.65		38.33
1985-86					
1986-87		34.29	34.29		35.39
1987-88	38.2	36.2	36.6	22.50	36.52
1988-89		36.6			35.07
1989-90		33.4	33.4		34.76
1990-91		32.76	32.76		35.04
1991-92		33.23			34.79
1992-93		33.73	33.7		36.37
1993-94	32.36	30.51	30.03	17.80	38.36
1994-95		33.50	28.4		30.94
1995-96		28.04	27.3		15.2
1996-97					
1997	34.00	29.99	27.9		17.8
1998	34.00				20
1999-2000		25.10*		12.0	

Source: Lal et. al. (2001); * Sen & Himangshu (2004) estimates.

Table 2 reports the time trends in rural and urban poverty ratios. Both head-count ratio and PG ratio for urban areas had statistically significant declining trend during 1987-1997 but no trend during 1960-1973. On the other hand, rural head-count ratio shows an increasing trend during 1960-1973 but not in the later period. On the basis of these trend estimates we can conclude that whereas urban poverty had a trend decline during 1987-1997, there had not been any trend decrease (or increase) in rural poverty during the same period. This finding corroborates to what Dutt (1999) has observed and can be attributed to sluggish growth in agriculture. I shall return to this later.



Source: Calculations based on the WB estimates reported in Table 1 above.

Table 2: Time Trends in Rural and Urban Poverty

	1960-1973	1987-1997
<u>Rural H</u>		
World Bank Estimate	Significant, <i>Increasing</i>	Insignificant
Tendulkar-Sundaram Estimate		Insignificant
<u>Rural PG (World Bank)</u>	Insignificant	Insignificant
<u>Urban H</u>		
World Bank Estimate	Insignificant	Significant, <i>Declining</i>
Sundaram-Tendulkar Estimate		Significant, <i>Declining</i>

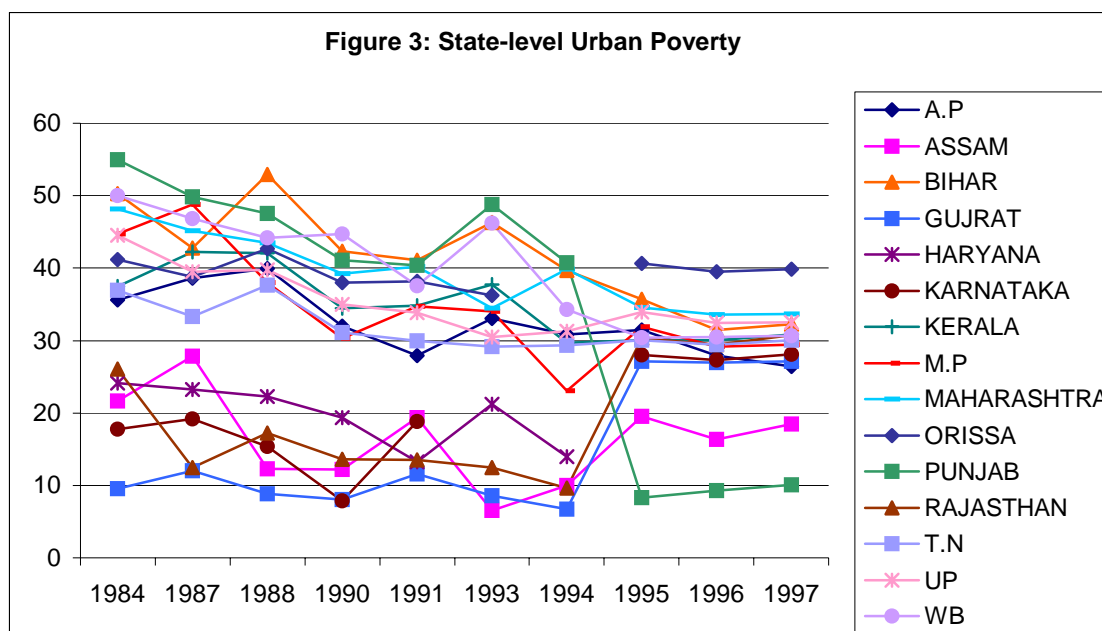
Urban PG (World Bank)	Insignificant	Significant, <i>Declining</i>
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Source: Own calculations based on Table 2 above.

Changes in urban poverty at the state level are shown in Figure 3. Most of these states had more or less declining trends, consistent with what we have observed at the all-India level, except Assam, Gujrat and Rajasthan. There seems to be, however, two distinct groups of states in terms of the level of urban poverty. The group consisting of Assam, Gujrat, Haryana, Karnataka and Rajasthan is the low-poverty rate group with the highest urban poverty rate being less than 15 percent during the period. The lowest poverty rate for the high-poverty group, on the other hand, had been more than 25 percent.

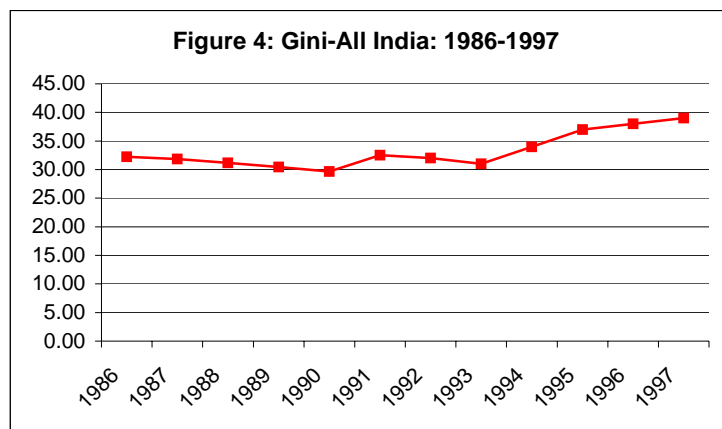
3.3. Income Inequality in India

In the first twenty-five years after the Independence, income inequality in India as measured by the Gini coefficient had declined marginally from little over 35 percent in 1951 to around 29 percent in 1973. The decline in values of Gini continued till late 1980s after an increase in inequality in late 1970s. But the decade of 1990s has been a decade of rising income inequality at



Source: Based on poverty estimates reported in Jha (1999).

a very high rate with the value of Gini climbing up to 40 percent (see Figure 4). This has in fact been the highest value recorded over the entire period of our study – 1951 to 1998. During the same 10 year period, 1987-1997, the rural and urban inequality have also increased but at a much slower rate than the all-India rate of increase, with the urban inequality being 5 percent higher than the rural inequality on the average.



Source: Based on estimates reported in Ozler et. al. (1996) and Jha (2002).

The estimated trends reported in Table 3 show complete reversal of trend changes in the all-India Gini coefficients. Income inequality as measured by the Gini coefficients had a declining trend during 1960-1973, and an increasing trend during the reform period. But rural and urban inequalities had no trend changes in either period.

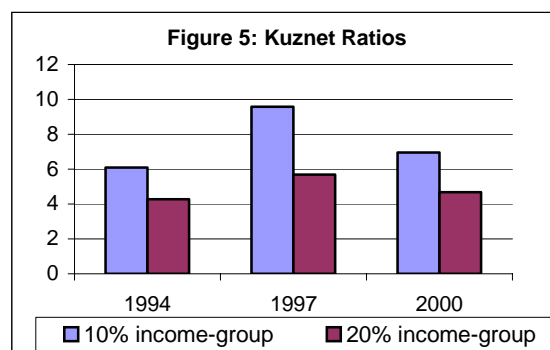
Table 3: Time Trends in Income Inequality

Inequality as measured by Gini	1960-1973	1987-1997
All India	Significant, <i>Declining</i>	Significant, <i>Increasing</i>
Rural	Insignificant	Insignificant
Urban	Insignificant	Insignificant

Note: * Significant at 1% level.

Source: Own calculations.

The Kuznet Ratios (or the Mahalanobis measure of inter-decile ratio of mean income levels) show that both the ratio of the income share of the top 10% of the population to the income share of the bottom 10% of the population and the income ratio of top 20 percent to bottom 20 percent of population have similar trends. Income inequality measured by such ratios increased quite sharply in 1997 and then declined to some extent in the year 2000 though not coming down to the 1994-level. However, it appears that most of the income in India is still concentrated in top 10 percent of population and relative position of the poorest 10 percent of population have not improved much despite declining head-count ratio of poverty.



Source: Marjit, Acharyya, Kar and Mukherjee (2004).

Scattered evidence shows that inequality among wage earners in India has increased during 1990s. A direct but crude measure of such inequality is the skill premium or the wage-gap between workers with different levels of skills. Table 4, reproduced from Shariff and Gumber (1999), reports the premium to education levels of workers in different sectors during 1987-88 and 1993-94. What deserve attention are asymmetric changes in relative wages across different education levels in the manufacturing sector. During the same period, the skill-premium for

graduate wage earners relative to secondary-level educated workers increased but their position vis-à-vis non-literate workers deteriorated. But in sectors like agriculture, mining, trade, and finance and insurance, the skill premium had increased at all levels. This despite the fact that the unskilled wage, both in money and real terms, in informal sectors, had increased quite significantly during the early half of the 1990s⁶.

Table 4: Change in Wage Ratio in India by Sector

Sectors	Graduate/Secondary		Graduate/Non-literate		
	1987-88	1993-94	1987-88	1993-94	
1. Agriculture, forestry & fishing		1.31	1.36	3.58	3.77
2. Mining & quarrying		1.12	1.44	1.52	1.79
3. Manufacturing		1.57	1.85	3.32	2.85
5. Electricity, gas & water		1.37	1.25	2.35	2.30
6. Construction		1.50	1.44	3.19	2.62
7. Trade		1.52	1.77	2.63	2.83
8. Transport & storage		1.32	1.25	2.53	2.03
9. Finance, insurance, and real estate		1.50	1.67	2.86	4.12
10. Community, social & personal services		1.40	1.41	3.22	3.38

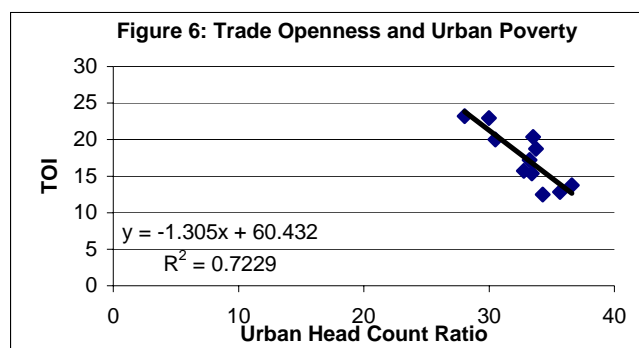
Source: Shariff and Gumber (1999).

4. Trade Liberalization, Poverty and Inequality

What follows from the above discussions and observations, is that during the period of economic reforms and trade liberalization urban poverty, as measured by the Head-count and the PG ratios, *declined*, and the value of all-India Gini *increased*. It is natural to ask then, how far trade liberalization may have triggered or initiated these changes? If so, what are the plausible channels through which it may have operated? These issues are addressed in this section.

4.1 Aggregate Impact of Trade Liberalization: Preliminary Observations

Studying the relationship between poverty estimates and the Trade Openness Index (TOI), the ratio of value of trade to GDP, first of all, a statistically significant negative correlation between urban head-count (and PG) ratio and the TOI is observed. The scatter diagram in Figure 6 shows such high correlation with the head-count ratio. Thus, both the head-count and PG measures of poverty for urban areas have fallen with the increased share of trade in GDP. Second, the regression result reported below indicates the favourable impact of TOI on the urban poverty.



But there has been no correlation whatsoever between rural poverty and the TOI. This is consistent with the earlier observation of no statistically significant trend decline or increase in rural poverty. It is not surprising that with very little non-farm activity in rural India and restrictive agricultural trade, increased trade during 1990s had little or no impact on rural poverty. But since the urban sectors are more integrated with the global economy than rural areas, the urban

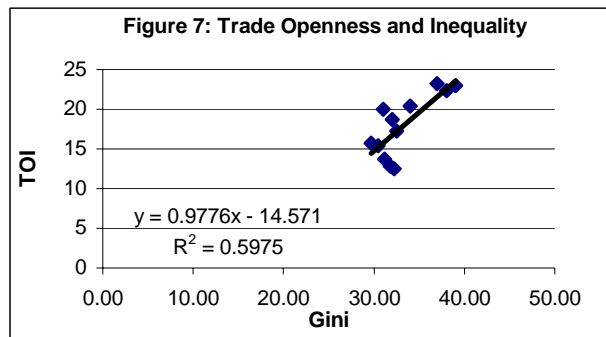
⁶ As reported in Annual and Quarterly Employment Review, Ministry of Labour, the share of unorganized employment in agriculture was 99 percent, in manufacturing 82.1 percent and in construction 89.1 percent in 1994.

population has direct access to the opportunities created by increased trade and globalization. This is essentially what has been reflected in these statistical observations.

$$\text{HCu} = 42.58 - 0.55 \text{ TOI} \quad (1)$$

(20.81) (4.85) adj. $R^2 = 0.69$

On the other hand, as observed by Marjit, Acharyya, Kar and Mukherjee (2005), both the increase in TOI and decline in average tariff appear to have contributed to rising income inequality in India. First of all, the scatter diagram in Figure 7 indicates quite strong positive association of the all-India Gini coefficient with trade share in GDP⁷. Second, the TOI has been observed to *Granger cause* income inequality during 1960-1998. Given such a causality result, the simple OLS regression reported below captures the adverse impact during the reform period 1986-1998:



$$\text{GiniA} = 20.25 + 0.71 \text{ TOI} \quad (2)$$

(6.37) (4.19) adj. $R^2 = 0.62$

The above estimates though shed some light on the gross short run (or static) impact that trade openness may have on poverty reduction and income inequality, they cannot answer how these effects may have operated. Thus, little policy conclusions can be drawn solely from these estimates. A more disaggregate level of study is, therefore, needed.

4.2 Disaggregate Analysis: Short Run Impact

The most well conceived *short run* effect of trade liberalization is through changes in wages and other factor returns consequent upon changes in production pattern and, therefore, composition of output. Theorization of this effect dates back to the celebrated Stolper-Samuelson (henceforth, SS) theorem in 1940s: Free trade (or trade liberalization) should raise (lower) the relative return of the abundant (scarce) factor. Of course, the Heckscher-Ohlin trade pattern of countries underlies this theorem⁸. Since most of the developing countries are endowed with relatively greater physical amount of (unskilled) workers than other factors of production, the SS theorem stated above should mean two things. First, trade liberalization redistributes incomes in favour of the wage earners and against the capital owners. If wage earners have no assets and therefore capital income, and capital-owners have only their capital incomes, then the above pattern of factor income changes may imply a declining income inequality among workers and capitalists. Second, wage earners are better-off both in absolute and real terms, which in turn mean that the incidence of poverty should fall with trade liberalization since most of the poor are the wage earners. Of course, underlying premise is that the regular employment does not fall.

The empirical reality is, however, something which is quite on the contrary. As observed by researchers, over the last two decades the position of unskilled workers have in fact deteriorated relative to their more skilled brothers almost universally. Sometimes the process of globalization

⁷ There is also negative association with the (unweighted) average tariff.

⁸ A more generalized statement has later been known as the Price Magnification Effect [Jones (1965, JPE)]: Trade liberalization lowers the rate of return to the factor of production intensively used in the import-competing sectors relative to those used in the export sectors.

has also worsened their absolute position. Marjit and Acharyya (2003) provide a detailed account of these empirical observations spanning over almost all the continents.

Recent theoretical developments has resolved this apparent inconsistency between conventional theoretical wisdom and empirics by extending the basic general equilibrium trade models in terms of the physical and market characteristics of the developing countries (such as segmented labour markets and other price inflexibilities) as distinguished from those in the developed countries. These theoretical developments strongly suggest that trade liberalization and globalization may indeed cause growing wage inequality even in the developing countries.

Though the precise mechanism through which such a nexus works differs in each of these extensions, it is still the composition effect of trade liberalization which is the driving force of impacts on wage inequality and poverty. In Feenstra and Hanson (1996), such a composition effect of an inflow of foreign capital works in favour of higher stages of production activities with increasing skill-intensity along the vertical chain of production. This raises the relative demand for skilled workers and therefore their wages relative to the unskilled workers. In Marjit and Acharyya (2003), on the other hand, the composition of output changes in favour of the more skill-intensive export items in a diversified export basket. Reallocation of resources across the traded and non-traded sectors, and across the formal and informal sectors, are the other two channels through which trade liberalization can raise wage inequality and, therefore, contribute to overall income inequality within a country.

The analytical structure of the economy which underlies these channels through which trade-poverty-inequality nexus works is developed fully in the appendix. Here I provide an outline of it⁹. Consider a simple competitive general equilibrium framework of the economy which produces three export goods – a quality-differentiated skill-intensive manufacturing export good Z, an unskilled-labour intensive manufacturing export good Y, and an agricultural export good X – one unskilled-labour intensive import-competing good M and one non-traded good N. These five goods are produced by four domestic factors of production: skilled labour (S), unskilled labour (L), land (T) and capital. However, domestic capital used in the manufacturing export sectors and in the manufacturing import-competing sector are of different types – K_1 and K_2 respectively. The production structure in each of these sectors is illustrated in the Figure 8. The benchmark model does not consider any imported input nor does it allow any foreign capital inflow. But these aspects can of course be incorporated into the framework without any qualitative changes in the relationship between trade liberalization, poverty and inequality¹⁰.

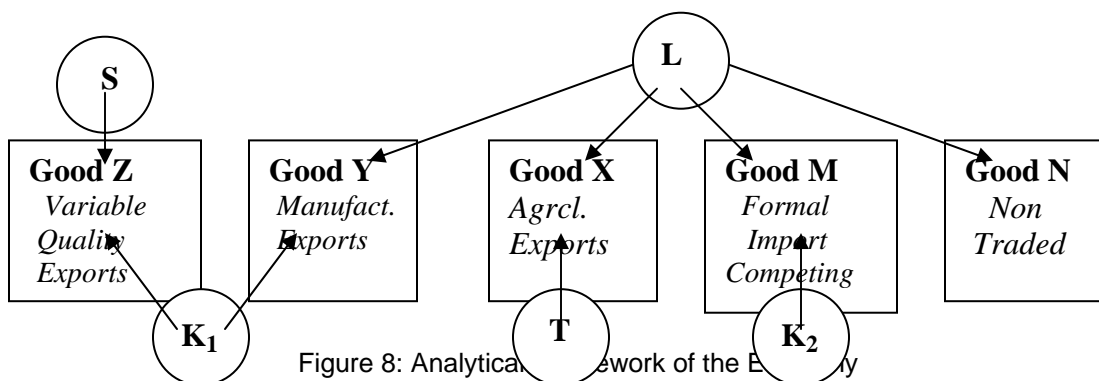


Figure 8: Analytical framework of the Economy

I assume that the quality-differentiated good Z is not domestically consumed. All production functions are assumed to exhibit constant returns to scale with diminishing returns to variable factors. All markets are perfectly competitive with flexible prices, except the formal segment of the market for unskilled labour. The segmentation and dichotomization of the market for unskilled labour are done here only on the basis of wage determination process. In the formal (or organized) labour market, the unskilled money wage is fixed at a pre-determined level, whereas

⁹ The analytical framework is an extension of the theoretical structure developed in Marjit and Acharyya (2003) and Acharyya (2004).

¹⁰ See Marjit et al. (2005) for such extensions and the backward link between industry and agriculture.

in the informal (or unorganized) segment, the money wage is determined by the market forces and adjusts fully (and instantaneously) to any excess demand for or supply of unskilled labour. However, the producers in the formal sectors can fire workers in face of contraction of output. Though even within each sector both formal and informal production units may coexist, I keep things simple by assuming that each sector either comprises of formal production units (paying workers the predetermined money wage) or of informal units which pay the workers the market-determined wage. In particular, I assume that only the import-competing sector M is the formal sector. Production units in all other sectors are informal in the sense defined above. Thus, the framework of the trading economy incorporates three critical features of a developing country like India: diversified export basket comprising of both skill-intensive and unskilled-labour intensive industrial good along with an agricultural goods¹¹; non-traded production activities like construction; coexistence of formal and informal labour markets (and production units)¹².

As shown in the appendix, following implications of trade liberalization and increased trade on wages, and therefore, on poverty and inequality, emerge for this economy:

1. An increase in the world price of the skill-intensive export good Z, and consequent increase in its production and exports, unambiguously raises wage inequality among skilled and unskilled workers. The unskilled workers lose in absolute as well as in real terms. Thus, the incidence of poverty and wage inequality rises.
2. An increase in the world price of the unskilled-labour intensive exports (Y) unambiguously raises the unskilled money wage and thus poverty. But the wage inequality among skilled and unskilled workers grows.
3. Liberalization of imports of the final consumption good, through a reduction of import tariff duty, lowers both the skilled and unskilled wages. But the real unskilled wage increases as the money wage falls less than proportionately to the decline in the domestic price of imports. Thus, whereas poverty should decline, the wage inequality among skilled and unskilled workers *may* rise.
4. An increase in the world price of agricultural good and its exports raises both the skilled and unskilled wage. This is similar to the complementarity result derived in Marjit and Acharyya (2003).

These theoretical understanding of the possible channels through which increased trade may affect poverty and income inequality set the direction of the disaggregate analysis. I start with how wages had changed during the reform period and then shall examine the implications of changes in trade composition and growth in exports of skilled and unskilled-labour intensive goods.

a. Changes in Unskilled Informal and Agricultural Wages During the Reform Period

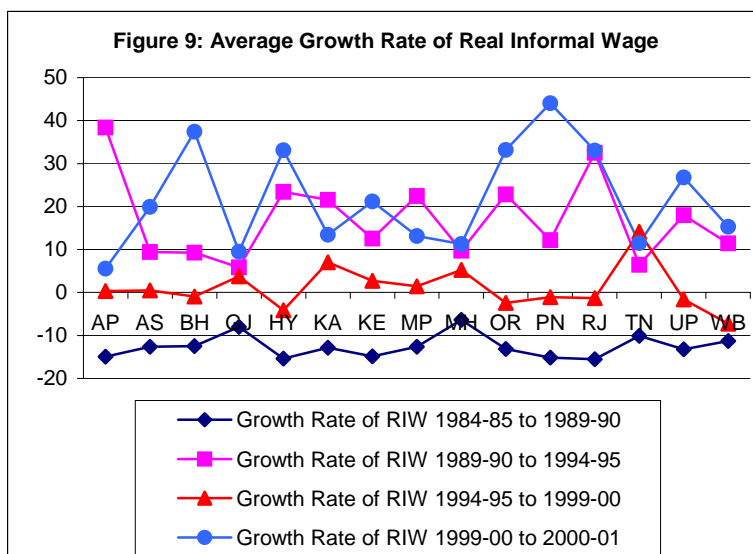
Given the dimension of informal labour markets in India, and the fact that the vast majority of poor, if not all, are actually unskilled workers whether in agriculture or in urban informal sectors, changes in the unskilled real informal wage and real agricultural wages during the reform period should reflect the impact of trade liberalization and reforms on the state of poverty in India. Study by Deaton and Dreze (2002) reveals a negative correlation between real agricultural wages and rural poverty: -0.87 in 1993-94 and -0.91 in 1999-2000. The present study also observes a negative correlation between the real informal wage and the rural poverty at the state level in 1999-2000 estimated at -0.58 for the 30-day recall period and -0.57 for 7-day recall period based on the Deaton-Dreze adjusted poverty estimates.

Figure 9 below shows the average annual growth rate of real informal wage (RIW) across 14 states during four periods – 1984-85 to 1989-90, 1989-90 to 1994-95, 1994-95 to 1999-2000 and 1999-2000 to 2000-01. The real informal wages for each of these four years are calculated from the NSS surveys by Marjit and Kar (2004). These are wages in the Non-Directory manufacturing

¹¹ The skill-intensive Good Z, which can be produced here in different qualities, symbolizes the high-technology goods that India exports, like chemicals, scientific instruments (such as aerospace, office and data processing equipments, wristwatches), computers and transport and electronic machinery. The unskilled-labour intensive manufacturing export, on the other hand, symbolizes exports of cotton textiles and leather manufacture.

¹² Informal sectors ensure that even with rigid money wages in some sectors, excess unskilled workers can be absorbed there.

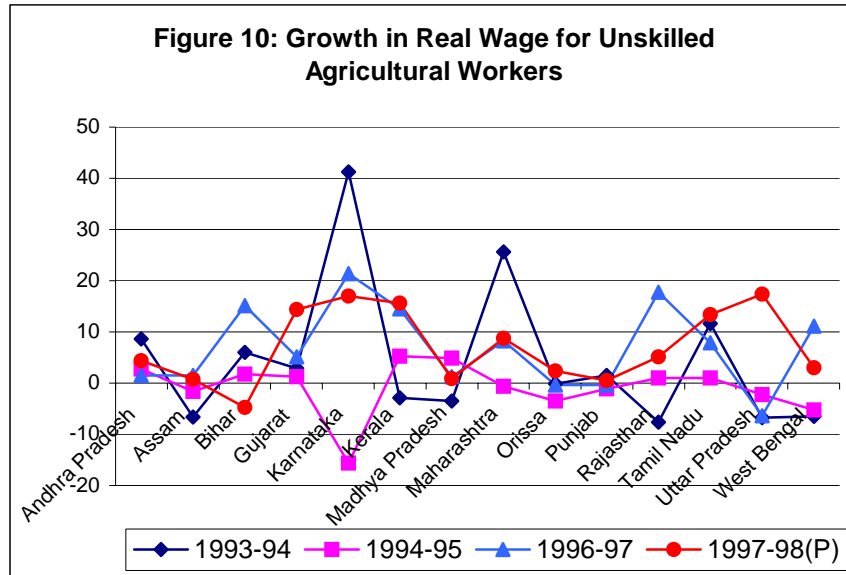
enterprises (NDMEs) in India (combined for both rural and urban establishments). During the second half of 1980's all the states had experienced decline in RIW. But during 1989-90 to 1994-95, there had been complete reversals. Annual growth rates increased quite significantly, indicating increase in RIW over the period for all these states. This increase may well be due to exchange rate and trade liberalization policies which raises the demand for informal unskilled labour as spelled out above. In the second half of the 1990s, however, growth rates of RIW decelerated and even became negative for some of states (such as Bihar, Haryana, Orissa, Punjab, Uttar Pradesh and West Bengal). But, by the turn of the century, growth rates again have picked up, and for some states even surpassed those during the early phase of the reform period. Note that it was during 1999-2000, that import-quota regime has been dismantled for almost all import items and tariff rates were also lowered drastically.



Source: Marjit and Kar (2004).

Figure 10, on the other hand, illustrates the annual growth in real wage for unskilled agricultural workers during 1993-94 to 1997-98¹³. Compared to 1993-94 and 1994-95, in later years majority of the states experienced increase in the growth rate of these wages. Thus, both real informal and agricultural wages for unskilled workers increased on the average during the reform periods resulting, of course, from increased demand for unskilled workers employed in informal sectors and agriculture. However, whether such improvements in wages are due to the composition effect or the growth impact of trade liberalization is an open issue.

¹³ The real wages, as reported in The Economic Survey, are calculated by deflating state average wages for unskilled agricultural workers at current prices by the state level CPIAL with 1960-61 as the base year.



Source: Based on data reported in Economic Survey (various issues).

b. Composition and Diversification of Trade

If we look at the composition of India's exports during 1985-1998 as shown in Table 5, it is immediate that the share of agricultural exports has fallen throughout this period despite a sudden jump from 16.6 percent in 1994 to 20.44 percent in 1996. Of the major agri-export items, only rice could manage to increase its share in total exports in the second half of the 1990s, after sluggishness in early years of reforms. Despite some improvement in late 1990s, share of Coffee, Tea and mate in total agri-exports has fallen quite sharply. Spices still have a larger share of little over 15 percent, whereas the share of rice has increased quite significantly since 1994. Trade restrictions coupled with sluggish agricultural growth during this period partly explain these falling shares of agricultural exports. The share of manufacturing in total exports, on the other hand, has increased from 59.09 percent in 1985 to 77.23 percent in 1998 with some fluctuations during the early years of reforms. But the share of service exports in total exports of goods and services declined steadily till 1996. Thereafter, it has picked up once again.

It appears that manufacturing exports might offer some plausible explanations of the observed impacts of trade liberalization on (urban) poverty and inequality. From the composition of manufacturing exports, it is evident that Clothing and Textile Yarn & Fabric have more or less maintained their share in total exports. Together they still account for almost 25 percent of our total exports (see Table 6). When we add the share of leather manufacture, the combined share of

Table 5: Composition of India's Aggregate Exports

Share in Total Exports of	1985	1987	1989	1991	1992	1993	1994	1996	1997	1998
Agri Exports	27.45	22.35	17.73	18.65	15.79	18.67	16.60	20.44	19.70	18.74
Manufacturing Exports	59.09	62.08	66.75	71.09	69.55	71.48	72.49	71.77	74.87	77.23
Service Exports*	25.91	22.02	20.03	21.56	20.00	18.84	18.60	17.96	20.90	27.77

Note: * Share in Total Exports of Goods and Services.

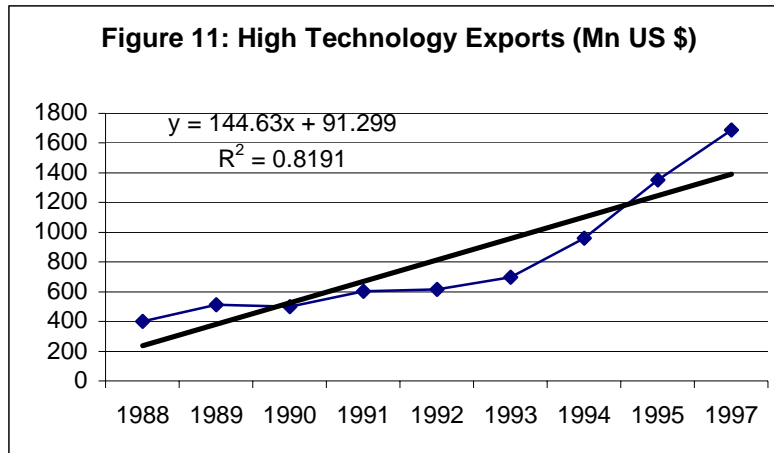
Source: Compiled from ADB Country Tables 2003; Economic Survey, various issues;
World Development Indicator 2001 CD-ROM.

Table 6: Composition of Manufacturing and Service Exports

Share in	1985	1987	1989	1991	1992	1993	1994	1995	1996	1997	1998
<i>Manufacturing Exports</i>											
Textile yarn	19.09	16.29	11.24	11.18	15.28	13.98	14.95	15.06	15.57	14.89	14.85
Clothing	16.83	18.71	17.51	18.74	18.59	16.74	17.22	16.83	15.69	15.27	17.41
Leather manufactures, n.e.s	9.84	2.85	3.55	4.63	9.77	7.24	6.87	6.59	5.68	5.60	6.62
High-Technology	4.20	4.69	4.05	4.25	4.79	5.81	6.88	6.55	5.62
<i>Service Exports</i>											
Communication, computer	57.01	39.64	41.83	40.65	29.46	30.63	31.57	31.48	30.51	44.45	57.65

Source: Compiled from ADB Country Tables 2003; Economic Survey, various issues;
World Development Indicator 2001 CD-ROM.

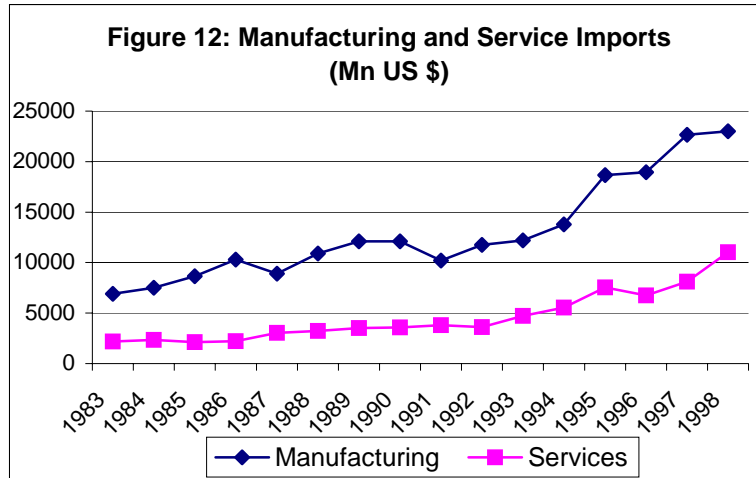
these three export items account for almost 40 percent of manufacturing exports. Since these exports are relatively unskilled labour intensive, their growth should have some significant implications for urban poverty. On the other hand, the share of high-technology export items like scientific instruments, computers, chemicals, electrical machinery and office equipments, and pharmaceuticals, which require relatively larger number of skilled workers and scientists (or research personnel) than other manufacturing goods, has also increased quite steadily. There has been phenomenal growth in these exports, which picked up particularly after 1992 (see Figure 11), driven primarily by the world demand. The growth of software exports by itself indicates how the composition of Indian exports is shifting towards these more skill-intensive items in the present era of globalization characterized by revolution in the information technology in the West. All these have some rather obvious implications for income inequality.



Source: Based on data reported in World Development Indicator 2001.

With the conversion of import quotas into tariffs and phasing out of tariff duties particularly after the mid 1990s, imports of both manufacturing and services have grown quite fast (see Figure 12). Of the manufacturing import items, chemicals and machines, both of which are relatively skill-intensive imports, have recorded significant increases. Even imports of basic manufactures have increased. As the theoretical results mentioned above indicate, these increases in imports should favourably affect the real unskilled wages (and hence the incidence of poverty), but may still cause the wage-inequality to grow.

Thus, for seeking an explanation of how increased openness and trade may have had favourable impact on (urban) poverty and adverse impact on income inequality in India in the 1990s, one must scrutinize the empirical relationship between these indicators and the growth of exports of Textiles yarn, Clothing and Leather manufacture, and high-technology goods, on the one hand, and growth in imports of manufacturing items, on the other hand. Simple correlation studies, reported in Table 7 below, show the anticipated negative association between urban poverty and growth of exports of the three unskilled-labour intensive goods and import of basic manufacturing goods.



Source: Based on ADB dataset (India Country Table 2003).

Surprisingly, the growth in high-technology exports also correlates inversely with urban poverty. There is, on the other hand, a positive association between high-technology exports (and basic manufacturing imports) and Gini coefficients. Most of these results are consistent with what has been predicted by the comparative static results of the theoretical analysis. What may appear to be surprising is the favourable impact of the growth in high-technology exports on urban poverty. However, as shown earlier, the growth in exports high-technology goods had also been associated with growth in unskilled-labour intensive manufacturing exports and imports. Thus, the estimated correlation coefficients, not controlled for other variables, may actually reflect combined effects of these changes.

Table 7:
Growth in Unskilled and Skilled-labour Intensive
Exports, Poverty and Inequality: Correlations

	Urban Poverty	All India Gini
Growth in HTX	-0.81	0.95
COMEXP	-0.80	0.82
MANIMP	-0.65	-0.76

Note: HTX: Exports of high-technology goods; COMEXP: exports of Clothing, Textile Yarn and Leather Manufacture; MANIMP: Manufacturing imports.
Growth is measured by log-transformation of values.

Source: Own calculations.

4.3 Growth Impact of Trade Liberalization

Growth impact of trade liberalization operates rather indirectly. Trade liberalization affects growth of output, which in turn influences poverty and income inequality by creating opportunities for upward income mobility. Of course, output growth-inequality nexus is not a simple one-way causation. Inequality can also constrain output growth.

4.3.1 Trade and Growth

Trade liberalization affects output growth in more than one ways. First of all, there is the characterization of trade as an engine of growth by Sir Dennis Robertson (1940). Similar idea can be traced back to vent for surplus argument of Adam Smith¹⁴. The second sets of arguments,

¹⁴ In contrast to Smith's *supply-side* argument, Acharyya (1994) has recast vent-for-surplus as an effective-demand problem in a Keynes-Kalecki framework of an open economy.

which are neo-classical in tradition, evolve around the gains from trade and income redistribution effect. As international trade raises the real income of trading nations, it allows a higher rate of savings, capital formation and therefore output growth. On the other hand, redistribution effect of trade alters the rate of output growth if people have different marginal propensity to save. For example, if trade lowers the money wage and raises the rate of return to capital, there will be an overall increase in savings propensity since capitalists usually have a higher marginal propensity to save than the wage earners. There will consequently be higher rate of capital accumulation and growth. Of course, if trade redistributes incomes in a different way, growth may be impeded¹⁵.

Since the early 1980s, economists have found evidence on sustained productivity growth for quite a handful number of countries including the newly industrialized countries of Asia [Romer (1986)]. The developments of endogenous growth models were primarily motivated by this phenomenon which could not be explained by vintage neoclassical growth models which predicted dampening productivity growth when diminishing returns set in. In these New Growth Theories, source of growth can either be increasing product varieties [as in Romer (1990) and Grossman and Helpman (1991)]; or increasing product quality (as in Aghion and Howitt (1992), Segerstrom et. al. (1990) and Grossman and Helpman (1991)]. Implications of these theories, based on economies of scale, product variety and better quality of goods, is that countries with a relatively diversified export basket and better quality of such exports would experience a more sustained growth effect of openness than other countries.

Recent cross-country regression results, however, have produced mixed results. Frankel and Romer (1999) find that TOI is strongly related to long-term growth though there is no reverse causation from growth to trade. Dollar (1992) and Sachs and Warner (1995) also find that increased openness is correlated with more rapid growth, though they consider an altogether different measure of openness based on tariffs on machinery, quota coverage and distortions in the exchange rate. Dollar and Kraay (2001) reconfirm these earlier studies: in the 1990s, the globalizing developing countries were catching up with the rich countries, whereas non-globalizers continued to lag further behind.

Harrison (1996) and Rodriguez and Rodrik (2000), on the other hand, show that the robustness of the correlation between openness measure and growth *declines* as other variables (such as property rights) are added into the analysis. Singh and Dhumale (2000) observation also contradicts the Sachs-Warner hypothesis that openness leads to beta convergence (convergence of per capita incomes of developing countries with higher per capita incomes of developed countries). In fact, except for a few Asian developing countries, there has been divergence rather than convergence between the rich and the poor countries during the last two decades.

However, the link between exports and output (or GDP) growth depends much on nature of exports. Exports of a country can have strong linkages with and dynamic effects on the rest of the economy in terms of skill formation, productivity increase and product diversification when proportion of high value addition activities like high-technology items is high in the export basket. Table 8 below reports the correlation between GDP growth and high-technology exports for some selected Latin American and Asian countries during the 1990s. For all these countries, growth in GDP during 1990-2000 has been associated with growth in high-technology exports. On the other hand, except for Brazil, Chile, Indonesia and Mexico, growth in GDP also correlates highly with the share of these exports in manufacturing exports.

Table 8: Correlation between GDP growth and HTX

	Argentina	Brazil	Chile	China	Indonesia	Korea	Mexico	Singapore	Thailand
lnGDP & lnHTX	<i>0.75</i>	0.82	0.86	0.99	<i>0.67</i>	0.87	<i>0.69</i>	0.99	0.90
lnGDP & SHTX	-0.72	0.50	0.17	0.97	0.54	0.82	0.57	0.97	<i>0.65</i>

Note: Bold-faced values are significant at 1% level and values in italics are significant at 5% level.

Source: Own calculation based on data reported in WDI 2001.

¹⁵ There is also the factor-weight effect of trade on the rate of growth as pointed out by Corden (1971).

The experience of the Indian economy in this regard does seem to favour the idea that free trade helps output growth. First of all, Marjit et al. (2004) find that exports Granger causes GDP, but not vice versa, for the period 1980-2003¹⁶. Second, simple OLS regressions (not reported here) show both exports and imports (together as well as individually) raised GDP during 1985-2001: One percent increase in exports (or imports) raised GDP by 0.73 percent (0.83 percent).

4.3.2 *Growth, Poverty and Inequality*

The idea that economic growth has a favourable impact on poverty is based on the income mobility concept of Kuznets (1963). High economic growth creates opportunities for more work and increased income. The demands for unskilled labour are also magnified with such growth. A dynamic economy, where technological change is rampant causing continuous changes in the composition of technologically upgrading and stagnant industries, generates as well as destroys productive employment opportunities. In the process, some people move into lower income-groups relative to where they were at the beginning of the growth process (downward income mobility) and some people move into higher income-groups (upward income mobility). In the rapid growth process, as is usually argued, opportunities for upward mobility far outweighs the downward mobility. Rapid economic growth, therefore, is pro-poor on the balance. However, if the poor cannot access the opportunities for upward mobility generated through the growth process, the potential favourable impact on poverty is far from realized [Tendulkar (1992)].

At the aggregate level, the present analysis finds statistically significant negative correlation of -0.80 between growth in GDP and in PCGDP and *urban* poverty only during 1987-1997. However, in a country like India's complexity, studying correlation between growth, inequality and poverty at the aggregate or all-India level would be mis-leading. To study such a nexus at the state level, in Table 9 below I have categorized 14 major states into high growth, moderate growth, low growth and negative growth rate states according to their average annual growth rates in real PCNSDP during 1990-1997. The cut-off average growth rates applied to define high, moderate and low – above 5% , between 3 and 5 % , and below 3% respectively – are purely arbitrary and, of course, contestable. These are just intended to narrow down our focus on a few broad categories of states according to their average annual growth rates.

Table 9: Average Growth Rate and Rate of Change in Poverty

	Real PCNSDP		Average Percentage Change in HCR	
	% change	Value	Urban	Rural
High Growth States				
KER	6.97	54.31	0.56	-2.91
TN	6.18	59.66	-2.45	-4.78
GJ	5.30	68.29	-4.56	-0.93
Moderate Growth States				
OR	4.48	33.34	-0.01	1.09
KAR	4.43	60.75	-2.85	-5.52
MHR	4.31	53.90	-3.81	1.56
AP	4.01	55.27	-2.57	1.69
WB	3.22	55.19	-0.42	-0.86
RJ	3.21	54.31	-0.14	2.88
Low Growth States				
PJ	2.90	85.27	-4.08	8.54
MP	2.08	40.04	-3.98	4.37

¹⁶ This is contrary to what Marjit and Raychaudhuri (1997) had earlier observed: GDP Granger causes exports but not vice versa. They used the data of the Economic Survey for the period 1951-1994. Thus, by their estimation exports were residuals. This essentially is a reflection of regulations and trade controls making the causality running from exports to GDP weak and statistically insignificant.

UP	0.84	34.40	-3.98	4.70
Negative Growth Rate				
AS	-0.58	37.55	22.93	3.27
BH	-3.41	20.79	-4.00	1.23

Note: All values are period averages (1990-1997). Growth rates in Real PCNSDP is calculated on the basis of the series provided by the Economic Survey (various issues).

Several observations are in order. First, except Kerala, all other 11 states, which had positive growth rates in real PCNSDP, have experienced declining poverty rates for urban areas on the average during this period. Second, once again except Kerala, other high-growth rate states had declining incidence of poverty in both rural and urban areas. For Kerala, urban poverty appears to have increased whereas rural poverty had declined over the period on the average. Third, all low-growth states and, except Karnataka and West Bengal, all other moderate-growth states had positive growth rate in rural poverty. Fourth, average rate of increase in rural poverty had been much higher for low-growth states than for moderate-growth states. From these simple observations arise two questions: First, does the *rate* of growth in real PCNSDP have any implication for rural poverty reduction? Second, does the *level* of real PCNSDP influence the relationship between growth rate and poverty reduction? Note that, Karnataka had a very high value of real PCNSDP (on the average) during 1990-1997, and despite its moderate average growth rate in real PCNSDP, average rate of decline in rural poverty had been the largest.

The *panel regressions* of head-count ratios at the state level, for both urban and rural areas, estimating the impact of real PCNSDP, covering these 14 major states and the period 1987-1997, indicate *favourable* growth impact on poverty:

$$HCR_u = 97.32 - 17.05 \ln RPCNSDP \quad (5)$$

(11.74) (8.10)

$$HCR_r = 79.58 - 10.24 \ln RPCNSDP \quad (6)$$

(8.39) (4.24)

where, HCR_u and HCR_r denote respectively urban and rural head-count ratios; RPCNSDP denotes real per capita Net State Domestic Product. The t-ratios are shown in the parentheses and all β -coefficients are statistically significant at 1% levels rejecting the null hypothesis $H_0 : \beta = 0$. Moreover, both the Breusch-Pagan and the Hausman Specification tests confirm random effects, i.e., individual state-specific effects are uncorrelated with real PCNSDP (value and/or growth)¹⁷.

The nexus between growth and inequality, on the other hand, is described by the oft-quoted inverted-U hypothesis put forward by Kuznets (1955) and Oshima (1962). Initially growth in per capita income is associated with rising inequality but later as per capita income grows further, benefits of such growth permeate more widely to lower inequality. An invariable accompaniment of growth is a shift away from agricultural activities and towards industrialization and urbanization. As perceived by Kuznets, the dislocating effects of the reduction of agricultural activities and increased industrialization would be most unfavourable to the relative position of the low-income groups. But in the later stages, as the pace of industrial growth slackens, such unfavourable forces become weaker and income distribution pattern becomes more equal [Kuznets (1955, p. 18)]. There is also the reverse causation running from inequality to economic growth. Alesina and Rodrik (1994), for example, have found a quite significant inverse relationship between initial inequality – particularly land inequality – and subsequent growth in per capita income. Similar result has been arrived at by Bruno, Ravallion and Squire (1996) and Deininger and Squire (1997). However, it is important to note that different types of inequality have different, and sometimes opposing, effects on growth [Cornia and Court (2001)]. Inequality of earnings that rewards effort is likely to be pro-growth. But income or wealth accruing because of inheritance is likely to be anti-growth.

¹⁷ Similar panel regressions also show that the level of real PCNSDP also had favourable (but marginal) impact on poverty in both urban and rural areas as anticipated earlier.

Marjit, Acharyya, Kar and Mukherjee (2004) in their SANEI-study, observe that during the period 1960-1997, both the level of and growth in GDP *Granger causes* inequality in India, but the level of inequality (Granger) causing growth in GDP is rather weak and is statistically significant only at 10% level of significance.

Given the above Granger causality results indicating stronger growth-causing-inequality relationship, Marjit et al. estimate the impact of current GDP growth on the same-period inequality at the aggregate level during 1987-1997 by the OLS regression:

$$\text{GiniA} = -11.48 + 5.09 \ln \text{GDP} \quad (7)$$

(1.14) (4.46)

where, GiniA denotes all-India Gini coefficient.

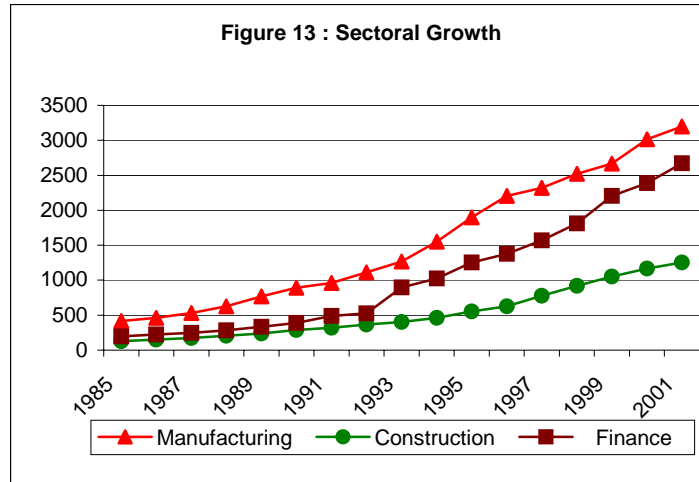
Thus, growth in GDP raises the value of Gini coefficients. To the extent to which rising Gini coefficients reflect growing income inequality, growth appears to have widened income inequality in India during 1987-1997.

Sectoral growth implications

Part of the reason why GDP growth did not correlate with rural poverty may lie in the source of growth. First of all, the share of agriculture in GDP has declined consistently from 33 percent in 1985 to 27 percent in 1997 and then to 25 percent in 2001. The share of industry, on the other hand, has fluctuated below the 30 percent mark which it reached during 1989-90. But there has been quite a significant increase in the share of services. The annual growth rates of industry and services had also been higher than the annual growth rate in agricultural in most of the years during 1990s. With not much of non-farm activities in rural areas, it is therefore not surprising that rural poverty does not correlate significantly with GDP growth.

As far as the growth in services is concerned, this has primarily been driven by financial services and commercial services including computers and software. Of course, growth in these services is expected to increase the demand for skilled workers more than the demand for unskilled workers (if the latter demand is raised at all), and therefore expected to raise the skill premium and worsen the income inequality.

There is, however, quite significant and consistent growth in construction sector (see Figure 13). This sector being typically unskilled labour intensive, and most of the construction work being concentrated in urban areas, such a growth is expected to have a significant favourable impact on urban poverty. These sectoral growth patterns and composition of GDP also offer explanations to the adverse impact of growth in GDP on income inequality. As noted earlier, share of services in GDP has increased quite significantly during the 1990s. Growth of Finance & Real Estate had also been higher in most of the years during 1990s than growth rates in manufacturing sector. As Table 11 shows, the growth in manufacturing, construction (capturing the non-traded component of GDP) and services correlate with the values of Gini coefficient as anticipated.



Source: Calculations based on values at current factor cost (ADB Country Table 2003).

Table 10
Correlation: Sectoral Growth, Poverty and Inequality
(All-India Level; 1986-1997)

	HCu	Gini
Growth in		
Manufacturing	-0.81	0.78
Construction	-0.79	0.78
Services	-0.80	0.78

Note: All values are significant at 1% level.
Source: Own calculations.

5. Policies to make Trade-Growth-Poverty nexus stronger

As we have observed, international trade may work for the poor primarily through its growth impact. Given that growth did have a potential favourable impact on poverty in India during the 1990s, it is, therefore, necessary to ensure that increased trade does accelerate growth. Poor quality of exports is a major impediment to such trade-growth-poverty nexus, for which designing long term policies are more than urgent. Of course, liberalization of imports, particularly imports of machineries, equipments and intermediate goods, should also be an important element of the policy targeted at strengthening the growth impact of trade.

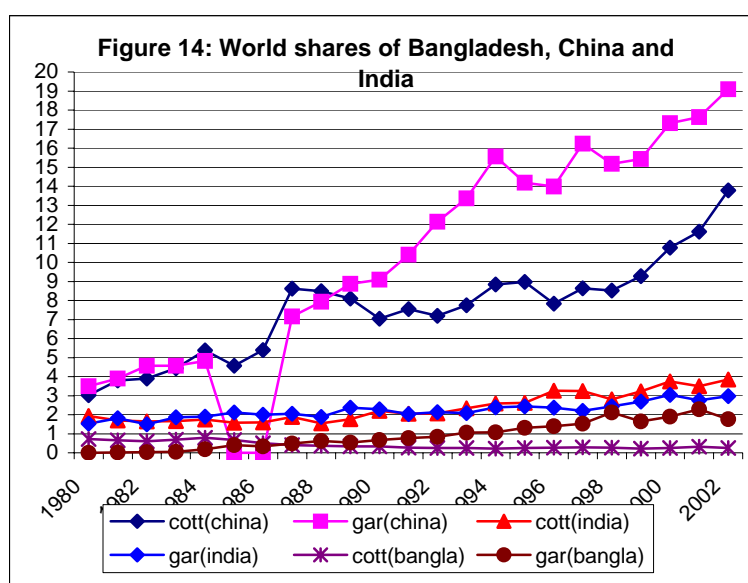
What appears from the analyses in section 4, the growth in exports of high-technology goods is a critical element of the trade-growth nexus. But, though there has been quite a phenomenal growth in such exports in recent periods, its share in total manufacturing exports is still low at 5.39 percent in 2001. This number appears to be much smaller when compared to the shares of some of the Latin American and Asian countries: 8.96% in Argentina, 19.20% in Brazil, 22% in Mexico, 20.57% in China and 29.55% in Korea [Acharyya (2005)]. One major impediment to growth of such exports in India is, of course, related to quality of these export items. There are many incidences of cancellation of consignments and future export orders by quite a few EU countries even in case of electronics export as reported by Sharma et al. (1997)¹⁸.

¹⁸ The problem is qualitatively different, however, for exports of software. The phenomenal growth of the Indian software industry and its exports in the 1990s has been primarily due to outsourcing of low value addition activities by the foreign multinationals unlike other NICs of Asia who have been able to develop and export software packages as well. As such despite significant export growth, little dynamic link has been established with the rest of the economy that will encourage more sustaining technology upgradation and general productivity improvement.

There are both supply-side and demand-side factors that prohibit or discourage enhancement of qualities by exporting firms [see Raychaudhuri et al. (2002) and Acharyya (2005)]. Technological constraint and information asymmetry on part of buyers in the advanced countries regarding quality of imports from developing countries are the two most important of all. Whereas encouraging in-house R&D through proper incentive structure can remove the technological constraint, providing information for and minimizing cost of obtaining ISO-9000 series certificate will remove the information (or demand) constraint¹⁹.

Similar quality problems characterize exports of textiles, garments, and leather manufacture. As we have seen above, growth in these exports can be instrumental in alleviating poverty. It is necessary, therefore, to take special care to step up growth in exports of these goods. Not only the intrinsic qualities of these products often fall short of that of our major competitors like China and Bangladesh, poor environmental quality of leather manufacture in particular, has often been a major cause of concern. Technical backwardness and failure to meet standards, both quality and environmental, imposed by European importing countries have also seriously hampered the growth of exports of leather and leather manufacture [Roy (2000)]. India's share in world trade has in fact fallen quite significantly over the years whereas China's share had grown almost exponentially (see UNCTAD Handbook of Statistics 2004). Part of the reason for such declining share is the ban imposed by Germany (which is the major importer of Indian leather) and the European Union countries on all items containing Pentachlorophenol (the cheapest anti-fungal preservative used by Indian leather manufacturers) of more than 5 mg/Kg.

The share of textiles yarn and fabric, on the other hand, though has picked up during 1990s, it is still far below the share we had in early 1970s. In garments exports, Bangladesh is fast catching up Indian exports in terms of the world share. Both these countries, however, lag far behind Chinese market share in both textiles and garments (Figure 14). If these shares are any indicator of how the countries will fare in the post-MFA period, the situation is certainly not very bright for India²⁰.



Source: UNCTAD Handbook of Statistics, 2004.

Quality problems in these cases arise primarily from the highly fragmented structure of both the leather and textile industries. The Hirschman Index ranges from 0.04 in leather garments industry to 0.12 in leather footwear during 1997-98. Small scale production keeps overhead costs small, but at the same time small firms do not have much incentive for building reputation in the

¹⁹ Raychaudhuri et al. (2002) estimate positive impact of growth of ISO-9000 companies on exports both in the cross-country analysis and for selected export products for India.

²⁰ Recent UNCTAD study also projects larger gain of market for Chinese products than for Indian products.

long run [see Naidu (2000) and Sinha and Sinha (1991)]. The high contestability of leather market in India, in fact, is a major obstacle in building reputation and investing in quality improving production technology. Moreover, since quality of leather products is not known to the buyers before actual consumption (the case of experience goods in the terminology of Nelson), highly fragmented industrial structure per se generates negative informational externality regarding the average industry quality and lowers the incentives for foreign buyers to buy such products. This, in turn, induces potential producers of better-than-industry average quality to offer lower qualities²¹.

There are two ways we can overcome this problem of information externality. First, decentralized production of large fragmented firms should be brought under centralized management and marketing. Regional Leather Export Promotion Councils can play greater roles in this regard. Italy, which is the largest leather exporter (with world share hovering around 20 percent), has a similar decentralized production and centralized marketing structure. Second, fragmented small firms should be encouraged to obtain ISO-9000 series certification, which acts as a signal to the foreign buyers as better quality of products than their perceived average industry quality²².

6. Conclusion:

This paper finds statistically significant growth impact of trade on poverty and income inequality in India during the reform period. However, both the impact of trade on growth and growth on poverty are rather small in magnitude despite quite large changes in trade policies. Part of the reason for such small impacts is the domestic constraints. International trade plays powerful role in the development process only when internal mainsprings of growth function well. Physical infrastructure like power, ports, roads and telecommunication, is one such critical element of internal mainsprings of growth. That poor infrastructure constrains the export growth and weakens the trade-growth nexus for India, on the other hand, has been emphasized by Raychaudhuri, Acharyya, Marjit and Rahman (2002) and Srinivasan and Tendulkar (2003)²³. The World Development Report of 1994 also points out the positive impact of rural roads and irrigation on agricultural output and income in India and Bangladesh.

But progress in infrastructure development has not been very encouraging so far. Average annual growth rates had in fact been lower during the liberalization episode than in the immediate pre-reform decade for electricity generation and railway goods traffic. As pointed out in the Economic Survey (2003-2004), performance of power sector is particularly disappointing despite major reforms including privatization and opening up to foreign investment. Major infrastructure development has been achieved only in terms of the growth in cargo handling at major sea-ports and airports, and in the growth of telecommunication. But when we look at annual percentage changes instead of period averages, the infrastructure growth does not appear to be too encouraging. Hydro power generation had in fact negative growth rates during the second half of the 1990s. Growth rates in new telephone connections had sharp decline almost throughout the 1990s, whereas growth in cargo handled at major sea ports also declined during 1994-1997.

On the other hand, increased inequality that trade liberalization leads to through changes in the skill composition of export basket, simply reflects persistent differences in the capacity of individuals to exploit market opportunities or to achieve access to productive employment and property rights. Lack of education, training and skill to cope up with the changes in technology and production structures that globalization and trade liberalization usher in is the most important constraints of all that delays access to opportunities for upward income mobility for the lower income groups. It is, therefore, absolutely necessary to create an environment such that every

²¹ See Chiang and Masson (1988) for a theoretical discussion of information externality in case of experience goods explaining the Taiwanese export problem.

²² As estimated by Raychaudhuri et al. (2003), the proportions of ISO-9000 in total number of exporting companies in this sector were only 0.40 in 1998 and 0.49 in 1999. The proportion of ISO-9000 firms in the textile sector, on the other hand, had increased only marginally from 21 percent in 1996 to 26 percent in 1998.

²³ Applying Principal Component Analysis, Raychaudhuri et al. (2002) construct Infrastructure Stock Index for India, Bangladesh and Sri Lanka and estimates (partial) elasticities of exports of these countries (to their major destinations) with respect to such an index. Such estimated elasticities are quite high for Indian exports to USA, Canada and to major EU countries, ranging from 1.74 for exports to Belgium to 1.12 for exports to Australia.

member of the lower income groups and socially backward classes gets access to not only formal primary education but to opportunities for acquiring technical skills that help them exploit market opportunities.

Unfortunately, much remains to be achieved in this regard. Still 35 percent of Indian population is illiterate according to the 2001 census. Despite market opportunities provided by increased trade, educational standards, to the extent to which it is captured by enrollment ratios, have not improved much. In fact, the number of enrollment falls at successively higher stages of education for both boys and girls. Reduction in such numbers is almost 60% between primary and middle stages of education. On the other hand, during 1977-1997, dropout rates increased as we move up the education level. Though these rates as a percentage of students enrolled in secondary education had come down from 84% in 1976-77 to 71% in 1990-91, during the 1990s there had not been much improvement in the dropout rate.

These significant dropout rates have some far reaching implications. Many of these children engage themselves in different economic activities including household work contributing to the growing incidence of child labour in India. The long run implication, on the other hand, is that these child workers constitute a sizeable proportion of adult labour force in future with very little productive capacity and skill to access to opportunities for upward income mobility. Analyzing the 50th Round NSS data, Chaudhri (1997) has observed that 97.5% of all child labour in 1993-94 was in the age-group 10-14 year. Incidence of child labour remains relatively high in the same age-group compared to the age-group 5-9 years even in 1999-2000. The implication for the education policy that can be drawn from these observations is simple. The age-group attending the primary school is usually 6-11 years. This means, given the high dropout rates in middle-education level and higher incidence of child labour in the age-group 10-14 years, more emphasis should be given on education at the middle and secondary level education than has been done so far. Spreading primary education is certainly important but that should not be the only target of the education policy. Reduction of dropout rates at middle and secondary levels not only will have immediate favourable impact on the incidence of child labour, but also on the future productive capacity of the adult labour force.

Appendix: Analytical Framework of the Economy

Given the framework of our economy as illustrated in Figure 8, the zero-profit conditions for the sectors producing the four traded goods can be written as (with all prices expressed in terms of good Y):

$$P_Z^*(Q) = a_{SZ}W_S + a_{KZ}(Q)r_1 \quad (A.1)$$

$$P_Y^* = a_{LY}W + a_{KY}r_1 \quad (A.2)$$

$$(1 + t) = a_{LM}\bar{W} + a_{KM}r_2 \quad (A.3)$$

$$P_X^* = a_{LX}W + a_{TX}R \quad (A.4)$$

where, P_j^* , $j = Z, Y, X$, is the (given) world price of the j-th traded good in terms of the world price of the import-competing good M, and $P_Y = (1 + t)$ is the tariff-inclusive domestic price of the import-competing final good Y.

Note that, following Acharyya and Jones (2001), I assume that the higher quality of the export good Z is more intensive in capital, but requires the same amount of skilled labour as a lower quality. This assumption allows us separate out the quality and quantity dimensions. The marginal productivity of capital with respect to quality enhancement is also assumed to be diminishing. Thus, $a'_{KZ}(Q) > 0, a''_{KZ}(Q) < 0$. On the other hand, though for any given quality the world price of good Z is given to this small economy, the foreign buyers are willing to pay more for

a higher quality. Such a price-quality relationship, however, is assumed to be proportional: $P_Z^* (Q) = \alpha Q$.

The competitive condition for the non-traded good, on the other hand, is given by

$$(A.5) \quad P_N = a_{LN} W$$

But, by definition, the output of the non-traded good must match its *local* demand:

$$(A.6) \quad D_N (P_N, y) = N$$

where, y denotes real income:

$$(A.7) \quad y = P_Z^* Z + Y + P_X^* X + P_M^* M$$

Flexibility of all factor prices (except the formal sector unskilled wage) guarantees full employment of the five factors of production:

$$(A.8) \quad \bar{T} = a_{TX} X$$

$$(A.9) \quad \bar{S} = a_{SZ} Z$$

$$(A.10) \quad \bar{K}_1 = a_{KY} Y + a_{KZ} Z$$

$$(A.11) \quad \bar{K}_2 = a_{KM} M$$

$$(A.12) \quad \bar{L} = a_{LX} X + a_{LY} Y + a_{LN} N + a_{LM} M$$

There are, of course, the least-cost input choice equations for each production sector determining the input-coefficients (except a_{LN}) from the factor prices under constant returns to scale technology.

Finally, the competitive producers choose quality of the export good Z , for a given set of factor prices they face, by the following marginal condition:

$$(A.13) \quad \alpha = a'_{KZ}(Q) r_1$$

The six prices – W_S , W , r_1 , r_2 , R and P_N – five output levels – Z , X , Y , M and N – the real income, y , and the quality of export good Z are thus determined by the above set of 13 independent equations²⁴.

Given the above analytical framework, let us now examine the implications of liberal trade policies and increased trade on factor returns. Following equation of change is important in arriving at specific comparative static results, which has been derived by taking percentage change forms of endowment and zero-profit conditions²⁵:

$$\phi \hat{W} + \delta \hat{W}_S = \sigma_Y \frac{\lambda_{KY}}{\theta_{KY}} \hat{P}_Y^* + \sigma_X \frac{\lambda_{LX}}{\theta_{TX}} \hat{P}_X^* + \sigma_M \lambda_{LM} \hat{p} + \mu \hat{\alpha} \quad (A.14)$$

where, $\phi \equiv \lambda_{LN} \varepsilon_N + \sigma_X \frac{\lambda_{LX}}{\theta_{TX}} + \sigma_M \frac{\lambda_{LM}}{\theta_{KM}} > 0$; $\mu \equiv \frac{\lambda_{KZ}}{\lambda_{KY}} \frac{\lambda_{LY}}{\theta_{KZ}} (\sigma_Z + \theta_{SZ}) > 0$; $\delta \equiv$

$\frac{\lambda_{KZ}}{\lambda_{KY}} \frac{1}{\theta_{KZ}} (\lambda_{LY} \theta_{SZ} + \sigma_Z) > 0$; λ_{ij} is the employment share of j -th sector in total employment of

²⁴ The process of determination of these variables is fairly standard and rather obvious for those familiar with general equilibrium trade models, and is, therefore, not described here to save space. For determination of export quality, on the other hand, see Acharyya and Jones (2001).

²⁵ Readers unfamiliar with the standard algebra of this type of general equilibrium models refer to Caves, Frankel and Jones [1997].

the i -th factor; θ_{ij} is the share of i -th factor in average cost in j -th sector; $\varepsilon_N \equiv -\frac{\hat{D}_N}{\hat{P}_N} > 0$ is the

(absolute) price-elasticity of demand for the non-traded good, and $\sigma_j, j = Z, Y, X, M$, is the

factor-substitution elasticity in the j -th sector (e.g., $\sigma_Z = \frac{\hat{a}_{SZ} - \hat{a}_{KZ}}{\hat{r} - \hat{W}_S}$); $\hat{\rho} \equiv \frac{d(1+t)}{(1+t)} < 0$.

Case I: Increase in the world price of skill-based exports :

Suppose there is a ceteris paribus non-uniform increase in the world price of good Z: $\hat{\alpha} > 0 = \hat{\rho} = \hat{P}_Y^* = \hat{P}_X^* = \hat{P}_M^*$. Note that we consider, in fact, an increase in the marginal willingness-to-pay for higher qualities so that price increase is more for higher quality varieties of the good Z. This raises the incentive for enhancement of quality as well as for increased physical production of export-good Z. With the skilled labour specific in this sector and the required type of capital already fully employed in this sector and in the unskilled labour-intensive export sector Y, both the skilled wage and the rate of return to capital should increase. However, whether the skilled wage rises more than the increase in the world price of good Z (in which case real skilled wages rises too), and consequently more than the rate of return to capital depends on the factor substitution elasticities in the economy. Formally, it is straightforward to check that,

$$\hat{W}_S = \frac{\mu + \phi \frac{\theta_{KY}}{\theta_{LY}} \frac{1}{\theta_{KZ}}}{\delta + \phi \frac{\theta_{KY}}{\theta_{LY}} \frac{\theta_{SZ}}{\theta_{KZ}}} \hat{\alpha} > 0$$

(A.15)

$$\hat{r}_1 = \frac{\delta - \theta_{SZ} \mu}{\theta_{KZ} \left(\delta + \phi \frac{\theta_{KY}}{\theta_{LY}} \frac{\theta_{SZ}}{\theta_{KZ}} \right)} \hat{\alpha} > 0$$

(A.16)

Note that, if the production technology in the Z-sector is Leontief, $\sigma_Z = 0$, then $\mu = \delta$, so that $\hat{W}_S > \hat{\alpha} > \hat{r}_1 > 0$. In any case, however, the increase in the rate of return to capital lowers the informal unskilled money wage, given the world price of exportable good Y, which in turn raises the rate of return to land, given the world price of agriculture. Therefore, in this case the wage inequality increases. Unskilled workers lose both in real terms as well as relative to other factor owners. All these should increase the overall income inequality.

Case II: An increase in the price of unskilled-labour intensive manufacturing exports

A ceteris paribus increase in P_Y^* , on the other hand, leads to the following changes in wages:

$$\hat{W} = \frac{\sigma_Y \frac{\lambda_{LY}}{\theta_{KY}} + \delta \frac{\theta_{KZ}}{\theta_{SZ}} \frac{1}{\theta_{KY}}}{\phi + \delta \frac{\theta_{KZ}}{\theta_{SZ}}} \hat{P}_Y^* \quad (A.17)$$

The rate of return to capital increases once again, which in turn now means a fall in the skilled money wage [see eq. (A.1)]. Thus, an increase in the world price of unskilled-labour intensive manufacturing exports must lower both poverty and wage inequality.

Case III: Trade liberalization:

A reduction of tariff on the final import good M lowers both the informal unskilled wage and the skilled wage. Depending on the factor intensity conditions, the wage inequality can either increase or decrease. Note, the reduction of tariff protection leads to a contraction of the import-

competing sector. Given the pre-determined money wage to the (organized) unskilled workers in this sector, the burden of adjustment is borne by the owners of capital specific there, i.e.,

$$\hat{r}_Y = \frac{1}{\theta_{KY}} \hat{\rho} < 0 \quad (A.18)$$

The production of the import-competing final good, therefore, becomes relatively more capital intensive than before. Since the type of capital used in its production is not used elsewhere and thus additional capital cannot be drawn from other sectors, more capital-intensive production process can be supported only through a fall in the physical production. This just confirms our presumption that more foreign competition contracts the import-competing sector. The unskilled workers who lose job in this sector move to other sectors. But with initially no change in the rate of return to the other type of capital, the return to land and the skilled wage, there cannot be any change in the production of either the skill-based export good Z, the unskilled-labour intensive manufacturing exports, or the agricultural good X. Unemployed unskilled workers can be absorbed only in the non-traded sector through a fall in its price and corresponding increase in its demand. Consequently, the unskilled wage falls. Therefore, informalization of the economy (i.e., contraction of the organized sector production and corresponding increase in the informal sector production) induced by trade liberalization lowers the informal unskilled wage. Following factor price changes, *at initial output levels for goods Z, X and M*, are then immediate from the zero-profit conditions: $\hat{R} > 0$, $\hat{r} > 0$, $\hat{W}_S < 0$. These factor price changes now trigger output changes through factor substitution effects. There will thus be further adjustments in the non-traded production and the unskilled wage as well. But these secondary impacts cannot alter the direction of initial changes in factor prices. Thus, trade liberalization raises inequality between non-wage and wage-earners. The wage-inequality among skilled and unskilled workers, on the other hand, may change in either direction. More precisely, taking into account all adjustments,

$$\hat{W} = \frac{\sigma_M \frac{\lambda_{LM}}{\theta_{KM}}}{\phi + \delta \frac{\theta_{LY}}{\theta_{KY}} \frac{\theta_{KZ}}{\theta_{SZ}}} \hat{\rho} < 0 \quad (A.19)$$

However, by the definition of ϕ , it is immediate that the fall in unskilled money wage will be less than proportionate to the rate of tariff reduction. Thus, the *real unskilled money wage rises*, which must lower the incidence of poverty. Since, by (A.1) and (A.3)

$$\hat{W}_S = \frac{\theta_{KZ}}{\theta_{SZ}} \frac{\theta_{LY}}{\theta_{KY}} \hat{W} \quad (A.20)$$

so by (A.19), the skilled wage falls too. But the wage inequality may still grow if the skilled based good uses less capital (per unit of skilled labour) than the intermediate good :

$$\hat{W}_S - \hat{W} = \frac{\theta_{LY}\theta_{KZ} - \theta_{SZ}\theta_{KY}}{\theta_{KY}\theta_{SZ}} \hat{W} \quad (A.21)$$

In other words, growing wage inequality may well be associated with trade liberalization and consequent informalization of the economy.

Case IV: Increase in the world price of agricultural exports:

A ceteris paribus increase in P_X^* , by similar composition effect, unambiguously raises the informal unskilled money wage, lowers the rate of return to capital used in the skill-based export sector and raises the skilled money wage. By (A.19) the skilled wage increases too. This is the complementarity result derived in Marjit and Acharyya (2003): Even an expansion of the export

good which does not use skilled labour, can cause the skilled wage to increase, and consequently the skill-based exports to grow as well²⁶.

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²⁶ Note that, as the W_S/r ratio goes up, production of Z becomes less skilled-labour intensive. The consequent greater availability of skilled workers (at the initial output level) makes possible an expansion of production of good Z.

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