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# Caste and Wealth Inequality in India

by

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**ABSTRACT**

In this paper, we conduct the novel exercise of analyzing the relationship between overall wealth inequality and caste divisions in India using nationally representative surveys on household wealth conducted during 1991–92 and 2002–03. According to our findings, the groups in India that are generally considered disadvantaged (known as Scheduled Castes or Scheduled Tribes) have, as one would expect, substantially lower wealth than the "forward" caste groups, while the Other Backward Classes and non-Hindus occupy positions in the middle. Using the ANOGI decomposition technique, we estimate that between-caste inequality accounted for about 13 percent of overall wealth inequality in 2002–03, in part due to the considerable heterogeneity within the broadly defined caste groups. The stratification parameters indicate that the forward caste Hindus overlap little with the other caste groups, while the latter have significantly higher degrees of overlap with one another and with the overall population. Using this method, we are also able to comment on the emergence and strengthening of a "creamy layer," or relatively well-off group, among the disadvantaged castes, especially the Scheduled Tribes.

**Keywords:** Caste; Inequality; Distribution of Wealth

**JEL Classifications:** D31, D63, J15

## I. INTRODUCTION

It is widely acknowledged among social scientists that caste is a persistent determinant of power, economic inequality, and poverty in contemporary India. Yet, economics literature on caste relations in India is at best sparse, even as noneconomists (mainly anthropologists and sociologists) have continued to make substantial contributions to the overall literature on caste (e.g., Beteille [2007], Gupta [2000], and Srinivas [2000]). This gap has been acknowledged recently and a call for greater attention to this axis of differentiation has been made (Deshpande 2000). This, among other reasons, such as better data availability, has given rise to an accelerated production of quantitative studies on caste in the last few years (e.g., Barooah [2005], Deshpande [2001], Kojima [2006], Munshi and Rosenzweig [2006], and Sundaram [2006]).

The quantitative studies on caste can be divided into two broad categories. First, there are studies that have used either large surveys (mainly National Sample Survey [NSS] consumption and National Family Health Surveys [NFHS]) or fieldwork-based small sample surveys to show the evidence of caste differentials in consumption, income, education, occupations, and development indices (e.g., see Deshpande [2001], Hasan and Mehta [2006], Mehrotra [2006], Mohanty [2006], Srinivasan and Mohanty [2004], and Sundaram [2006]). The near consensus in these studies is that the less privileged caste groups tend to be worse off than the others on the measured indicators across the country, although there are regional differences. Second, using large survey data, other studies have employed the Blinder-Oaxaca decomposition (or modifications of this) to separate the structural differences (e.g., geographical, discrimination-based) among households from the differences in endowments (physical and human) in the market place (e.g., see Barooah [2005] and Kojima [2006]) that create caste disparities. Barooah (2005), for instance, using the National Council for Applied Economic Research (NCAER) survey showed that about a third of the income differentials in India could be attributed to discrimination in the market place. Using the NSS consumption surveys, Kojima showed that both lower endowments of physical and human capital possessed by disadvantaged groups, as well as different structures of income generation, contribute equally to the disparities among caste groups. What is remarkable across these studies is the persistence

of systematic disparities among households across different caste groups over long periods of time.

Our paper contributes to this literature by analyzing the relationship between overall wealth inequality and caste divisions[1] in India. There have been no studies on the wealth disparities (as opposed to consumption or income disparities) within and among caste groups on indicators and how these disparities contribute to the overall inequality in India. Wealth inequality is an integral aspect of economic inequality among persons at a given point in time, as well as across generations. Disparities in wealth can also translate into disparities in economic security. For a substantial portion of the Indian population that is dependent on agriculture, land is the major source of livelihood. Inequalities in the quantity and fertility of land owned are a significant determinant of economic inequality among households. Quality and quantity of schooling accessible to the children in urban and semiurban areas can vary positively with household wealth.

The relationship between overall wealth inequality and caste is analyzed in this study using the Yitzhaki decomposition or ANOGI[2] (Yitzhaki 1994; Frick et al. 2004). This allows us to separate the overall inequality into within-group and intragroup components, rather than obtaining conditional average effects of social divisions via regression-based decomposition methods such as the Oaxaca-Blinder method. Furthermore, the overlapping parameters estimated using our chosen method permits the distinction between caste-stratification and caste-inequality. This is especially important in the context of ongoing debates in Indian political economy about the questions of affirmative action and the so-called "creamy layer."[3]

The remainder of the paper is organized as follows. Section II describes the data and problems; we also outline the definitions of the caste groups. Section III describes the

[1] We focus on caste for the purposes of this paper, although acknowledging that caste itself is a highly differentiated category. The 1911 census of India contained a far more detailed breakdown of caste groups than what is available in post-Independence data. Tabulations based on the 1911 census for Uttar Pradesh (the largest Indian state, then known as United Provinces) showed that among the 42 castes considered in the census, "each caste contained landless labourers, cultivators, as well as landlords" (Chaudhury 2004: 1990). Economic differentiation within castes is the rule rather than the exception, then and now.

[2] ANOGI stands for "Analysis of Gini."

[3] The "creamy layer" refers to the emergence of an economically well-off group within castes whose average member is worse-off relative to the rest of the population.

patterns of wealth disparities among caste groups. The subsequent section (IV) presents the decomposition results. Section V concludes.

## II. DATA AND DEFINITIONS

The data used in this paper are from the two rounds of the All India Debt and Investment Survey (AIDIS) conducted in 1991–92 and 2002–03. Wealth is computed as the total household assets net of the indebtedness. Household assets are defined as "physical assets like land, buildings, livestock, agricultural machinery and implements, non-farm business equipment, all transport equipment, durable household goods, and financial assets like dues receivable on loans advanced in cash or in kind, shares in companies, and cooperative societies, banks, etc., national saving certificates and the like, deposits in companies, banks, post offices, and with individuals" (NSS 2005: 5). Debt is defined as cash loans payable. In the absence of a better deflator, the Consumer Price Index for agricultural workers is used to make the 1991 and 2002 rural wealth values comparable across time. Similarly, the Consumer Price Index for industrial workers is used to make urban wealth values comparable across time.

The unit of analysis for the whole paper is the household adjusted for its size. That is, the household weight is multiplied by the household size to obtain a distribution among persons. We use per capita wealth—household wealth divided by household size—as the measure of wealth. The implicit equivalence scale assumed here is that there are no "economies of scale" associated with wealth. (For the relative advantages and disadvantages of using this method for Indian wealth data, see Jayadev, Motiram, and Vakulabharanam [2007].)

The definitions of caste groups are completely dictated by the data and do not adequately reflect the complex and layered reality of caste in India. Both the AIDIS rounds allow for the classification of the entire population into three groups, viz., the Scheduled Castes or the "Dalits" (SC), Scheduled Tribes or the "Adivasis" (ST), and everyone else whom we call Other Communities (OC). We term this classification "Scheme I." The 2002–03 survey introduced the additional category of Other Backward

Classes (OBC).[4] In addition, the category of religion was also enumerated. Cross-tabulating caste and religion allows for the separation of OC into three distinct groups: OBC; Hindus who are not SC, ST, or OBC whom we call Hindu forward castes (FC); and non-Hindus (NH) who are not SC, ST, or OBC. The 2002–03 survey, therefore, allows for the classification of the population into five caste groups. We term this classification "Scheme II." It should be noted that the SC and ST individuals might belong to any religion.

A brief note is in order regarding the category of caste. Caste in India is defined differently along the "Varna" and the "Jati" schemes. The Varna scheme has four broad groups—Brahmins, Kshatriyas, Vis, Sudras—and those people outside the Varna scheme, ranked in a descending order of ritual status. Brahmins were traditionally associated with the priestly and scholarly community. Kshatriyas were the ruling groups. Vis were associated with those groups associated with trading, moneylending, and retailing. Sudras were the peasants and artisans. Among those outside the Varna scheme, the so-called "untouchables" (the present day Dalits) were mostly associated with the rural, landless laboring community and the tribal groups (the present day Adivasis) were associated with those living on the fringes of or outside the settled agricultural society. It is generally agreed upon that this is a textual scheme defined by the Brahmins.

The Jati scheme is very different. There are thousands of Jati groups that vary spatially and temporally in terms of their ritual rankings, socioeconomic status, and occupations. It is also important to recognize that the caste system functions on the ground along different Jati orderings, thus creating a bewildering variety of them, as well as a system that cannot be neatly captured by structural and closed systems that can be deployed across space and time (for important renditions of the caste system, see Dumont [1970], Chatterjee [1993], and Gupta [2000]). Similarly, while certain occupations are traditionally associated with certain caste groups (especially Jati groups), this relation too is problematic given the significant flux in this relationship over time. However, it has generally been the case that those outside the Varna scheme have tended to be

[4] The determination of disadvantaged groups (OBCs) was made according to the 1931 census. Many changes have occurred since in the socioeconomic status of these groups, but this category does not reflect these changes, in part because subsequent censuses have not collected information on caste. The need for a new caste-based census is the subject of a heated debate in contemporary politics and the public sphere.

concentrated in the menial occupations, and this relationship also needs careful examination in our times to see if independent India has been able to shake off some of the entrenched caste-based hierarchies. We therefore use the categories (Varna-based) that are available in the surveys to make broad decomposition analyses of the overall inequality in India.

We further separate the rural areas from the urban, as we believe that the wealth accumulation and income generation dynamics vary significantly across this sectoral division.

The problems associated with the wealth data in the surveys are identified in the literature (see, for example, Subramaniam and Jayaraj [2006] and Jayadev, Motiram, and Vakulabharanam [2007]). They deserve a brief recapitulation. There are basically four kinds of problems with these data. First, wealth distributions tend to be concentrated at the very top end. Unless a special effort is made to oversample the very wealthy, the concentration of wealth tends to be underrepresented. This will artificially reduce the overall inequality. Second, there is a tendency among people of all wealth groups to underreport their wealth holdings. This tendency to underreport is exacerbated as wealth holdings rise. This will widen the gap between those with close to no wealth and those that have some wealth. Third, the reported assets may not be correctly valued. It has been found in India that the reported values of even recent transactions tend to be lower than the market values. Given the lack of proper wealth-based deflators, the wealth values that are analyzed can be somewhat off the mark. Fourth, there is a tendency to hide illegitimate wealth that will lead to undercounting of the assets owned by the wealthy. Finally, there is a strong tendency to underreport liability or debt. These problems add up to a state wherein populations belonging to the wealthier groups (more prevalent among the non-SC/ST population) appear to hold lower wealth than they actually have and the less wealthy groups (especially the SC/ST groups) report higher wealth than they have. This will certainly reduce the overall inequality, but it will also reduce the between-caste inequality figures. These problems might be reflected in our findings.

## III. CASTE DISPARITIES IN WEALTH

Most studies of economic inequality in India have used consumption expenditure as the indicator of economic status. Our choice of wealth as the indicator of economic status would be superfluous if consumption expenditure and wealth are distributed similarly across individuals. While the two are correlated, the ranks of individuals in the two distributions can be quite different (table 1). If all individuals in a given quintile of one distribution also belong to the same quintile of the other distribution, then every number on the principal diagonal of the matrix shown in table 1 will be equal to twenty and every off-diagonal number will be equal to zero. Inspection of the table shows that the largest number occurs at the intersection of the top quintiles of the two distributions. This number indicates that only about half (10.4/20 = 52 percent) of those in the top quintile of wealth distribution were also in the top quintile of consumption expenditure. In other quintiles, at least two-thirds of individuals in a given quintile of wealth distribution were located in a different consumption quintile, with the third quintile showing the weakest correlation in rankings.[5]

[5] Indeed, the picture can be more complicated than suggested by the table since we expect rankings of individuals *within* quintiles also to be different, depending on whether wealth or consumption is used as the ranking variable.

**Table 1. Joint Distribution of Wealth and Consumption, 2002**

| Wealth | Consumption 1991 | | | | |
|---|---|---|---|---|---|
| | q1 | q2 | q3 | q4 | q5 |
| q1 | 7.2 | 4.8 | 3.4 | 2.4 | 2.2 |
| q2 | 5.5 | 5.2 | 4.2 | 3.0 | 1.9 |
| q3 | 3.8 | 4.7 | 4.7 | 4.0 | 2.8 |
| q4 | 2.6 | 3.6 | 4.7 | 5.1 | 4.0 |
| q5 | 0.9 | 1.7 | 3.0 | 5.4 | 9.1 |
| Total | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 |
| | **2002** | | | | |
| q1 | 7.3 | 4.8 | 3.7 | 2.4 | 1.4 |
| q2 | 5.8 | 5.1 | 4.2 | 3.0 | 1.5 |
| q3 | 3.9 | 4.6 | 4.7 | 4.2 | 2.5 |
| q4 | 2.3 | 3.7 | 4.6 | 5.3 | 4.2 |
| q5 | 0.7 | 1.8 | 2.8 | 5.1 | 10.4 |
| Total | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 |

**Note:** Consumption is measured as per capita consumption expenditures (MPCE), i.e., total household consumption expenditures divided by the number of persons in the household.

Let us now turn to examine disparities in wealth and wealth distributions among caste groups. Since comparisons between the two years are possible only with the six-group schema (ST, SC, and OC), differentiated by their rural versus urban location, we begin with a consideration of the estimates shown in the upper panel of table 2. Between 1991 and 2002, the relatively disadvantaged groups (SC and ST) experienced rates of growth in mean per capita wealth that are better than the majority group in both the urban and rural areas. However, the medians tell a different story, especially for the ST. The wealth of the average person in that group rose only 7 percent in the urban areas (as compared to 42 percent for the urban OC) and 21 percent in the rural areas (versus 25 percent increase for the rural OC). In contrast, the average SC person experienced a robust increase in wealth of approximately 40 percent over the same period in both the urban and rural areas.

**Table 2. Wealth by Caste Groups (in thousands of 2006 rupees)**

**A. Scheme I**

| | 1991 | | | 2002 | | | Percent change | |
|---|---|---|---|---|---|---|---|---|
| | Mean | Median | Share in Population | Mean | Median | Share in Population | Mean | Median |
| **Urban ST** | 38.5 | 19.5 | 0.7 | 67.1 | 20.8 | 0.7 | 74% | 6% |
| **Urban SC** | 31.1 | 16.1 | 3.1 | 46.0 | 22.6 | 3.8 | 48% | 40% |
| **Urban OC** | 88.4 | 33.1 | 20.6 | 123.4 | 47.1 | 20.9 | 40% | 42% |
| **Rural ST** | 24.6 | 15.8 | 8.0 | 34.1 | 19.0 | 7.3 | 39% | 21% |
| **Rural SC** | 23.3 | 13.0 | 15.3 | 30.9 | 18.0 | 15.9 | 33% | 39% |
| **Rural OC** | 58.8 | 31.1 | 52.2 | 77.6 | 38.9 | 51.4 | 32% | 25% |
| **All** | 55.7 | 24.9 | 100.0 | 75.3 | 32.0 | 100.0 | 35% | 28% |

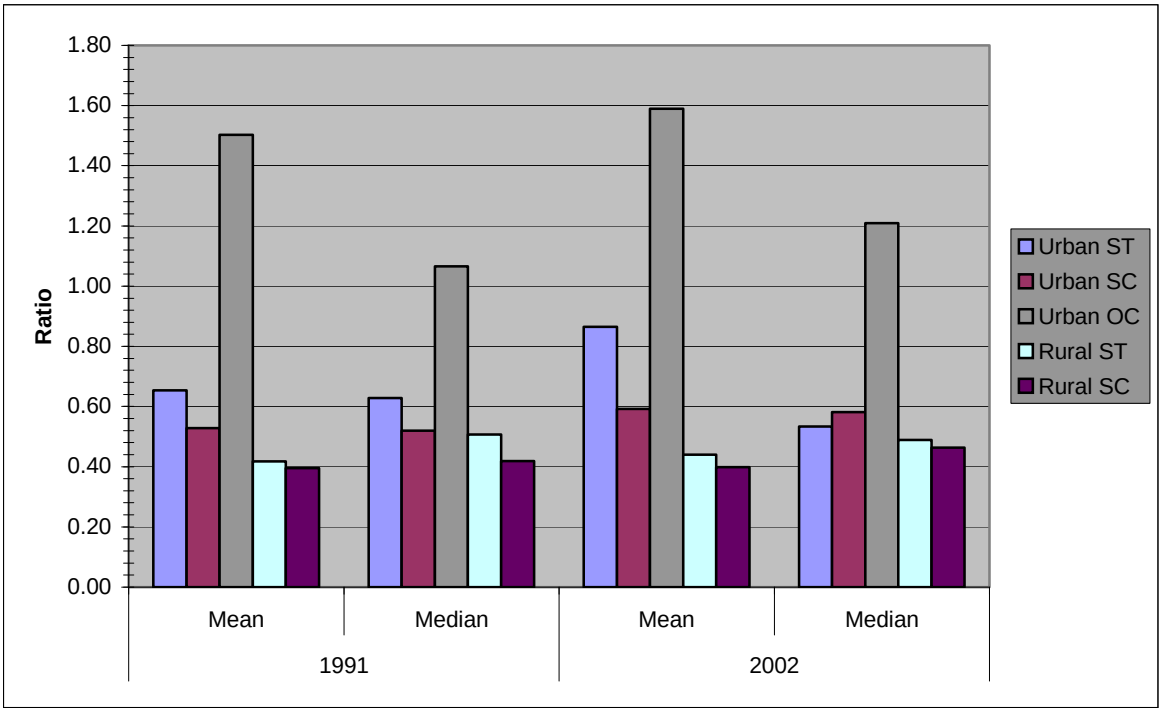
**B. Scheme II (2002 only)**

| | Mean | Median | Share in Population |
|---|---|---|---|
| **Urban ST** | 67.1 | 20.8 | 0.7 |
| **Urban SC** | 46.0 | 22.6 | 3.8 |
| **Urban OC** | 123.4 | 47.1 | 20.9 |
| **OBC** | 85.5 | 34.8 | 9.0 |
| **Hindu Others (FC)** | 169.3 | 77.7 | 8.4 |
| **Non-Hindu Others** | 109.5 | 34.5 | 3.4 |
| **Rural ST** | 34.1 | 19.0 | 7.3 |
| **Rural SC** | 30.9 | 18.0 | 15.9 |
| **Rural OC** | 77.6 | 38.9 | 51.4 |
| **OBC** | 62.0 | 34.2 | 31.3 |
| **Hindu Others (FC)** | 105.4 | 60.1 | 14.1 |
| **Non-Hindu Others** | 93.9 | 25.9 | 6.0 |

In spite of the increases that did occur between the two years, the average SC/ST person still had a considerable wealth disadvantage in 2002 (see figure 1). Compared to the most numerous group, rural OC, the median wealth levels of rural ST and SC were, respectively, only 49 and 46 percent; the relative positions of the urban ST and SC were somewhat better at 53 and 58 percent. In contrast, the urban OC had a median wealth that was 21 percent higher than his/her rural counterpart. Comparison to the 1991 median values show that the relative positions of the rural and urban SC were, in fact, higher than in 2002, while the relative positions of the rural and urban ST were somewhat lower. The urban OC group also experienced strong growth in their relative position. If we were to compare the relative positions using mean, rather than median, values then we would also obtain a similar picture of disadvantage for the SC/ST groups, with the exception of the

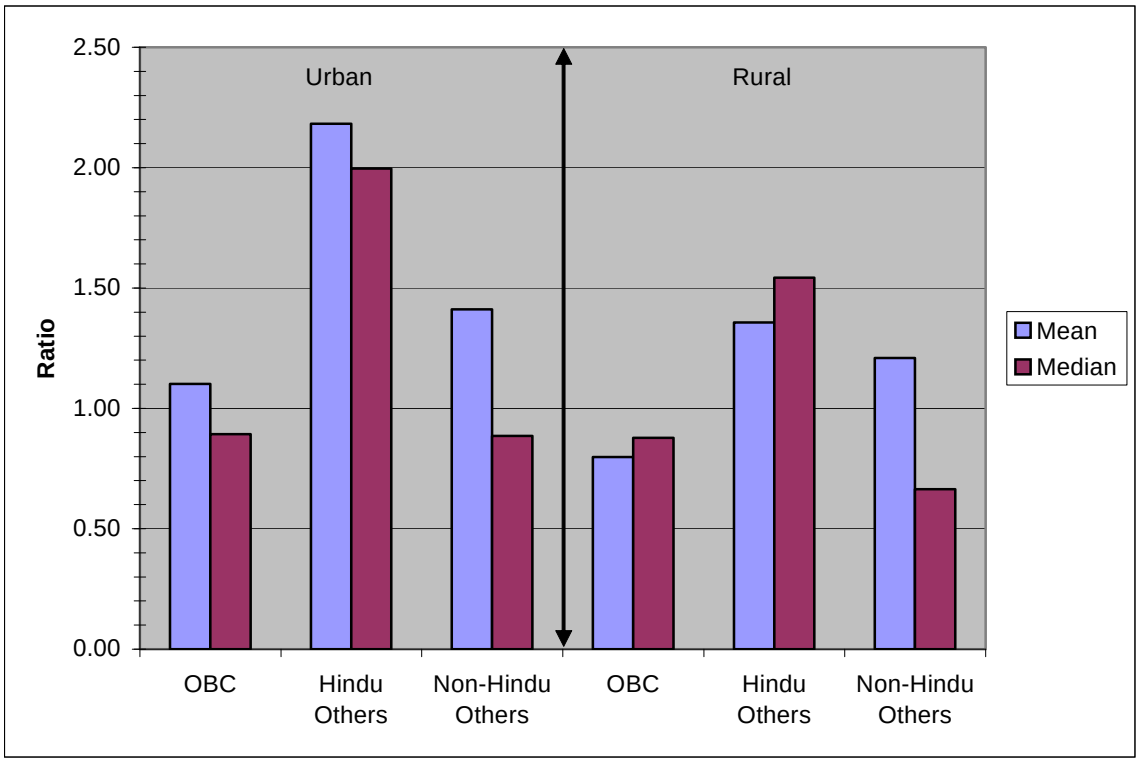
urban ST whose mean wealth is 86 percent of the mean wealth of the rural OC (as compared to only 58 percent in terms of median wealth).

**Figure 1. Disparity in Wealth by Caste, 1991 and 2002 (Ratio to Mean or Median Values of Rural OC)**




As noted earlier, we are forced to treat the OC as a single category for comparing the two years because the 1991–92 data does not allow for further breakdown of this group along caste/religion lines. However, such a breakdown is possible in 2002–03 and the structure of disparities among caste groups can be better seen in terms of what was referred to earlier as Scheme II (panel B of table 1 and figure 2). Irrespective of their urban or rural location, the average OBC person has an amount of wealth that was a little less than 90 percent of the average rural OC person. The average person in the group labeled "Non-Hindu Others" and living in an urban area has as much wealth as the average OBC; those in the rural areas have significantly less, though more than that of the average SC or ST person. The most advantaged subgroup in the OC group is the Hindu forward castes (FC); the median wealth in the urban segment of this group is twice as much as rural OC, while its rural segment has a median that was 54 percent higher than rural OC.

**Figure 2. Disparity in Wealth among OC Groups, 2002 (Ratio to Mean or Median Values of Rural OC)**




The ranking of the ten groups (in Scheme II) in terms of median wealth follows a pattern that one might expect a priori: the Hindu forward castes are at the top (urban, followed by rural). Immediately below them are the OBC groups and urban non-Hindu others who have quite similar levels of median wealth. At the bottom, we have the most disadvantaged (urban, followed by rural). The rural non-Hindu others occupy a place immediately above the most disadvantaged and below everyone else.

If we were to use the mean values to rank the groups, the pattern shifts somewhat (figure 2). The top group—urban, Hindu FC—still maintain their lead and the rural SCs and STs held their status as the worst-off. Rural Hindu FC slip to the third place, with the second place taken by the urban, non-Hindu others. Rural non-Hindu others occupy the fourth place, followed by the urban OBC, urban ST, rural OBC, and then urban SC. The reranking of the groups is an indication of the extent to which within-group inequalities differ, a subject to which we return below.

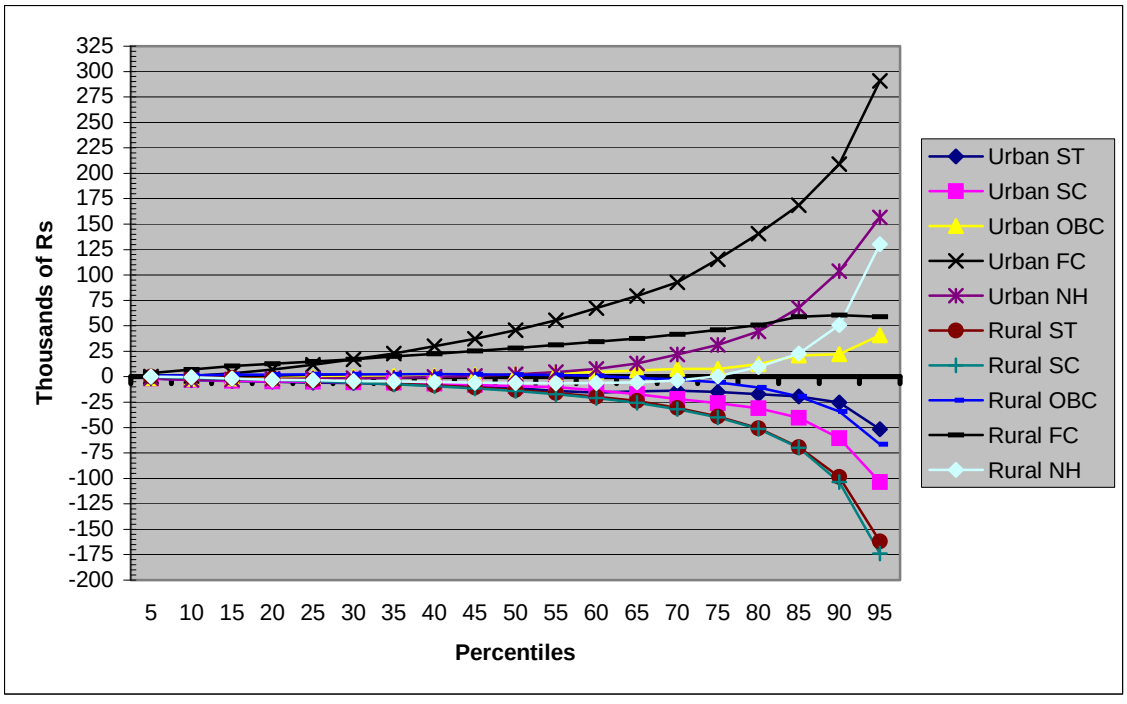
Comparison of within-group distributions reveals that caste divisions and the urban-rural divide act as distinct, yet interrelated, influences on the overall wealth

distribution (see table 3). The differences between the distributions of the individual groups are plotted on the vertical axis in figure 3 as ( $p_{ij} - p_i$ ), which expresses the deviation between the percentile cutoff of the $j^{th}$ group ( $p_{ij}$ ) from the overall percentile cutoff ( $p_i$ ) at the $i^{th}$ percentile. Strikingly, only the Hindu FC stay in the positive territory throughout the distribution, while the SC and ST groups stay in the negative territory throughout the distribution. The cutoff values for the former became increasingly higher than the overall values (most markedly for the urban, forward caste Hindus), while for the latter they became increasingly lower as we move to higher echelons of the wealth distribution. The other two groups, OBC and non-Hindu other, display more complex patterns. Lower portions of the urban OBC and non-Hindu other distributions have cutoff values that are below the cutoff values for the overall distribution, but the higher portions have values that are higher, especially for the non-Hindu others. The rural segments of these communities diverge from one another markedly. While the bottom 60 percent of rural OBC enjoy higher than overall cutoff values, the top 40 percent in their distribution have cutoff values that are increasingly lower. The opposite pattern can be observed for the rural non-Hindu others.

**Table 3. Percentile Cutoffs for Scheme II, 2002 (in thousands of 2006 Rs.)**

| Percentile | Urban ST | Urban SC | Urban OBC | Urban FC | Urban NH | Rural ST | Rural SC | Rural OBC | Rural FC | Rural NH | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 0.8 | 0.7 | 1.1 | 2.5 | 1.0 | 2.7 | 2.1 | 3.4 | 6.1 | 2.4 | 2.4 |
| 10 | 1.8 | 2.0 | 3.1 | 6.0 | 2.1 | 4.8 | 4.0 | 6.6 | 12.0 | 4.5 | 5.1 |
| 15 | 3.3 | 3.7 | 5.8 | 11.0 | 4.7 | 6.3 | 5.5 | 9.5 | 18.1 | 5.9 | 7.6 |
| 20 | 5.2 | 5.6 | 8.8 | 17.3 | 8.3 | 7.7 | 7.0 | 12.3 | 22.8 | 7.3 | 10.2 |
| 25 | 7.0 | 7.9 | 12.3 | 24.5 | 11.2 | 9.3 | 8.6 | 15.2 | 27.7 | 9.5 | 12.9 |
| 30 | 9.8 | 10.6 | 16.1 | 33.1 | 14.5 | 11.0 | 10.1 | 18.3 | 33.0 | 11.8 | 16.0 |
| 35 | 12.0 | 13.4 | 20.1 | 42.2 | 18.0 | 12.6 | 11.9 | 21.6 | 39.2 | 14.8 | 19.3 |
| 40 | 14.7 | 16.3 | 24.2 | 52.8 | 22.8 | 14.7 | 13.6 | 25.6 | 45.5 | 17.9 | 23.0 |
| 45 | 18.2 | 19.4 | 29.0 | 64.6 | 27.9 | 16.6 | 15.8 | 29.7 | 52.5 | 21.4 | 27.3 |
| 50 | 20.8 | 22.6 | 34.8 | 77.7 | 34.5 | 19.0 | 18.0 | 34.2 | 60.1 | 25.9 | 32.0 |
| 55 | 23.6 | 27.2 | 41.4 | 93.1 | 42.0 | 21.6 | 20.3 | 39.1 | 68.9 | 31.0 | 37.6 |
| 60 | 28.9 | 31.0 | 49.0 | 111.7 | 52.1 | 24.7 | 23.3 | 45.0 | 78.9 | 38.1 | 44.4 |
| 65 | 38.0 | 35.1 | 58.4 | 131.7 | 65.3 | 28.5 | 26.6 | 51.3 | 89.9 | 46.8 | 52.3 |
| 70 | 49.0 | 41.1 | 70.5 | 155.5 | 84.5 | 32.0 | 31.0 | 60.1 | 104.2 | 59.0 | 62.8 |
| 75 | 61.4 | 50.4 | 83.9 | 191.8 | 107.7 | 37.3 | 36.2 | 70.8 | 122.4 | 76.7 | 76.3 |
| 80 | 77.3 | 63.6 | 106.9 | 235.0 | 139.1 | 43.8 | 43.2 | 83.9 | 145.3 | 104.1 | 94.5 |
| 85 | 102.9 | 81.8 | 143.2 | 290.9 | 189.9 | 52.8 | 52.2 | 102.8 | 181.2 | 145.1 | 122.2 |
| 90 | 144.9 | 109.8 | 192.3 | 379.3 | 273.9 | 71.6 | 66.5 | 136.1 | 230.5 | 220.8 | 170.1 |
| 95 | 220.6 | 168.8 | 313.1 | 562.9 | 429.0 | 110.4 | 98.3 | 205.9 | 331.0 | 402.3 | 272.3 |

**Figure 3. Deviation from Overall Percentile Cutoffs by Caste at Selected Percentiles, 2002 (in thousands of 2006 Rs.)**



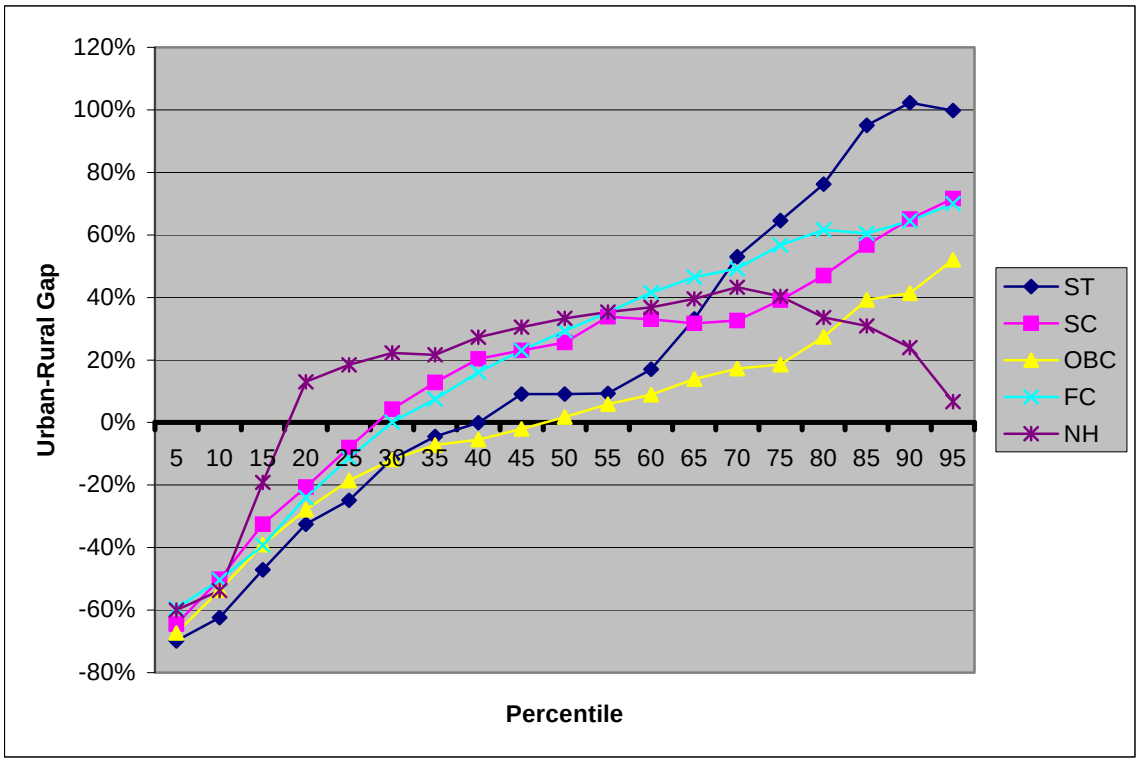
The direction and amount of the urban-rural disparity within caste groups varies across the distribution. This can be illustrated by defining the following statistic for group $j$ at percentile $i$:

$$g_{ij} = \frac{p_{ij}^{u} - p_{ij}^{r}}{p_{ij}^{r}}, \qquad (1)$$

where the urban-rural gap in wealth is expressed as a percentage of the percentile cutoffs ( $p$ ) in the rural area for each caste group (the superscripts $u$ and $r$ represent, respectively, the urban and rural areas).

Estimates of the urban-rural gaps are shown in figure 4 for selected percentiles, with the bold horizontal reference line representing a situation of zero urban-rural disparity. The wealth gap is in favor of rural individuals at the bottom of the distributions of all castes. This is a reflection of the incidence of land ownership (however meager the farm size might be) in the rural areas among the poor, in contrast to the greater presence of propertyless individuals among the urban poor, irrespective of their caste identity. Notable differences exist among the castes in the percentile point at which their respective curves cross above the zero line. At one extreme are the non-Hindu others, for whom the switch favoring the urban areas occurs at the 20$^{th}$ percentile; at the other extreme, the switch occurs only at the 50$^{th}$ percentile for the OBC. The variation in the amount of urban-rural disparity among the castes appears to be much smaller at any given percentile point below the zero-line, i.e., when the disparity is in favor of the rural individuals. Above the zero-line, when the disparity turns in favor of the urban persons, the amount of disparity (at any given percentile point) among the castes appears to vary much more. Clearly, the evidence suggests that the wealth advantage enjoyed by the urban individuals within every caste becomes higher at the higher percentiles, with the non-Hindu others standing out as a clear exception to this rule because the disparity in favor of the urban individuals in this group declines after the 70$^{th}$ percentile. The urban advantage skyrockets within the ST group in the top portions of the distributions, a result consistent with the well-known fact that the rural tribal areas fall among the most economically backward areas in India.

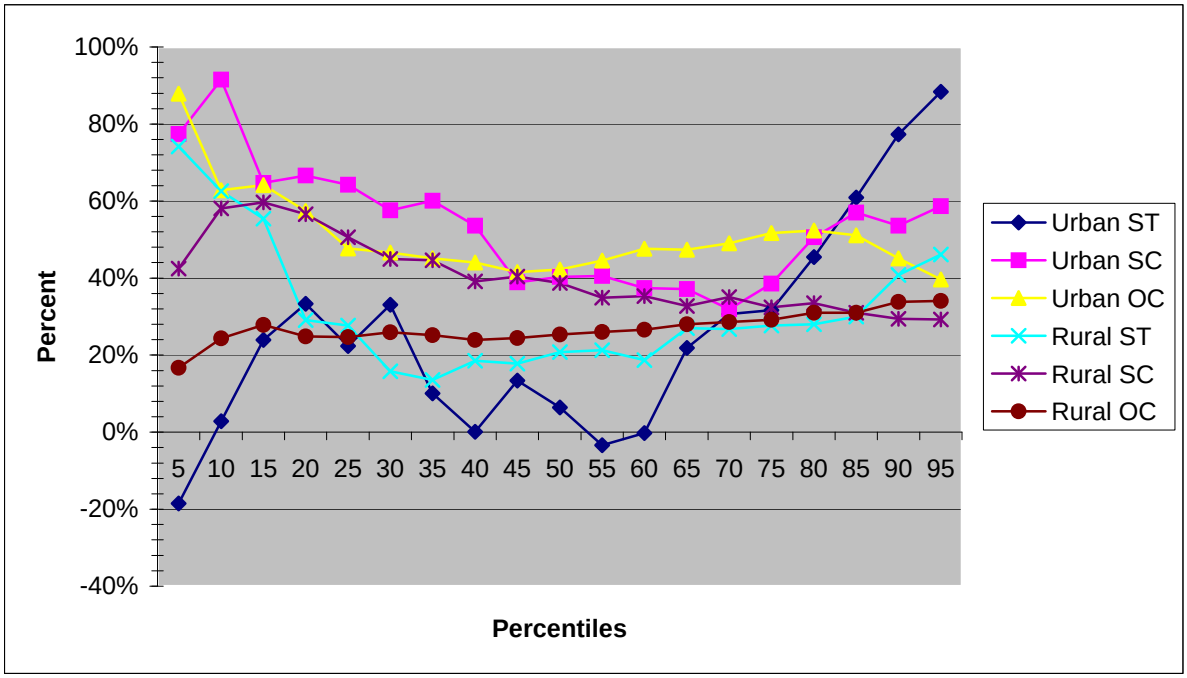
**Figure 4. Urban-Rural Wealth Gap (as a Percent of Rural Wealth) by Caste at Selected Percentiles**




We now revert to Scheme I in order to examine whether any significant differences could be found among the groups in terms of the changes in wealth that occurred between 1991 and 2002 across the entire distributions (figure 5). Urban ST is the only group in which some of the percentile cutoffs in 2002 are roughly the same as, or lower than, their 1991 levels. In contrast, the bottom half of the urban SC group generally saw a much higher boost in their wealth levels than their counterparts in the other groups. For the upper-middle portion (roughly from the 50$^{th}$ to 80$^{th}$ percentile), the urban OC group experiences much faster growth than their counterparts in other groups. The sharpest increases in wealth between 1991 and 2002 among the top 20 percent in all groups occurs for the urban SC/ST groups. A negative correlation between the initial amount of wealth and the subsequent gain could be found in the bottom half of the urban SC and OC groups, as well as the rural ST and SC groups. In fact, the schedule for the rural SC group slopes downward to the right almost throughout the distribution. Finally, the rural OC group displays the most stable pattern: their schedule remained largely flat for most of the distribution. The overall picture of changes across the distributions

suggests a pattern of wealth accumulation that is not heavily biased in favor of those at the top within each caste group, with the exception of the urban ST.

**Figure 5. Percent Change in Wealth at Selected Percentiles by Caste Group, 1991 to 2002**




## IV. DECOMPOSITION OF WEALTH INEQUALITY

### A. Yitzhaki Decomposition

The picture of caste disparities in India sketched out so far can be made richer by relating them to an analysis of overall wealth inequality. The tools of decomposition analysis allow us to analyze the within-group and between-group disparities. Further, it would allow us to develop summary measures that would express how demarcated in terms of its wealth holdings a particular caste group is from another group or from the total population. Also, comparisons of the degree of inequality among groups can be done. The method of Gini decomposition developed originally by Shlomo Yitzhaki offers a unified framework for addressing these issues.

Let $G$ be the Gini coefficient of wealth. The Yitzhaki decomposition allows us to separate $G$ into intergroup inequality ($I_b$) and a remainder ($I_r$) that can be interpreted as intragroup inequality (Yitzhaki 1994):

$$G = I_b + I_r \tag{2}$$

The amount of intergroup inequality is:

$$I_b = \frac{2\,\mathrm{cov}(\mu_i, \overline{F_{oi}}(y))}{\mu}, \tag{3}$$

where $y$ is wealth, $\mu$ is mean wealth for all persons, $\mu_i$ is mean wealth for group $i$, and $\overline{F_{oi}}(y)$ is the mean rank of group $i$, i.e., the average position of the members of a group in the overall wealth distribution.[6] Thus, the amount of intergroup inequality is twice the covariance between the mean amounts of wealth and mean ranks of groups divided by the mean wealth for all individuals.[7]

The remainder term is calculated as:

$$I_r = \sum_i s_i G_i O_i, \tag{4}$$

where $s_i$ is the share of group $i$ in aggregate wealth, $G_i$ is the Gini coefficient of the wealth distribution within group $i$, and $O_i$ is the overlapping index for group $i$. The Yitzhaki decomposition provides group-specific measures of overlapping, unlike the standard decomposition of the Gini where only a summary measure of overlapping by all groups can be obtained. The index of overlapping proposed by Yitzhaki is a measure of the degree to which the range of wealth in each group overlaps with the range of wealth for all persons. Overlapping can thus be seen as the opposite of stratification: the higher the amount of overlap between a group and the population, the less stratified they are as a group in terms of wealth (Yitzhaki 1994: 148–149). This feature of the decomposition is

[6] For example, if the mean rank is 0.25 for SC, then the average SC person's position in the wealth distribution for all persons will be at the 25th percentile.

[7] In contrast, in the standard decomposition the between-group component would be equal to twice the covariance between the wealth of each group and the rank of each group's mean wealth divided by overall mean wealth. The Yitzhaki decomposition takes into account the ranking of each individual within each group in the overall distribution.

crucial for us since our objective is to ascertain the extent to which castes occupy or do not occupy different segments of the wealth distribution.

The amount to which group $i$ overlaps with the overall distribution is defined as:

$$O_i = \frac{\text{cov}_i(y, F_{oi}(y))}{\text{cov}_i(y, F_i(y))}, \tag{5}$$

where $F_{oi}(y)$ is the function that assigns to the members of group $i$ their ranks in the overall distribution, $F_i$ is the function that assigns to the members of group $i$ their ranks in the wealth distribution within that group, and $\text{cov}_i$ indicates that the covariance is according to the distribution within group $i$.[8] The minimum value of $O_i$ is given by the share of group $i$ in the population and its maximum value is equal to 2. When the index equals the minimum possible value, it suggests that the group in question is a perfect stratum, i.e., it occupies an exclusive segment of the overall wealth distribution. If a particular group has a range of wealth that coincides with the range of wealth of all persons, then the index will be equal to 1. Finally, if the index is greater than 1, the distribution of wealth within the group is much more polarized than in the overall distribution. This can happen if the members of the group constitute two strata, one that has higher and the other that has lower wealth than $\mu$, the average wealth of all individuals in all groups (Milanovic and Yitzhaki 2002: 162–163).

The index of overlapping defined in equation (4) is constructed from indexes that indicate the amount by which a group overlaps with each of the other groups:

$$O_i = p_i + \sum_{j \neq i} p_j O_{ji} \tag{6}$$

\where $p_i$ is the share of group $i$ in the total population and $O_{ji}$ is the index of overlapping of group $j$ by group $i$. Since the overlapping of a group by itself is equal to 1 by definition, its contribution to $O_i$ is equal to its relative size. The index of overlapping of the overall distribution by a group is the weighted sum of overlapping of

[8] In theory, the functions are actually cumulative distribution functions. However, when working with actual samples, the cumulative distribution function is estimated by the rank of the observation and, hence, our description of the functions as rank-assigning functions (Yitzhaki 1994: 149, n.1).

each of the other groups by that group, with the relative size of each group serving as the weights.

In turn, the group-by-group overlapping indexes are calculated as:

$$O_{ji} = \frac{\text{cov}_i(y, F_{ji}(y))}{\text{cov}_i(y, F_i(y))}, \tag{7}$$

where $F_{ji}$ is the function that assigns members of group $i$ their ranks in the wealth distribution of group $j$. The index $O_{ji}$ indicates the extent to which the wealth of individuals in group $j$ falls in the range of wealth of individuals in group $i$; the higher the fraction of group $j$ that falls in the range of group $i$, the higher will be the value of $O_{ji}$. For a given fraction of group $j$ that falls in the range of group $i$, the closer the wealth of the individuals in that fraction are to the mean wealth of group $i$, the higher will be the value of $O_{ji}$. The index can take values between 0 (no overlap) and 2. Perfect overlap occurs when the index equals 1, indicating that the rankings of members of group $i$ produced by $F_i$ and $F_{ji}$ are identical (Yitzhaki 1994: 150–152).

**B. Within-Group vs. Between-Group Inequality**

We now turn to the results of the Yitzhaki decomposition for our data.[9] It is useful to begin with the estimates of within-group and between-group caste inequality (table 4). Overall wealth inequality shows very little change between 1991 and 2002. The share of within-group and between-group inequality in overall inequality also remains roughly the same between the two years. The within-group inequality (the $I_r$ term in equation [2]) accounts for the bulk of overall inequality in both years.

[9] Decomposition of the Gini by groups was performed using the ANOGI module for STATA (version 9).

**Table 4. Within- and Between-Group Inequality by Caste**

| | Gini points | | | Percentage shares | | |
|---|---|---|---|---|---|---|
| | 1991 | 2002 | | 1991 | 2002 | |
| | | Scheme I | Scheme II | | Scheme I | Scheme II |
| **Overall Gini** | 0.648 | 0.655 | 0.655 | 100.0 | 100.0 | 100.0 |
| **Within group** | 0.595 | 0.599 | 0.572 | 91.9 | 91.4 | 87.4 |
| **Between group** | 0.053 | 0.056 | 0.083 | 8.1 | 8.6 | 12.6 |

The domination of the within term indicates there are other wide variations in the characteristics of household members that are also expected to contribute to wealth differentials within castes—occupation, age, education, industry of employment, and number of earners in the household, to mention a few. Additionally, we would expect product mix and fertility, among other things, to also have effects on the wealth of farmer households. In 2002, we found that the share of within-group inequality is somewhat lower (87 percent) under the more elaborate Scheme II (ten groups as compared to six in Scheme I). Since the subgroups included in the OC group are themselves quite different from each another in terms of their average wealth and distributions, the modest increase in the share of between-group inequality under Scheme II is not out of line with our expectations.

### C. Within-Caste Inequality and Overlapping

The results from decomposing the remainder term along caste lines are shown in table 5. Looking first at the column of overlapping indexes for caste groups under Scheme I reveals that the urban ST and SC groups are hardly homogenous groups. Both have values exceeding 1 for their overlapping indexes, indicating that there might be two distinct strata, one quite rich and the other extremely poor, within each of these groups. This is most striking in the case of the urban ST in 2002. The overlapping index for the urban OC is almost 1 in 1991 and slightly lower in 2002, indicating the close similarity between their distribution function and the distribution function for the entire population. However, when these values are reckoned against their share in population (the minimum value that can be taken by the overlapping index), they appear far more modest than the urban SC/ST groups.

**Table 5. Within-Group Inequality and Overlapping by Caste**

| | 1991 | | | | 2002 | | | |
|---|---|---|---|---|---|---|---|---|
| | **Population Share** | **Wealth Share** | **Gini** | **Overlap** | **Population Share** | **Wealth Share** | **Gini** | **Overlap** |
| **Urban ST** | 0.007 | 0.005 | 0.628 | 1.049 | 0.007 | 0.006 | 0.725 | 1.137 |
| **Urban SC** | 0.031 | 0.017 | 0.627 | 1.056 | 0.038 | 0.023 | 0.632 | 1.051 |
| **Urban OC** | 0.206 | 0.327 | 0.700 | 0.993 | 0.209 | 0.342 | 0.683 | 0.966 |
| **Urban OBC** | | | | | 0.090 | 0.102 | 0.677 | 1.016 |
| **Urban FC** | | | | | 0.085 | 0.190 | 0.648 | 0.840 |
| **Urban NH** | | | | | 0.034 | 0.050 | 0.713 | 1.054 |
| **Rural ST** | 0.080 | 0.035 | 0.526 | 0.913 | 0.073 | 0.033 | 0.568 | 0.969 |
| **Rural SC** | 0.153 | 0.064 | 0.573 | 0.973 | 0.159 | 0.065 | 0.557 | 0.947 |
| **Rural OC** | 0.522 | 0.551 | 0.595 | 0.918 | 0.514 | 0.530 | 0.609 | 0.929 |
| **Rural OBC** | | | | | 0.313 | 0.258 | 0.580 | 0.932 |
| **Rural FC** | | | | | 0.141 | 0.197 | 0.563 | 0.791 |
| **Rural NH** | | | | | 0.060 | 0.075 | 0.734 | 1.095 |
| **All** | 1 | 1 | 0.648 | 1 | 1 | 1 | 0.655 | 1 |

The rural groups in Scheme I have lower values for their overlapping indexes than the urban groups, a result that is not surprising in light of the considerable rural-urban wealth gaps that were discussed above (figure 4). Once again, when compared relative to their shares in population, the rural OC group has a substantially lower degree of overlapping than the rural SC/ST groups. Estimates for the subgroups included in OC in 2002 (Scheme II) show that the Hindu FC is the group with the lowest amount of overlapping among all groups, while the non-Hindu other rural and urban groups take, respectively, the second and third places in terms of overlapping (the urban ST was first, as noted above). The higher degree of overlapping by the rural non-Hindu others as compared to their urban counterparts is an exception to the pattern observed for the other groups.

Within-caste inequality is the highest (above 0.670) among the urban ST, urban non-Hindu others, and rural non-Hindu others, which, as we noted above, are also characterized by overlapping indexes above 1. Excluding the latter, the other rural groups all have a roughly similar amount of within-caste inequality (0.560 to 0.580). The urban SC, OBC, and FC groups occupy an intermediate position (0.610 to 0.660) in within-caste inequality. Comparisons against the 1991 values show that the only groups that saw substantial change in wealth inequality are the ST groups, for whom there is a big

increase in inequality. This is especially true for the urban ST and is consistent with our earlier finding about the big increases in the percentile cutoffs in the upper tail of the ST wealth distribution (figure 5). Considered in conjunction with the jump in the overlapping indexes, it appears that there is an emergence of a "nouveau rich" and growing income polarization within the ST groups.

Apart from the index of overlapping for each group with the overall population, the Yitzhaki decomposition also allows us to estimate pair-wise indexes of overlapping among the groups (equation [7]). The estimates of the resulting overlapping matrix using Scheme II for 2002 are shown in table 6 (panel A). The reference group (the caste represented by the subscript $i$ in the overlapping index $O_{ji}$) is shown in the rows of the table; other groups are shown in the columns (the castes represented by the subscript $j$). Urban and rural FC groups have the highest degree of overlap with one another and a much lower degree of overlap with all others. Thus, their status as the groups with the lowest degree of overlapping with the population did not hold for the pair-wise comparison. Overlapping of each of the other groups by the urban ST, SC, OBC, and the non-Hindu others groups is generally high. In contrast, the overlapping of each of them by the Hindu FC is much lower.

**Table 6. Matrices of Overlapping and Ranks for Caste Groups, 2002**

**A. Overlapping**

| | **Urban ST** | **Urban SC** | **Urban OBC** | **Urban FC** | **Urban NH** | **Rural ST** | **Rural SC** | **Rural OBC** | **Rural FC** | **Rural NH** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Urban ST** | 1 | 1.045 | 1.107 | 1.131 | 1.052 | 1.065 | 1.042 | 1.193 | 1.266 | 1.051 |
| **Urban SC** | 0.938 | 1 | 1.009 | 0.928 | 0.933 | 1.051 | 1.032 | 1.119 | 1.111 | 0.963 |
| **Urban OBC** | 0.881 | 0.916 | 1 | 1.062 | 0.951 | 0.905 | 0.885 | 1.068 | 1.179 | 0.928 |
| **Urban FC** | 0.716 | 0.722 | 0.842 | 1 | 0.827 | 0.681 | 0.662 | 0.866 | 1.037 | 0.776 |
| **Urban NH** | 0.915 | 0.944 | 1.041 | 1.133 | 1 | 0.928 | 0.906 | 1.100 | 1.230 | 0.970 |
| **Rural ST** | 0.855 | 0.925 | 0.918 | 0.809 | 0.842 | 1 | 0.977 | 1.040 | 1.000 | 0.879 |
| **Rural SC** | 0.852 | 0.924 | 0.889 | 0.739 | 0.812 | 1.021 | 1 | 1.017 | 0.934 | 0.868 |
| **Rural OBC** | 0.794 | 0.849 | 0.908 | 0.903 | 0.838 | 0.851 | 0.831 | 1 | 1.070 | 0.826 |
| **Rural FC** | 0.654 | 0.678 | 0.792 | 0.903 | 0.750 | 0.625 | 0.608 | 0.836 | 1 | 0.697 |
| **Rural NH** | 0.937 | 0.973 | 1.075 | 1.163 | 1.029 | 0.971 | 0.945 | 1.148 | 1.277 | 1 |

**B. Ranks**

| | Urban ST | Urban SC | Urban OBC | Urban FC | Urban NH | Rural ST | Rural SC | Rural OBC | Rural FC | Rural NH |
|---|---|---|---|---|---|---|---|---|---|---|
| **Urban ST** | 0.5 | 0.502 | 0.419 | 0.298 | 0.417 | 0.522 | 0.536 | 0.410 | 0.301 | 0.448 |
| **Urban SC** | 0.498 | 0.5 | 0.410 | 0.282 | 0.409 | 0.526 | 0.541 | 0.402 | 0.283 | 0.445 |
| **Urban OBC** | 0.581 | 0.590 | 0.5 | 0.362 | 0.492 | 0.622 | 0.634 | 0.502 | 0.381 | 0.531 |
| **Urban FC** | 0.701 | 0.718 | 0.638 | 0.5 | 0.619 | 0.748 | 0.758 | 0.653 | 0.544 | 0.656 |
| **Urban NH** | 0.582 | 0.590 | 0.508 | 0.381 | 0.5 | 0.616 | 0.628 | 0.509 | 0.400 | 0.534 |
| **Rural ST** | 0.478 | 0.473 | 0.378 | 0.251 | 0.383 | 0.5 | 0.517 | 0.361 | 0.237 | 0.423 |
| **Rural SC** | 0.463 | 0.459 | 0.366 | 0.242 | 0.371 | 0.483 | 0.5 | 0.348 | 0.227 | 0.409 |
| **Rural OBC** | 0.590 | 0.598 | 0.497 | 0.347 | 0.491 | 0.639 | 0.652 | 0.5 | 0.363 | 0.538 |
| **Rural FC** | 0.699 | 0.717 | 0.618 | 0.456 | 0.600 | 0.763 | 0.773 | 0.637 | 0.5 | 0.650 |
| **Rural NH** | 0.551 | 0.555 | 0.469 | 0.344 | 0.466 | 0.576 | 0.591 | 0.461 | 0.350 | 0.5 |

The reason behind this apparent discrepancy can be understood by considering the overlapping between the urban ST and urban FC. The overlapping of urban ST by urban FC is only 0.716. This reflects the fact there are relatively few urban ST individuals in the urban FC wealth range. Consequently, the ranks of urban FC individuals, when each of them is placed in the wealth distribution of urban ST, did not differ much from each other for a large number of them, thus reducing the size of the covariance in the numerator of equation (7). On the other hand, the overlapping of urban FC by urban ST is much larger, at 1.05, reflecting the fact that there are relatively more urban FC individuals in the urban ST wealth range.

The overlapping of rural ST and SC by each of these groups is higher than the overlapping of their urban counterparts by the same groups. For example, the overlapping of rural ST by rural SC is 1.02, while the overlapping of urban SC by rural SC is lower, at 0.92. Further, the overlapping of rural OBC, FC, and NH groups by, respectively, the rural SC and ST is higher than the overlapping of urban OBC, FC, and NH groups (e.g., the overlapping of rural FC by rural SC was 0.934, as against only 0.739 for urban FC). This suggests that the distributions of rural ST and SC are more similar to each other than to the members of their own community in the urban areas and that they have at least some members with amounts of wealth that match the wealth of wealthier individuals from the rural residents of other communities.

However, the rural-urban patterns of overlapping are quite different for the rural OBC and FC groups. Their wealth distribution is more similar to the urban residents of their own communities than to the SC or ST in the rural areas. For example, the

overlapping of rural SC by rural OBC is only 0.831, while the overlapping of urban OBC by rural OBC is higher, at 0.908. Similarly, the overlapping of rural ST by rural FC is quite low at 0.625 compared to the overlapping of urban FC by rural FC that stood at 0.903. The overlapping relation between the rural OBC and rural FC, as well as that between the rural NH and rural FC, mirrors the relationship between urban ST and urban FC that is discussed above.

The index of overlapping is sensitive to extreme values because it depends on the ranks and amounts of wealth of individuals in each caste. Hence, an examination of the ranking of one caste in terms of another is instructive. Such an exercise can answer the following type of question: at what percentile of the forward caste wealth distribution is an average SC person located? The average rank of each caste in the distribution of other castes can be displayed in a matrix of ranks. Along the row labeled "Urban ST," for example, we can read off the average rank of an individual in that group in the wealth distribution of each of the other groups. Since the ranks are normalized to lie between 0 and 1, the average rank of a group in its own distribution will be 0.5 (i.e., the 50th percentile).

The matrix of ranks for caste groups under Scheme II is shown in table 6 (panel B). Forward castes clearly dominate other groups in terms of this indicator, too. If we look at the entries under the column labeled "Urban FC," it is evident that the average rank of all groups except rural FC is placed below the 40th percentile of the urban FC wealth distribution; the rural FC's average rank is at the 45th percentile. Similarly, the entries in the "Rural FC" column are also below the 40th percentile for all groups except, obviously, their urban counterparts.[10] Viewed from another angle, this means that the average ranks of all the other groups are at their lowest levels when they are placed in the distribution of forward castes. The most numerous of the groups, the rural OBC, have a mean rank above the 50th percentile in the distributions of all SC and ST groups and close to the 50th percentile for the non-Hindu others and urban OBC distributions.

The average rural ST and SC ranks are below the 40th percentile in the distributions of all other non-ST/SC groups, except for the non-Hindu others, where their

[10] The sum of the average rank of group *j*'s rank in group *i*'s and the average rank of group *i*'s rank in group *j*'s distribution will be equal to 1.

ranks were at the 41–42nd percentile and slightly below the middle in the distributions of their urban counterparts. Even though they have high values for their overlapping index, the average urban ST and SC ranks are in the bottom half of the distribution of all other groups, except that of their rural counterparts, where they are slightly above the middle. Their ranking is the lowest (roughly at the 30th percentile) in the FC distributions, somewhat higher (roughly at the 40th percentile) in the OBC distributions, and the highest (roughly at the 45th percentile) in the NH distributions.

## V. CONCLUSION

The average SC/ST person in India has a substantial disadvantage in wealth relative to people from other groups in both years of analysis. Among these other groups, the FC Hindus are the clear leaders in median wealth in both the rural and urban areas. For the second survey year (2002–03), the OBCs and non-Hindus occupied positions that placed them noticeably above the SC/ST groups, but significantly below the FC in terms of median wealth values. In a worrisome trend, the relative median wealth of the rural and urban ST is, in fact, lower in 2002 than in 1991. A similar picture of SC/ST disadvantage and forward caste advantage is evident throughout the distributions in terms of gaps in percentile cutoffs. Estimates of the matrix of ranks for caste groups also confirm the existence of sizeable wealth gaps between the forward castes and everyone else. Considered in conjunction with the findings documented in other studies regarding the considerable shortfalls of the average SC/ST person in consumption, education, and development indices, the picture that emerges is one of comprehensive and persistent disadvantage for the disadvantaged groups in contemporary India.

Our decomposition analysis shows that inequality between castes (between-group inequality) accounts for as much as 13 percent of overall wealth inequality in 2002. The less elaborate caste schema (three instead of five) that we were forced to use for 1991 due to data limitations results in a lower share of between-group inequality (8 percent). The major determinant of between-group inequality is the large gap between SC/ST groups (especially rural) and the forward castes (especially urban) in average wealth. It would be interesting to compare this result to the results that arise from using other variables to

classify the population (e.g., age or education). However, it is reasonable to expect that irrespective of the "grouping variable" used, the share of within-group inequality is likely to be the dominant factor in overall inequality. There are, inevitably, other wide variations in the characteristics of households that, when taken together, are likely to contribute more than the classifying variable itself to wealth differentials within any group.

Results from our decomposition analysis also indicate that the forward caste Hindus have a fairly low degree of overlapping with the overall population and, especially, with the SC/ST groups, i.e., they are more stratified in terms of their wealth distribution. The other groups show a fairly high degree of overlapping with the overall population, as well as with each other. Evidence of a polarized distribution could be detected for four groups—urban ST, urban NH, rural NH, and urban SC (overlapping index greater than 1). The first three of these groups have within-group inequality that is much higher than the overall inequality, while the Gini coefficient for the last group was lower than the overall Gini coefficient.

With the exception of the rural SC, the other three SC/ST caste groups—urban ST, rural ST, and urban SC—witnessed increases in within-group inequality between 1991 and 2002. This was especially striking for the ST. Given its occurrence along with the deterioration in the median wealth of the group compared to the rest of the population, we might be witnessing the emergence of a "nouveau rich" or creamy layer stratum and growing income polarization within the ST groups.

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