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Pre- and Post-Reform India: A Revised Look at Employment, Wages, and Inequality

Major economic reforms were introduced in India in 1991–93. Before then India was, by most accounts and most definitions, a relatively closed economy. Both the domestic and external opening up of the economy have continued since June 1991. However, the reforms have been accompanied by an intense intellectual and political debate about their success. Detractors contend that the economic reforms have not benefited the poor to a desirable extent, that inequality has increased significantly, that growth has been of the “jobless” variety, and that unemployment has emerged as a major social and political problem.

This paper attempts to document in as thorough a manner as possible the development of the Indian economy over the last thirty-odd years. The issues are inherently contentious. For example, much has been written about the constancy of annual gross domestic product (and per capita GDP) growth rates both before and after 1991–92—about 5.6 percent (3.5 percent). But this constancy is based on a loose identification of the pre-reform period as 1980 to 1990 and the post-reform period as 1991 to 2000. July 1991 marks the beginning of the economic reform period, and a correct definition of the pre-reform period would put its end point as June 1991, followed by a transition cusp year (1991–92), which also marks the beginning of the post-reform period. If this simple and mandatory correction to the definition of pre- and post-reform periods is made, then per capita GDP grew at an average annual

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rate of 3.1 percent before the reforms and at an annual average of 4.1 percent afterward (1991 through 2004); in other words, the growth rate of per capita GDP rose an average of 1 percentage point in the post-reform period.

While macroeconomic statistics indicate a significant acceleration in per capita GDP growth, some commentators perceive that the post-reform growth process has been inequitable. And equity, no matter what the definition, has always been of paramount importance to Indian intellectuals, politicians, and policymakers.

The concerns about equitable growth are highlighted with references to employment growth and the rate of unemployment. For example, in the 1980s, the employment-unemployment surveys produced by the National Sample Survey Organization (NSSO) indicated that jobs had increased at an annual rate of 2.3 percent (1980 to 1991); in the 1990s (1991 to 2003), annual job growth increased by only 1.9 percent. It has also been contended that wage growth of agricultural workers was halved in the 1990s, increasing at a rate of only 2.5 percent, compared with a 4–5 percent annual increase in the 1980s.¹ Critics claim that unemployment rates increased between 1993–94 and 1999–2000. Critics also argue that if the NSSO consumer expenditure (CE) survey for 1999–2000 is made “comparable” to 1993–94, it shows not only that inequality has increased since reforms but that the pace of poverty decline has slowed.² Thus, the critics allege that all the statistics point to the same conclusion—the post-reform period is characterized by inequitable, jobless growth, higher unemployment rates, and increased inequality. In a country where nearly 40 percent of the population was absolutely poor in the early 1980s, a legitimate question arises: if economic reforms were so good, how come they produced so little?

This paper wades into this political and ideological minefield by examining the nature of employment, unemployment, wages, and inequality in India between 1972 and 2003. The exercise, in a large part, is one of accounting; that is, looking at what the data show and at what the scholars say happened and determining whether the scholars’ conclusions derive from the data.

A large part of the argument about inequitable growth after the reforms were initiated is based exclusively on NSSO *consumption* surveys, and

1. These data are from the Agricultural Wages in India (AWI) series, not the NSSO. These calculations exclude the crisis year 1991–92 from the pre-reform period and include it in the post-reform period. Our method is to consider the crisis year as belonging to both periods.

2. Deaton and Dreze (2002) and selected papers in Deaton and Kozel (2005).

then only on the large sample years: 1993–94 and 1999–2000.³ This method is incorrect. The employment and wage surveys conducted almost annually by NSSO for the last decade are a rich source of information on trends in wage income and therefore in consumption and poverty. The sample sizes in the other sample years are large enough for conclusions about these trends, and most experts advocate their use.⁴ In addition, non-NSSO wage (and therefore incomes) data are available on an annual basis, so time trends can be calculated for the “true” pre-reform period, 1991 and earlier, and the “true” post-reform period, 1991 and later. In other words, the artificial constraint of using 1993–94 as a pre-reform year is not operative with annual data.

Use of this additional NSSO data (and inclusion of survey years after 1999–2000) changes the post-reform employment growth picture considerably. Job growth is no longer anemic; it accelerates to a high 2.9 percent rate for the 2000–03 period. The weekly unemployment rate in 2003 declined to 3.1 percent, 1.3 percentage points lower than in 1999–2000. This is also among the lowest observed jobless rate since the mid-1970s and is considerably lower than the average of 4.5 percent that prevailed in the 1970s and 1980s.

In addition, examination of census and NSSO data reveals that the 1990s were characterized by a decline not just in the rate of growth of employment (as noted by most observers) but also a decline in the rate of growth of the *potential labor supply*, that is, people of age fifteen to fifty-nine. This decline had major “intended” consequences for the labor market: if the labor market was characterized by underemployment in the 1980s, and per capita GDP growth accelerated, then the labor market would reveal, through the extra induced demand for labor, much less underemployment in the 1990s. The flip side of this tightening labor market should be an increase in the rate of growth of real wages. Contrary to the “halving” of wage growth for agricultural workers after reform found by many experts, we find that wage growth accelerated for most classes of workers and remained at least constant for agricultural workers.

The plan of this paper is as follows. The next section documents the data, definitions, methods, and various methodological issues associated with the NSSO data on employment. Then we provide background information on the structure of the Indian labor market and how it has changed

3. The Indian fiscal year is from April 1 to March 31; hence, the nomenclature 1993–94, for example, which means data from April 1, 1993, to March 31, 1994. The agricultural year (and most NSSO surveys) are for the agricultural year July 1 to June 30.

4. See, for example, Deaton and Dreze (2002); and Sen and Himanshu (2004a, 2004b).

since the 1970s. Data on employment are examined to verify whether the post-reform period has been characterized by jobless growth, and the trend in unemployment in India from 1972 to 2003 is explored. Next we take a detailed look at the different estimates of wage growth, derived from several different sources of data, and follow with an examination of the trends in wage income and consumption inequality since the mid-1970s, dealing particularly with the proposition that inequality worsened pervasively in the post-reform period. We conclude with the reasons why the results in this paper differ somewhat from the conventional wisdom on employment growth, unemployment, and wage growth, among other subjects.

Data, Definitions, and Methods

One of the primary data sources used by analysts to evaluate socio-economic developments in India is the various surveys conducted by the NSSO. Official data on poverty come from the consumer expenditure surveys conducted every five years by the NSSO. The last such large sample survey was conducted in the agricultural year July 1999–June 2000; the previous three such surveys were undertaken in 1993–94, 1987–88, and the calendar year 1983.

Much of our analysis focuses on a different set of NSSO surveys, the employment and unemployment (E&U) surveys. These surveys contain a wealth of information; indeed, they form the “official” source of information for the government on this important issue.⁵

Records on earnings, wages, activity status, occupation, education, and the like are recorded at the individual level in the E&U surveys. For each member of the household (upward of 120,000 households in the large sample surveys and 30,000–60,000 households in the annual surveys), detailed data are tabulated relating to activity in the preceding seven days. The survey asks about the nature of work (self-employment, unpaid family labor, paid labor, paid labor in government works programs), the number of days of work (measured in half-day units) in each activity, and total earnings received. For self-employment and unpaid family labor, no earnings are reported, either actual or imputed. From these data, the NSSO authorities assign three classifications for each individual: a usual status of employment, a weekly status, and a current daily status (CDS).

5. See, for example, Kapila and Kapila (2002), who reproduce in a single volume three reports by the Indian government on unemployment.

The E&U surveys have not been much used for trends on household *incomes and welfare* for three important reasons. First, a parallel consumer expenditure survey has always been available to derive information on poverty, and this parallel survey is also the official, hence definitive, source for trends on poverty. Second, household income is generally believed to be more difficult to measure accurately than household expenditure. Third, the NSSO household income data are incomplete in that they only have information on labor income.

But the NSSO consumption expenditure data are not without their share of problems. The urgency for an alternative source of information on poverty therefore arose sometime *before* the publication of the NSSO 1999–2000 CE survey, which was doomed from the outset to be controversial. A major reason was the recognition that the national accounts data were revealing consumption information that the NSSO surveys were not fully capturing. Some have argued that this gap was to be expected since the consumption of the rich is difficult to capture in household surveys. But this argument stretches the imagination because a small percentage of households at the tip of the distribution could not possibly account for half of national consumption, as a comparison of the survey results to the national accounts for 2001–02 appeared to show.

Definitions of Unemployment

In 1970 an expert group published a report, referred to here as the Dantwala report, on the unemployment situation in India. This report made the point that it was inappropriate to measure unemployment rates according to the conventional method used in developed countries, which asked whether a person was employed during the previous week, and if not, whether she was looking for work. The expert group concluded that unemployment in the Indian economy could not be accurately measured by weekly status, especially because so many workers were engaged in agriculture, so much of the work was seasonal, and so much underemployment was visible. The report therefore advocated the construction of a daily unemployment rate based on a person-day concept. This concept estimates the fraction of days that persons are unemployed out of the total labor force days.

The three states of activity are employed, unemployed, and not looking for a job. *Usual status* uses the previous year as the reference base. Under this classification, the state of activity on which a person spent a plurality of time in the preceding 365 days is defined as the *principal status*. If the

most common occurrence for an individual during the year was unemployment, then the individual was considered unemployed according to usual status.

For persons classified according to *current weekly status*, the reference period is the previous week. A priority order of employed, unemployed, and not in the labor force is established; individuals are assumed to be employed if they were employed for at least one hour in the survey week. Absent employment, individuals were unemployed if they were available or looking for work at any time during the week; otherwise they were not in the labor force.

The *current daily status* definition of unemployment is meant to focus on person-days. For each of the previous seven days, individuals are asked to report their work and labor force status for each half-day unit. If they worked less than four hours in the day, they are counted as employed for half the day and unemployed for the remainder if they were available for or seeking work. The aggregate of seven days yields an estimate of person-days of employment and unemployment (daily status) in the economy.

Data on Wages

The NSSO data on daily wages were easily computed as total earnings from wage employment in the preceding week divided by the number of days associated with wage employment. In addition, we used three other sources to estimate rural and agricultural wages: Agricultural Wages in India (AWI), Cost of Cultivation (CoC) surveys, and a new series (since 1998–99) published by the Ministry of Agriculture in the *Indian Labour Journal*.⁶

In rural areas, and especially among small cultivators, wage income is an incomplete indicator of family income because it excludes the contribution of family labor as well as income from any form of self-employment, including cultivation. But there is no problem in interpreting trends in per-day wages as indicators of what is happening to the growth in incomes of those whose major asset is labor, especially the poor.⁷

6. Data for the AWI series for the 1980s are taken from Dreze and Sen (2002) and ILO (1996); for the 1990s, data came from the *Economic Survey*, Indian Ministry of Finance. These data are in nominal terms; the consumer price index for agricultural laborers (CPIAL) is used as the price deflator to obtain wages in real terms (with CPIAL in 1993 equal to 100).

7. As Sen and Himanshu (2004a, 2004b) point out, there is a “problem” with the wage surveys before 1999–2000 in that they did not include data on overtime payments. The definition of overtime payments that were excluded is unclear, however. In any event, the impact of this omission in measuring wage growth of the poor is likely to be minimal, if not inconsequential.

A simple calculation of the NSSO trend in real wage growth can help to resolve some of the various debates on what happened to poverty and inequality in India in the 1980s and 1990s. No definitional changes are involved in the NSSO wage data, so there should be little controversy over what it says. The derived growth in real wages for the 1980s and 1990s can help shed light on the respective pace of poverty decline in the two periods—a higher rate of wage growth in the 1980s, for example, would indicate that the growth process was more pro-poor in the pre-reform period. A faster growth rate for urban wages (relative to rural) in the 1990s may be indicative of increasing inequality.

NSSO Population Adjustments

The population projections based on NSSO household weights do not match the population as revealed by census data. These individual weights (computed from household weights) were adjusted, for rural and urban areas separately, for each of the survey years to keep the aggregate population equal to the census population at the time of the survey. For example, in 1983, India had an estimated population of 734 million and an urbanization rate of 23.8 percent. Hence, the rural and urban populations that year were 559.3 million and 174.7 million, respectively. The NSSO survey weights yield a rural population of 519.4 million and an urban population of 162.2 million. A “matching” was achieved by multiplying the weight for the rural areas of the economy by $559.3/519.4$, and multiplying the weights for the urban areas by $174.7/162.2$.

Definition of Pre- and Post-Reform Periods

The start of the economic reform period is not controversial; in June 1991: a new government came into power, with Dr. Manmohan Singh as the finance minister (Singh became the prime minister of India in May 2004). To confront a severe balance of payments crisis, a series of policy initiatives were introduced starting in early July 1991. Among other things, the rupee was devalued by 20 percent, peak tariffs were reduced from 300 percent to 110 percent, and a structural adjustment loan from the International Monetary Fund (IMF) was obtained in 1991.⁸

The end of the pre-reform period *is* controversial. The pre-reform period is often defined as the years 1980–91, bolstered by a considerable literature

8. See Virmani (2005) for a comprehensive listing, with dates, of the various reforms initiated in India since 1970.

suggesting that GDP growth in India actually took off in the early 1980s and that for much of the post-reform period, GDP per capita growth was the same as in the 1980s.⁹ However, it is unclear why the 1970s should not be part of the pre-reform period, since several of the policy initiatives undertaken then continued into the 1980s and were overturned as part of the reform package adopted in 1991–93. Thus, the 1972–73 NSSO employment survey forms a convenient starting point for the pre-reform period.¹⁰

Although the literature on GDP growth identifies 1991 as the break point between the pre- and post-reform periods, such is not the case with the literature on wages, poverty, and inequality. The reason: the lack of a large sample NSSO survey in 1991, or 1990, or even 1992. The first large NSSO survey *after* the initiation of reforms is the 1993–94 survey, conducted from July 1993 to June 1994. The earliest pre-reform large sample survey year is 1972–73; the earliest pre-reform year for which NSSO unit-level data are available is 1983. Either can be used as the beginning of the pre-reform period. The last pre-reform large sample NSSO year is 1987–88, but given that this was a drought year, it is not a good choice for the end of the pre-reform period. Data convenience has dictated the choice of 1993–94 as the cusp year between the pre- and post-reform years. NSSO large sample surveys are extremely useful, but they are not necessarily coincident with the history or timing of economic reforms. The reality is that the end of the 1993–94 survey year (June 1994) is a full three years *after* the institution of reforms in July 1991 and thus cannot be construed as the beginning. That even this simple conclusion is controversial is indicated by an alternative view expressed by Duflo. In commenting on an earlier draft of this paper, Duflo stated that “using 1993–94 as a pre-reform year may be inappropriate, but using it as a post-reform year certainly is as well.”

If reforms were initiated in July 1991, then to what period does the financial year April 1991 to March 1992 belong? There are strong arguments for defining 1991–92 as a pre-reform year. This was a crisis year (GDP growth of only 1 percent), in large part because of the unsustainable nature of economic policies of the 1980s. Part of the process of economic reforms is that such policies bring about a structural readjustment that often results in a short-term decline. Hence, a “worst case” calculation is to consider the

9. See Bhalla (2000, 2002a), Panagariya (2004), Rodrik and Subramaniam (2004), and Virmani (2004a, 2004b) for discussions and comparison of the growth rates in the 1980s and 1990s.

10. The text reports calculations, whenever possible, for both definitions of the pre-reform period: 1972–91 and 1980–91.

cusps year 1991–92 as belonging to *both* the pre-reform and the post-reform era. Thus, the data are presented for three periods: two pre-reform periods, 1972–91, and the high-growth years 1980–91; and a post-reform period, 1991–2003, the last year for which most data are available.

A Broad Overview of the Labor Force

While the conclusions of the Dantwala unemployment report were relevant in the 1960s, the view of India as a traditional low-income country does not have much applicability today. In the 1960s India was one of the poorest countries in the world; today it is on the verge of being classified as middle income, albeit at the lower end of the range. In the 1950s agricultural output accounted for more than half of GDP; today it is less than 20 percent. At the end of the 1970s nonfarm income was 21 percent of rural incomes; by 1999–2000 this fraction had doubled to 42 percent.¹¹

NSSO E&U surveys provide several details about the large transformation of the Indian economy. Some basic data for the Indian workforce since 1983 are reported in table 1. Overall, the agricultural workforce increased at a robust annual rate of 2.4 percent in the 1980s; in the 1990s, the rate of growth was minus 0.2 percent per year.¹²

The number of young, illiterate workers (illiteracy is defined as less than two years of education; young workers fall in the fifteen- to twenty-four age group) is rapidly declining. In 1983 about half of all young workers were illiterate; by 1999–2000, this fraction had declined to less than a third (table 2). Illiterate workers in the entire workforce constituted 55 percent in the early 1980s; by the end of the 1990s, this fraction had declined to 44 percent (table 3).

The loss in agricultural jobs in the Indian economy has been made up by increases in employment in services and production. In fact, for the 1983–2000 period, job growth in production-related activities has outpaced job growth in services (2.8 versus 2.3 percent a year), a somewhat surprising result given the common belief that production-related employment has stagnated because of labor laws and other limitations.

11. Foster and Rosenzweig (2003).

12. The 1980s is the period 1980–89, the 1990s the period 1990–99; however, when the discussion pertains to NSSO large sample data, then “the 1980s” refers to the ten-and-a-half-year period 1983 to 1993–94, and “the 1990s” refers to the six-year period, 1993–94 to 1999–2000.

TABLE 1. Structural Changes in Employment According to Weekly Status

<i>Workforce</i>	<i>Millions of workers</i>			<i>(log) Annualized growth (%)</i>		
	<i>1983</i>	<i>1993-94</i>	<i>1999-2000</i>	<i>1983 to</i>	<i>1993-94 to</i>	<i>1983 to</i>
				<i>1993-94</i>	<i>1999-2000</i>	<i>1999-2000</i>
Official (all ages)	263	346	368	2.6	1.0	2.0
15-59 years	229	311	334	2.9	1.2	2.3
15-59 years ^a	228	304	322	2.7	0.9	2.1
Agriculture (15-59 years)	142	183	181	2.4	-0.2	1.5
Cultivators ^a	79	96	90	1.8	-1.0	0.8
Farmers other than cultivators ^a	8	14	14	5.3	0.2	3.4
Agricultural laborer ^a	49	65	69	2.7	1.1	2.1
Nonagriculture (15-59 years)	86	122	141	3.3	2.4	3.0
Production ^a	43	59	68	3.1	2.3	2.8
Service ^a	10	11	14	1.5	3.6	2.3
Unpaid, self-employed	122	160	166	2.6	0.6	1.9

Source: NSSO Employment and Unemployment surveys conducted in 1983, 1993-94, and 1999-2000.

a. The computation of aggregates includes only those observations where occupation codes are not missing.

TABLE 2. Illiteracy in the Young Workforce, 15-24 Years

<i>Workforce</i>	<i>1983</i>	<i>1993</i>	<i>1999</i>
Total (millions)	61.3	75.7	74.4
Illiterate (millions)	31.1	30.1	24.2
Illiterate as percent of workforce	50.7	39.8	32.5

Source: NSSO Employment and Unemployment surveys conducted in 1983, 1993-94, and 1999-2000.

A perspective on the rate of change of the skill levels (human capital) of the Indian work force can be seen in table 3. Two structural aspects are apparent. First, the skill levels are advancing rapidly. Second, females are catching up to men, with the share of women attaining more than a primary school education (six years) growing much faster than the share of men.

Table 4 provides data on this changing occupational structure. Growth in "good" jobs (defined as wage-earning rather than self-employment or family work, higher-valued and more-skilled occupations rather than unskilled workers, and the like) is far outpacing the growth in "bad" jobs. The highest rate of job growth is for professional and technical workers, and within this workforce, the female job rate is growing faster than the male job rate (6.4 versus 5 percent). It should be emphasized, however, that

TABLE 3. Changing Levels of Education in the Labor Force

Years of education	Millions of workers			(log) Annualized growth (%)		
	1983	1993-94	1999-2000	1983 to 1993-94	1993-94 to 1999-2000	1983 to 1999-2000
Male						
0	74	79	75	0.6	-0.7	0.1
2 or fewer	78	82	79	0.4	-0.6	0.0
2-6	47	60	59	2.4	-0.2	1.5
6 or fewer	125	142	138	1.2	-0.4	0.6
More than 6	48	73	95	4.0	4.3	4.1
6-11	41	59	75	3.3	4.1	3.6
More than 11	7	15	20	7.1	4.9	6.3
Total	173	215	233	2.1	1.3	1.8
Female						
0	52	67	66	2.4	-0.2	1.5
2 or fewer	53	68	67	2.4	-0.2	1.5
2-6	7	14	15	6.6	1.7	4.8
6 or fewer	60	82	82	3.0	0.1	2.0
More than 6	5	11	15	7.9	5.8	7.2
6-11	4	8	12	7.5	6.1	7.0
More than 11	1	3	4	9.5	5.1	7.9
Total	64	92	98	3.5	0.9	2.5
All workers						
0	126	146	142	1.4	-0.5	0.7
2 or fewer	131	150	146	1.3	-0.4	0.6
2-6	53	74	74	3.1	0.2	2.0
6 or fewer	184	223	220	1.8	-0.2	1.1
More than 6	53	84	110	4.4	4.5	4.4
6-11	45	67	87	3.7	4.3	3.9
More than 11	8	17	23	7.4	4.9	6.5
Total	238	307	330	2.5	1.2	2.0

Source: NSSO Employment and Unemployment surveys conducted in 1983, 1993-94, and 1999-2000.

the share of professionals in the total workforce is still very small (only 23.5 million workers in 1999-2000, although that was more than double the number in 1983).

Table 5 provides details on the composition of the workforce according to the "paid" status of the worker. The Dantwala report underlined the fact that most workers in India were casual workers, entering and exiting the labor force according to season, and that family workers were a large fraction. In the 1990s (1993-94 to 1999-2000), self-employed workers and family workers in rural areas showed no growth. Overall, wage and nonwage jobs expanded at the same rate in 1983-93, but during the next six years wage employment outpaced nonwage employment, indicating both the

TABLE 4. Occupational Composition of the Work Force in India

Occupation	Millions of workers			(log) Annualized growth (%)		
	1983	1993-94	1999-2000	1983 to 1993-94	1993-94 to 1999-2000	1983 to 1999-2000
	Male					
Professional, administrative, technical, manager	8.0	13.8	18.3	5.1	4.7	5.0
Clerical	6.6	9.4	10.3	3.3	1.4	2.6
Sales	11.7	19.8	21.0	5.0	1.0	3.6
Production	32.1	48.2	56.8	3.9	2.7	3.5
Service	5.9	7.7	9.4	2.5	3.3	2.8
Agriculture, fishery	92.6	118.9	118.0	2.4	-0.1	1.5
Total	157.0	217.9	233.7	3.1	1.2	2.4
Female						
Professional, administration, technical, manager	1.8	4.0	5.2	7.5	4.3	6.4
Clerical	0.5	1.3	1.5	8.8	2.4	6.5
Sales	2.1	2.9	2.7	3.3	-1.4	1.6
Production	7.4	11.0	11.3	3.8	0.4	2.6
Service	2.7	3.5	4.5	2.6	4.2	3.2
Agriculture, fishery	44.4	67.0	68.4	3.9	0.3	2.6
Total	58.8	89.6	93.5	4.0	0.7	2.8
All						
Professional, administrative, technical, manager	9.9	17.8	23.5	5.6	4.6	5.3
Clerical	7.1	10.7	11.7	3.9	1.5	3.0
Sales	13.8	22.7	23.7	4.8	0.7	3.3
Production	39.5	59.2	68.1	3.9	2.3	3.3
Service	8.6	11.2	13.9	2.6	3.6	2.9
Agriculture, fishery	137.1	185.9	186.4	2.9	0.0	1.9
Total	215.8	307.6	327.2	3.4	1.0	2.5

Source: NSSO Employment and Unemployment surveys conducted in 1983, 1993-94, and 1999-2000.

growth of good jobs and the move toward less casual, and more modern employment, in the post-reform 1990s.

In sum, the Indian workforce is increasingly better educated, with female education expanding at a faster pace than male education; the share of unskilled workers in the labor force is declining, growth in agricultural jobs has halted, and paid jobs are taking up this slack.

Decline in the Rate of Growth of the Potential Labor Force

Some perspective on “jobless” growth can be obtained by observing the rate of growth of *potential* labor supply, where potential signifies the *physical*

TABLE 5. Wage and Nonwage Jobs

Category	Millions of workers			(log) Annualized growth (%)		
	1983	1993-94	1999-2000	1983 to 1993-94	1993-94 to 1999-2000	1983 to 1999-2000
Wage earners						
Rural	72.7	97.5	110.3	2.8	2.0	2.5
Urban	30.8	42.8	49.0	3.1	2.3	2.8
Total	103.5	140.3	159.3	2.9	2.1	2.6
Male	75.7	102.1	116.5	2.9	2.2	2.6
Female	27.8	38.1	42.7	3.0	1.9	2.6
Total	103.5	140.3	159.3	2.9	2.1	2.6
Self-employed, family workers (no wage data)						
Rural	106	140	140	2.6	0.0	1.7
Urban	20	31	35	4.3	2.3	3.5
Total	126	171	175	2.9	0.4	2.0
Male	91	117	121	2.4	0.6	1.7
Female	34	53	54	4.2	0.2	2.7
Total	126	171	175	2.9	0.4	2.0
Family workers						
Rural	35.1	58.6	59.6	4.9	0.3	3.2
Urban	4.1	7.2	8.0	5.4	1.8	4.1
All India	39.2	65.8	67.6	4.9	0.4	3.3

Source: NSSO Employment and Unemployment surveys conducted in 1983, 1993-94, and 1999-2000. Family workers are a subset of the self-employed individuals and hence no wage data are available for them.

availability of individuals ages fifteen to fifty-nine. If inward and outward migration is not significant, then employment cannot exceed this rate of growth. It can and does exceed this ceiling if the labor force participation rate (LFPR) increases, especially the LFPR of women. Otherwise, just demographics alone (in the absence of migration) constrains the rate of growth of employment. Some of the decline in job growth in India apparently results from this phenomenon, that is, a decline in growth of the potential labor force growth is partly responsible for the so-called jobless growth of the 1990s.

Population growth in India has been declining—from an annual average of 2.1 percent in the 1980s to 1.9 percent in the 1990s.¹³ At the end of the decade, the annual population growth rate had further declined to only

13. Census years are 1981, 1991, 2001, and so on. Thus the census years for the 1980s are 1981-91; for the 1990s, 1991-2001, and so on.

1.6 percent a year. Table 6 documents a little-known and therefore less-appreciated fact—the rate of growth of India’s potential labor force (those in the fifteen to fifty-nine age group) also declined in the 1990s, from 2.6 percent a year to 2.3 percent. NSSO figures reflect the same decline in population growth—from 1.9 percent a year in the 1983 to 1993–94 period to 1.7 percent a year in the 1993–94 to 1999–2000 period. The NSSO rate of growth is lower in both time periods because the NSSO surveys were conducted two years after the 1981 and 1991 censuses. The NSSO figure for the rate of growth of the potential labor force, however, declines much more rapidly—from a 2.6 percent annual average in the 1980s (the same as the census) to only 1.7 percent in the 1990s, for an average decline of 0.9 percent, compared with a 0.3 percent decline in the census data.

TABLE 6. Potential Labor Force in India, 1981–2001

Category	Millions of people			(log) Annualized growth (%)		
	1981 ^a	1991	2001	1981–91	1991–2001	1981–2001
Population						
Census	683	846	1,027	2.1	1.9	2.0
NSSO	734	899	999	1.9	1.7	1.9
Population, 15–59 years						
Census	358.8	465.5	585.7	2.6	2.3	2.5
NSSO ^a	393.6	515.5	572.4	2.6	1.7	2.3

Source: Census of India 1981, 1991, and 2001; NSSO Employment and Unemployment surveys conducted in 1983, 1993–94, and 1999–2000.

a. NSSO population estimate and corresponding growth rates are computed for years 1983, 1993–94, and 1999–2000.

Given that the change in the NSSO and census population growth rates are of similar magnitude, the reasons for the difference in the two potential labor force growth rates are unclear. One possible explanation could be the differences in the beginning and end years of the data in the two samples. The nature of the bias, however, is unclear and deserves further investigation.

The fact remains, however, that at least a partial explanation for the much-discussed jobless growth phenomenon of the 1990s lies in the data sources, which show a decline in the rate of growth of the potential labor force. This is *not* a decline in supply induced by a weakening job market, but rather a structural decline that is not insignificant. This finding implies that one should expect to find a decline in the rate of employment growth in the 1990s, everything being equal. In other words, less employment growth was needed in the 1990s to keep unemployment rates constant.

Decline in Labor Force Participation Rate

An additional factor explaining the low growth rate of employment in the post-reform 1990s is a decline in the labor force participation rate itself.¹⁴ The LFPR in 1993–94 was a high 58.3 percent. By 1999–2000 it had declined to 56.4 percent, a level even lower than the LFPR observed sixteen years earlier in 1983 (57.7 percent). See table 7 (and related discussion about labor force and daily unemployment rates) for details. This decline in the LFPR in the 1990s averaged 0.55 percent a year, indicating that job growth in the 1990s would have declined by the same percentage. It is coincidental, and interesting, that an advanced economy like the United States has also experienced this phenomenon in recent years. A common explanation for both societies is that there are increasing numbers of individuals in the potential labor force who are staying out of the labor force for longer periods than in the past; some of these individuals are increasing their education. As shown earlier in table 3, in India, individuals with more than eleven years of education increased at a 4.9 percent pace in the 1990s, considerably higher than the growth rate of the labor force.

TABLE 7. Derivation of Person-Day Labor Force Participation Rates

<i>Category</i>	<i>1983</i>		<i>1993–94</i>		<i>1999–2000</i>	
	<i>All persons</i>	<i>Age 15–59</i>	<i>All persons</i>	<i>Age 15–59</i>	<i>All persons</i>	<i>Age 15–59</i>
Person (millions)	734	394	899	515	999	572
Person days (millions)	5,138	2,758	6,293	3,605	6,993	4,004
Persons days in labor force (millions)	1,820	1,590	2,330	2,100	2,490	2,260
Labor force participation rate (percent)	35.4	57.7	37.0	58.3	35.6	56.4

Source: NSSO Employment and Unemployment surveys conducted in 1983, 1993–94, and 1999–2000.

A direct estimate of the role played by increasing education enrollments on the decline in labor force growth is provided in table 8. The labor force grew at a 1.3 percent rate in the 1990s; if education enrollment had stayed the same as it was in 1993–94, the labor force would have grown at an annual pace of 1.5 percent. Hence, the education-induced decline in the LFPR, and therefore in the labor force, was at the rate of 0.2 percent a year.

14. The computation of LFPR is not on the basis of person but on the basis of person days, that is, the ratio of total number of person days in labor force to the total number of person days in the reference week for the age group ages fifteen to fifty-nine.

TABLE 8. Is Education Responsible for the Decline in LFPR

Category	Millions of people			(log) Annualized growth (%)	
	1983	1993	1999	1983 to 1993-94	1993-94 to 1999-2000
Population	394	515	572	2.6	1.7
Enrollment	22	40	48	5.5	3.1
Enrollment rate	5.7	7.7	8.4	2.9	1.4
Labor force	238	321	348	2.9	1.3
Adjusted labor force ^a	238	321	352	2.9	1.5

Source: NSSO Employment and Unemployment surveys conducted in 1983, 1993-94, and 1999-2000.

a. Available labor force (ages 15-59) in 1999-2000 with the enrollment rate of 1993-94.

These two phenomena—a decline in the rate of growth of the potential labor force induced by demographics and a decline in the rate of growth of the actual labor force induced by increasing education—explain *all* the decline in employment growth. For the period 1991-2001, the census data indicate potential labor force growth of 2.3 percent a year. The decline in LFPR is 0.55 percent a year, so jobs should have grown at 1.75 percent a year in the 1990s. Actual job growth (1991-2003) was at the rate of 1.7 percent a year.

The Pre- and Post-Reform Periods: What Should One Expect?

Table 9 documents the trends in some of the major macroeconomic variables for the pre- and post-reform periods. In keeping with the discussion in the previous section, data are presented for two pre-reform periods: 1972-91 and 1980-91. Given that the longer period is more unfavorable to the pre-reform period, the comparison between 1980-91 and 1991-2003 is emphasized in the discussion.

Per capita GDP accelerated after the reforms, from an average of 3.1 percent a year to 4.1 percent. This should have normally been associated with higher employment growth, but that is possible only when both the LFPR and productivity growth remain constant. Given the sharp acceleration in skill levels (and therefore productivity), however, some decline in the rate of job growth was to be expected. And the rate of job growth did decline, from 2.4 percent a year to 1.7 percent, mirroring the decline in the potential labor force growth noted earlier.

Growth in private income per worker mirrored productivity growth, almost tripling from 1.6 percent a year to 4.2 percent.¹⁵ Agricultural wage

15. Growth in private income per worker is computed as the ratio of private income (national accounts) and the workforce (NSSO data).

TABLE 9. Average Annual Growth in Selected Indicators
Percent

<i>Indicator</i>	<i>Before reform</i>		<i>After reform</i>
	<i>1972–91</i>	<i>1980–91</i>	<i>1991–2003</i>
Employment	2.0	2.4	1.7
GDP, per capita	2.3	3.1	4.1
Wage, agricultural laborer (AWI, real)	2.0	3.1	3.3
Wage, agricultural laborer (CoC, real)	2.0	3.0	3.7
Private income per worker	1.8	1.6	4.2
Population	2.2	2.1	1.9
Population (age 15–59)		2.6	2.3

Source: NSSO Employment and Unemployment surveys conducted in 1983, 1993–94, and 1999–2000; *Handbook of Statistics on Indian Economy* (2004) by the Reserve Bank of India; Agricultural Wages in India (AWI), and Cost of Cultivation (CoC) Survey of Principal Crops, published by the Ministry of Agriculture, Government of India; National accounts database developed by *Economic and Political Weekly*; Census of India 1981, 1991, and 2001. Population data are from Census of India 1981, 1991, and 2001, for the period 1981–91 and 1991–2001.

growth—growth in wages of the poorest workers—showed a *sharp* acceleration from the pre-reform period 1972–91 and a mild acceleration from the shorter pre-reform period, 1980–91. This acceleration is noted for both sources of agricultural wage data, the AWI and CoC surveys. The AWI series indicates a mild acceleration, from 3.1 to 3.3 percent, while the CoC data indicate a sharper uptrend, from 3.0 to 3.7 percent a year. It should be emphasized that, paradoxically, the AWI series has been used by several authors to argue that agricultural wage growth collapsed in the post-reform period.¹⁶ These contradictory conclusions pertaining to the AWI data are evaluated in greater detail later in this paper.

Employment

This section uses the weekly activity status definition to interpret trends in employment. Two major questions are asked. First, what has been the trend rate of growth of employment? Second, how has this trend varied between the pre- and post-reform periods? This analysis responds in part to policy concerns that employment growth stagnated in the post-reform period—the jobless growth phenomenon.

Employment Growth, 1972–2003

There were eighteen NSSO employment surveys conducted between 1972 and 2003, six of which were large sample surveys (1972–73, 1977–78,

16. See Deaton and Kozel (2005) for a sampling.

1983, 1987-88, 1993-94, and 1999-2000) and twelve of which used smaller samples. Not all the surveys were conducted for the agricultural year, which extends from July through June. The center of this "benchmark" year is December. Table 10 adjusts the "raw" weekly employment figures for those surveys that have a non-December center (see also box 1). For example, the 2002 survey was conducted from July to December and the 2003 survey from January to December. Employment between these two surveys grew at a rate of 4.1 percent a year; so the adjusted level for December 2003 (the center of the 2003-04 agricultural year) is 400 million. In other words, if the 4.1 percent growth rate had extended for another six months, the level of employment would have been 400 million rather than 393 million.

TABLE 10. Employment, Unemployment, and Labor Force

Millions unless otherwise indicated

<i>Survey round</i>	<i>Year</i>	<i>Labor</i>		<i>Rate (%)</i>	<i>Employment</i>	<i>Employment^a</i>
		<i>force</i>	<i>Unemployed</i>			
27 (1972-73)	1972	231	10	4.3	221	221
32 (1977-78)	1977	245	11	4.5	234	234
38 (Jan-Dec83)	1983	275	12	4.5	263	266 ^a
43 (July87-June88)	1987	296	14	4.8	282	282
45 (July89-June90)	1989	317	11	3.5	306	306
46 (July90-June91)	1990	328	13	4.0	315	315
47 (July-Dec91)	1991	338	15	4.4	323	326 ^a
48 Jan-Dec92)	1992	349	18	5.2	331	337 ^a
50 (July93-June94)	1993	359	13	3.6	346	346
51 (July94-June95)	1994	352	7	2.0	345	345
52 (July95-June96)	1995	355	8	2.3	347	347
53 (Jan-Dec97)	1997	363	9	2.5	354	356 ^a
54 (Jan-June98)	1998	358	13	3.6	345	337 ^a
55 (July99-June2000)	1999	385	17	4.4	368	368
56 (July2000-June01)	2000	377	10	2.7	367	367
57 (July01-June02)	2001	396	13	3.3	383	383
58 (July02-Dec02)	2002	394	13	3.3	381	380 ^a
59 (Jan03-Dec03)	2003	405	12	3.0	393	400 ^a

Source: NSSO Reports on Employment and Unemployment available at (mospi.nic.in/stat_act_t14.htm).

a. Indicates adjustment to original data to make the employment estimate conform to a July-June year.

Employment Trends

A long-term trend line is fitted to all employment surveys since 1972 (figure 1). The large sample surveys for 1972-73 and 1999-2000 sit on the trend line (annual rate of growth of 1.9 percent), while 1993-94 survey has the largest positive residual (5 percent). In contrast the residual for 1983 is

BOX 1. Employment: Small and Large Sample Surveys

A semi-log regression of employment on time, with a dummy for the years in which there was a large sample survey, yields the following:

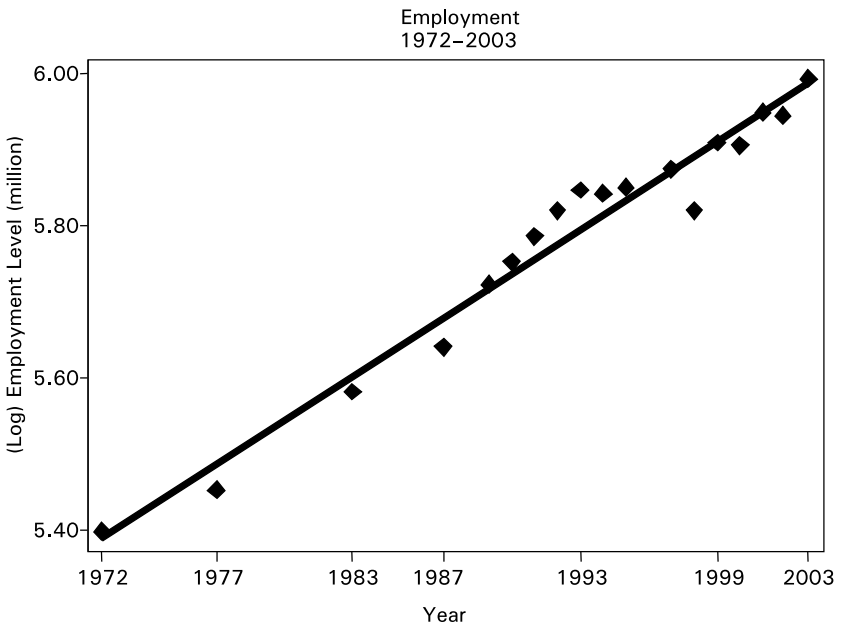
$$\ln(\text{Employment}) = -31.7 + 0.019 * \text{year} - 0.0116 * \text{large sample dummy}$$

(-15.5) (18.4) (-0.64)

Number of observations = 18; adjusted $R^2 = 0.971$; t statistics in parentheses.

The lack of significance of the large sample year dummy suggests that one can pool the data for the two sets of surveys. A larger sample was not expected to make much difference to the aggregate trend, given that even the small samples surveyed more than 40,000 households. It is encouraging to see that the coefficient is significant at only the 50 percent level of confidence (t statistic of -0.64).

FIGURE 1. Employment in India by Weekly Status, 1972–2003



Source: Employment-Unemployment survey conducted by NSSO for all the years mentioned in the figure. Employment levels are adjusted to correspond to a July–June year; see also table 10.

2 percent *below* trend. Most analysts have used the NSSO survey years of 1983, 1993–94, and 1999–2000 to derive implications about what happened not only between these survey years but also in the pre- and post-reform periods. The uneven pattern of residuals is suggestive of the problems that can arise if just three data points are used to derive conclusions about

employment growth. If 1983 is below trend and 1993–94 is above trend, then this means that growth is overstated for the pre-reform period by 0.7 percent a year (7 percent divided by ten years). Analogously, growth is understated for the 1993–94 to 1999–2000 period by 5 percent over six years, or 0.8 percent a year. The average annual growth rate (based on all the surveys available rather than just the large sample surveys) is 2.3 percent for the pre-reform period and 1.8 percent for the post-reform period.

Thus, the headline *decline* in employment growth rates between the two periods is not 1.6 (2.6 percent a year pre-reform versus 1 percent a year post-reform), but only 0.5 percent (from 2.3 percent to 1.8 percent). The much-talked about jobless growth in the post-reform period is actually job growth of 1.8 percent a year, a rate not much different than the thirty-year average of 1.9 percent. As noted earlier, the 0.5 percent annual decline in the rate of growth is, perhaps not coincidentally, exactly equal to a *minimum* estimate of a decline in labor force growth.

This analysis confirms that while job growth definitely declined over much of the post-reform period, the conclusion that it was *caused* by the reforms needs to be modified in several respects. First, the years immediately following the reforms show an acceleration of job growth. Second, the notion of a “decline” in employment growth was grossly magnified by the *choice* of the NSSO large sample years 1983 and 1993–94 to measure pre-reform job growth. Third, when we use all of the available employment surveys, we find a decline in job growth after the reforms of only 0.5 percent a year. Finally, a decline of about that magnitude should be expected since the potential labor supply had declined by approximately the same amount.

Unemployment in India, 1977–2003

Several recent studies have concluded that the post-reform period has been characterized by increasing unemployment rates.¹⁷ While GDP growth may have maintained its earlier pace, or even mildly accelerated, slow employment growth was more the reality of the post-reform period, and given India’s high population and labor force growth, increasing unemployment rates were to be expected. The increasing unemployment problem was also viewed as serious enough to warrant a serious policy response. Hence, at the end of 2004,

17. In particular, three Planning Commission studies, two authored by Gupta (2002a, 2002b), and the third the recently released “Mid-Term Appraisal of the Tenth Five-Year Plan” (2005).

the government introduced a job program that is expected eventually to guarantee a job to every person in rural India who wants a job.¹⁸ To begin with, this Employment Guarantee Act promises to provide 100 days of work a year to at least one person in each rural household. This policy initiative follows directly from the strong belief that unemployment rates in India are disturbingly high. Whether this view is supported by any evidence is examined below.

As mentioned earlier, there are *three* different definitions of unemployment in India: unemployment according to usual status, weekly status, and daily status. These different definitions allow for a *variety* of interpretations about what happened to unemployment in India after the institution of economic reforms in 1991. Table 11 reports the official data according to the usual, weekly, and daily status of unemployment for the period 1972–2003.

Unemployment Rates: Usual and Weekly Status

The usual status of unemployment measures structural or long-term unemployment. If a person was in the labor force (working or seeking work) and unemployed for the major part of the year, her usual status would be unemployed. Under this definition unemployment has hovered between 2 and 4 percent for the last thirty years, and in 2003 was at the lower end of the range: 2.2 percent.

Since it is a long-term measure, the usual status may not be the most useful indicator of unemployment. Weekly status may be a more meaningful measure of unemployment. A person is considered unemployed on a weekly status if she was unemployed for all seven days in the preceding week. A major advantage of using the weekly status is that it is the definition of choice for most countries of the world.

For urban areas, weekly unemployment rates were between 6.6 and 7.9 percent in the pre-reform period and declined to 5 percent by 2003. In rural areas, the magnitude is considerably lower for both periods—between 3.7 and 4.2 percent in the pre-reform period, and 2.4–3.9 percent in the 1990s (2.4 percent in 2003). On an all-India basis, the unemployment rates ranged between 4.3 and 4.8 percent before 1991, and between 3.1 and 4.4 percent after the reforms (in 2003, the level was a low 3.1 percent). The ostensibly high unemployment rate observed in 1999–2000, 4.4 percent, is near the low end of the range for the pre-reform years.

18. “The proposed Act gives a legal guarantee of employment to anyone who is willing to do casual manual labor at the statutory minimum wage”; see Dey and Dreze (2004).

T A B L E 11 . Official Unemployment Rates (Usual, Weekly, and Daily), 1972-2003

Percent	1972	1977	1983	1987	1993	1994	1995	1997	1998	1999	2000	2001	2002	2003
<i>Category</i>														
Rural														
Daily	8.2	7.7	7.9	5.3	5.6	n.a.	n.a.	n.a.	n.a.	7.2	n.a.	n.a.	n.a.	n.a.
Weekly	3.9	3.7	3.9	4.2	3.0	1.6	1.5	1.9	2.8	3.9	2.1	2.7	2.5	2.4
Usual (principal)	n.a.	3.3	1.9	3.1	1.8	1.0	1.3	1.4	2.3	2.0	1.3	1.5	1.6	1.5
Urban														
Daily	9.0	10.3	9.5	9.4	7.4	n.a.	n.a.	n.a.	n.a.	7.7	n.a.	n.a.	n.a.	n.a.
Weekly	6.6	7.9	6.8	7.1	5.8	4.0	4.0	4.5	5.8	5.9	4.7	4.7	5.6	5.0
Usual (principal)	n.a.	8.8	6.0	6.6	5.2	3.8	4.0	4.1	5.7	5.2	4.2	4.4	5.0	4.2
All India														
Daily	8.3	8.2	8.3	6.1	6.0	n.a.	n.a.	n.a.	n.a.	7.3	n.a.	n.a.	n.a.	9.1
Weekly	4.3	4.5	4.5	4.8	3.6	2.2	2.1	2.6	3.5	4.4	2.8	3.2	3.3	3.1
Usual (principal)	n.a.	4.2	2.8	3.8	2.6	1.7	1.9	2.1	3.1	2.8	2.0	2.3	2.5	2.2

Source: NSSO reports on Employment and Unemployment situation.
n.a. Not available.

Unemployment: Daily Status Definition

Both the usual and weekly status definitions of unemployment may be inappropriate for a developing economy like India. The 1970 Dantwala committee offered a new definition of employment to reflect the peculiarities of unemployment in a large agrarian economy. For such an economy, it was felt that a *time rate*, rather than a *person rate*, of unemployment would be more useful. Hence, a definition of unemployment was needed that would incorporate the fraction of time in a week that a person was unemployed. Alternatively, data on daily employment and unemployment can be used to generate a *person* rate of unemployment according to the definition that a person is considered unemployed if on any half day she did not work and was looking for work, and this calculation is repeated for each of the fourteen half days of the week.¹⁹

For the daily status definition of unemployment, NSSO codes two separate categories—code 81, the traditional unemployment definition (looking for work and not employed); and code 82, a nontraditional definition (not working, not seeking to work, but available for work). Code 82 accounted for 2.3 percent of the labor force in 1983 and for 1.5 percent in 1999–2000. The code 81 rate decreased marginally over the same period, from 6 percent to 5.7 percent (table 12). The results are similar for the fifteen to fifty-nine age group.

That unemployment has been declining is also indicated by the calculation of the *duration* of unemployment for the daily unemployed. This shows a steady decline from 1983 onward—2.4 days in 1983, 2.3 days in 1993–94, and 2.2 days in 1999–2000 (table 13). A large fraction, almost a third, of the daily unemployed are those who are unemployed for one, two, or three days a week. These short-duration daily unemployed were 3.1 percent of the labor force in 1983, 2 percent in 1993–94, and 2.6 percent in 1999–2000. In rural India, where most of the measurement problems referred to by the Dantwala report occur, a very small percentage of the rural workforce is unemployed for all seven days of the week: 2.6 percent in 1983, 2.2 percent in 1993–94, and 3 percent in 1999–2000.

A clear trend that emerges from our analysis of different definitions of unemployment (and a trend consistent with the data on employment) is that unemployment rates in the post-reform period were about 1.5–2 percentage points below those in the pre-reform years (1977–78, 1983, and 1987–88),

19. The actual definition has fourteen units, with each day comprising of two half-day units.

TABLE 12. Unemployment Rates According to Daily Status Definition

Percent unless otherwise indicated

<i>Definition</i>	<i>All persons</i>			<i>Age 15-59 years</i>		
	<i>1983</i>	<i>1993-94</i>	<i>1999-2000</i>	<i>1983</i>	<i>1993-94</i>	<i>1999-2000</i>
Person (millions)	734	899	999	394	515	572
Person days (millions)	5,138	6,293	6,993	2,758	3,605	4,004
Person days in labor force (millions)	1,860	2,370	2,520	1,620	2,130	2,290
Labor force participation rate	36.2	37.7	36.0	58.7	59.1	57.2
Total days of employment (millions)	1,710	2,220	2,340	1,480	1,990	2,120
Total days of unemployment (code 81) (millions)	111	111	144	102	106	137
Total days of unemployment (code 82) (millions)	43	32.4	39	38.1	29.5	35.5
Person-day unemployment rate (7 day workweek, code 81)	6	4.7	5.7	6.3	5	6
Person-day unemployment rate (7 day workweek, code 82)	2.3	1.4	1.5	2.4	1.4	1.6
Person-day unemployment rate (7 day workweek, code 81 + 82)	8.3	6.1	7.3	8.6	6.4	7.5
Official unemployment rate (NSSO, person days concept)*	8.3	6.0	7.3	*	*	*

Source: NSSO Employment and Unemployment surveys conducted in 1983, 1993-94, and 1999-2000.

*The NSSO does not compute daily unemployment rates for those aged 15-59 years, so data for this classification category are not available.

a significant amount. Thus, the big picture, according to the employment, labor force, and unemployment data, is that after reforms, the rate of growth of the potential labor force fell to less than 2 percent a year; the rate of growth of employment declined to an annual rate of 2 percent, and unemployment rates declined significantly. These are long-term trends; looking ahead, it appears that employment growth will match expected growth in the labor force (8 million people annually). It is encouraging to note that for 2000-03, employment growth far exceeded this minimum level.

Poverty, Education, and Frictional Unemployment

The relationship between poverty and unemployment is a controversial one. Some argue that the poor remain poor because they cannot find employment. Others argue that the poor are poor because they lack human and physical capital, not because they lack job opportunities or jobs.

TABLE 13. Unemployment, 1983 to 1999–2000, by Daily Status
Percent

Status	<i>Unemployment rates</i>		
	1983	1993–94	1999–2000
All India			
7 days unemployed	3.3	2.8	3.6
4 or more days unemployed	5.3	4.1	4.8
More than 1 but fewer than 4 days	3.1	2.0	2.6
Total	8.4	6.1	7.4
Total (official)	8.3	6.0	7.3
Average duration of unemployment of those who are unemployed for more than 1 but fewer than 7 days a week	2.4	2.3	2.2
Rural India			
7 days unemployed	2.6	2.2	3.0
4 or more days unemployed	4.8	3.6	4.4
More than 1 but fewer than 4 days	3.4	2.2	2.9
Total	8.1	5.8	7.3
Total (official)	7.9	5.6	7.2
Average duration of unemployment of those who are unemployed for more than 1 but fewer than 7 days a week	2.4	2.3	2.2
Urban India			
7 days unemployed	5.8	5.1	5.5
4 or more days unemployed	7.1	5.9	6.3
More than 1 but fewer than 4 days	2.2	1.4	1.7
Total	9.3	7.3	8.0
Total (official)	9.5	7.4	7.7
Average duration of unemployment of those who are unemployed for more than 1 but fewer than 7 days a week	2.3	2.3	2.2

Source: NSSO Employment and Unemployment surveys conducted in 1983, 1993–94, and 1999–2000.

Note: Duration of unemployment is obtained by multiplying the weighted average of the days unemployed in a week (as a proportion of the days in labor force) by 5.

There is an additional dimension—the relationship between education and unemployment. It has been argued that the jobless growth of the 1990s provided employment only for the educated rich; the uneducated poor were left behind. If so, then one should observe a strong negative relationship between education and unemployment, that is, the less educated you are, the more likely you are to be unemployed. There is an alternative hypothesis about this particular relationship, which yields the opposite sign. With economic development, and especially with globalization, one should expect the more educated members of the labor force to search longer for “better”

jobs. This hypothesis would imply that unemployment rates and education are positively related, that is, the rich have a much higher probability of unemployment than the poor.

The NSSO data strongly support the latter explanation. Table 14 reports the unemployment rates and education levels for various classifications of households. The different patterns yield one very firm conclusion: the mean education level of the unemployed is very high and has been increasing over years. For the weekly status definition, the mean education attainment of the unemployed in 1983 was six years, almost two-and-a-half times the mean education level of an average Indian. The story in 1999–2000 is no different: the mean education level of the unemployed increased to 7.2 years. Such individuals, in terms of education, are in the top 10 percent of society.

TABLE 14. Education and Unemployment, Weekly Status

<i>Category</i>	<i>1983</i>	<i>1993</i>	<i>1999</i>
Unemployment (%)			
Rural	3.5	2.7	3.4
Urban	7.3	5.9	6.1
All India	4.3	3.4	4.1
Poor ^a	4.5	3.2	4.5
Agricultural laborer household	5.0	3.2	4.3
Mean education years of labor force			
Rural	2.2	2.8	3.3
Urban	5.8	6.3	6.9
All India	3.0	3.6	4.2
Poor ^a	1.9	2.2	2.5
Agricultural laborer household	1.1	1.6	1.9
Mean years of education of unemployed			
Rural	4.9	6.3	6.1
Urban	7.9	9.0	9.1
All India	6.0	7.3	7.2
Poor ^a	4.3	5.3	4.5
Agricultural laborer household	2.2	3.1	3.3

Source: Employment and Unemployment surveys conducted by NSSO for 1983, 1993–94, and 1999–2000.
a. The poor are defined as those with monthly per capita consumption less than the official poverty line.

Wages and Income

This section examines whether wage growth provides corroborative evidence for the assumed deleterious effects of slower job growth. For example, a slower rate of wage growth in the post-reform years would be strong evidence

that job growth in the 1990s was of a lackluster variety. Indeed, one important reason why the finding of slow job growth was generally accepted was because some analysts pointed to a sharp decline in the rate of growth of wages (particularly the wages of unskilled agricultural workers) as evidence of “bad” reforms.²⁰ This evidence was deemed to be consistent with the associated “findings” that reform-led growth was lopsided, that poverty had not declined as fast as it had in the 1980s, and that reforms had caused an increase in inequality. The important issue of trends in inequality is taken up in the next section; the discussion here centers on the question of wage growth.

There is only one source of data on wages of *all* workers: the NSSO E&U large sample surveys conducted in 1983, 1993–94, and 1999–2000.²¹ Annual wage data are necessary for a meaningful analysis of the pre- and post-reform years, but these data are available only for agricultural workers. As a result, researchers have attempted to “match” the annual agricultural wage data with the periodic NSSO wage data to derive implications for overall wage growth in the pre- and post-reform period. These analyses are evaluated in detail below.

Rural and Urban Wage Growth

If the focus of interest is in economywide wage growth, and or rural-urban wage growth, then the only source for such information is the NSSO large sample E&U surveys. These surveys are of limited use for interpreting trends in the pre- and post-reform periods. If NSSO period II (1993–94 to 1999–2000) real wage growth rates are observed to be higher than NSSO period I (1983 to 1993–94), then one can reach the “safe” conclusion that wage growth was better in the post-reform period. If the wage growth rate shows a decline in NSSO period II, then unless one knows what happened in the intervening five years (1988–89 to 1992–93), years which overlap both the pre-reform and the post-reform periods, there is little that can be said about pre- and post-reform growth.²²

With these caveats, it is the case that the time profile of real wage growth, as revealed by the NSSO data, shows an unambiguous acceleration. Wage

20. Agricultural workers constitute a large fraction of the poor in the country and live in households whose primary, and almost exclusive, source of income is from labor.

21. The NSSO survey year 1987–88 seems to yield a highly inaccurate division of the labor force by sex; hence, analysis of wage data from this source is ignored.

22. Some indication about what happened to wages in this intervening period is yielded by the data on agricultural wages; the AWI and CoC wage series reveal an annual growth rate of 0.7 and 3.1 percent, respectively.

growth figures for all workers in India accelerated from an annual average of 2.5 percent to 4.5 percent (table 15). This wage growth pattern is consistent with annual GDP per capita growth, which rose from 3 percent to 4.3 percent over the same years. Per worker income growth also showed a sharp acceleration, from 1.6 to 4.7 percent annually.

TABLE 15. (Log) Annualized Growth of Wages, per Capita GDP and Private Income per Worker

<i>Category</i>	<i>1983 to 1993–94</i>	<i>1993–94 to 1999–2000</i>
NSSO data		
Agricultural workers	2.6	2.6
Rural India	2.5	4.1
Urban India	2.4	4.9
All India	2.5	4.5
National accounts data		
GDP, per capita	3.0	4.3
Private income	1.6	4.7

Source: NSSO Employment and Unemployment surveys conducted in 1983, 1993–94, and 1999–2000, *Handbook of Statistics on Indian Economy, 2004–05*.

Thus, both the national accounts and NSSO survey figures are in close agreement that wage and income growth nearly doubled after reforms. For agricultural workers, NSSO data suggest a constancy in the rate of growth of about 2.6 percent a year both before and after reforms. These twin findings—a large increase in the overall wage growth of workers and constancy in wage growth of the poorest agricultural workers—are at variance with the general belief that wage growth, especially of agricultural workers, collapsed in the post-reform period.

Wage Growth of Agricultural Workers before Reforms

This general belief holds that the rate of growth of wages of agricultural workers fell back from a high of about 5 percent a year in the 1980s to a low of about 2.5 percent a year after the reforms. These results are based on the AWI (a non-NSSO series that was discontinued after 2000). Despite this result being contradicted by the NSSO data showing a constancy in the rate of growth of agricultural wages, the finding gained currency both because of the sharp “unexplained” fall, and because it was endorsed by authoritative experts.

Gupta was the first to “discover” a large decline in the growth rate of agricultural wages postreforms: “Change in real wages in pre-reforms (1981–91)

period was 4.7 percent and in the post reform period (1991–99) 2 percent.”²³ Using a semi-log regression, Dreze and Sen conclude: “The growth rate of real agricultural wages fell from over 5 percent per year in the 1980s to 2.5 percent or so in the 1990s.”²⁴ Deaton and Dreze use these earlier studies to conclude: “According to recent estimates based on AWI data, real agricultural wages were growing at about 5 percent per year in the eighties and 2.5 percent per year in the nineties.”²⁵ Sen and Himanshu echo the same conclusion: “The different time-series available agree that, *although less than during the 1980s*, 1990s growth of real agricultural wage rates averaged 2–3 per cent per annum at the national level” (emphasis added).²⁶

As row 1 of table 16 illustrates, NSSO data show growth in agricultural wages between 1993 and 2000 of 2.6 percent a year, a number very close to the much-cited AWI figure of 2.5 percent for the 1990s. Indeed, this correspondence was taken as “proof” that wage growth had collapsed after the reforms. Apparently, it was assumed that since the 1990s figures from the two data sources matched, the 1980s wage figures would also match. In other words, it was assumed that the average annual NSSO wage growth figure for the 1980s would be close to 4.5 or 5 percent that the AWI data showed.

TABLE 16. Growth in Agricultural Wages, by Various Data Sources, Selected Periods
Percent

Survey	1972–91	1980–91	1991–2003	1983 to 1993–94	1993–94 to 1999–2000
NSSO	n.a.	n.a.	n.a.	n.a.	n.a.
Average growth	n.a.	n.a.	n.a.	2.6	2.6
AWI					
Average growth	2.0	3.1	3.3	4.2	2.2
Semi-log	3.0	4.4	3.1	3.0	2.8
CoC					
Average growth	2.0	3.0	3.7	5.0	2.5
Semi-log	2.8	3.8	3.5	4.0	2.5

Source: Agricultural Wages in India (AWI); Cost of Cultivation (CoC) of principal crops survey; NSSO Employment and Unemployment surveys conducted in 1983, 1993–94, and 1999–2000.

n.a. Not available.

23. Gupta (2002b, p. 468). We obtain somewhat different estimates: 3.1 percent a year in the 1981–91 period, and 1.9 percent a year in the 1991–99 period.

24. Dreze and Sen (2002, p. 348).

25. Deaton and Dreze (2002, p. 3737).

26. Sen and Himanshu (2004a, p. 4238).

But as we have just observed, the NSSO wage growth for the 1980s was much less than the AWI estimate of 2.6 percent a year—the same as in the 1990s.

Sundaram challenged the collapse in wage growth hypothesis by laboriously documenting the pattern of NSSO wage growth for the 1980s and 1990s.²⁷ He documented wage growth for twenty groups of agricultural workers (ten occupational groups sorted by gender). For twelve of these groups, he reported an acceleration in wage growth, for four groups a deceleration, and for four groups a constancy. The overall average growth in both periods: 2.8 percent a year. “The evidence from the NSSO Employment Unemployment Surveys offers *no* support at all for the hypothesis of a slowdown in the rate of growth of average daily wage earnings of adult casual labourers during the 1990s relative to that between 1983 and 1994,” Sundaram concluded.²⁸

Sundaram’s estimates for wage growth were also supported by Ahluwalia, who used NSSO data to document the large wage acceleration that occurred in the two six-year periods immediately surrounding the reforms (1987–93 and 1993–99).²⁹ The Ahluwalia report showed a 0.8 percent growth in real wages for casual male workers in the NSSO pre-reform period, and an acceleration to 3.6 percent growth in the post-reform period. Thus, it appears that *no* aspect of the NSSO data shows any decline in the rate of growth agricultural wages in the post-reform period, let alone a collapse.

Evaluation of Data on Agricultural Wages

Neither Sundaram’s extensive evaluation nor Ahluwalia’s supporting evidence appeared to have any impact on the “conventional wisdom” holding that agricultural wage growth collapsed after reforms. Different authors have used different methods and data series to make their claims. Table A-1 presents the nominal and real data on agricultural wages for every year since 1970. The reader can choose her own pre- and post-reform periods for estimations, and conclusions.

There are three major non-NSSO sources of data, and all of these data are for the agricultural year July to June. The most widely used wage series is the AWI series, which is available for the years 1960–2000. A new wage series (most likely a replacement for the AWI) started in 1997–98 and is available through 2002–03; this series is published in the *Indian Labour*

27. Sundaram (2001a, 2001b).

28. Sundaram (2001a).

29. Ahluwalia (2002).

Journal (ILJ). The third wage series is less widely used but more comprehensive. It is derived from various issues of *Cost of Cultivation* (CoC) in India. This series, which has details on the principal crops cultivated, the wage bill, and the quantity of labor used, began in 1970.³⁰ All three surveys are conducted by the Ministry of Agriculture. Table A-1 to this paper reports both the original and “filled” data for missing observations since 1999–2000; these have been filled in by grafting the *growth* rate as observed in the “parallel” ILJ agricultural wage series for the period 1999–2003. Real wages, in 1993 prices, are obtained by using a common deflator, the national average of the consumer price index for agricultural laborers (CPIAL). By using this common deflator, issues of divergence due to the use of different price series do not arise.

What Do the Wage Data Show?

This comprehensive tabulation of agricultural wages in India yields several insights into the evolution of wages in India. The AWI and CoC series show almost the same nominal wage for 1971 and 1980; and both show a large, 5 percent increase in 1984.³¹ However, the close correspondence in the two series begins to diverge just before the reforms of 1991. In 1990 the AWI series reveals a wage that is 6.5 percent higher than the average wage shown by the CoC; in 1999–2000 (the last year of the AWI data), the AWI wage level is 3 percent *lower*. In between, in 1993–94, the two wage series show an equal nominal wage. Looking at just these end-point differences (in 1990 and 1999), the AWI series shows an average annual growth rate in the 1990s that is 1 percent lower than the rate shown by the CoC series.

There are two methods for deriving an estimate of growth for any period of time: average growth (given by the difference in the values in the end years); or a semi-log regression. The latter disproportionately weights the outlier years. A simple semi-log regression of the AWI series for the period 1980–91 yields a growth coefficient of 4.4 percent; for the period 1991–2003, the coefficient is 3.1 percent (table 16). The CoC data (same time periods, same semi-log method) show a constancy in the rate of growth: 3.8 and 3.5 percent a year in the two periods. But the figures for the more

30. We are grateful to Mr. Praduman Kumar, Ministry of Agriculture, for kindly providing the data on cost of cultivation for different crops in India, 1970–2000.

31. No easy explanation is available for such a large jump in just one year. What is suggestive is the fact that 1982 was one of the lowest rainfall years and 1983 one of the best. So the 1984 wage increase might have involved some “catching up” in the agricultural sector.

reliable estimate of annual average growth tell a very different story—*both* sources point to an acceleration in the rate of growth of agricultural wages, from 3.1 to 3.3 percent a year in the AWI data; and from 3.0 to 3.7 percent a year in the CoC data.

The conclusion that agricultural wage growth collapsed is now explained. If a *semi-log regression estimate* of the AWI series for the 1980s is inappropriately juxtaposed with NSSO agricultural wage growth between 1993–94 and 1999–2000 (2.6 percent), and if, inappropriately again, the earlier period is believed to be pre-reform and the latter post-reform, then it does appear that wages of agricultural workers collapsed to half their pre-reform level.

Pre- and Post-Reform Economic Performance: A Review of the Evidence

As discussed earlier, it is incorrect to define the pre- and post-reform periods according to the availability of NSSO large-sample data. Table 17 documents the growth rates according to NSSO survey dates, and according to dates corresponding to reform periods. Growth results are presented for the two pre-reform periods: 1972–73 to 1991–92 and 1980–81 to 1991–1992. The post-reform period is defined as 1991–92 to 2003–04. Note that the cusp year, 1991–92, is considered as being part of both the pre-reform and the post-reform periods. There are arguments that it should belong to both periods

TABLE 17. Pre- and Post-Reform Wage Growth

Category	Including crisis year (1991–92)			Excluding crisis year (1991–92)		
	Pre-reform		Post-reform	Pre-reform		Post-reform
	1972–91	1980–91	1991–2003	1972–90	1980–90	1992–2003
Employment (in millions), NSSO	2.0	2.4	1.7	2.0	2.4	1.6
GDP, per capita (A) (NA)	2.3	3.1	4.0	2.5	3.5	4.3
Wage, farm laborer (AWI, real)	2.0	3.1	3.3	2.5	4.1	3.1
Wage, farm laborer (CoC, real)	2.0	3.0	3.7	2.3	3.5	3.7
Private income, per worker (NA and NSSO)	1.8	1.6	4.4	2.2	2.3	4.7
Population	2.2	2.1	1.6	2.2	2.1	1.6
Population (age 15–59)		2.6	2.3		2.6	2.3

Source: NSSO Employment and Unemployment surveys conducted in 1983, 1993–94, and 1999–2000; *Handbook of Statistics on Indian Economy* (2004) published by Reserve Bank of India; Agricultural Wages in India and Cost of Cultivation survey of principal crops published by Ministry of Agriculture, Government of India; National Accounts (NA) database developed by *Economic and Political Weekly*; population data are from Census of India 1981, 1991, and 2001 and for period 1981–91 and 1991–2001.

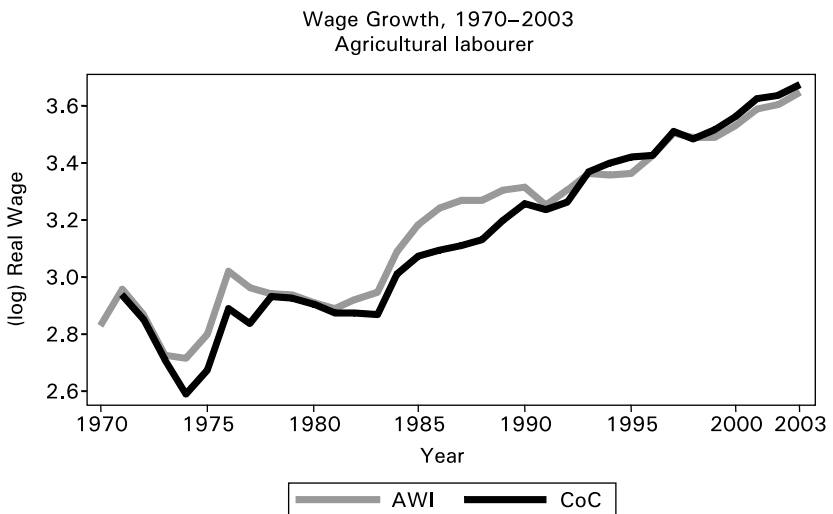
or to neither period. If the crisis year is excluded, the reform period shows a greater acceleration in growth. Consequently, to present a “worst case” picture of the reform period, the discussion below pertains to only the comparison that includes the cusp year in both periods.

Employment growth slowed in the post-reform period, as discussed earlier. No matter what the income indicator used (GDP per capita, private income per worker, agricultural wages), the post-reform period shows an acceleration. There is thus little evidence that the reform period was bad for the average, or the agricultural, worker.

Figure 2 documents the data on agricultural wage growth. Figure 2a shows the correspondence in the real wage *levels* of the AWI and CoC wage series; the two are near identical for several end-points: 1970, 1980, 1990, and 1999, but there is great divergence for the years 1985–89. In these years, the AWI wage levels are considerably higher than the CoC wage levels; hence, it is no surprise that the wage *growth* figures for the AWI series are higher for the 1980s. Figure 2b illustrates the differences as revealed by semi-log regressions; a decline in the slope for the AWI is observed for the 1990s (from a 4.4 percent annual trend to a 3.1 percent annual trend), while the CoC series shows a constancy.

FIGURE 2. Agricultural Wages

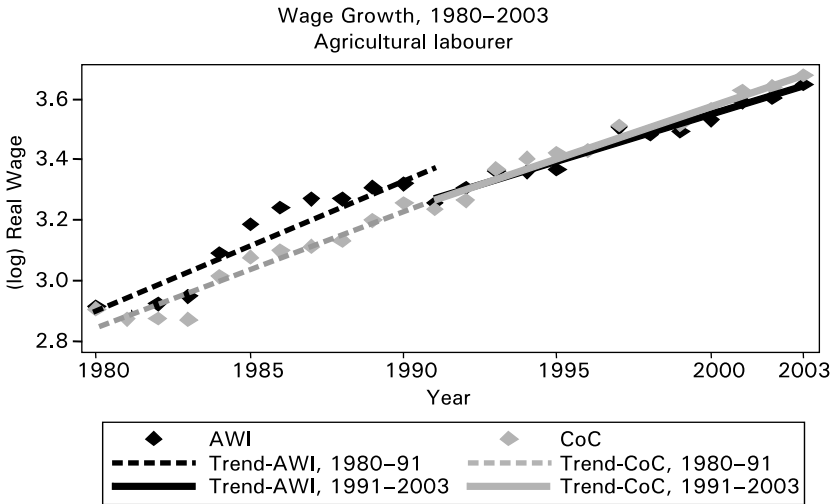
a. Wage Growth, 1970–2003



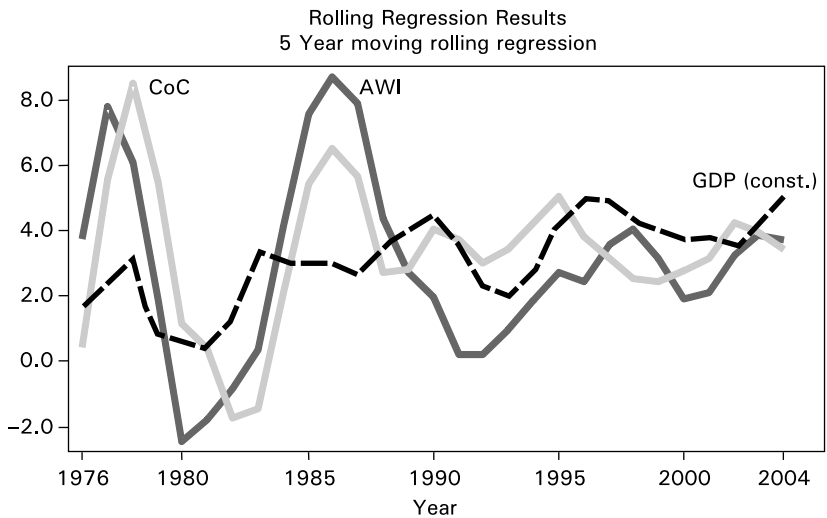
(Figure 2 continued)

(Figure 2 continued)

b. Wage Growth Trends, 1980-2003



c. Rolling Regression Results for Agricultural Wages and GDP per capita, 1971-2004



Source: Agricultural Wages in India (AWI) and Cost of Cultivation (CoC) survey of principal crops, published by Ministry of Agriculture, Government of India. AWI data are not available after 1998 and CoC data are not available after 2000. They are constructed using the growth rate of respective wages obtained from the *Indian Labour Journal*.

Figure 2c reports the results for a rolling regression for the two wage series and GDP per capita growth; the estimates are for a ten (and five) year initial window period 1970–79, and then for subsequent ten-year periods obtained by adding and subtracting one year; for example, the first estimate is for the period 1971–76, the next for the period 1972–77, and so on. This figure clearly shows that GDP per capita has steadily accelerated to a growth rate of 4 percent a year. Both the AWI and CoC wage series accelerate to over 8 percent a year in the mid-1970s, only to collapse to 2 percent a year in the years ending 1980 (AWI) and 1982 (CoC). Both wage series then reach a local peak in 1986 (a growth rate between 6 and 8 percent a year) and then fall to a low in 1991 or 1992. By 2003–04, both wage series reveal a growth rate close to 4 percent.

This section has presented all the data available for the period 1970–2003. Regardless of the definition of wages used, or whether the crisis year should or should not be included in both periods, there is no evidence to support the conventional wisdom of a precipitous decline in the rate of growth of wages of the poor.³² Indeed, the evidence points to a small acceleration. The other *derived* conjecture of the reform critics is that given the “reality” of a wage growth decline, it would be consistent to expect that inequality increased with economic reforms. But as we have just documented, there was no decline in wage growth of agricultural workers. Inequality outcomes are a function of several factors, and as the next section shows, the net effect of the various factors on inequality trends has been close to zero.

What Happened to Inequality after the Reforms?

The controversy over what happened to employment, unemployment, and agricultural wages is underpinned by one common belief: economic reforms initiated in 1991 and continued by every government since then, led to an increase in inequality. The primary basis for this conclusion is the 1999–2000 NSSO consumer expenditure survey. Consumption inequality for this fiscal year is alleged to have been significantly higher than inequality in 1993–94. (As discussed earlier, this comparison is inappropriate since reforms were initiated two to three years before 1993–94.)

32. Only one data source (AWI) shows a decline in the rate of growth of agricultural wages, which is observed if the crisis year 1991–92 is excluded from the analysis. However, even in this specification, the alternative CoC wage series actually shows an acceleration in wage growth, from 3.5 percent a year from 1980 to 1990 and 3.7 percent a year from 1992 to 2003.

Besides, and to make the inference about a pervasive inequality change even more problematic, the definition of some major items of consumption underwent a major change in the 1999–2000 survey. So a strict, noncontroversial comparison of consumption inequality between the two fiscal years is just not possible.³³ Even if a comparison is made, as attempted by various authors, the nominal change in inequality observed between the two years is less than 8 percent, and the higher level of inequality in 1999–2000 is slightly less than that observed in the pre-reform years 1983 and 1987–88. In other words, even the worst case estimates of inequality change in the 1990s still reveal a level of inequality less than that observed in the years preceding the reforms.

This conclusion diverges considerably from the findings that consumption inequality worsened sharply after the economic reforms in 1991. Several articles in Deaton and Kozel attempt to document this worsening “trend.”³⁴ In another prominent study, Deaton and Dreze conclude: “Except for the absence of clear evidence of rising intra-rural inequality within states, we find strong indications of a *pervasive* increase in economic inequality in the nineties. This is a new development in the Indian economy: until 1993–94, the all-India Gini coefficients of per capita consumer expenditure in rural and urban areas were fairly stable. Further, it is worth noting that the rate of increase of economic inequality in the nineties is far from negligible” (emphasis added).³⁵ Sen and Himanshu wrote: “It is now *certain that economic inequality increased sharply during the 1990s in all its aspects* and, as a result, poverty reduction deteriorated markedly despite higher growth” (emphasis added).³⁶

It bears emphasis that Sen and Himanshu do not offer any direct evidence of increased inequality in the 1990s; their indirect evidence consists of a mixing of data on different definitions of consumption in the different survey years. Deaton and Dreze arrive at their conclusion on the basis of a *synthetic* estimate of the old definition of consumption in 1999–2000, a variable for

33. The changing definitions are as follows: all goods are one of three types: food, durables, and nondurables, nonfood (NDNF). Before and including 1993–94, data on food consumption was collected on a thirty-day recall basis; in 1999–2000 food information was collected on both a thirty- and a seven-day basis. Data on durables were gathered on a thirty-day and annual basis through 1993–94, and then only annually in 1999–2000. Data on NDNF were collected on a thirty-day basis throughout. How these changing definitions affect both the mean and the distribution is a subject explored in considerable detail in Bhalla and Das (2004).

34. Deaton and Kozel (2005).

35. Deaton and Dreze (2002, p. 3740).

36. Sen and Himanshu (2004b, p. 4361).

which information was not gathered in the 1999–2000 survey. This they do on the basis of some very plausible assumptions.

Trends in Consumption Inequality

There are two possible adjustments that can be made to the 1999–2000 survey to make the consumption definition compatible with the 1993–94 survey (and earlier surveys). One method is to adjust the 1999–2000 new consumption data to conform to the 1993–94 old consumption definition.³⁷ The second method is to make 1993–94 compatible with the 1999–2000 definition.³⁸ Both adjustments are imprecise but nevertheless meaningful.

Figure 3 presents data for real consumption inequality from 1951 to 1999–2000. Data for 1951–82 are from the WIDER income distribution database, and those from 1983 to 1999–2000 are derived from our own calculations. The Planning Commission price deflator for each state and the rural-urban categories is used to deflate nominal expenditures. For 1951–63, a sharp decline in consumption inequality is observed; for the next forty years, the Gini varied in a very narrow range, 0.30 to 0.32. Real consumption

FIGURE 3. Consumption Inequality (Gini) in India, 1951–99



Note: Data from 1951 to 1982 from WIDER income distribution database; from 1983 onward, authors' computations. Nominal expenditures deflated by the state, urban/rural price indices.

37. Deaton and Tarozzi (2000) advocate this approach.

38. This method is put forth by Sundaram and Tendulkar (2003).

inequality in the much discussed 1993–94 to 1999–2000 period went up a paltry 4 percent.

This inequality result is at sharp variance with the conventional wisdom of a “pervasive” increase in inequality in the 1990s. The largest such increase is reported by Deaton and Dreze, a 7.8 percent increase in nominal inequality between 1993–94 and 1999–2000 (variance of logs measure of inequality).³⁹ Using Sundaram and Tendulkar’s new definition, the real inequality increase during that period was only 4.2 percent.

No matter what the definition of consumption (old or new, nominal or real), the conventional result that inequality worsened sharply in the 1990s is just not obtained. All series indicate an increase in inequality in the 1990s; the magnitude of this change, however, is very small (less than 8 percent). Further, real inequality seems not to have worsened as much as nominal inequality; the magnitude of change is about half that of change in nominal inequality (around 4 percent). Finally, for all the definitions of real inequality change in the 1990s relative to the 1980s, there is an improvement in inequality; for all the nominal changes, the net change in inequality is mildly positive.

NSSO consumption data, like the wages and income data reported later, do not show any significant change between 1983 and 2000. The data indicate a very mild V shaped pattern for inequality with the two end years, 1983 and 1999–2000, forming the ends of the V.

CONSUMPTION INEQUALITY: NSSO E&U SURVEY. In 1999–2000, the NSSO E&U survey also collected data on consumption expenditures (in addition to the data on employment and wages). The schedule of questions on consumption was a compressed one, especially relative to the more exhaustive set of questions in the NSSO CE survey. Sundaram and Tendulkar compare the two NSSO 1999–2000 consumption estimates (CE and E&U) and conclude that average consumption levels are comparable for a broad set of goods and that the per capita consumption average of the E&U survey is “uniformly” lower than the CE estimate by about 10 percent. If so, the inequality estimate of the E&U survey can be taken to be representative of the underlying distribution. This estimate is lower by about 4 percent than that indicated by the CE survey. Thus, *all* consumption data indicate a near constancy in inequality for the period, 1983 to 1999–2000.

CONSUMPTION INEQUALITY: RATIO OF URBAN TO RURAL CONSUMPTION. Both Deaton and Dreze and Sen and Himanshu use an additional indicator of inequality trends: the change in the ratio of average urban to average rural

39. Deaton and Dreze (2002).

consumption. Though there is no theoretical linkage, both sets of authors assume that a rise in the ratio implies an increase in inequality. An increase in the ratio is indeed observed in both real and nominal terms. But change in this ratio does not correspond with change in inequality. The ratio increases by about 11 percent between 1983 and 1993–94 and by 8 percent between 1993–94 and 1999–2000. However, this increase is consistent with inequality improving during the first period and inequality mildly worsening in the second period. This suggests that the urban-rural ratio of average consumption is *not* a reliable indicator of inequality change.

CONSUMPTION INEQUALITY: ADJUSTED NSSO CONSUMPTION. One additional estimate of consumption inequality is presented in table 18.⁴⁰ The estimates showing a decline in poverty for India (and several other developing countries) are suspect because in the 1990s, the growth in mean consumption as measured by surveys was considerably lower than the growth in mean consumption shown in national accounts.⁴¹ This is one bias that would tend to indicate that poverty levels in the 1990s were overstated. A bias in the opposite direction stems from the likelihood that consumption by the rich is underestimated in the surveys; hence, survey averages would tend to overstate the consumption of the poor. What is needed is an *adjusted* estimate of the survey mean; one such estimate is provided by “correcting” the NSSO data for the systematic measurement error that is introduced because the NSSO survey captures a reduced amount of total consumption (as revealed by the national accounts). The NSSO survey and national accounts estimates are “matched” for nineteen items, and the matched estimate is taken to be the true level of aggregate consumption. For example, in 1999–2000, cereal consumption in the survey was 17.5 percent below the national accounts estimate, so each survey household’s per capita cereal consumption is increased by 17.5 percent. If a poor household did not consume any “motorcycle,” the “motorcycle error” would not be transmitted to its adjusted consumption. This method does not suffer from definitional or measurement problems, but it does assume that the national accounts per capita consumption estimates of different goods are correct.

The inequality levels of the marked-up *adjusted* consumption are higher than the NSSO survey consumption, by about 10 percent. In other words, once the data are adjusted for all of the “missing” consumption, inequality,

40. This estimate was first presented in Bhalla (2002a, 2002b), reproduced in Deaton and Kozel (2005).

41. This point is discussed extensively in Bhalla (2002a, 2002b).

TABLE 18. Consumption Inequality, per Capita Expenditure, NSSO Data, 1983 to 1999-2000

Consumption category	1983	1987	1993-94	1999-2000	<i>(log) Change, %</i>		
					Period I	Period II	1999-2000 over 1983
Nominal expenditures							
Old definition of consumption (Gini) ^a	0.33	0.33	0.33	n.a.	n.a.	n.a.	n.a.
New definition of consumption (Gini) ^a	0.30	0.30	0.30	0.32	-0.7	6.0	5.3
National accounts-adjusted consumption (Gini) ^b	0.36	n.a.	0.35	0.37	-2.8	5.6	2.7
Urban/rural ratio of mean consumption							
Old definition of consumption ^a	146.2	155.8	162.8	n.a.	10.8	n.a.	n.a.
New definition of consumption ^a	n.a.	n.a.	162.8	175.9	n.a.	7.7	n.a.
Real expenditures ^c							
Old definition of consumption (Gini) ^a	0.32	0.31	0.30	n.a.	-5.2	n.a.	n.a.
New definition of consumption (Gini) ^a	0.29	0.28	0.28	0.29	-6.2	3.9	-2.3
National accounts-adjusted consumption (Gini) ^b	0.35	n.a.	0.33	0.35	-5.9	5.9	0.0
Urban/rural ratio of mean consumption							
Old definition of consumption ^a	110.0	107.8	116.8	n.a.	6.0	n.a.	n.a.
New definition of consumption ^a	n.a.	n.a.	116.9	124.8	n.a.	6.5	n.a.

Source: NSSO Consumer Expenditure survey for years 1983, 1993-94, and 1999-2000, National Accounts data from CSO and EPW CD-ROM.

n.a. Not available.

a. For old and new definitions of consumption, see text.

b. National accounts-adjusted refers to the adjusted per capita consumption, with adjustments made at the household and item level, that is, by "matching" of item expenditures, in survey and national accounts. See text for details.

c. The rural-urban state poverty line is used as the price deflator.

at any point in time, is higher by 10 percent. This is consistent with the belief that the rich understate their consumption by a greater degree than do poor people. However, the inequality trend according to marked-up consumption is exactly the same as the unadjusted consumption. For the adjusted data, the real Gini in 1983 was 0.35, which declined to 0.33 in 1993-94 and returned to 0.35 in 1999-2000. In other words, the adjusted data show a

mild V and no change between the pre- and post-reform periods—the same result shown by unadjusted consumption data.

Collecting all the available data, the overwhelming conclusion is that there has been no trend in per capita consumption inequality between 1983 and 1999–00. For the two post-reform years 1993–94 and 1999–2000, inequality increased mildly, with the most extreme estimate of the change being only 7.8 percent.⁴²

Trends in Wage and Income Inequality

Unlike the NSSO consumption surveys, the NSSO E&U data do not have any definitional problems and the wage data can be used to assess changes in wage and income inequality. These surveys are a rich source of data on those individuals who report wage and salary income; and for this population, the trend in wage inequality is easily estimated. By use of a simple human capital model, wage incomes can be derived for those workers (self-employed and family workers) for whom wage data are not reported. This allows for an approximation to trends in overall income inequality.

INCOME INEQUALITY CHANGE, 1975–76 TO 1994–95. Figures 4 and 5 document the results on all the income inequality surveys conducted in India. The only organization to collect complete data on income distribution in India is the NCAER. Two of its surveys, in 1975–76 and in 1994–95, were national in coverage. These NCAER surveys indicate an increase in inequality of only 10 percent for the twenty-year period (Gini values of 0.39 and 0.43 in the two years).

The NSSO per capita income data is incomplete; it contains information on wages but has no data on earnings from self-employment or capital. The data can be made “complete” by estimating an earnings function model. This model uses information on years of education, experience, and experience squared to separately estimate an income function for urban and rural areas and for males and females. From an imputed wage for each worker, total and per capita wage income for each household is derived.

A cross-check on this imputed NSSO income distribution is provided by comparing it to the distribution obtained from the complete NCAER data (complete in the sense that the organization collected information on all sources of income from all members of the family). The 1975–76 NCAER distribution has a Gini of 0.39, not much different from the adjusted NSSO

42. Deaton and Dreze (2002).

FIGURE 4. Income Inequality in India, 1955-99

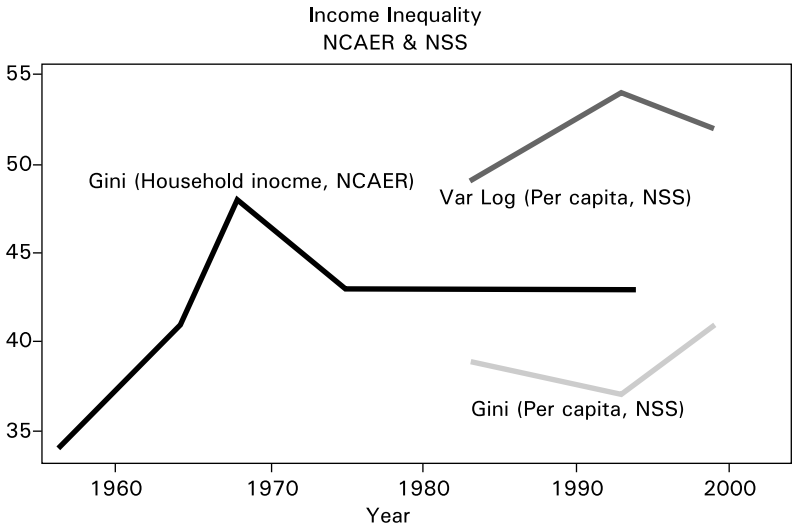
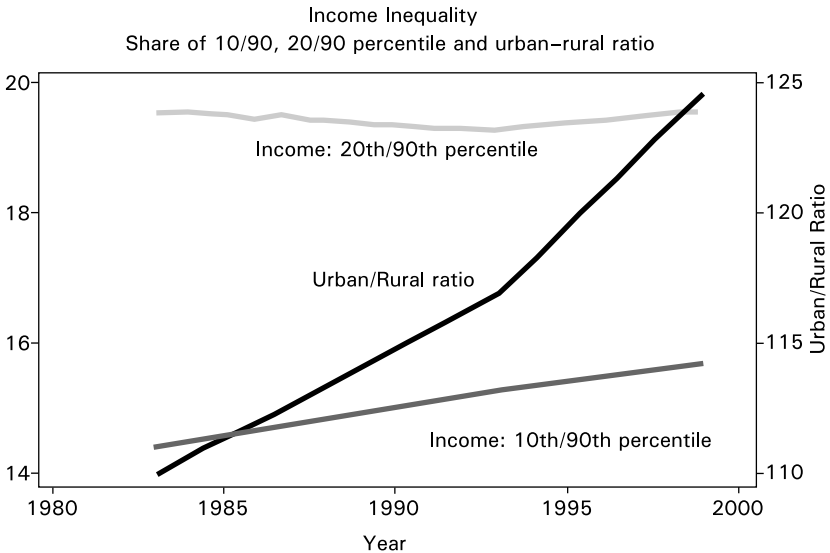


FIGURE 5. Income Inequality, by Percentiles, NSSO Data, 1983-99



Gini of 0.42 for 1983; the 1994-95 NCAER distribution has a Gini of 0.43, a level very similar to the NSSO adjusted Gini of 0.41 for 1993-94.

The Gini for NSSO real wage inequality declines from 0.39 in 1983 to 0.37 in 1993-94 and then rises to 0.41 in 1999-2000—the same pattern as that

obtained for nominal wages.⁴³ A different inequality measure, the variance of logs, shows a reverse pattern, that is, a peak in inequality in 1993–94 and a large decline (about 25 percent) thereafter. In other words, depending on the measure of inequality, wage inequality either increased in the 1990s by a small amount (Gini) or decreased by a large amount (variance of logs). But in all cases, the 1999–2000 level is little different than the 1983 level. This difference in the Gini and variance of log measures results most likely occurs because the Gini is more sensitive to changes near the *middle* of a distribution.

That this is indeed the case is indicated by the NSSO percentile data on wages and wage growth. Figure 5 plots these data for the period 1983 to 1999–2000. The poorest tenth and twentieth percentiles gain relative to the ninetieth percentile, between 1993–94 and 1999–2000.

INCOME INEQUALITY WORSENING: YET ANOTHER ESTIMATE. This constant inequality pattern for the 1990s (relative to the 1980s) is far removed from the conventional wisdom, where it is more or less assumed that not only did inequality worsen after the reforms, but that it did so by a large amount. One study by Banerjee and Piketty uses data on *income taxes* (paid by less than 3 percent of the population) to derive conclusions about changes in overall income distribution.⁴⁴ This heroic study has been much cited as corroborative “proof” that inequality worsened in India since the economic reforms. Banerjee and Piketty conclude that the top 0.01 percent of Indians had faster growth than the average (“the rich got richer”) and that this phenomenon had “a non-trivial impact on the overall income distribution.” In their 2005 update, Banerjee and Piketty warn that “if the same pattern of divergence between the rich and the rest that we saw over the past decade is repeated over the next decade, the income distribution consequences will be much more drastic than what we have so far seen.”⁴⁵

But this conclusion does not follow from the data and analysis that they present. The change in status of the top 0.01 percent will have precious little bearing on inequality unless the same change is enjoyed by, say, the top 1 or 2 percent or perhaps even the top 10 percent. For example, inequality is likely to *improve* if the top 0.01 percent gains (relative to the average) and the top 1 percent loses (again, relative to the average). The net effect is an

43. Real wage income figures are obtained by deflating nominal wage incomes by a price deflator which varies across states and regions (urban and rural).

44. Banerjee and Piketty (2003). See also Banerjee and Piketty (2005).

45. Banerjee and Piketty (2005, p. 528).

improvement in overall inequality since the top 1 percent has 100 times the weight of the top 0.01 percent.⁴⁶

But even if the top 1 percent of taxpayers had faster-than-average growth, it is still questionable whether inequality would worsen. The Banerjee and Piketty conclusion rests on the assumption that rates of tax compliance remain unchanged. Whether they have or not is an empirical matter, and there is strong evidence suggesting that income tax compliance rates have increased markedly, and in a nonlinear fashion.⁴⁷ In other words, there is a “missing middle” in India’s tax returns. Both the richest and the poorest of the 20 percent of India’s population that is tax eligible have much higher compliance ratios (about 30–50 percent) than the less than 10 percent tax compliance ratios of those in the middle of the tax distribution.

Even worse for the Banerjee and Piketty analysis and conclusion is the fact that their own Pareto-constructed income data show that inequality *improved* in the 1990s. Table 19 reports the Banerjee and Piketty synthetic estimates (Pareto distribution derived from tax data) of income (in 1999–2000 prices) for the top 0.01 percent of the population, the top 1 percent, the 99th percentile, and so on for 1992–93, 1993–94, and 1999–2000. NSSO worker distribution for 1993–94 is used as a benchmark and the Banerjee and Piketty growth rates are imposed on this distribution, along with the growth in average per worker incomes for the bottom 98 percent of the worker population.

What Happened to Poverty in the 1990s?

The pace of poverty reduction is a function of two important variables (in addition to the shape of the distribution close to the poverty line): the rate of income growth, and the change in inequality.⁴⁸ If inequality stayed approximately the same in the 1980s and 1990s, then the pace of poverty reduction

46. One discussant, Kaushik Basu, claimed in his comments on our paper that the Banerjee–Piketty study *does* lead to the logical inference that there was an unambiguous *increase* in income inequality: “The [Banerjee–Piketty] claim is that inequalities have gone up, because 0.01 percent have a high growth, so the top end of income is pulling up very rapidly.... [W]hat you get is Lorenz curve pulling down. If the Lorenz curve is pulling down, then by virtually any measure of inequality, inequality has gone up.” Both theoretically and empirically, we disagree. If the top 0.01 percent has a higher rate of growth than the average, and the top 1 percent a lower than average rate of growth, then, all else being equal, inequality has improved. This is indeed what occurs with the Banerjee–Piketty data (see table 19).

47. For evidence on increasing tax compliance, see Bhalla (2002b, 2004c); and Kelkar (2002).

48. On the shape of the distribution close to the poverty line, see Bhalla (2002a, 2002b).

TABLE 19. Banerjee–Piketty Data Indicating Income Inequality Improvements in the 1990s

Income class	Level (in Rs. 000)			Cumulative growth (%)	
	1992–93	1993–94	1999–2000	1992–99	1993–99
Above 99.99 percentile	1,161	2,428	4,034	247.6	66.2
Above 99 but below 99.99	126	157	191	51.6	21.7
Top 1 percent	136	180	230	68.3	27.7
99th percentile	73	90	88	20.0	-3.0
Top 2 percentiles	105	135	159	51.4	17.4
Average worker income	20	21	29	43.9	39.9
Gini	0.4203	0.4203	n.a.	0.4198 ^a	0.4079 ^a
Variation of logs	0.7240	0.7240	n.a.	0.7206 ^a	0.7053 ^a

Source: Banerjee and Piketty (2003) for growth in wages of the top 2 percent of the population; average worker income is the ratio of private income (national accounts) and number of workers in the economy (NSSO surveys); the distribution of per worker income is obtained from NSSO E&U survey, 1993–94.

a. Derived indexes with the NSSO income distribution data for the base year (1992–93 or 1993–94) and Banerjee–Piketty percentile growth rate for the intervening years.

n.a. Not available.

can only slow in the 1990s if the rate of consumption growth declines. But as we have just seen, all indicators of income change show an acceleration in per capita growth in the post-reform period. So the pace of poverty reduction should have been faster in the 1990s, but it is observed to be lower. Why? The answer is that the NSSO consumer expenditure surveys have been capturing less and less of the consumption as indicated by the national accounts, with the consequent result that the growth of per capita consumption, according to the NSSO consumption surveys, has only been a cumulative 8 percent between 1993–94 and 1999–2000; some authors argue that the *cumulative* six-year growth in expenditures of the poor was no more than 3 percent!⁴⁹ According to the national accounts data, per capita consumption grew at an annual rate of 3.2 percent in the 1990s; the NSSO-based growth rate was only 1.3 percent a year.

Table 20 provides a comprehensive listing of all the different growth rates in the two NSSO periods. Only the NSSO consumption growth shows a constancy; all other estimates (including the NSSO E&U surveys) show a sharp acceleration. The magnitude of average growth in the 1990s by all NSSO nonconsumption survey sources is also considerably higher—by at least 1.5 percentage points a year, or 9 percent over six years. This puts into

49. See Sen and Himanshu (2004a, 2004b).

TABLE 20. Per Capita Annual Growth in the 1980s and 1990s: Alternative Estimates

<i>Indicator</i>	<i>1983 to 1993-94</i>	<i>1993-94 to 1999-2000</i>	<i>1983 to 1999-2000</i>
GDP (National Accounts)	5.1	6.5	5.6
GDP per capita (National Accounts)	3.0	4.5	3.6
Per worker income (National Accounts)	1.6	5.6	3.1
Rural wages (NSSO)	2.5	4.1	3.1
Urban wages (NSSO)	2.4	4.9	3.3
Agricultural worker wages (NSSO)	2.6	2.6	2.6
Per capita consumption (National Accounts)	1.5	3.2	2.2
Per capita consumption (NSSO), old definition	0.8	1.8 ^a	1.2
Per capita consumption (NSSO), new definition	1.2	1.3	1.2
Poor rural workers (Sen and Himanshu)	n.a.	0.5	n.a.

Source: NSSO Employment and Unemployment surveys conducted in 1983, 1993-94, and 1999-2000; *Handbook of Statistics on Indian Economy* (2004) published by Reserve Bank of India; Government of India; National Accounts (NA) database developed by *Economic and Political Weekly*; Census of India 1981, 1991, and 2001; Sen and Himanshu (2004a).

a. Obtained from Deaton and Dreze (2002).

n.a. Not available.

perspective the needless debate in the poverty literature in India on the likely percentage by which the NSSO consumer expenditure survey data for 1999-2000 overstated mean expenditures. The maximum possible overstatement in total 1999-2000 expenditures is considerably less than 2 percent, a magnitude close to the difference in annual growth between the NSSO consumption survey and other data!

The different NSSO survey estimates of cumulative growth between 1993-94 and 1999-2000 (the difference that is relevant for poverty calculations) diverge by about 20 percentage points—8 percent for consumption growth compared with 28 percent for growth in rural incomes. An adjustment of 1 or 2 percentage points in consumption due to overreporting of food expenditures in 1999-2000 is therefore very, very minor. Thus, the significant “growth gap” between average wage growth and average per capita rural consumption growth during the 1990s dwarfs any calculations of the over- or underestimate of mean per capita expenditures in 1999-2000. The NSSO average consumption growth for six years in the 1990s is equal to the NSSO rural income growth for one year and four months; and Sen and Himanshu’s cumulative consumption growth of only 3 percent in the 1990s is achieved by an average NSSO agricultural wage worker in little over a year, and by a rural wage worker in only three months.

A worst case estimate of *average* consumption growth is obtained by taking the wage growth achieved by the *poorest of the poor*, agricultural workers. And the poorest workers achieved annual growth of 2.6 percent for sixteen-and-a-half years. If this wage growth is imposed on the consumption distribution of 1983 (the most unequal distribution for all the NSSO large sample survey years), then poverty levels for different years can be generated. These poverty levels will be different from the official levels because of differences in growth; the distribution remains relatively most unequal for the 1983 distribution. If the growth rates are worst-case estimates, so are the derived poverty levels, and changes. The predicted poverty level in 1999–2000, on the basis of *average* per capita consumption growth being equal to the growth in incomes of the *poorest* workers (2.6 percent a year), is only 13 percent, fully *half* the official head count ratio of 26 percent. Note that average annual rural wage growth in the 1990s was much higher than 2.6 percent, and imposition of this larger growth would obviously imply an even lower poverty level in 1999–2000. This simulation vividly illustrates the magnitude of the upward bias in poverty calculations that results from assuming that the average per capita NSSO consumption growth reflects reality.

Conclusions

The accepted view about the behavior of the Indian economy before and after the reforms is as follows. In the 1980s economic growth averaged around 5.5 percent a year. Population growth was around 2 percent, so per capita growth averaged 3.5 percent. Employment growth was more than 2.5 percent, and unemployment rates were low. Rural India, where most of the poor reside, benefited enormously as wages of agricultural workers expanded at a rate of about 4–5 percent each year.

At the end of the 1980s, the Indian economy ran into a balance of payments crisis, and, in response, the Government of India instituted major economic reforms in the short space of two years, 1991–93. The nature of these reforms was not controversial, and every government since then has continued with them. According to the conventional view, however, these reforms did not materially benefit the economy. The GDP growth rate stayed the same, and employment growth collapsed to about 1 percent a year. Following this apparent slackening in demand, unemployment rates skyrocketed, and agricultural wage growth fell to half its pre-reform rate. Because the

reforms were oriented toward the rich, urban parts of the economy, this sector benefited disproportionately more. Aggregate inequality worsened, and worsened significantly.

There are debates within this overall story, but the broad parameters are accepted by most economists, sociologists, policymakers, and politicians. The objective of this paper was to take a second look at the conventional conclusions; by doing so, we find that virtually every conclusion noted above is either unsupported or reversed. In the last few years, annual GDP growth of around 7 percent now makes the post-reform GDP (and GDP per capita) growth significantly *higher* than it was before the reforms. Regarding employment, evaluation of census and NSSO data indicates that the rate of growth in the supply of working-age people *declined* by 0.3–0.7 percent a year in the post-reform period. This demographic shift has been ignored by most analysts who have examined the slow job growth of the 1990s. If the size of the potential labor force has declined, it means that employment growth has to be less (and wages higher) to keep the labor market in equilibrium, all else being equal. Further, NSSO employment data for the period 2000–03 (also considered a period of jobless growth) shows healthy growth of 2.9 percent a year, a pace well above growth of potential labor supply (around 2 percent a year).

On deeper examination, the conclusion that the growth rate of agricultural wages collapsed is also shown to be wrong. Although Sundaram and Ahluwalia had pointed out that the NSSO data indicated *no* decline in wage growth in the post-reform 1990s, this finding was ignored by most analysts.⁵⁰ Examination of all the non-NSSO data on agricultural wages also indicates no support for the view that wages collapsed; instead, overwhelming support is obtained for the conclusion that wage growth of poor agricultural workers at least stayed constant. NSSO data reveal that wage growth of rural and urban workers accelerated sharply in the post-reform period. Unemployment rates, while higher in 1999–2000 than in 1993–94, were still lower than the levels prevailing in much of the pre-reform period. By 2003 unemployment rates had declined to a near thirty-year low (and were much lower than that they had been just four years earlier in 1999–2000).

Data on both consumption and income inequality were examined in detail. Both consumption and income data reflect the mildest of inverted V's, with the pre-reform period being one end and 1999–2000 being the other, and 1993–94 being the low point of inequality. However, the improvement between 1983 and 1993–94 is less than 9 percent, and the subsequent

50. Sundaram (2001a, 2001b); Ahluwalia (2002).

worsening was only about 4 percent or so. Thus, the post-reform year 1999–2000 is observed to have marginally *lower* inequality than either of the two pre-reform years, 1983 or 1987–88.

Thus, one consistent view of the economy has been replaced by another consistently opposite view. Previously, it was thought that reforms were not effective in raising aggregate growth, employment, and wages. Because the reforms involved some macroeconomic policies, such as devaluing the rupee, reducing tariffs, making the economy more open, and making exports competitive, critics of the reforms did not ask why these seemingly sensible policies were not having a positive effect. However, no one, not even the critics, has questioned the basic thrust of economic reforms: the necessity of opening up the economy, the reduction in import tariff rates to international levels, the goal of making the rupee more competitive, and the abolition of the industrial licensing system.

The new picture we show here is also consistent: the reforms were remarkably successful in generating jobs and reducing unemployment rates, and the data used are the *same* as those arguing the opposite. For some of the revised conclusions, there is the advantage of having additional data, but most previous findings were questionable even based on old data. One explanation for the (faulty) previous set of findings is that like news, research occurs in waves. Researchers “build” on prior research, sometimes with an ideological filter. So a wave of opinion becomes a new “reality.” And this reality can become policy, as has recently occurred in India. Unemployment rates are at historic lows, the unemployed are found to be the educated nonpoor, and yet the government, perhaps aided by the previous jobless growth “findings,” decides to embark on an employment guarantee scheme for the rural unemployed—a category of workers showing the least amount of unemployment.

APPENDIX

TABLE A - 1. Agricultural Wages from Different Sources^a

Year	Nominal					Real						
	AWI	CoC	NSSO	Plowman AWI	Unskilled ILJ	Plowman ILJ	AWI	CoC	NSSO	Plowman AWI	Unskilled ILJ	Plowman ILJ
1970	3.0						16.9					
1971	3.4	3.3					19.2	18.9				
1972	3.4	3.4					17.6	17.3				
1973	3.6	3.5					15.3	15.0				
1974	4.8	4.2					15.1	13.3				
1975	5.0	4.4					16.5	14.5				
1976	5.4	4.7					20.5	18.0				
1977	5.6	5.0					19.4	17.1				
1978	5.4	5.4					18.9	18.8				
1979	5.8	5.8					18.8	18.7				
1980	6.5	6.5					18.4	18.3				
1981	7.2	7.1		6.7			18.0	17.7		16.8		
1982	7.8	7.4					18.6	17.7				
1983	8.9	8.2	6.6				19.1	17.6	14.9			
1984	10.3	9.5					22.0	20.3				
1985	11.8	10.6					24.2	21.7				
1986	13.1	11.4					25.5	22.1				
1987	14.8	12.7					26.3	22.4				
1988	16.7	14.6					26.3	22.9				

1989	18.3	16.4				27.3	24.5		
1990	19.9	18.7				27.6	25.9		
1991	22.3	21.9	21.5			25.9	25.4	25.0	
1992	26.3	25.3				27.3	26.2		
1993	28.9	29.0	19.6			28.9	29.0	19.6	
1994	32.2	33.6				28.7	30.0		
1995	35.9	37.9				28.9	30.6		
1996	41.7	41.8	37.7			30.8	30.9	27.9	
1997	46.5	46.8	43.5			33.3	33.5	31.2	
1998	50.8	50.4		42.6	53.7	32.8	32.6		27.5
1999	53.2	54.4	37.1	46.7	59.8	32.9	33.6	22.9	34.7
2000	55.0 ^b	57.0	38.4 ^b	48.9	61.9	34.1	35.4	23.8	28.9
2001	59.3 ^b	61.5 ^b	41.4 ^b	51.2	66.7	36.3	37.6	25.3	30.3
2002	62.0 ^b	64.2	43.2 ^b	53.0	69.7	36.7	38.1	25.6	31.3
2003						38.4	39.5	28.1	31.4
2004	71.5 ^b	73.1 ^b	54.4 ^b		93.3 ^b	40.0	41.0	30.5	46.8
									52.3

Source: Agricultural Wages in India (AWI), Cost of Cultivation (CoC) of principal crops survey, and *Indian Labour Journal* (ILJ) are all published by the Ministry of Agriculture, Government of India. The AWI series appears to have been discontinued from 2000–01 onward and been replaced by the ILJ series. Updating of the series for the years 2000–01 to 2002–03 was done by grafting on the growth rate as observed in the ILJ series onto the other series; the 2004–05 data has been updated via the growth rate for 1999–2000 to 2004–05 observed for agricultural workers in the NSSO survey for 1999–2000 and the Indian Retirement, Earnings and Savings (IRES) (survey for 2004–05) conducted by Ministry of Finance, Government of India. NSSO refers to data collected by the Employment-Unemployment surveys conducted in years 1983, 1993–94, and 1999–2000.

a. Data on agricultural wages are collected for various categories of agricultural workers, the most common of which is a plowman. Blank spaces indicate data not available.

b. Indicates that the number has been derived using other wage data series.

Comments and Discussion

Kaushik Basu: How successful have the Indian reforms of the early 1990s been? This question has been the source of much controversy, heartburn, and debate. The aim of the paper by Surjit Bhalla and Tirthatanmoy Das is to contribute to this debate by looking at three broad parameters of performance: job creation, poverty, and inequality. Toward this objective the authors marshal an extremely impressive range of data sources—various rounds of the National Sample Survey—including Employment-Unemployment and Consumer Expenditure surveys, data from Agricultural Wages in India and Cost of Crop Cultivation surveys, and more. This empirical reach is commendable, and learning how the numbers are collected and collated makes for interesting reading.

Nevertheless, the paper fails to persuade because it attempts to slay too many dragons. The paper begins by outlining a long list of “accepted views” about what has happened to growth, employment, poverty, and inequality, with the aim of taking a “second look” at all these conventional wisdoms, and “by doing so,” Bhalla and Das find that “virtually every conclusion ... is either not supported or reversed.” Now, whenever an author finds that “virtually every” conventional wisdom is wrong, clearly the sensible strategy is to question one’s own analysis, instead of *everybody* else’s. And if the authors of this paper had done so, they would have themselves discovered most of the flaws that I discuss below.

The main problem of the paper is—over-zealousness. In evaluating the reforms, the authors refuse to give an inch. *Everything*, it seems, has turned out for the better. The subtext is that no government intervention is needed. All is hunky dory. The paper ends up, effectively, as an endorsement of the BJP-government slogan “India shining.”

Conventional Wisdom

Let us look into their argument in some detail. First of all, what Bhalla and Das describe as conventional wisdom, held by virtually all Indian economists, is not so. For instance, they say “the conventional view” is that the “GDP growth rate remained the same” before and after the reforms and that poverty did not decline. On the contrary, there is widespread agreement

that the post-reform GDP growth rate is higher—somewhat, compared with the 1980s, and, significantly, compared with earlier times. Likewise, there is increasing agreement that poverty, as defined by the percentage of the population below the poverty line, had gone down by the end of the 1990s. It is true that the fifty-fifth round of the NSSO, because of its effort to collect data on consumption for both the last seven days and the last thirty days, creates comparability problems with previous NSSO surveys. But, thanks to two excellent papers, by Deaton and by Sen and Himanshu, we have as good insights into poverty changes as can be gleaned from the data.¹ And it is evident that, although the decline is not as sharp as had been claimed by the then-BJP government, poverty has gone down.

The other two conventional wisdoms are rightly described in the paper. It is widely believed that the higher growth of the 1990s has not been accompanied by a commensurate growth in jobs and that inequality—regional and personal—has gone up.

As a consequence, the paper has little to add on GDP growth and poverty. What is therefore of potential interest is what it has to say on “jobless growth” and inequality. The paper’s conclusions on inequality—namely, that everybody else is wrong—turns out, on inspection, to be invalid. The discussion on jobless growth is more interesting. The numbers here are messy enough that one cannot reach an easy conclusion. But the data collated and organized in this paper is, in itself, deserving of attention.

Jobless Growth

The authors’ basic contention is that the number of new jobs created each year since the reforms may be low, but that does not translate into a high unemployment rate because the increase in labor force has itself been low. They construct this finding by using a variety of interesting data sources. While their final conclusion does not stand up to scrutiny, the process of building up to that conclusion makes for absorbing reading.

The final conclusion is marred by some small flaws and one conceptual omission. Take, for instance, the authors’ observation, “If inward and outward migration is not significant, then employment growth cannot exceed [the] rate of growth [of potential labor supply].” “Potential labor supply,” it is worth reminding the reader, is the total working age population, unmindful of whether a particular person wishes to work or not. This definition contrasts with the “labor force,” which consists of the population working or

1. Deaton (2001); Sen and Himanshu (2004a).

looking for work. It is now easy to see that the quoted sentence is invalid and occurs because of an elementary confusion between “level” and “growth.” It is indeed true that the level or size of the labor force or the size of the working population cannot exceed the level of potential labor force. But that is not so for the growth rates. Consider two years in which there is no change in the potential labor force. But suppose in the first year half the people in the potential labor force worked and in the second year everybody worked. In that case growth in the potential labor force is zero, and growth in jobs is 100 percent, thereby demonstrating the invalidity of the quoted sentence.

It is not as if the authors are unaware of this, as later remarks by them demonstrate. The source of their mistake is overzealousness. So keen are they to keep the labor force growth rate low (since that tends to make the unemployment rate low) that they end up making this error. Not surprisingly, the unemployment rate that they calculate for the year 2003—namely, 2.2 percent—would put Japan to shame.

The handling of dates also raises questions. The paper goes through a rather convoluted argument to explain why 1990–91 should be treated as belonging to both the pre-reform and the post-reform periods. Since 1990–91 was one of the worst years for the Indian economy, treating it in both periods immediately ensures that the post-reform changes will look better than the changes in the pre-reform period.

The more serious mistake is that of not making room for what is known in the literature as the “discouraged worker effect.”² It is well known that when the job scenario gets bad and work becomes consistently hard to find, people often withdraw from the labor market, that is, they become too discouraged to continue searching for work. When this happens, the size of the unemployed pool (those without work *and looking for work*) goes down, and so the unemployment rate goes down. This of course is no reason for celebration since the improvement in the unemployment rate in cases like this is simply a statistical artifact.

Inequality

Turn now to inequality. Bhalla and Das dismiss out of hand Deaton and Dreze’s findings on “the pervasive increase in economic inequality in the nineties,” as based on “a synthetic estimate.” They also dismiss Sen and Himanshu’s claims on worsening inequality as a consequence of their “mixing of data on different definitions of consumption.” But there are many

2. See discussion in Basu, Genicot, and Stiglitz (2003).

other writers who subscribe to the view of deteriorating inequality in India. In fact, on this the authors are right that there is near-consensus. And this is so for the good reason that inequality has been getting worse for several decades and particularly in the 1990s.³

The increase in inequality is true whether one looks at overall measures, such as the Gini coefficient or the variance of logs, or at segments of the population, such as the class of income-tax payers. By most overall measures applied to NSSO data, inequality in 1999 was worse than it was in 1993. One can quibble over whether these are good years to compare and whether these are the best numbers to look at, but the fact remains that the large NSSO surveys show a worsening in the 1990s.

Bhalla's disagreement with Banerjee and Piketty is based on a simple misunderstanding. Banerjee and Piketty show a sharp worsening of income distribution at the top—namely, that the richest 0.01 percent of the population grew sharply richer between 1992 and 1999.⁴ Their income rose by an astonishing 348 percent. Banerjee and Piketty do not claim that *therefore* inequality increased overall. So Bhalla and Das's claim that during the same period the top 2 percent of the population had a decrease in its income share, and that this amounts to evidence of "anomalies" in the Banerjee–Piketty study, is not meaningful.

On this they also misquote me. My comment was in the context of the claim made in an earlier version of their paper that Banerjee and Piketty's findings are compatible with unchanged inequality "since *it very well might be the case that the super-rich are taking from the very rich*, leaving the aggregate inequality unchanged" (my italics). I had merely pointed out that, if the italicized part of the quote were true, then anybody with familiarity with Lorenz curve analysis would be able to see that inequality would have to get worse. So Bhalla and Das's claim was untenable.

Spurious Causality

One widespread weakness is the presumption that whatever happened after the reforms was *caused* by the reforms. Throughout the paper the language used is that of causality between the reforms and changes in the economy. "The new... picture shows that the reforms were remarkably successful in generating jobs," it is pointed out. But no effort is made to link the greater

3. See, for example, Ahluwalia (2000); Rao, Kalirajan, and Shand (1999); Banerjee and Piketty (2003); and Basu (2004).

4. Banerjee and Piketty (2003).

jobs (to the extent that that was so) to the reforms, excepting that the reforms preceded the jobs.

What this analysis misses is that hundreds of changes are taking place at any time. And especially in this age of globalization, when a change in Brazil or South Africa or the United States can affect outcomes in India, it is not clear that all changes in the late 1990s can be attributed to the Indian reforms of the early 1990s. The increasing economic inequality is a case in point. I think this inequality is intimately connected to globalization and technological changes and would occur in individual countries whether or not economic reforms had occurred. It may not be a matter of coincidence that inequality is on the rise in so many nations—the United States, China, and India. As the globe shrinks the lower end of the U.S. labor market faces increasing competition from China and India, and so the wages of lower-end jobs in the U.S. get pulled down, relatively. Equally, as the labor market for skilled workers and professional managers becomes more integrated globally, the top-end incomes in India and China increase sharply. This causes inequality in India and China to rise. This is nicely compatible with Banerjee and Piketty's findings regarding Indian inequality.

Moreover, while Indian inequality is huge in absolute terms, it is not particularly bad in relation to what is happening to other nations. Take the simple measure of the ratio of the income of a nation's richest 10 percent divided by the income of the poorest 10 percent. According to the World Bank's *Human Development Report*, this ratio for Brazil is 85, for China 18.4, for the United States 15.8, and for India 7. So the Indian problem is big in absolute terms but not in relative terms.

My belief is that while these large inequalities are embarrassing, there is little that any individual country, especially one that is poor and a relatively small player in the global marketplace, can do about it without driving away capital and skilled labor. So if inequality is to be tackled, coordinated global action will be needed. That is something that has to be entrusted to an international organization. And given that the world does not have an appropriate organization for this task, it may need to create one.⁵

Government Interventions

Turning to the subtext of government interventions, that old debate of “whether markets or governments” is dead, and mercifully so. Most contemporary economists recognize that it is not a matter of which but of how

5. I have argued this in Basu (2006).

much of which and where. I have personally taken the view that in a variety of market matters, India needs to rely much more on free contracts, instead of terms and conditions laid down by the government. One area in urgent need of reform on this score is labor market policy, where much more market-based flexibility is needed. At the same time, when it comes to poverty and matters concerning basic standard of living parameters, there is need for purposive government intervention. And for that it is immaterial whether poverty has gone down or risen and whether inequality today is more or less. What needs to be agreed is whether there is too much poverty and inequality is too high. And on this question, anybody who is aware of India's surging economy and also sees the roadside dwellers in big cities and reads about the conditions of farmers in the semi-arid areas of the country can easily agree that the huge deprivations suffered by some segments of the population are wrong.

I am aware that not every wrong can be corrected. As I have already argued, a single nation can only do a limited amount to reduce inequality in today's globalized world. On poverty and unemployment, there is a lot that government needs to and can do, and the government should not wait until we economists have sorted out whether the first-derivative of the trends of these indicators over the last decades were positive or negative.⁶

Devesh Kapur: The paper addresses two politically salient issues in India—employment and inequality—that are critical not just to debates on the effects of reforms but also to the evolution of India's political economy. It challenges the prevailing consensus that reforms have not delivered on employment. The paper subsequently extends the analysis to the other two legs of the holy trinity of the critiques of reforms—poverty and inequality—and finds a much happier story there as well. According to the paper's analysis, the reforms have delivered on all three fronts—employment, poverty, and inequality—and critics are head-in-the-sand Cassandras.

The paper is empirically rich and in its key messages serves an important gadfly function. Its analysis and discussions on employment are more persuasive, however, than those on inequality. Even if the claims of jobless growth are exaggerated, how is one to understand the decline in employment growth rates? The paper argues that fewer numbers are entering the labor force because a larger number of the age cohort is enrolled in higher education.

6. Ferro, Rosenblatt, and Stern (2004).

Nonetheless, there is no denying that given the robustness of India's economic growth, the expectations of higher employment growth have not been met. What could be the reasons for anemic employment growth?

One, it might reflect noise in the data. How meaningful are employment and wage data in a country where more than half the population is self-employed? India does not collect income data in any systematic way. And as for consumption expenditures, the growing discrepancy between the NSSO and the national accounts data puts that into question as well. Comparing wages over time is sensitive to the choice of deflators—but in India the deflators have themselves become more error prone because of a failure to incorporate quality improvements. In addition, studies on changes resulting from reforms are particularly sensitive to the choice of year when the reforms began and whether 1991 should be included or excluded in the pre- or post-reform era. Studies are also sensitive to the choice of the terminal year. For instance, initial studies showed a large payoff from reforms as growth accelerated; however, as growth moderated in the late 1990s, studies suggested that the growth in the post-reform decade differed little from that in the 1980s. However, a renewed burst of growth over the last few years has again shifted the tenor of the debate.

Two, it could simply be that as education and household incomes rise, people can now “afford” to be unemployed because they are no longer as poor as in the past. However, while unemployment increased with education between 1983 and 1993, it dropped (albeit slightly) in the more recent period (1993–2000).

Three, lower employment growth could reflect differential sectoral growth rates, especially if India's economic growth is being driven by sectors with low employment elasticities (human-capital-intensive services and capital-intensive manufacturing), even as growth in sectors with high employment elasticities (agriculture) has dropped. There has been a modest decline in employment within public and private registered enterprises (which are concentrated in manufacturing and services), in the post-reform period. In the public sector, total employment (including central government, state government, local government, and quasi-government) increased rapidly in the 1970s and 1980s from 10.7 million in 1971 to 16.0 million in 1981 and 19.1 million in 1991. It barely changed over the next decade rising to 19.1 million in 2001 before declining to 18.6 million in 2003.⁷ The growing dominance of the service sector in GDP, with its greater prevalence of

7. “Employment Statistics in India,” *Economic and Political Weekly*, May 3, 2003, for 1971–2001 and Ministry of Labor, Government of India, “Annual Report 2004,” for 2003.

contract and informal labor, has meant that even though this has been the fastest-growing sector, employment within the registered portion has not grown commensurately. Among large firms in this sector, the largest growth in employment has been in the information technology sector, while modest growth in private banks has been offset by the pruning of jobs in public sector banks.⁸

The stagnation of employment in the formal manufacturing sector, despite robust growth (averaging more than 7 percent since the reforms began), poses another puzzle. One explanation is that productivity growth in the 1990s put a damper on labor demand. However, strong total factor productivity growth should increase profits and reinvestment, and the resulting capital accumulation should drive employment demand. A second explanation is that there has been a change in the “intensity” of employment as distinct from the “extensity” of employment. For instance, Bhalotra found that between 1979 and 1987, the manufacturing sector saw a significant increase in working hours (resulting in the equivalent of changing from a five- to a six-day shift). As a result earnings rose rapidly, employment and wage rates much less so.⁹ A third explanation is that labor law rigidities have made firms wary of increasing employment lest they be saddled with extra labor in lean times. If so, one should observe faster growth in firms with fewer than a hundred employees (since the rigid labor laws apply only to larger firms), and an increase in capital intensity as firms substitute capital for labor.

Just how critical are rigid labor regulations to employment growth? Clearly they cannot explain the slowdown in employment growth since the same regulations were valid earlier. Indeed, as with much else in India, it is not the existence of regulations per se but their enforcement that matters more. And the declining bargaining strength of labor over the past two decades (evident for instance in the decline in strikes and a relative increase in lockouts) reflects the diminishing political clout of organized labor in India. Moreover, the Supreme Court has taken a tougher stance on labor indiscipline, in contrast to the 1970s and 1980s. Consequently, firms have been able to deploy a variety of strategies to get around labor laws from voluntary retirement schemes to outsourcing to technological upgrading to employing contract labor.

Other evidence also supports an implication of the paper that labor flexibility is not perhaps as critical an issue as it is made out to be. Labor regulations are cited by just 16.7 percent of respondents in firm-level surveys in

8. See Shirsat (2005) for a recent analysis of service sector employment gains and losses.

9. Bhalotra (1998).

India as a critical impediment facing India's manufacturing sector. Other factors ranging from corruption among public officials, courts, regulation, taxes, lack of financing, poor infrastructure, and policy uncertainty are all cited by firms as more important in deterring investment than labor regulations. Nonetheless, it is the case that India does worse than many countries on the rigidity of employment index (that is, policies related to hiring and firing of workers). While India does better than the average for low-income countries, it does worse than middle-income countries and substantially worse than China. However, it would seem that if India could bring its bankruptcy procedures in line with Chinese standards, that might give an even larger fillip to the manufacturing sector than changing labor laws (table 21).

TABLE 21. Comparative Business Climate in India

<i>Measure</i>	<i>India</i>	<i>China</i>	<i>Lower-middle income</i>	<i>Upper-middle income</i>
Time required to start a business (days)	89	41	53	46
Time required to enforce contracts (days)	425	241	398	408
Time to resolve insolvency (years)	10.0	2.4	3.4	3.4
Index of ease of hiring and firing workers (0=least rigid, 100=most rigid)	48	30	40	34

Source: World Bank, *World Development Indicators, 2005*, table 5-3.

The principal reason for the decline in employment growth rates would appear to be the anemic growth of agriculture, the country's largest employer. Agriculture growth rates in India sharply declined from 3.4 percent between 1985-86 and 1994-95 to 1.8 percent between 1995-96 and 2002-03. It is not surprising that the growth rate of agricultural employment declined from an annual average of 2.6 percent between 1983 and 1993 to 0 percent between 1993 and 1999. While the occupational category "farmers and fisherman" increased by nearly 49 million in the former period, it increased by just 0.5 million in the latter period. In a sector that has high employment elasticities, such a large relative decline in growth rates in the post-reform era is bound to have adverse affects on national employment figures.

The paper makes a brave attempt to undermine studies that appear to show increases in inequality. I am skeptical of the analysis that inequality in India has not increased. At the upper tail both consumption and wage data are very inadequate in their ability to capture changes in income. Nonwage sources of income, particularly income from financial and property assets, have become much more important for the upper deciles of the population.

Moreover, the rates of return to education have increased. The educational premium has widened in India in the 1990s paralleling the experience elsewhere.¹⁰ Given the very high degree of educational inequality in India, a widening education premium cannot but have an adverse affect on income inequality. Additionally there is substantial evidence that interstate inequality is increasing because of diverging growth rates, largely due to the failure of some northern states (especially Uttar Pradesh and Bihar) to enact reforms.

Given their political salience and welfare implications, employment and inequality will continue to attract analytical attention. Among the many questions that need addressing, I highlight a few.

—There is a need to move beyond comparing outcomes pre- and post-reforms to counterfactual analysis—what would have happened if reforms had not occurred?

—A shift in the analytical focus from the national to the state level might allow a better scrutiny of the data. For instance interstate variation in employment growth coupled to interstate growth rates would be a good cross-check of possible inconsistencies in the data as well as the causal mechanisms.

—Export growth rates since liberalization have been almost double GDP growth rates. Consequently one would expect growing employment in export-oriented sectors, especially since export intensity in an industry appears to have a positive impact on employment.¹¹ How much of a difference is this likely to make if export growth continues at its recent robust clip?

—As distinct from the level of wages and employment, have reforms resulted in greater wage and employment volatility? If this is the case, are there implications for creating or enhancing insurance mechanisms that might also make labor more amenable to reforms in labor regulations?¹²

—Given changes in labor demand, the supply of skills is an important issue that needs better understanding. To the extent that economic reforms change the structure of the economy, they also result in changes in the demand for skills. For instance a growing urban economy needs a large number of skilled technicians—be it plumbers or electricians or auto

10. See, for example, Duraiswamy (2000); and Desai, Kapur, and McHale (2003).

11. Banga (2005).

12. Hasan, Mitra, and Ramaswamy (2003).

mechanics. An educational system geared to producing people with degrees but no skills will result in a sharp supply-demand mismatch. Consequently one can have both higher levels of unemployment coexisting with sharp increases in wage rates for a range of other occupations and skills. For policy purposes, it is imperative to identify skill supply-demand mismatches.

From an analytical and policy perspective, it might be fruitful to examine changes in inequality among different social groups in India and its causes. For instance, intercaste earnings inequality appears to have fallen in the last two decades while interreligion earnings differences have risen.¹³ And while unequal distribution of observed skills explained inequality among urban male workers in the 1980s, unequal returns on observed skills became a more important determinant in the 1990s.¹⁴ The reasons may have to do with the evolution of Indian politics and society, but the precise mechanisms need careful analytical attention.

Esther Duflo: The last few years have been marked with lively debate on the trends in poverty, inequality, wages, and employment in India. Some of the best Indian and international scholars have contributed to the debate, approaching it from a variety of angles and using a variety of data sources. This literature is both rich and of high quality. The paper by Bhalla and Das adds to this literature by presenting new evidence on each of these aspects.

The paper revisits some known arguments and brings some original data to bear. It is a very rich piece of work that leaves almost no stone unturned. Clearly, substantial work went into this piece, and the end-product is impressive both in its scope and ambition.

The main merit of this paper is the lesson that looking at the multiplicity of data with a unique viewpoint is dangerous. By trying to show that reforms in the 1990s have been bad for the poor, some authors may have overlooked certain pieces of data that went against their own opinions. In fact, according to Bhalla and Das, it is not just one or two authors who have overlooked isolated pieces of data that did not fit with their theories; essentially everyone who has ever worked on the subject has gotten *all* the pieces of data systematically wrong. In contrast to the misleadingly coherent picture that emerges from this body of work (poverty has dropped, but not as fast as one may have

13. Bhaumik and Chakrabarty (2006).

14. Kijima (forthcoming).

hoped; formal employment and wages have stagnated; inequality has increased), Bhalla and Das present a new picture of the 1990s and early 2000s, equally coherent, but with the exact opposite message: unemployment was stable in the 1990s and decreased in the 2000s; wages increased faster in the 1990s than before; and therefore inequality must have remained stable and poverty must have decreased. According to the authors, indeed it did: they say the “poverty rate, correctly calculated, is only 13 percent today.” To reach these conclusions, the paper needs to revisit what the authors present as common, if erroneous, knowledge.

Strangely enough, given how aware the authors are that strong priors can lead one to make choices and assumptions that are at best contentious, Bhalla and Das seem to repeatedly fall into this trap themselves, always picking the pieces of data that best fit their argument. The paper covers impressive ground and makes many forceful claims. It is outside the scope of these comments to scrutinize every single one of these claims, so I will highlight just some of these issues, picked somewhat at random.

In the discussion on employment, the authors argue that the small sample can be used because on average it gives the same answer as a large round: later on, however, we are told that 1993–94 is “above trend” relative to the other years (small sample), and that the treatment of this particular year is at the center of the “re-visit” of the data (since the authors do not contest the fact that employment growth was low between 1993–94 and 1999, relative to previous years). With a small number of employment-unemployment surveys, can one really claim that there is nothing special about the large survey in one paragraph, and in the next say that the 1993–94 period seems above trend? How do we know that this is not a data issue, with the small sample giving different answers than the large sample? Another way to interpret the same results would be to say that the growth in employment was high before the reforms and low afterward. If 1993–94 is a post-reform year, using this year actually underestimates the difference in the pre-reform trend. Incidentally, as figure 1 shows, the growth of employment seems to have been fast in the years 1987–93 and to have slowed a bit afterward. The authors seem to assume that the problem is solved, since they draw a unique trend for the entire period, and this of course implies that the 1987 data was “below” trend and the 1993 data “above” trend. This implication rules out the hypothesis that there may have been a trend break in employment growth from the outset. I also do not understand where the observation that there was an “acceleration” of job growth in the year immediately following the reform comes from (the rate of growth is exactly the same after 1990 as it was just before, according to figure 1).

More fundamentally, the discussion on employment and unemployment somehow misses the main point. The worry is not that people are declaring themselves to be unemployed, but that despite economic growth, they are employed in a variety of unskilled, unproductive, low-paying informal jobs. In surveys Abhijit Banerjee and I have conducted in Udaipur district, Rajasthan, and Hyderabad, India, we show people to be remarkably active: they have a small plot of land in a rural area, or a small business in the city; they are working a day job whenever labor is available; and they somehow get by in this way, through a combination of multiple occupations and temporary migration.¹⁵ A very small minority have a stable employment source, including their land, which does not provide enough resources for a family to live on. Their land is too small, their businesses are undercapitalized, and they have essentially no assets to speak of. These poor people would presumably be better off if they had salaried jobs and could be matched with some capital, and yet they are not. With its focus on whether someone was working or not in the past week, this paper ignores the issue that has really troubled researchers and policymakers: most of the poor remain small-scale entrepreneurs, in the sense that they bear most of the risk associated with their businesses, and this has apparently not changed with liberalization.

The section arguing that inequality has not increased between 1993 and 1999 is particularly disappointing. To start, it presents a misleading impression of the work both by Banerjee and Piketty and by Deaton and Dreze. Beginning with Deaton and Dreze, this paper states that they (as well as Sen and Himanshu) claim that rural-urban inequality is an indicator of overall inequality. They do not. Instead, their argument is that inequality in rural areas has been more or less constant, but that it has risen within urban areas, between urban and rural areas, and between states that are doing well economically and states that are not. The argument presented in this paper (table 19 and associated discussion) that the Banerjee–Piketty data in fact show a decline in inequality does not make any sense. They show an increase of income in *all* the top shares (0.1 percent, 1 percent, and so on), which is clearly an indication of an increase in inequality at the top. They do point out that the top 1 percent grows similarly to the rest of the population for the 1990s. There is simply no way this data indicates a “decrease” in inequality, and the paragraph trying to show the opposite gives the impression of trying to defy gravity. The only substantial comment on Banerjee–Piketty is that the increase in the top share is an artifact of higher reporting due to the decline in the top marginal rate. Banerjee and Piketty discuss the matter at length in

15. Banerjee and Duflo (2006).

the paper, and they make two observations: First, the trend in the increase in the top share started well before this episode and is quite continuous, suggesting it cannot be explained by this decline. Second, the magnitudes are not right: explaining a tripling of the top share with a decline of the top rate of 40–60 percent would seem to be really difficult.

One could quibble with the construction of some of the numbers in the “consumption inequality section” as well. For example, the section on “real inequality” uses the Planning Commission price indexes to deflate consumption. As Deaton and Tarozzi have shown, these indexes grossly overstate urban relative to rural prices. Using the indexes will therefore “reduce” inequality (since they make the richest group appear poorer than it is), and one can hypothesize (though not having done it, I will not present this as a foregone conclusion) that this will also reduce the trend in inequality, because the urban areas are getting rich faster than the rural areas. Bhalla and Das could have avoided this problem by using the Deaton–Tarozzi index. The construction of the data in some sections of this paper is unclear. In particular, I was not sure whether the “adjusted consumption” data is now calculated using Deaton’s initial suggestion, or with the adjustments that Bhalla had subsequently proposed (and that turned out to be incorrect, as demonstrated by Deaton and Dreze). Since there is no reference to this debate, it is not entirely clear what was done.

What is, however, the most surprising in this section of the paper is the treatment of the numbers in the text. Why is an increase in the Gini coefficient of 8 percent (or 4 percent for that matter) “small”? Given that this indicator was stable for long periods of time before, we are talking about a very large percentage increase. What is the statistical test that allows the authors to conclude that this increase is “insignificant”? This tendency to use the word “significant” or “insignificant” throughout the paper without any specific meaning (except to refer to what these authors consider significant or not) is somewhat disconcerting. Finally, how is it that in the conclusion we are left with the thought that consumption inequality decreased between 1983 and 1999, when most numbers in the authors’ own tables suggest just the opposite (it is just the “real” number, which has the problem we discussed above, that shows a decline).

The arguments on why the NSSO overstates poverty and understates consumption by the poor have been extensively discussed elsewhere, and this is probably not the place to discuss them once again. The widening discrepancy between the NSSO data and the national accounts is troubling, however, and is likely to reflect problems with both data sources. Additionally, it is true that the level and the increase of this “missing consumption”

is of an order of magnitude larger than what turned out to be the effect of the change in the NSSO reference period. Yet, we did not know this until Deaton and others did the exercise, so there is really little point in criticizing the exercise just because the answer turned out to be that the problem was not that bad. Here, the authors propose applying the growth in agricultural wages calculated *from the NSSO* to the income distribution in 1983; the conclusion is that the rate of poverty thus calculated is 13 percent, rather than 26 percent as the NSSO consumption data suggest. It is not very clear why the wage data is a better variable for evaluating the growth in the consumption of the poor than the measures of their consumption calculated from the NSS. Many of the poor are not working for wages, or not working for wages for most of the year. The fact that the wages, when paid, have increased, does not tell us what the rate of increase of income is for this population, and even less what the rate of consumption increase is. It is precisely because labor income is hard to calculate that the NSSO (like most surveys around the world) tries to evaluate economic welfare by measuring consumption. This is fraught with difficulties, but if one wants to say something on measuring consumption-based poverty, there seems to be no escape.

Bhalla and Das teach us, in part by their criticisms of others, but perhaps even more by their own practices, that using aggregate time-series data to try to say something about the impact of liberalization on poverty is a somewhat doomed effort. The NSSO data is available only for key years, including the 1993 year that is difficult to categorize as “before” or “after” liberalization, depending on how long one thinks economic processes take. The paper explicitly ridicules me for ignoring (in my discussion of a previous version of the paper) that 1993 comes after 1991. It is true that I am an economist, rather than a historian, but I can still manage this level of sophistication with the chronology. The point was that we have no idea when the reforms started to have an impact, since we do not know (and are not given a model for) the time-series process that generates this data. Given that phenomena like employment and unemployment are in large part “medium-run” phenomena, one should be forgiven for thinking that placing 1993 squarely in the “after” period, and therefore attributing the outcomes in that year to the reforms, is in large part wishful thinking. We discussed this in the context of the employment data. The same importance regarding how to treat the year 1993 is true for inequality, where the conclusion that inequality increased in the 1990s is based on the comparison 1993–99. The point is that we do not know whether to “attribute” events in 1991, 1992, or 1993 to the reforms or not. And there is no reason to think we should know. Given how much else has

happened in the world over time, attributing any change in the time series to the reforms is very hazardous.

A serious effort to document the patterns in the data, without trying at all costs to establish causal links (in either direction) between them and the reforms, is definitely very valuable. But to investigate the causal effect of liberalization on poverty and inequality, one needs more than a time series with, in the worst case, three points including an ambiguous one. It will be necessary to be somewhat more creative in the use of the available data, perhaps exploiting differences across regions on the effect of liberalization. For example, Topalova uses a district-level panel of inequality and poverty measures to trace the impact of trade liberalization on poverty at the district level, exploiting the fact that the initial industrial composition of a district predicts how much a particular district is affected by liberalization.¹⁶ Foster and Rosenzweig study the impact of countryside industrialization on welfare, and show that India's entry into the global economy has reduced the gender gap by increasing incentives to provide girls with an English education.¹⁷ These papers all tell us something precise about a specific causal mechanism. They can be evaluated on the merit of their assumptions without having to make guesses about when the right date to start counting a year as being "post-globalization" is. The desperate effort to read a consistent pattern into the disparate pieces of data has led these authors to tarnish their commendable effort in accumulating so much data with avoidable mistakes and exaggerations.

General Discussion

T. N. Srinivasan pointed to the difficulties of interpreting the aggregate data in the absence of some underlying structural model of the labor market. However, it is difficult to know how to characterize labor markets in India. Certainly there is no unified national market, and even at the regional level it is heavily segmented between rural and urban; within the rural sector there is significant movement in and out of agriculture on a seasonal basis. Similarly, it is difficult to evaluate the impact of the reforms without thinking through the process of how their effects might be transmitted to the various labor markets. He concluded that the construction of a structural model is a challenging task but crucial to answering the questions asked in the paper.

16. Topalova (2005).

17. Foster and Rosenzweig (2003); Munshi and Rosenzweig (forthcoming).

In addition, he thought that a full understanding of the design of the NSSO surveys was important to interpreting the results. He argued, for example, that the surveys were meant to be interpreted as percentages of the relevant populations and that it was potentially misleading to present estimates in levels form, as is done in the paper. Similarly, he believed that the price indexes used to construct measures of real wages needed to be interpreted with caution.

Pranab Bardhan was surprised by the large deceleration of growth in the population of labor force age that is reported in the paper for the post-1993 period. He was puzzled about how the census and NSSO estimates could be so different, and he would like to have some corroborative evidence. He also expressed concern that the overall unemployment rate is under-reported by an increasing amount. He traced it to the growing role of women, who were more likely interpret the survey question about seeking employment as implying work outside of the family.

Several participants questioned the meaning of unemployment within the context of the current Indian economy, particularly as it applied to the rural sector. Many Indians are too poor to be unemployed. Their poverty emerged as underemployment and low productivity, not unemployment. Similarly, several participants argued that the trade liberalization and similar measures should be expected to affect productivity, not unemployment. Robert Lawrence also suggested that it may be necessary to adjust the data for cyclical factors and to differentiate between the immediate effects of reform and the longer-term impact.

Arvind Panagariya raised a concern about the importance of labor market regulations. He thought that simply asking firms about hindrances to expansion of employment would not elicit meaningful responses if they did not believe the regulations were under consideration for change. Thus, it would be necessary to inquire in greater depth to obtain useful responses. Others noted that large-scale manufacturing did not grow more rapidly after the trade liberalization and believed that suggested an influence of the restrictive labor market regulations. Apparel in particular was an area in which India should have been an appealing location for large-scale firms serving the export market. At the same time, it was pointed out that several empirical research studies directly examined the impact of the labor market regulations and found it to be small. The issue remains quite unsettled.

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