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Regional Trade Openness Index, Income Disparity and Poverty: An Indian Case Study

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In the absence of a direct measure of trade openness at the state/regional level and its effects on poverty and disparity the CUTS study provides a maiden attempt to fill the vacuum. The study has established that states with relatively high levels of income are also the states with greater exposure to trade and such a relationship has grown over time. The regional/state level disparity tends to widen as more open states grow much faster compared to those states which are less open. The study further finds evidence in support of a lower incidence and depth of poverty for urban areas as compared to rural areas. Furthermore, there is clear evidence in support of increasing inequality in rural areas when the level of inequality is correlated with the state level openness index. This Briefing Paper is based on a CUTS study which focuses primarily on identifying the inter-linkages between trade openness at the state level and incidence of poverty.

1. Introduction

International trade theories argue that the removal of trade barriers does impact the industrial dynamics of a country. However, the impact depends on the factor intensities of exporting/import competing industries. As a country engages more and more in international trade, its factors of production will enter increasingly into the exporting sector, where their returns are higher, compared to import competing sectors. This can be envisaged at the regional/state level. Consequently, those states, which can attune their production structure to international demands should earn higher than other states.

This briefing paper is based on a study, which focuses primarily on identifying the inter-linkages between trade openness at the state level and incidence of poverty. It first looks into how 'open' Indian states are with respect to international trade and then tries to characterise three related relationships: (i) between trade openness on one hand and incidence, depth and severity of poverty (rural and urban) or the incidence of inequality at the state level on the other; (ii) between trade openness and industrial employment across industry types (workers and employees); and (iii) between trade openness and regional disparity.

In their attempt to establish linkages among these aspects the authors of the study have tried to construct, a 'trade openness index' (TOI) at the regional or state level, which according to them is the first-ever attempt of its kind. Such construction has become, of late, more demanding due to the near absence of trade data at sub-national/state level. Moreover, construction of such an index is more problematic for a large-sized as well as highly heterogeneous country like India.[1]

2. Review of Literature

2.1 Economic Reforms and Poverty in India

The post-independence era has seen intense debate on the measures to capture the incidence and depth of income poverty in India and the policies most appropriate in lowering the extent, thus measured. The economic reforms of the 1990s have led to a renewal of interest in measuring poverty and inequality in the post-reforms period. The causality between trade openness and poverty in the Indian case has been explored only in recent times. The relevant studies explore whether the high gross domestic product (GDP) growth rates driven by trade in recent years have contributed to the reduction of poverty across states.

Although poverty rates in rural and urban areas have shown declining trends in general, the outcomes vary considerably across states. Using a specific factor model of trade, Topalova (2005) through a study of Indian district level data has shown that in the presence of limited factor mobility, more trade liberalisation has been associated with a smaller decline in rural poverty. This downward impact of the extent of trade liberalisation on poverty decline was less striking in states that had more flexible labour market institutions. These results were contradicted by Hasan, Mitra and Ural (2006) who reported that the impact of trade reforms on poverty alleviation was positive and more visible in states with relatively 'flexible' labour market conditions.

This study confines itself only to economic reforms and poverty related issues. Various empirical studies show that the percentage of poverty has declined both at the all-India level and at the regional (state) levels.[2] The causes underlying

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such changes are diverse. Not surprisingly, the evolving relationships between poverty and inequality too have numerous interpretations, of which a notable contribution is Dreze and Sen (2002). It is estimated, based on an international poverty line of around US$1 per day at 1993 purchasing power parity, that around one-third of the world's poor in the mid-1990s lived in India (Datt and Ravallion, 2002a). Therefore, the incidence of absolute poverty in India is an important determinant of the global incidence of poverty.

The GDP and per capita income growth rates in India during first three decades of planning focused on 3-3.5 percent (popularly known as 'Hindu growth rate') and 1 percent per annum respectively. In 1980s, an acceleration took place with the trend growth rate of GDP touching 5 percent per annum. There was further acceleration with the two respective growth rates attaining levels of 6.7 and 4.5 percent in 1992-97, 5.3 and 3.3 percent in 1997-2002 and 7.8 and 6.1 percent in 2002-07. It is widely believed that the reforms of the 1990s were instrumental in achieving such high growth rates. However, it is not clear how much India's poor have shared in the gains from economic growth.

The relationship between GDP growth and poverty reduction after the onset of economic liberalisation is quite contentious. As opposed to the general belief of poverty falling in the 1980 there exist two polar notions about the impact of reforms on poverty. One group strongly claims that poverty reduction in India in the decade of the 1990s has been dismal. These studies include Ninan (1994.2000), Dev (1995), Tendulkar and Jain (1995) and others. Ninan claimed that, while rural, urban and overall national poverty levels recorded a significant decline during the pre-reform periods (1969-70 to 1990-91), these negative trends weakened or got reversed during the post-reform period (1991-92 to 1993-94) in terms of various poverty indicators: Head Count ratio (HCR), Poverty Gap Index (PGI) or Squared Poverty Gap Index (SPGI).

Furthermore it is reported that a majority of 15 larger states in India that contributed positively towards overall poverty reduction in the pre-reform decades reported statistically insignificant poverty reduction rates in the post-reform period with Punjab and Haryana even reporting an actual increase in rural poverty. Dev (1995) reported an increase in poverty rates during the 'first 18 months', after economic reforms were initiated in India. Tendulkar and Jain (1995) claimed a sharp increase in rural poverty rates with a moderate rise in urban poverty rates during 1991-95, although the reforms were only 'indirectly' responsible for such a trend.

More recent studies covering a larger period after reforms find that in the second half of the 1990s the rate of poverty reduction was significant, especially in the urban areas. Datt (1999) showed that overall poverty reduction was moderate despite significant reductions in urban poverty, mainly due to the stagnation in rural poverty rates. Sundaram and Tendulkar (2003b), while reexamining their earlier study (2003a), observe a clear and unambiguous decline in poverty between 1993-94 and 1999-2000. They claim that the average annual reduction in poverty in India during the second half of the 1990s was higher than that recorded for the ten-and-half years prior to 1993-94.

2.2 Economic Reforms and Formal Employment in India

One of the most interesting issues in the face of economic liberalisation in India has been the downward flexibility of formal wages and its implications for the level of employment. It is simple to understand that if the fall in labour supply outweighs the increase in the demand for labour due to falling wages, then the level of employment must fall. Mitra (2006) estimated growth rates in wages and employment during the pre-reform (1979-80 to 1990-91) and post-reform (1990-91 to 1997-98) periods. He found that the rate of growth of workers was higher in the second period compared to the first one. Tendulkar (2004) notes that the organised labour market in India is undergoing some churning. Formal rules incorporated in protective labour legislation continue to persist, despite inability to protect employment in the face of growing domestic and foreign competition.

It comes as no surprise that the cross-currents of protective schemes and the constant search by the employers to switch to cost saving techniques, including resorting to flexible labour allocation modes and outsourcing to sectors where labour laws are less stringent, creates a state of redundancy (Datt, 2003). For the full benefit of labour productivity to percolate to the workers, it is imperative that the social security network and health benefits, old age benefits and unemployment benefits or employment insurance are given an important place in the agenda on labour market reforms. Mitra (2006) argues that the presence of labour contractors, who regularly draw a part of the workers' pay or other benefits receivable as rents, complicates the situation even more.

2.3 Economic Reforms and Regional Disparity in India

The CUTS study comes out with the conclusion that the growth patterns in the 1990s reveal major regional imbalances. The western and southern states (Andhra Pradesh excluded) have tended to do relatively well. The low growth states form a large contiguous region in the north and east, which were poorer to start with. The National Sample Survey (NSS) data for 1993-94 and 1999-2000 reveal a strong pattern of inter-regional divergence in average per capita expenditures (Lal et al 2002). The two other aspects of increasing economic inequality in the 90s are rising rural-urban disparities in per capita expenditure and rising inequality of per capita expenditure within urban areas in most states. Further, the real wages of agricultural labourers and public sector employees have increased more slowly than per capita GDP, suggesting some intensification of economic inequality among occupation groups.

While expenditure based data suggest rising disparities in the nineties, the same does not apply to other social indicators. For example, there has been some narrowing of the rural-urban gap in terms of life expectancy and school participation (Deaton and Dreze, 2002). The increasing regional disparity is a potential cause of worry if it sharpens political tensions especially in a diverse federal polity such as India (Singh, Bhandari, Chen and Khare 2003). Dholakia (2003) showed that regional disparity in terms of human development has been decreasing but the regional disparity in income has been almost constant over the past two decades.

On the basis of real per capita net state domestic product, Marjit and Mitra (1996) find no evidence in favour of convergence across 24 Indian states over the period 1961-62 to 1989-90. Ghose; Marjit and Neogi (1997), Kurian (2000) etc., have corroborated further the above results in their studies. Krishna (2004) argues that while in the 1980s all states improved their growth performance relative to the previous two decades, the performance in the 1990s is quite uneven. States that could take advantage of the reforms of the 1990s, which allowed much scope for policy making at the state level, seem to have performed better.

3. The Trade Openness Index (TOI)

The CUTS study has constructed the TOI at the sub-national/regional/state level for the first time for India, although there exists very little theoretical and empirical work on the subject and that too does not establishes a direct link between economic growth through trade liberalisation on the one hand and poverty reduction and regional disparity on the other. This study is also handicapped by the same and therefore tries to establish linkages among the three indirectly. The literature on the relationship between openness and economic performance mainly focuses on the impact of trade orientation on productivity and this relationship has long been a subject of intense debate among economists.

Grossman and Helpman (1991) argue that whether or not a country grows more from openness to trade depends on a number of factors, including its comparative advantage *vis-à-vis* the rest of the world. Buffe (1992) contends that whether an export boom acts as an engine of growth depends on the structural characteristics of the economy. Benefits of trade openness have received an enormous amount of interest since the time of David Ricardo and include seminal studies by Scitovsky (1954), Keesing (1967), Bhagwati (1978), Krueger (1978), Liu *et.al* (1997) etc. All these studies emphasise that openness exposes countries to the most advanced ideas and methods of production and thus enhances efficiency. More recently Romer (1968,1992), Lucas (1988), and Barro and Sala-I-Martin (1995), while propounding 'Inclusive Growth Theory', have shown the positive impact that trade openness can have on economic growth of a country.

All these studies of the impact of openness on economic performance deal with how a country as a whole benefits from international trade but they do not study (or give little attention to) how regions/states within a country get affected when the country engages in international trade. The Heckscher-Ohlin model of trade predicts that with the introduction of international trade, there would be a shift in factor employment in different industries, which will ultimately lead to factor price equalisation across countries. The same thing can be foreseen at the regional level.

Ignoring factor price equalisation, the CUTS study argues that it is quite possible that as a state engages more in international trade its factors of production shift from the import competing sector where their returns become lower to the exporting sector. This will result in greater development of those states which can attune their production structure to international demands. It is not implausible to assume that different regions will be affected in different ways as a country opens up to trade or embarks on a trade liberalisation process. Thus, widening interregional income differences can be explained through such openness to trade.

Elizondo and Krugman (1992), based on North American Free Trade Agreement (NAFTA) experience, demonstrated that liberal trade policies should disperse economic activities across locations and thus reduce regional disparity within a country. The reason is that liberal trade policies will break the influence of the 'home market' and activities should disperse. Likewise one of the main objectives of the European integration under the EU was to achieve greater equality in productivity and income across Europe and it was successful in achieving it, which is demonstrated by the tendency of the long run convergence in productivity and income in the EU.

Increase in trade should improve real incomes in regions producing exportables and reduce that in regions producing importables, but the gains from trade ensure overall positive welfare effects. Thus, income is redistributed from the import competing to the exporting regions (Marjit and Beladi 2005) which may give rise to an increase in regional disparity. Now, in order to see how openness affects poverty and inequality, employment levels and regional disparity, we have, to first measure openness. Though the term 'openness' is widely used in international and economic growth literature there is no consensus on how to measure it.

Various measures are used in the empirical studies, which, *inter alia*, include 'trade dependency ratios', the 'rate of export growth' (Balassa, 1982), 'the trade orientation index' defined as the distance between actual trade and the trade predicted in the absence of distortion (Leamer, 1988; Wolf, 1993), the World Bank's outward orientation index which classifies countries into four categories according to their perceived degree of openness (World Bank, 1987) and the composite openness index which is based on trade related indicators such as tariffs, quotas, black market premia, social organisation and the existence of export marketing boards (Sachs and Warner, 1995). All these indices use data at the national level, but to find trade openness at the state or regional level, there is a need to construct a regional openness index, which requires substantial amount of ingenuity if it is to be sensible and practicable.

3.1 Construction of TOI

The construction of TOI in the CUTS study is based on the simple Heckscher-Ohlin-Samuelson framework of international trade theory. The authors restrict themselves to the case where only the nation engages in trade with the rest of the world as a sovereign entity and the regions trade via the nation. So it is not the case that West Bengal and Punjab are directly trading with US. India's overall factor endowments, among other things, will determine India's pattern of trade and those states whose endowments match well with national characteristics will have trade patterns similar to the nation. However, the production patterns of states are affected by active government policies and therefore actual trade may not reflect the nature driven comparative advantage of regions.

However, given the national trade and production patterns how much of it is replicated at the level of a particular state is the main consideration here. As a region opens up

for trade, the exporting region should gain and import competing regions should lose. Therefore, if initially, the exporting regions are relatively well off, trade is going to increase interregional disparity. Trade reallocates resources towards exporting sectors and therefore those regions, which are on the borderline of being identified as import competing ones in the pre-reform situation, should switch first to becoming exporting regions.

Eventually, there will be more regions emerging as exporters. With full mobility of factors across states, it is difficult to predict interstate variations of income, except if there is some specific factor such as land. However, initial distribution of income is very important for determining whether trade leads to further disparity. For a specific state, the level of output (both agricultural and industrial) has been linked to All-India trade figures to get an appropriate indicator of how 'open' it is. If most of the production is concentrated in the items, which at all India level contribute largely to export value, then it is reasonable to conclude that a particular state is attuned to exports and thus is more 'open' and *vice versa*.

The CUTS study calculates the industry-wise annual value added for each state according to the 2-digit level National Industrial Classification, NIC). Then it obtains shares of products in total exports and imports. The export and import shares of the goods at the all India level and gross value added shares of the same at the state level were calculated. Then correlation coefficients between them were obtained, which were calculated for 23-year period for 15 major states in India. High correlations contributed to high openness, as measured by the index. According to the authors' estimation, in 2002-03 Tamil Nadu was the most 'open' state while Assam was the least open (see table 1).

Table 1: Yearly Openness Index Ranks of Indian States

	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92
Andhra Pradesh	9	5.5	3.5	9	10.5	5.5	5	4	7	5	5	12
Assam	3	11	3.5	2	2	14	11	5	4	13.5	14	14.5
Bihar	11	12	15	14	15	9	13	15	15	15	15	14.5
Gujarat	7.5	8	8.5	7.5	8	7	9	8	9	7	7.5	6.5
Haryana	5.5	8	14	13	13	15	14	14	11.5	11	9	6.5
Karnataka	7.5	10	13	10	5.5	12.5	12	12.5	9	10	7.5	9
Kerala	14	13	8.5	3.5	5.5	12.5	10	12.5	11.5	12	11.5	13
Madhya Pradesh	13	14	10.5	11.5	14	4	5	11	14	8	5	3
Maharashtra	15	15	10.5	7.5	8	11	15	9.5	9	9	11.5	10.5
Orissa	11	4	6.5	3.5	3	2.5	7.5	9.5	13	13.5	13	10.5
Punjab	11	8	3.5	6	4	2.5	1.5	1	1.5	1.5	1	1.5
Rajasthan	1	1	1	1	1	1	1.5	2	1.5	1.5	2	1.5
Tamil Nadu	5.5	5.5	6.5	11.5	12	5.5	5	6	5	3.5	3	4
Uttar Pradesh	4	2	3.5	5	10.5	9	3	7	6	6	10	8
West Bengal	2	3	12	15	8	9	7.5	3	3	3.5	5	5
	1992-93	**1993-94**	**1994-95**	**1995-96**	**1996-97**	**1997-98**	**1998-99**	**1999-00**	**2000-01**	**2001-02**	**2002-03**	
Andhra Pradesh	8.5	6.5	12	7.5	6.5	9.5	12	12	12	12.5	12	
Assam	14	15	14	15	15	15	13	15	15	15	15	
Bihar	15	14	15	14	14	12	8	14	14	12.5	14	
Gujarat	10	9.5	10	9.5	9	7.5	6.5	8.5	6.5	7	8	
Haryana	6	11	3	6	6.5	13	15	8.5	8.5	9	11	
Karnataka	8.5	3.5	8	7.5	10.5	7.5	10.5	5	10	7	6.5	
Kerala	13	13	7	13	12	14	14	13	13	14	13	
Madhya Pradesh	4	5	4	4	4	2	4	6	2.5	7	6.5	
Maharashtra	11	9.5	10	11.5	8	9.5	10.5	11	8.5	10	9	
Orissa	12	8	10	9.5	13	6	6.5	7	6.5	5	5	
Punjab	2	1.5	2	2	2	1	2	1	4	1	2	
Rajasthan	1	1.5	1	1	1	3.5	1	2	5	2	3.5	
Tamil Nadu	3	3.5	5.5	5	5	3.5	3	4	1	4	1	
Uttar Pradesh	7	12	13	11.5	10.5	11	9	10	11	11	10	
West Bengal	5	6.5	5.5	3	3	5	5	3	2.5	3	3.5	

Note: The state with lowest openness index value is assigned rank 1 and vice-versa.

3.2 Results of the Study

The study concludes that there is ample support in favour of the initial hypothesis that increases in regional disparity across Indian states have some correlation with trade openness over the years. The study clearly establishes the fact that states with traditional emphasis on production of commodities that are intrinsically import competing in nature have suffered income losses over these years, but there appears no clarity from the empirical results whether industrial employment/ unemployment is affected by the openness to trade. The estimated correlation coefficients show that there is no uniform and monotonic relation between the growth rates of employees and workers and the TOI.

As regards TOI and poverty the study reports that state specific trade openness and urban HCR show a trend of negative correlation implying that higher the TOI, lower is the urban poverty and *vice versa.* In contrast to this, TOI does not lower the rural HCR, which reinforces their conjectures that trade does help the urban skilled population and other factors of production more than their rural counterparts. As regards trade openness and depth of poverty the study suggests that trade exacerbates poverty in rural areas relative to that in the cities where trade has eased the situation in deep pockets of poverty.

4. Conclusion

In the absence of a direct measure of trade openness at the state/regional level and its effects on poverty and disparity the CUTS study provides a maiden attempt to fill the vacuum. In order to develop the state level trade openness index, it has used a proxy measure with usual assumptions. The study has established that states with relatively high levels of income are also the states with greater exposure to trade and such a relationship has grown over time. The regional/state level disparity tends to widen as more open states grow much faster compared to those states which are less open. It further finds evidence in support of a lower incidence and depth of poverty for urban areas as compared to rural areas. In addition, there is clear evidence in support of increasing inequality in rural areas when the level of inequality is correlated with the state level openness index.

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Endnotes

1 The authors claim that the methodology they developed is not only applicable to the Indian case but should be useful for many such countries where state-level trade data are not available. In doing that they try to devise a proxy, which allows them to rank states over time in terms of their exposure to trade. Stated differently, the level of openness facing each state is the one vis-à-vis the rest of the world and not in comparison to another state within the same nation. There are very few studies available, which are closet to the present one. One such study referred by the authors is that dealing with the EU by Egger, Huber and Pfaffermayr (2005).

2 For example, Datt (1999), Datt and Ravallion (2002a), Sundaram and Tendulkar (2003 a, b, c).

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