

India: The Impact of Trade Reform on Inequality and Poverty

Outline

Petia Topalova, MIT

Introduction

Many developing countries, encouraged by international lending organizations, have adopted programs of trade liberalization as major components of their development strategy. While there is a general presumption that liberalization results in higher GDP, much less is known about the effects of trade liberalization on inequality. The distributional impacts of trade are particularly important in developing countries, as many poor nations have very unequal income distributions, with large vulnerable populations. If trade opening leads to further growth in income inequality, the benefits of liberalization may not be realized unless additional policies are devised to redistribute some of the gains from the winners to the losers.

Economic theory (e.g., the Heckscher-Ohlin theory and Stolper Samuelson theorem) predicts that gains to trade should flow to abundant factors, which in a developing country context suggests that unskilled labor would benefit most from trade. The rising skill-premium in the U.S. is often cited in support of standard theory. However, recent models, such as Davis (1996), Levchenko (2003), challenge these sharp predictions. Similarly, dynamic models of trade can deliver contradictory predictions about the effect of trade opening on income distribution (Stiglitz, Cunat and Maffezzoli (2001)).

Recent empirical work has attempted to resolve the contradictory theoretical predictions. Studies using cross-country variation typically find no relationship between levels or rates of change of inequality and trade.¹ However, these studies face significant problems: cross-country data may not be comparable, sample sizes are small, and changes in liberalization may be highly correlated with other variables important to income processes. A promising alternative is to use micro evidence from household and industry surveys. Several studies examine the consequences of trade reforms on skill-premium, returns to education, industry-premiums and size of informal labor markets² suggesting that trade liberalization might have had an effect on income distribution through all of the above channels.

We propose to investigate the impact of trade reforms on inequality and poverty in the context of India. In response to a severe balance of payments crisis in 1991, India launched a

¹ See Dollar and Kray (2002), Edwards (1997).

² See Hanson and Harrison (1999), Feliciano (1993), Cragg and Epelbaum (1996), Attanasio et al. (2003), Currie et al. (1997).

major set of economic reforms, including drastic trade liberalization. Extremely restrictive policies were abandoned: the average duty rate declined from 80 percent in 1991 to 30 percent in 1998, and the percentage of HS lines importable without license or quantitative restriction rose from 13 to 57 percent. Foreign trade in goods grew rapidly from 13 percent of GDP in 1990-91 to 19 percent of GDP in 1999-2000³. Trade in services grew even faster. The lower average tariffs, combined with changes in the tariff structure across industries, provide ample variation to identify the causal effects of trade policy on income processes. Co-incident with these tariffs reductions were significant changes in the incidence of poverty and income inequality.

To determine whether there is a causal link between liberalization and changes in poverty and inequality, I plan to use micro data with a macro approach. India's size and diversity allow for a "cross-country" research design, without many of the problems typically associated with such an approach. India is divided into almost 450 districts across 27 states. There is vast heterogeneity across states, and even across districts in terms of industrial composition in 1991⁴. Our identification strategy exploits this variation in pre-liberalization industrial composition across districts in India. The interaction between the share of a district's population employed by various industries on the eve of the economic reforms and the reduction in trade barriers in these industries provides a measure of the district's exposure to foreign trade. The fact that industrial composition is predetermined will allow us to causally interpret the correlation between the levels of poverty and inequality and trade exposure.

Methodologically, we adapt a difference in difference approach, exploiting both within-district time variation and across-district variation in composition of industries. In addition, abstracting from the geographical dimensions of trade liberalization, we also examine the evolution of the skill premium, returns to education and industry-premiums over time, measuring how their evolution depends on industry-specific trade liberalization.

Background and The Indian Trade Liberalization

India's post-independence development strategy was one of national self-sufficiency, and stressed the importance of government regulation of the economy. Cerra et al. (2000) characterized it as "both inward looking and highly interventionist, consisting of import protection, complex industrial licensing requirements, pervasive government intervention in financial intermediation and substantial public ownership of heavy industry." In particular,

³ Note that the ratio of import and exports to GDP in 1991 was virtually the same as in 1981. Calculated from Economic Survey, Reserve Bank of India.

⁴ Calculated from Census of India, 1991.

India's trade regime was amongst the most restrictive in Asia, characterized by high nominal tariffs and pervasive non-tariff barriers, including a complex import licensing system, an "actual user" policy that restricted imports by intermediaries, restrictions of certain exports and imports to the public sector ("canalization"), phased manufacturing programs that mandated progressive import substitution, and government purchase preferences for domestic producers.

It was only during the second half of the 1980s, when the focus of India's development strategy gradually shifted toward export led growth, supported by measures to promote exports and liberalize imports for exporters, that the process of liberalization began. Import and industrial licensing were eased, and tariffs replaced some quantitative restrictions, though even as late as 1989/90 a mere 12 percent of manufactured products could be imported under an open general license; the average tariff was more than 90 percent. (Cerra et al., 2000)

However, concurrent to the gradual liberalization of the late 1980s was a rise in macroeconomic imbalances, and a deterioration of the fiscal position, as expenditures to cover the trade deficit, as well as interest rates, rose. India's external debt nearly doubled, and India, with a rising current account deficit and greater reliance on commercial external financing was increasingly vulnerable to shocks. The situation was exacerbated by the sudden rise in oil prices due to the Gulf War in 1990, the drop in remittances from Indian workers in the Middle East, and slackened demand of important trading partners. Political uncertainty, which peaked in 1990 and 1991 after the poor performance and subsequent fall of a coalition government led by the second largest party (Janata Dal) and the assassination of Rajiv Gandhi, the chairman of the Congress Party, undermined investor confidence. With India's downgraded credit-rating, commercial bank loans were hard to obtain, credit lines were not renewed and capital outflows began to take place.

In response to the severe balance of payments crisis, on August 27, 1991, India turned to the International Monetary Fund for assistance in solving its external payments problem by requesting a stand-by arrangement of an amount equivalent to 75% of its quota. The IMF loans were given on the condition of major structural economic reforms, including trade liberalization. India launched a major set of economic reforms including industrial and import de-licensing, financial sector reform, tax reform and further trade liberalization almost immediately. "Given several earlier attempts to avoid IMF loans and the associated conditionalities, the large number of members of the new cabinet who had been cabinet members in past government with inward-looking trade policies and the heavy reliance on tariffs as a source of revenues, these reforms came as a surprise." (Hasan 2003)⁵.

⁵ "The new policy package was delivered swiftly in order to complete the process of changeover so as not to permit consolidation of any likely opposition to implementation of the new policies. The strategy was to

In compliance with the IMF imposed benchmarks, the export-import policy of the Indian government announced for 1992-1997 introduced a radical change in the trade regime by considerably reducing the role of the import and export control system (Table 1). The share of products subject to quantitative restrictions decreased from 87 percent in 1987-88 to 45 percent in 1994-95. All twenty-six import licensing lists were eliminated and a “negative” list was established (Hasan, 2003). Restrictions on exports were also relaxed with the number of restricted items falling from 439 in March 1990 to 210 in March 1994. Additionally, tariffs were drastically reduced (Figure 1a). Average tariffs fell from more than 80 percent in 1990 to 37 percent in 1996, and the standard deviation of tariffs dropped by fifty percent during that period (Figure 1b). Figure 2 presents the evolution of tariffs in various industries. Most industries did face a sharp drop in tariffs from 1991 to 1992, though the magnitude of the shock varies by industry. The economy reacted positively to the reduction in trade distortions and trade to GDP ratio rose from an average of 12.7 percents in the 1980s to nearly 19 percent of GDP in 1999/00 (Figure 3).

India remained committed to further trade liberalization in the 1997-2002 Export and Import Policy. However, by the time of the 1997-2002 five-year plan, the initial benchmarks were met, external pressure was relieved, meaning the problem of potential endogenous trade policy may be more pronounced.

Throughout the 1990s, India experienced a steady decline in poverty rates in both urban and rural areas (Figure 4). However, the evolution of inequality suggests that the income distributions might have been influenced by the recent reform. The trend in rural inequality, which had been declining since 1983, was reversed in the 1990s as rural inequality began to rise. Urban inequality experienced a sharper increase between the 1993 and 1999 round of the National Sample Survey than over previous periods. Household data also suggest a rise in within state inequality. National Accounts Data complement these findings, showing an even greater divergence in performance across states (Figure 5).

Empirical Strategy

Because the Indian liberalization was externally imposed, comprehensive, and because the Indian government had to meet strict compliance deadlines, we can examine whether there is a causal link between liberalization and changes in poverty and inequality. The period

administer a ‘shock therapy’ to the economy...There was no debate among officials or economists prior to the official adoption...The new economic policy did not originate out of an analysis of the data and information or a well thought out development perspective”, Gopal “*Political Economy of India’s Economic Policy*”

immediately before the reform, and the five-year plan immediately following⁶, comprise an excellent natural experiment. India’s large size and diversity (India is divided into approximately 450 districts (based on the 1991 Census) across 27 states) allows for a “cross-country” research design, without many of the problems typically associated with such an approach. Depending on the industrial composition within a district and the timing of liberalization across industries, districts across India experienced to a different extent and at different time the shock of trade liberalization. Our identification strategy will exploit exactly this variation in the “initial” industrial composition across districts in India. We construct a measure of district trade exposure as the average of industry-level tariffs weighted by the workers employed in that industry in 1991 as a share of all registered workers. The variation in industrial composition will generate differential response of the district level trade exposure to the changes in tariffs. In a regression framework, our baseline specification takes the following form:

$$y_{it} = \alpha + \beta TradeExp_{it} + Year_t + District_i + \varepsilon'_{it}. \quad (1)$$

Where y_{it} is district level outcome such as measures of poverty and inequality and TradeExp is the district exposure to international trade described above. The coefficient of industry β captures the average effect of trade protection on regional outcomes. The inclusion of district fixed effects absorbs unobserved heterogeneity in the determinants of poverty and inequality that is district-specific, while the year dummies control for macroeconomic shocks that affect equally all India.

We will further investigate whether various institutional characteristics of the Indian states influenced the propagation of the trade liberalization shock. For example the initial level of financial development, investor’s climate in the state as well as labor regulations might all have an impact on the strength of the effect of trade liberalization (if any) on poverty and inequality.

Following the micro literature that examines the link between trade and inequality, we will complement this identification strategy with some more descriptive evidence on the trends in skill premium, returns to education and industry premium based on household level data.

Data

The data used in this analysis comes from three main sources. Household survey data is available from the 1987-88, 1993-94 and 1999-2000 rounds of the Indian National Sample

⁶ India trade policy is developed according to five-year plans, each of which is announced in great detail at the beginning of the five-year period. While these may be modified in “off” years, the plans are by and large carried out.

Survey (NSS)⁷. The NSS provide household level information on expenditure patterns, occupation, industrial affiliation and various other household and individual characteristics. The surveys usually cover all states in India and collect information on about 75,000 rural and 45,000 urban households. We use this data to look at the overall trends in poverty and inequality and the progression of skill premium, returns on education and industrial premium over time. Based on this data, we also construct district level measures of poverty (measured as headcount ratio and poverty gap) and inequality (measured as the Gini coefficient, the standard deviation of the log of per capita expenditure and the logarithmic deviation of per capita expenditure)⁸.

Following Deaton (2003, 2003) we adjust our estimates based on NSS data in two ways. First, we use the poverty lines proposed by Deaton rather than those used by the Indian Planning Commission, which are based on incorrect price indices. In addition, we make adjustments because the 1999-2000 round is not directly comparable with the 1993-1994 round. The 1999-2000 round introduced a new recall period (7--days) along with the usual 30-day recall questions for the household expenditures on food, paan and tobacco. Due to the way the questionnaire was administered, there are reasons to believe that this methodology lead to an overestimate of the expenditures based on the 30-day recall period, which will in turn affect the poverty and inequality estimates. To achieve comparability with earlier rounds, we impute the correct distribution of total per capita expenditure for each district from the households' expenditures on a subset of goods for which the new recall period questions were not introduced. The poverty and inequality measures were derived from this 'corrected' distribution.

For information on industrial composition, we use data from the 1991 Indian Census, which reports industry of employment at the 3-digit National Industrial Classification (NIC) codes, resulting in about 450 industry codes. Of these, there are about 190 manufacturing industries.

Finally, annual tariff data at the six-digit level of the Indian Trade Classification Harmonized System (HS) Code was obtained from various publications of the Directorate General of Foreign Trade and the Ministry of Finance. Over 5,000 product lines were matched to the NIC Codes, using the concordance of Debroy and Santhanam (1993), to calculate average industry-level tariffs. Tariffs are obviously an incomplete measure of protection: non-tariff

⁷ The National Sample Survey is conducted every year, however we only focus on the larger so-called "quinquennial" surveys, which cover a substantially larger number of households, include an Employment – Unemployment schedule and are considered to be more reliable in general.

⁸ District identifiers were unfortunately unavailable in the urban subsample of the 50th round. The analysis is thus performed at the region level for the urban sector.

barriers have historically been and still are a very important tool of trade policy especially in the case of India. We plan to augment our study by including these additional measures in the future.

Bibliography

- Ahluwalia, Montek "State-Level Performance Under Economic Reforms in India?" CRED, March 2001.
- Cerra, Valerie and Sweta Saxena "What Caused the 1991 Currency Crisis in India?", IMF WP/00/157, October 2000.
- Cragg, M.I. and M. Epelbaum "Why has wage dispersion grown in Mexico? Is it the incidence of reforms or the growing demand for skills?", *Journal of Development Economics*, 51, 1996.
- Currie, Janet and Ann Harrison "Sharing the Costs: The Impact of Trade Reform on Capital and Labor in Morocco", *Journal of Labor Economics*, Vol. 15(3), Part 2, July 1997.
- Davis, Donald "Trade Liberalization and Income Distribution", 1996.
- Deaton, Angus "Adjusted Indian Poverty Estimates for 1999-2000", *Economic and Political Weekly*, 2003.
- Deaton, Angus "Prices and Poverty Rates in India, 1987-2000", *Economic and Political Weekly*, 2003.
- Deaton, Angus and Jean Dreze "Poverty and Inequality in India: A Reexamination", 2002.
- Deaton, Angus and Alessandro Tarozzi "Prices and Poverty in India", 2000.
- Debroy B. and A. T. Santhanam "Matching Trade Codes with Industrial Codes", *Foreign Trade Bulletin*, Vol. 24(1), 1993.
- Dollar, D. and A. Kraay "Growth is Good for the Poor", *Journal of Economic Growth*, 7(3), 2002.
- Edwards, S. "Openness, Productivity and Trade. What Do We Really Know?", NBER WP 5978, 1997.
- Feenstra, R. and G. Hanson "Foreign Direct Investment and Relative Wages: Evidence from Mexico's Maquiladoras," *Journal of International Economics*, 42, 1997.
- Feliciano, Zadia "Workers and Trade Liberalization: The Impact of Trade Reforms in Mexico on Wages and Employment", *Industrial and Labor Relations Review*, 55(1), 2001.
- Goldberg, P. and N. Pavcnik "Trade, Wages and the Political Economy of Trade Protection: Evidence from the Colombian Trade Reform", 2001.
- Hanson, G. and A. Harrison "Who gains from trade reform? Some remaining puzzles", *Journal of Development Economics*, 59, 1999.

Hasan, Rana “The impact of imported and domestic technologies on the productivity of firms: Panel Data evidence from Indian Manufacturing Firms”, *Journal of Development Economics* 69, p. 23-49, 2002.

Hasan, Rana, Devashish Mitra and Raaswamy “Trade Reforms, Labor Regulations and Labor-demand Elasticities: Evidence from India”, NBER WP 9879, August 2003.

Nouroz, H. *Protection in Indian Manufacturing: An Empirical Study*, MacMillan India Ltd., Delhi, 2001

Orazio, Attansio, P. Goldberg and N. Pavcnik “Trade Reforms and Wage Inequality in Columbia”, NBER WP 9830, 2003.

Pavcnik, Nina, Andreas Bloom, Pinelopi Goldber and Norbert Schady “Trade Liberalization and Labor Market Adjustment in Brazil”, 2002.

Rodriguez, Francisco and Dani Rodrik “Trade Policy and Economic Growth: A Skeptics Guide to the Cross-National Evidence”, 2000.

Sachs and Warner “Economic Reform and the Process of Global Integration”, *Brookings Paper on Economic Activity*, Vol. 1995, Issue 1, 1995.

Wolff, Edward “Trade and Inequality: A Review of the Literature”, 2000.

Young, Alwyn “Learning by Doing and the Dynamics Effects of International Trade”, *Quarterly Journal of Economics*, 106, 1991.

Table1. Non-Tariff Barriers Imposed on India's Imports

| 1987-88 | Banned | Limited Permissible | Open General License | Canalized | Not- Identified | Total |
|---------------|--------|------------------------|----------------------------|-----------|--------------------|-------|
| % of HS Codes | 33 | 18 | 13 | 9 | 29 | 100 |
| % of imports | 16 | 23 | 16 | 9 | 18 | 100 |

| 1992-93 | Banned | Restricted | Free | Canalized | Not- Specified | Total |
|---------------|--------|------------|------|-----------|-------------------|-------|
| % of HS Codes | 1 | 56 | 40 | 2 | 1 | 100 |
| % of imports | 0 | 21 | 46 | 33 | 0 | 100 |

| 1994-95 | Banned | Restricted | Free | Canalized | Not- Specified | Total |
|---------------|--------|------------|------|-----------|-------------------|-------|
| % of HS Codes | 0 | 43 | 55 | 2 | 0 | 100 |
| % of imports | 0 | 20 | 55 | 25 | 0 | 100 |

| 1997-98 | Banned | Restricted | Free | Canalized | Not- Specified | Total |
|---------------|--------|------------|------|-----------|-------------------|-------|
| % of HS Codes | 0 | 41 | 57 | 2 | 0 | 100 |
| % of imports | 0 | 15 | 64 | 21 | 0 | 100 |

Source: Nouroz, 2001. Table 2.6 Comparison of different measures of India's Import Licensing Structure.

Fig. 1a Evolution of Nominal Tariffs

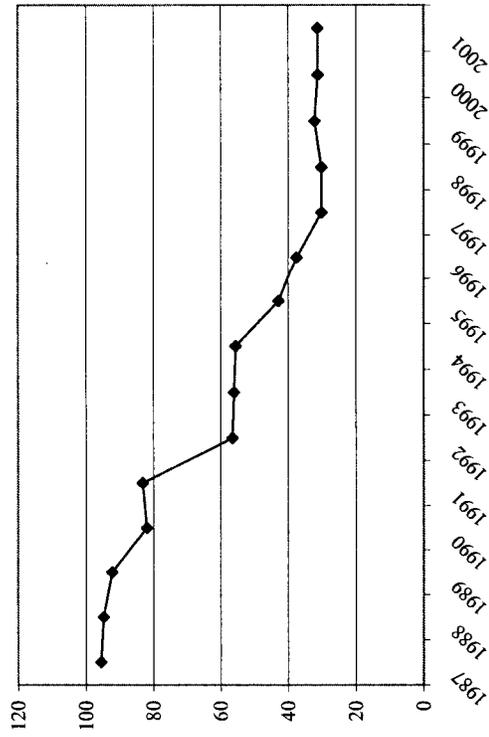


Fig. 1b Standard Deviation of Nominal Tariffs

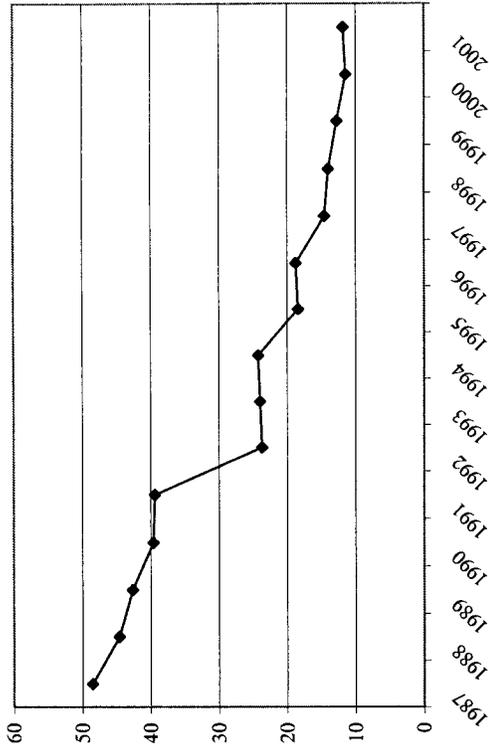


Fig. 3a India's Trade as A Share of GDP

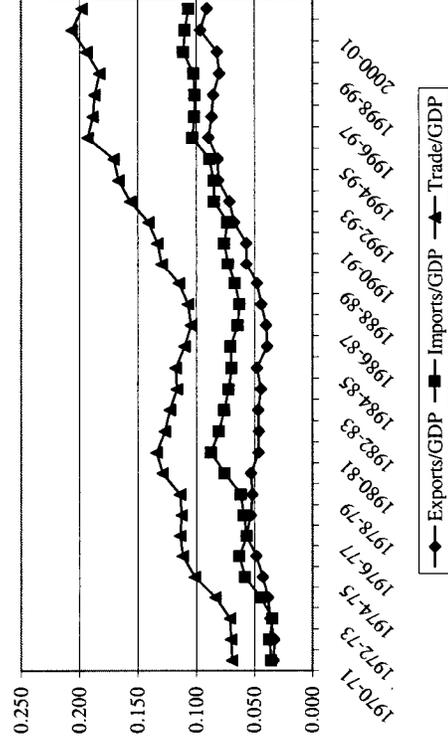
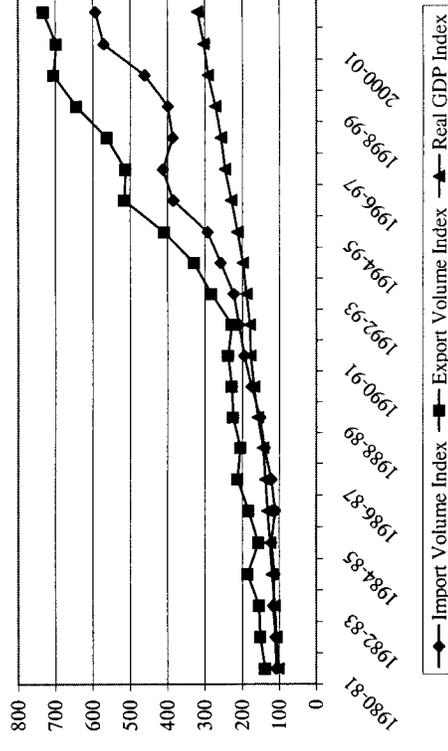


Fig. 3b Export and Import Volume Indices



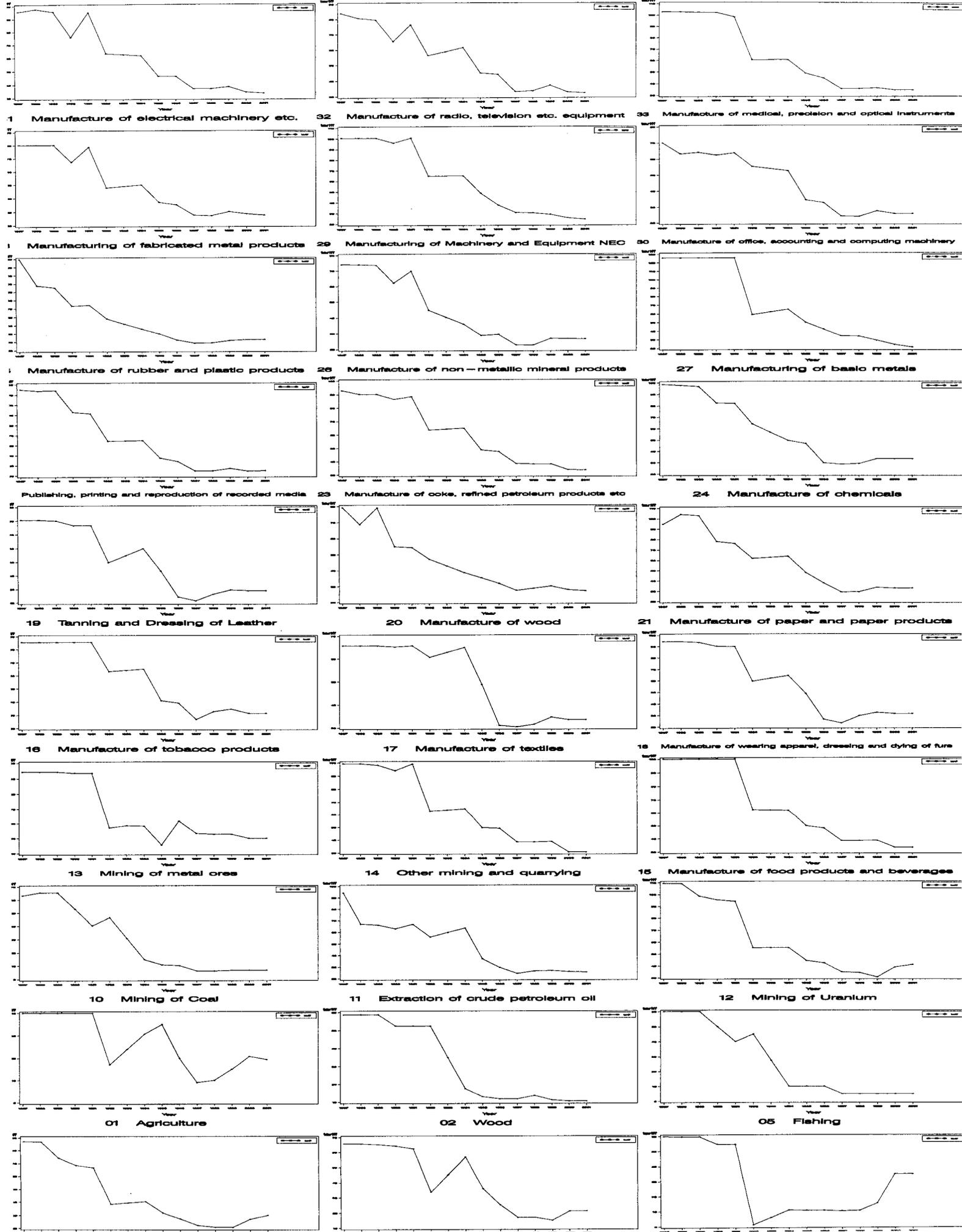
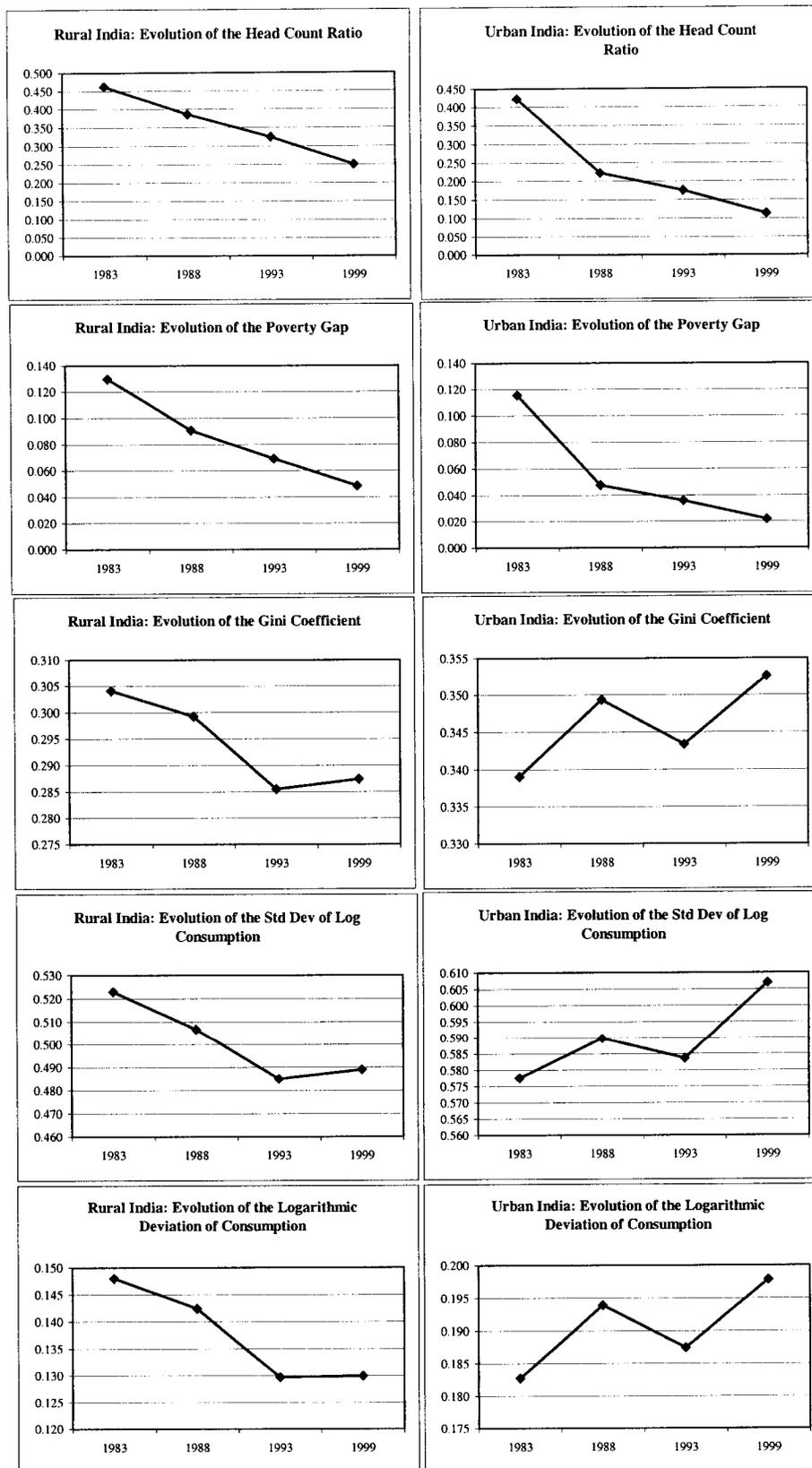


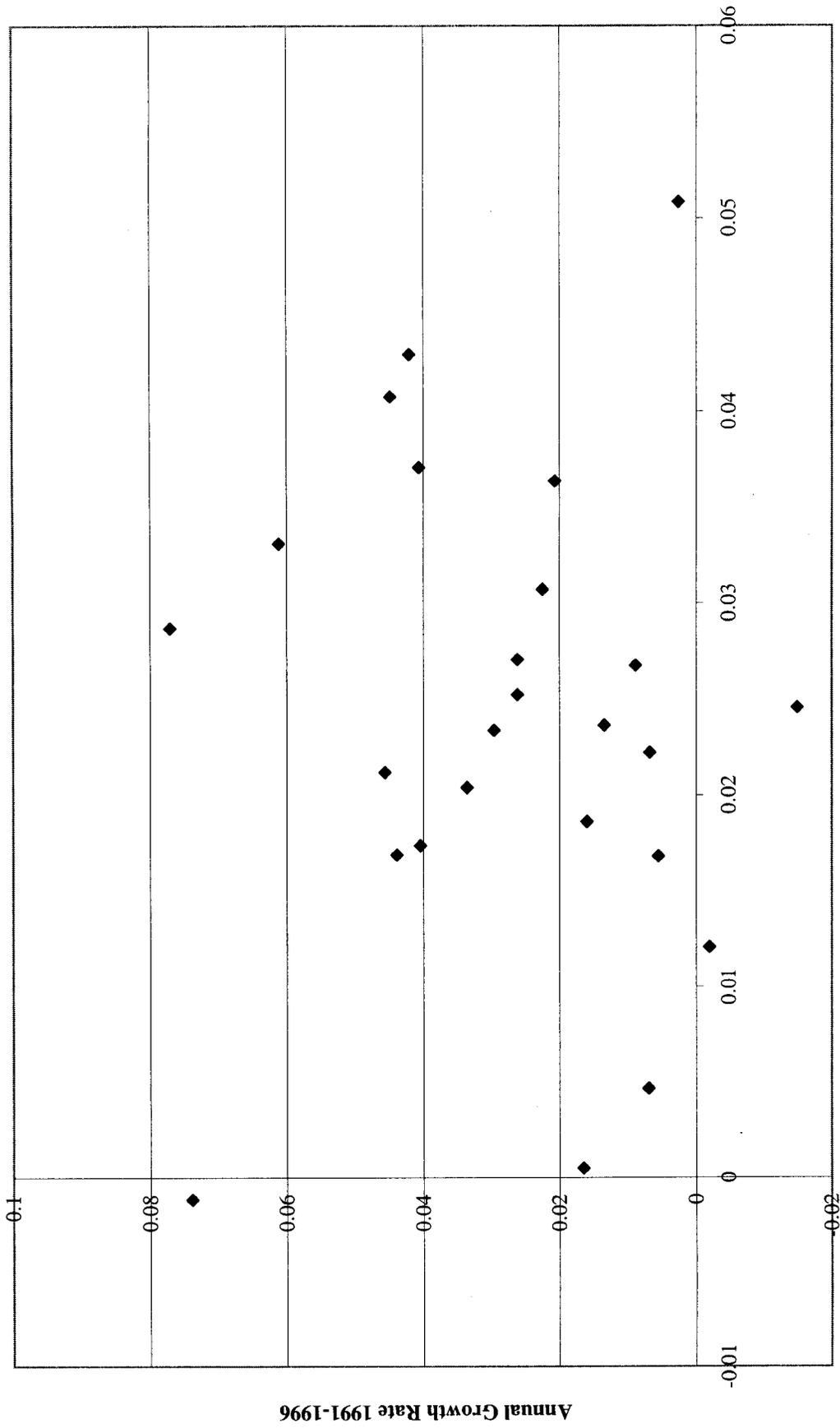
Fig. 4 Trends in Urban and Rural Poverty and Inequality

Source: National Sample Survey 38th, 43rd, 50th and 55th round



Note: Deaton's adjusted poverty lines and price indices were used. The 55th round data was adjusted for the change in questionnaire design.

Fig. 5 Per Capita GSDP Growth rate
Source: National Accounts Statistics of India



Annual Growth Rate 1980-1990