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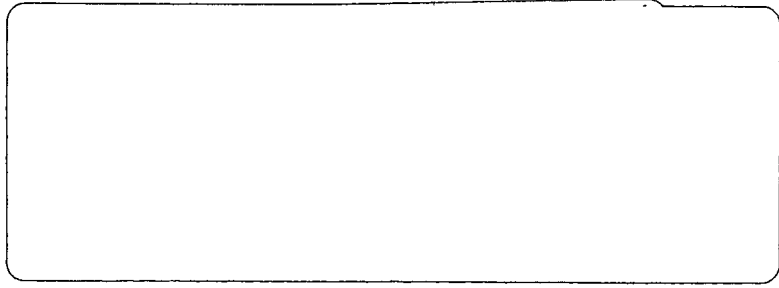
**The Growth of Aggregate Unemployment  
in India**

**Trends, Sources, and Macroeconomic Policy Options**

Raj Krishna

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# The Growth of Aggregate Unemployment in India

## Trends, Sources, and Macroeconomic Policy Options

Raj Krishna

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THE GROWTH OF AGGREGATE UNEMPLOYMENT IN INDIA:  
TRENDS, SOURCES, AND MACROECONOMIC POLICY OPTIONS

Summary and Conclusions

Much skepticism has been expressed about the realism and usefulness of measuring unemployment and underemployment in dominantly agricultural and dualistic Asian economies. And the controversy continues over the concepts to be used for measurement. Still, a large amount of data on unemployment and related magnitudes have been collected in nationwide labor force surveys in India over the last three decades. These data are not widely known because researchers have not so far built up comparable time series data of key magnitudes. They have been hampered by the slow and irregular release of data in changing forms and by the frequent "improvements" in survey concepts which affected the comparability of data yielded by different surveys. Many cross-section analyses of the Indian labor market are already available (see, for example, Rosenzweig, 1981; Bardhan, 1982; and Evenson and Binswanger, 1981).

After an analysis of some significant macroeconomic tendencies, the paper provides a nonparametric decomposition of the growth of "weekly status" unemployment for which eight observations are available over the period 1959-78. These observations imply the growth of unemployment at a rate of about 1.7 percent a year. This growth is decomposed into four factors: population growth and changes in the participation rate on the supply side; and growth of the capital stock and capital intensity on the demand side. Alternatively, the growth in the demand for labor (employment) is broken down into the contributions of the growth of output and the growth of productivity.

The decomposition exercise makes it possible (in section 4) to compute alternative combinations of growth rates of population, output, and productivity (or capital intensity) required for a target reduction of unemployment by the end of the century.

The main outcome is that though India has a massive unemployment problem, it can be reduced by a sustained overall growth rate of the order of 6.5 percent a year. But whether India can attain and maintain this high rate, under the well-known structural constraints, remains problematic. In the absence of a high growth rate, implementation of direct employment-generation programs, specifically targeted at landless and small-farm rural workers, will continue to be necessary for a long time.

## Résumé et conclusions

De nombreux sceptiques pensent qu'il est vain de vouloir mesurer le chômage et le sous-emploi dans les économies dualistes et à prédominance agricole des pays d'Asie. Les notions qui doivent intervenir dans cette opération continuent de diviser l'opinion. On n'en a pas moins recueilli un grand nombre de données sur le chômage et les grandeurs complémentaires au cours des enquêtes sur la main-d'oeuvre qui ont été réalisées dans toute l'Inde au cours des trois dernières décennies. Ces données ne sont pas très connues parce que les chercheurs n'ont pas encore élaboré de séries chronologiques comparables pour les grandeurs clés. Les difficultés tiennent à l'irrégularité et à la lenteur avec lesquelles ces données sont publiées, aux changements dans la façon dont elles sont présentées, et aux fréquentes "améliorations" apportées aux notions clés des enquêtes qui rendent difficile la comparaison des chiffres ainsi obtenus. On dispose déjà de nombreuses analyses d'échantillons représentatifs de la main d'oeuvre en Inde (voir, par exemple, Rosenzweig, 1981; Bardhan, 1982; et Evenson et Binswanger, 1981).

Cette étude analyse d'abord certaines tendances macroéconomiques importantes, puis donne une décomposition non paramétrique de la croissance du chômage, en "mesure hebdomadaire", pour lequel on dispose de huit observations faites au cours de la période 1959-78. Selon ces observations, le chômage augmenterait de 1,7 % par an. Cette augmentation est liée à quatre facteurs : accroissement de la population et changements dans le taux de participation du côté de l'offre; et croissance du capital et de l'intensité du capital du côté de la demande. On peut aussi ventiler la progression de la demande de main d'oeuvre (emploi) entre l'accroissement de la production et l'amélioration de la productivité.

Grâce à cette décomposition, il est possible de calculer (Section 4) différentes combinaisons de taux d'accroissement de la population, de la production et de la productivité (ou de l'intensité de capital) nécessaires pour atteindre un taux donné de diminution du chômage d'ici la fin du siècle.

La principale conclusion de cette étude est qu'une croissance soutenue de l'ordre de 6,5 % par an permettrait d'atténuer le problème énorme du chômage en Inde. Mais, étant donné les contraintes structurelles que l'on sait, il est douteux que l'Inde puisse atteindre et maintenir ce taux de croissance élevé. Si elle n'y parvient pas, on devra continuer, pendant encore de nombreuses années, à appliquer des programmes de création d'emplois, destinés spécifiquement aux ouvriers agricoles et aux petits cultivateurs.

## Resumen y conclusiones

Se ha expresado gran escepticismo acerca de la confiabilidad y la utilidad de la medición del desempleo y el subempleo en las economías de países asiáticos, de carácter predominantemente agrícola y dualista, y la controversia se extiende a los conceptos que deben usarse para la medición. A pesar de ello, en la India se ha recopilado en los tres últimos decenios un gran volumen de datos sobre el desempleo y otros fenómenos conexos mediante censos de la fuerza laboral realizados en todo el país. Esa información no se conoce en forma amplia porque los investigadores no han elaborado hasta ahora series cronológicas de datos clave comparables. Su tarea se ha visto obstaculizada por la publicación lenta e irregular de los datos en formatos diversos y por las frecuentes "mejoras" de los conceptos estadísticos, que afectan a la comparabilidad de los datos proporcionados por los diferentes censos. Ya se dispone de numerosos análisis de secciones transversales del mercado laboral indio (véanse, por ejemplo, los trabajos siguientes: Rosenzweig, 1981; Bardhan, 1982, y Evenson y Binswanger, 1981).

Tras un análisis de ciertas tendencias macroeconómicas significativas, en el presente estudio se hace una descomposición no paramétrica del crecimiento del desempleo "semanal", respecto del cual se dispone de ocho observaciones correspondientes al período de 1959-78. Dichas observaciones se basan en la hipótesis de que el desempleo aumentó a razón de aproximadamente 1,7% al año. Ese aumento se descompone en cuatro factores: el crecimiento de la población y las variaciones en la tasa de participación, en lo que respecta a la oferta, y el incremento del acervo de capital y de la intensidad de capital, en lo que respecta a la demanda. A su vez, el aumento de la demanda de mano de obra (empleo) se descompone en las contribuciones de los incrementos de la producción y de la productividad.

El ejercicio de descomposición permite calcular (en la Sección 4) las diferentes combinaciones de las tasas de crecimiento de la población, la producción y la productividad (o intensidad de capital) necesarias para lograr una reducción indicativa del desempleo a fines de este siglo.

El resultado principal del análisis es que, si bien la India se enfrenta a un problema de desempleo de enorme magnitud, éste puede reducirse por medio de una tasa sostenida de crecimiento global de aproximadamente 6,5% al año. Ahora bien, el que el país pueda alcanzar y mantener esa elevada tasa, dadas sus bien conocidas limitaciones estructurales, es algo problemático. En ausencia de una tasa de crecimiento alta, tendrá que seguir durante mucho tiempo poniendo en práctica programas de generación directa de empleo orientados específicamente a los campesinos sin tierras y a los trabajadores de pequeñas explotaciones agrícolas.





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## 1. Introduction

Much scepticism 1/ has been expressed about the realism and usefulness of measuring unemployment and underemployment in dominantly agricultural and dualistic Asian economies. And there has been continuous controversy 2/ about the concepts to be used for measurement. Still, a large amount of data on unemployment and related magnitudes has been collected in nationwide labor force surveys in India over the last three decades. 3/ These data are not widely known because researchers have not so far built up comparable time series of key magnitudes. They have been hampered by the slow and irregular release of data in changing forms and by the frequent "improvements" in survey concepts which affected the comparability of data yielded by different surveys.

The Committee of Experts (India 1970), Pravin Visaria (1970) and the Committee on Unemployment (India 1973) tabulated weekly status unemployment rates for Census/Survey years between 1959 and 1971 for rural and urban areas but did not aggregate them into all-India rates. Also, the rates were not translated into time series of aggregate numbers of persons unemployed. In Visaria (1980) and Inderjit Singh (1982) too there is no discussion of the time-trend of unemployment.

This paper is an attempt to distill from the available data all the computable macro rates and aggregates of rural and urban (male and female) unemployment for different years; and to interpret them in the light of the relevant definitions and distinctions. The focus here is on aggregative time

trends rather than on disaggregative cross-section analysis. Many cross-section analyses of the Indian labor market are already available. (See for example, Rosenzweig 1981, Bardhan 1982, and Evenson and Binswanger 1981.)

Some significant macro tendencies are clearly discernible. These are analysed in the following Section (2).

Section 3 attempts a nonparametric decomposition of the growth of "weekly status" unemployment for which 8 observations are available over the period 1959-1978. These observations imply the growth of unemployment at a rate of about 1.7% a year. This growth is decomposed into the contributions of four factors: population growth and changes in the participation rate on the supply side; and growth of the capital stock and capital intensity on the demand side. Alternatively, the growth in the demand for labor (employment) is broken up into the contributions of the growth of output and the growth of productivity.

The decomposition exercise makes it possible (in Section 4) to compute alternative combinations of growth rates of population, output and productivity (or capital intensity) required for a target reduction of unemployment by the end of the century.

The main outcome is that though India has a massive unemployment problem it can be reduced by a sustained overall growth rate of the order of 6.5% a year. But whether India can attain and maintain this high rate, under the well-known structural constraints, remains problematic. In the absence of a high growth rate, implementation of direct employment generation programs, specifically targeted at landless and small-farm rural workers, will continue to be necessary for a long time.

## 2. Alternative Estimates of Unemployment and their Time Trends

All the unemployment rates and aggregates which can be calculated from data collected in 10 Rounds of the National Sample Survey (referred to as NSS hereafter) between 1958-59 and 1977-78 and the Censuses of 1961 and 1971 are summarised in Tables 1, 2, and 3.

Two crucial distinctions are required for the interpretation of these data: (a) between time-rates and person-rates of unemployment and (b) between 'current status' and 'usual status' rates of unemployment.

(a) The first distinction arises from the fact that the unemployment rate may be measured either in units of labor time or in numbers of unemployed persons. The time-rate is the number of persondays of unemployment as a proportion of persondays of labor supply per week. The person-rate is calculated with the number of persons counted as unemployed on the basis of their status during a preceding reference period. This number is divided by the number of persons in the labor force in the same period.

The time-rate and the person-rate may also be regarded as the flow rate and the stock rate of unemployment respectively.

(b) The second distinction refers to the fact that some unemployment rates are measured on the basis of employment status over a short reference period, usually a week preceding the Census/Survey, and others on the basis of employment status over a long reference period, usually a year preceding the Census/Survey. They are called current status rates and usual status rates, respectively.

An interesting feature of the most recent 27th and 32nd Round NSS data for 1972-73 and 1977-78 is that they yield three different unemployment

rates 4/: the "usual status" rate, and two "current status" rates, the "weekly status" rate and the "daily status" rate. The usual status and weekly status rates are person-rates (or stock-rates). The daily status rate is a time-rate (or flow-rate.)

The daily status unemployment rate is the ratio of labour days per week reported as unemployed (seeking or available for work) to the total labor force days per week (working plus seeking plus available days). Thus if a person wanted work for 6 days in the reference week and could get it for 5 days only his/her daily status unemployment rate would be 16.6 percent. The aggregate daily status rate for a week will then be a weighted sum of the rates for individual sample workers. 5/

In contrast with daily status unemployment, weekly status unemployment is measured in numbers of persons. A person's status for the whole week, called the "current status," is determined as follows. Every person who worked for gain for at least one hour on at least one day during the reference week, just preceding the survey, is given the "working" or "employed" status. Others are classified as "seeking" or "available" or "not available" for work. Thus anybody who worked even for an hour in the week or was available for work would be in the labor force. And only those persons would be counted as unemployed ("seeking work" or "available" for work) who did not work for a single hour in the week and were in the "seeking" or "available" position for a part of the week. With these definitions we should evidently expect the weekly status unemployment rate to be lower than the daily status rate.

The "usual status" unemployment rate is also a person-rate. At the time of the survey, a person is given a single status based on his "usual"

status during the preceding year. All except those "usually" out of the labor force in the previous year are counted as members of the force, and only those who were "usually" unemployed are counted as unemployed. Therefore the usual status rate should be expected to be the lowest of the three rates.

The 1972-73 and 1977-78 Rounds of the NSS yield all the three rates on a roughly comparable basis. Data from the earlier Censuses of 1961 and 1971 also provide estimates which are comparable with the usual status rates of the NSS for 1972-73 and 1977-78. Data from eight Rounds of the NSS between 1958-59 and 1966-67 similarly provide weekly status rates which are approximately comparable inter se and with the weekly status rates for 1972-73 and 1977-78.

From all the available observations on the three rates given in Tables 1, 2, and 3, we get an indication of their relative magnitudes and behavior over time in the 1960s and 1970s.

It needs to be stressed that the comparability of rates for different years is only approximate because the concepts were not strictly the same in all the surveys. Many minor and a few major changes in concepts were made from time to time at the expense of strict comparability. 6/ Despite these changes, however, the core content of the concepts behind the three rates, discussed in the preceding paragraphs, remained sufficiently stable during 1959/1978 to permit rough comparability.

The ranking of the three rates is as expected. In 1973 and 1978, the overall usual status rate was 1.6 and 2.6 percent respectively; the weekly rate 4.3 and 4.6 percent; and the daily rate 8.3 and 8.2 percent. (Tables 1, 2, and 3.) 7/

The daily status flow rate is evidently the most inclusive, covering open as well as partial unemployment. It is therefore the rate which is most relevant for policy-making. It is also the rate subject to relatively less error because of the short recall period. The weekly status rate can only be regarded as a rough measure of the proportion of workers remaining unemployed for a whole week, and the usual status rate as a rough estimate of the "chronic" unemployment rate. Chronic unemployment is clearly not a significant problem in comparison with the enormous problem of the discontinuous underemployment of a section of the labor force whose composition changes from day to day. This finding has the important policy implication that the unemployed have to be offered either wholetime employment or utterly irregular work, which they can take up as and when they need it, to fill the gaps in the time profile of their presently available work opportunities. Any requirement which commits a worker to work on a project temporarily but continuously for a minimum period will not be acceptable to him/her if the expected gain from this commitment is less than the expected loss due to the disruption of other work.

Viewing the variation of the rates over time, we note that the chronic rate was doubled between 1961 and 1973 from 0.7 to 1.6 percent. By 1978 it had risen further to 2.6 percent, though a part of this latter increase may be due to the difference in the concepts of "usual status" used in the surveys of 1973 and 1978. (Table 1 and Appendix 3.1, Section 3.) The weekly rate appears to have shown a clear declining tendency between 1959 and 1967: it fell from about 5.3 to 2.5 percent. But in the 70s this tendency was reversed, and the rate rose to 4.3 percent in 1973 and 4.6 percent in 1978. (Table 2.)



The most inclusive daily status rate (on which we have only 2 main observations) however seems to have declined slightly from 8.3 to 8.2 percent over the 5 years 1973-1978. (Table 3.)

The lower panels of Tables 1, 2, and 3 translate the three rates into corresponding volumes of aggregate unemployment. The aggregates record the same trends as the rates.

Chronic unemployment appears to have risen five times from 1.4 million in 1961 to 7.1 million in 1978. 8/ (Table 1.)

Weekly unemployment declined from about 9 million to 5 million between 1959 and 1967 and then rose back to 11.2 million by 1978. (Table 3.)

Daily status unemployment too rose slightly from 18.6 million to 19.2 million between 1973 and 1978. (Table 4.)

These trends are depicted 9/ in Chart 1.

There are two other bodies of unemployment data which merit notice. In the 25th Round of the NSS (1970-71) data was collected on the daily status unemployment rate, but it covered only the lowest decile of cultivator households, estimated to be 3.7 million, and non-cultivating wage-earner households mainly dependent on agricultural labor, estimated to be 8.9 million. (An overwhelming majority (88 percent) of the former had holdings less than 2.5 acres.) The estimated unemployment rates of these households are summarized in Table 4. These are comparable with the rural daily status rates estimated for 1972-73 because the concepts used are almost the same.

Since the landless suffer the most from unemployment it is not surprising that their daily status rate (7.55 percent) in 1970-71 is close to the overall rural rate in 1972-73 (8.2 percent). (Tables 3 and 4.) The rate for small farmers is somewhat smaller (6.4 percent).

The second body of additional data was collected in 5 Rounds between 1959 and 1967. These were figures of "underemployment" on the basis of a normative time criterion alone: "severe" underemployment was defined as employment for less than 28 hours in the reference week, and "moderate" underemployment as employment for 28 to 42 hours in the week. The use of this criterion of course yielded staggering numbers: rates ranging between 31 and 46 percent of the labor force, and aggregates between 55 and 77 million. (Table 5.)

A subset of workers recorded as underemployed with the normative time criterion alone, was also counted: those who reported "availability" for more work. Thus it was a count of persons defined as unemployed on the basis of a joint use of the normative "time" and "availability" criteria. The unemployment rate of these plus the wholly unemployed (as a proportion of the weekly status labour force) turns out to be as high as 15 percent in 1959 but falls to 9 percent in 1964-65 (Table 6.) The computed absolute number of the wholly unemployed plus the underemployed available for more work is also very high: about 26 million in 1959 and 16 million in 1965. This rate and aggregate would presumably have risen since the mid-sixties, like the other rates and aggregates reviewed earlier. But data on underemployed persons were not collected after 1967.

The NSS data on underemployment discussed in the two preceding paragraphs (Tables 5 and 6) have a two-fold significance. First, the count of employed and underemployed persons with the time criterion alone (Table 5) can be regarded as one of the estimates of "surplus labour." The high rates of unemployment obtained with the time criterion alone are only comparable with "direct" surplus labour estimates made by some researchers (for the rural

areas.) Thus the very high rural unemployment plus underemployment rate for 1961 computed with NSS data (40.6 percent) would be comparable with the high rate estimated by another method by Mehra (26.7%).

There is also another sense in which the few observations of unemployment plus underemployment for the early 1960s may be significant. The composite weekly status unemployment including the open unemployment and the underemployment of those available for more work (Table 6), may be regarded as a rough measure of daily status unemployment for the early years of the 1960s for which directly obtained estimates of daily status unemployment are not available. The composite rate went down from 15.2 percent in 1958-9 to 8.9 percent in 1964-65. (Table 6.) The order of magnitude of this rate in 1964-65 is roughly the same as the daily status rate for 1972-73 and 1977-78 (8.2 to 8.4 percent) though the two rates are not strictly comparable. The concepts are different; the former rate is a stock rate, the latter is a flow rate. But, the NSS weekly status data for the unemployed and underemployed are the only available evidence on the underemployment situation in the early 1960s. If composite weekly status unemployment is regarded as a proxy for daily status unemployment, it would appear that daily status unemployment might have fallen in the early 1960s from about 26 to 16 million and then risen to 18.6 million in the early 1970s. This trend is consistent with the other trends discussed earlier.

Apart from trends in aggregate unemployment, data in Tables 1, 2, and 3 also indicate the trends in the rural-urban shares and male-female shares of unemployment. The shares are summarised in Table 7.

Throughout the 1960s and 1970s the share of the rural areas in the (weekly status) labor force remained 80 percent or more, though it registered

a slight decline from 85% in the beginning of the 1960s. Thus a very high proportion of the working people in India still reside in the rural areas in spite of considerable industrial growth. A counterpart of this phenomenon is the continuing concentration of more than 70% of the work force in agricultural and allied activities. It is indeed a unique fact that in India the share of agriculture in the labor force has not declined over the last three decades of accelerated industrialization. It has remained stuck between 72% and 74% for almost 7 decades. (Table 8.) In 10 other Asian countries, by contrast, this share declined by 4 to 9 percentage points within a decade (1965-1975). (ESCAP 1980, p. 147.) It is evident that in India the growth of industrial employment has been too small, in relation to the growth of the total labor force, to alter the sectoral distribution of the force.

In the case of (weekly status) unemployment, also, 83 to 90 percent of it remained located in the rural areas, with no trend, in the 1960s; but in the 1970s, the rural share of total unemployment did decline rapidly -- from 90% in 1966-67 to 65% in 1977-78.<sup>10/</sup> (Table 7.) An increasing part of total unemployment shifted, in the 1970s, to the urban areas. Between 1966-67 and 1977-78 the rural (weekly status) unemployment rate rose only from 2.7% to 3.7%, but the urban rate grew almost 5 times from 1.6% to 7.8%. The rural daily status rate actually declined (between 1973 and 1978) but the urban rate rose and crossed the 10% level in 1978). (Tables 2 and 3.)

Underlying the recent, increased "urbanization of unemployment" in India is the acceleration of the urbanization of the population itself in the 1970s. In the 1950s and 1960s the ratio of urban population to total population in India crawled up very slowly by less than 2 percentage points per decade. But in the 1970s it rose more rapidly by 3.4 percentage points (from 19.9 percent in 1971 to 23.3 percent in 1981). (Table 9).

Focusing on the share of women in the labor force and weekly status unemployment, the most striking fact is that women's share in total unemployment has been only a little less than 50% (ranging between 45% and 51% up to 1966-67), though their share in the labor force averaged only 29%. (Table 7.) This is reflected in the fact that the average (weekly status) unemployment rate of women has been consistently much higher than that of men. (Table 2.) But in the 1970s the gap between male and female unemployment rates narrowed in favour of women: the male unemployment rate rose more than the female unemployment rate. (Table 2, columns 7 and 8). This recent trend is even more strikingly evident in the daily status rates. Between 1973 and 1978 the unemployment rate for women fell from 11.5% to 10% while the rate for men rose from 7 to 7.6%. (Table 3, cols. 7 and 8.)

The data clearly indicate that women in India have consistently suffered a higher incidence of unemployment than men, and accounted for about half of the total volume of unemployment. But in the 1970s their unemployment rate rose less than that of males; and their share of total unemployment declined significantly from about 50% to 30%. This recent development is attributable to the high proportion of women reporting for work in some large-scale rural works projects, and to the increasing share of women in employment in the organised sector. In the case of rural works, data on the share of women in average attendance are usually not collected. But in one program (the Employment Guarantee Scheme of the State of Maharashtra) in which daily attendance has averaged as much as half-a-million workers in recent years, the proportion of women workers has been reported to be as high as 43% in 1979. (India 1979, p. 144.) In employment in the organised sector the share of

women stagnated between 11% and 11.3% up to the mid 1970s but then it rose to 12.4% within 3 years. (Table 10.)

Thus there is some evidence of a slight improvement in the relative employment situation of women in the last decade.

It may be thought that since the rate of reported (weekly status) unemployment in India has only been about 4% India's unemployment problem is not serious. 11/ This view is mistaken for at least three reasons.

First, in this view the unemployment rate is implicitly compared across countries whose labor force may differ in size by one or two hundred million. To get a sense of the deprivation represented by unemployment the magnitude to compare is obviously the total volume of unemployment. In 1978 in the U.K. a 5.8% rate implied 1.38 million workers unemployed; in the U.S.A. a 6% rate corresponded to 6.05 million workers unemployed; but in India a 4.6% (open unemployment) rate signified 11.2 million workers unemployed. (OECD 1980, pp. 78, 601 and Table 2).

Second, though only 2 observations are available on daily status unemployment, it is by common consensus (Bardhan 1976) the most adequate available measure of unemployment in India. The volume of unemployment according to this measure was 19.2 million in 1978; and unless the rate of growth of this volume falls significantly it should increase to at least 21.5 million over two decades.

Third, such a large volume of unemployment is associated with much greater "illfare" in a country with a per capita income of only \$240 in 1980 (World Bank 1980, p. 110), with 327.5 million people below an absolute poverty line in 1982, 12/ and with no unemployment insurance, than in countries with

higher incomes per capita, a lower incidence of poverty, and well-established social security systems.

Therefore there is little justification for regarding India's unemployment problem as small because the (weekly status) open unemployment rate is only 4 percent.

There is of course no doubt that, as the figures cited imply, India's poverty problem is more than 6 times as massive as the unemployment problem. 13/ Millions of people are obviously not "unemployed" (in the sense of having insufficient working time and being available for more work) and yet subsist below the poverty line. But recent surveys have documented two important propositions about the relation between poverty and unemployment in India.

First, there is a strong positive correlation between the two, in the sense that the poorest households (in the lowest consumption expenditure brackets) suffer the highest incidence of unemployment; and the incidence decreases monotonically for better-off households (in higher expenditure brackets). As Tables 11 and 12 show, in the rural areas the (daily status) unemployment rate falls steadily from 22% to 2% in 1972-73 and from 15% to 4% in 1977-78 from the lowest to the highest expenditure class. In the urban areas it declines from 29% to 5% in 1972-73 and from 18% to 6% in 1977-78. These facts suggest that at least for India there is no basis for the belief expressed in some writings that only the better-off can afford to be unemployed. (Ridker 1971 and Berry and Sabot 1978).

The second proposition underscored by recent surveys is that when rural poverty and unemployment are disaggregated by classes 79.2% of total poverty and 78.3% of total (daily status) unemployment is concentrated in just

two classes--the landless and the self-employed (small) farmers. (Sundaram and Tendulkar 1982, Table 1). This means that any programs that can eradicate the unemployment of these two classes would go a long way to reduce aggregate rural poverty, and vice versa. The landless obviously need guaranteed wage-employment at wages corresponding to poverty-line income. The self-employed small farmers need more productive inputs and assets so that their limited land resource may yield at least a poverty-line income, and their underutilized family labor may be more fully utilized.

In view of the trends in aggregate unemployment reviewed in this Section we attempt in the following Section a nonparametric 14/ decomposition of the growth of (weekly status) unemployment.

### 3. The Decomposition of Unemployment Growth

The growth of the labor force can be decomposed into the contributions of population growth and the change in the participation rate. And the growth of employment can be decomposed into the contributions of capital stock growth and the change in capital intensity. Alternatively, the growth of employment may be broken up into the contributions of output growth and the change in labor productivity.

Then the growth of unemployment (as the difference between labor force and employment) can be written as the weighted sum of the contributions of four components. (See Appendix 2).

Table 13 shows two alternative computations of these four components of the growth of "weekly status" unemployment between 1959 and 1978. In decomposition D1 growth rates of population (N), participation rate (p), net capital stock (K) and capital intensity (k) are used. (The growth rates are calculated by fitting trend equations to all the 8 observations.15.) In



decomposition D2 the growth rates of population (N), participation rate (P), output (Y) and labor productivity (v) are used.

During 1959-1978, weekly status unemployment grew by 1.7% a year. Computation D1 shows that on account of labor force growth alone, without any growth of employment, it would have grown 38.3% a year (41.7% due to population growth less 3.4% due to the decline in the participation rate). On the absorption side capital growth alone would have reduced unemployment 91% a year. But the increase in capital intensity offset more than half of the unemployment-reducing effect of capital growth. Therefore employment growth caused a net reduction of 36.6% a year in unemployment, as against the unemployment-increasing effect of labor force growth (38.3% a year.) The difference between the positive labor force growth effect and the negative employment growth effect remained as the positive rate of growth of unemployment (1.7% a year).

The alternative calculation D2 breaks up the employment growth effect (-36.6% a year) differently: into (-60.5%) a year as the unemployment-reducing effect of output growth, and 23.9% a year as the unemployment-increasing effect of the growth of labor productivity.

As we noted above, daily status unemployment is the most inclusive and meaningful magnitude of unemployment out of the 3 measures which have been recorded. But only two observations on it are available (for 1973 and 1978). In view of the importance of daily status unemployment, however, its growth between 1973 and 1978 has also been broken up in two ways. The computed components are shown in Table 14.

Over the 5 years daily status (DS) unemployment increased by 0.55 million or 0.58% a year. 16/ Labor force growth alone without employment

growth would have increased unemployment (DS) by 10.25% a year. The increase in unemployment would be 25.4% a year due to population growth alone; but the decline in participation absorbed more than half of the population effect. Again, the most massive reduction in unemployment (52.22% a year) comes from capital growth ceteris paribus; but more than three-fourths of this reduction is cancelled by the rise in capital intensity. (Similar results are obtained by using output growth and labor productivity.) (Table 14).

In all the four decomposition exercises reported in Tables 13 and 14, growth has the largest unemployment-reducing effect. But the growth-induced reduction of unemployment is offset by the growth of population and capital intensity (or labor productivity). (The effect of the decline in the participation rate is negligible). The calculations thus underscore the importance of high growth as the prime prerequisite for a solution of the unemployment problem. But they also suggest the need for supportive policies to influence population growth, the pattern of technological change and shifts in the product-mix.

In the following Section we use the decomposition exercises to compute the ranges of change required in variables reflecting these policies if a hypothetical target of unemployment reduction is to be realized.

#### 4. Implications of a Target of Reduction in Unemployment

Assuming that the policymakers fix a target-reduction in the daily status unemployment rate from 8.23% in 1978 to 1.0% in 2000 A.D., the expression for unemployment growth in the Appendix gives the implications of this target for the rates of change of other variables, viz. population, participation rate, capital stock and capital intensity (or net domestic product and labor productivity). The growth rate of each variable required to

achieve the target reduction in the rate of unemployment can be calculated, with the supposition that other variables keep changing at their trend rates in the past or other reasonable projected rates. These assumed rates are:

<u>Variable</u>	<u>Growth Rate</u> (Per year)
Population	2.20
Participation rate	0.00
Capital stock	5.00
Capital intensity	3.88
Net domestic product	3.50
Labor productivity	3.40

(The trend rates underlying these assumptions are set out in the footnotes of Table 15.) The assumed population growth rate would increase population from 68.4 million in 1981 to 1039 million by 2000 A.D. and the (daily status) labor force from 233 million in 1978 to 380 million by 2000 A.D. (with a low, unchanged participation rate: 36.5 percent). If the rate of unemployment is to fall to 1%, the volume of (daily status) unemployment will have to fall from 19.17 million to 3.8 million at the rate of 7.4% a year. The calculations summarised in Table 15 show that for unemployment to decline at this rate, with other variables changing at assumed (near-trend) rates, population growth should slow down from 2.2% to 0.4% a year; or the participation rate should fall 1.8% a year instead of remaining constant; or the capital stock should grow almost 7% instead of 5% a year; or the rise in capital intensity should be halved from 3.9% to 1.9% a year. Alternatively the growth rate of the economy should escalate from its long-run level of 3.5%

to 6.5%; or labor productivity growth should slow down from 3.4% to 0.4% a year.

The most interesting of these results is that if only the growth rate in India can be raised and kept up at 6.5%, which some developing countries have realised in the last two decades, mass unemployment can be absorbed even if population and productivity growth remain at past levels. Unfortunately, a rise in the growth rate in India to this level, though technically and financially feasible, seems unlikely in view of the old and new structural features of the economy. An increase in the capital stock growth rate is even more unlikely because the net domestic investment rate has already hit the abnormally high level of 23% (in 1981-82). (CMIE 1982). Any improvement of the growth rate will have to come from a reduction in the capital-output ratio (which has nearly doubled in the last 25 years, mainly due to growing inefficiency in the use of capital -- lengthening project construction lags, falling capacity-use ratios, and recurrent labor unrest and input shortages. (For documentation of these trends see Krishna 1980, 1981).

If and so long as growth remains constrained below the required level, a dualist development strategy will continue to be necessary. Such a strategy would include direct labor absorption measures as well as the maintenance of normal output growth. The major employment schemes currently being implemented in different parts of India are described in the Sixth Plan Document (India, 1981, Ch. 11 and 13). Six of them are relatively more successful in particular States; and, if replicated over the whole country, have the potential of absorbing most of the daily status unemployment over a ten-year period. 17/

FOOTNOTES

- 1/ The classic formulation of all the objections to the use of the "Western" concepts of unemployment and "disguised unemployment" for measuring the underutilization of labor in South Asia is in Myrdal (1968) Volume II, Chapter 21. The present writer, however, considers that the task of measuring unemployment at various levels of aggregation could not be evaded. Early discussions of the difficulties of measurement only led to a progressive evolution of survey concepts and techniques in India to accommodate the realities of transitional rural and urban informal sectors. The surveys eventually did generate many meaningful and realistic time series and a mass of cross-section data. One of Myrdal's main propositions was that though there is "a massive waste of labor," the "readily available labor supply" awaiting "work opportunities" is small (Myrdal 1968, V. II, p. 999). This has not been borne out by experience. The creation of "opportunities" has easily attracted large labor flows. In a single State, Maharashtra, for example, the number of workers reporting for work in rural areas under the Employment Guarantee Scheme varied between 355,000 and 911,000 by 1978-79. (Krishna, March 1982). Under another scheme, the Food For Work Program, 650 million persondays of work (or 1.78 million personyears of 365 days) were demanded by rural workers in 1979-80. (India, January 1981, p. 168-9). And annual rural-urban migration in India is estimated to have averaged 850,000 in the 1960s and 2 million in the 1970s.
- 2/ See India 1970, Krishna 1972, Dantwala and Visaria 1974, Hauser 1973, ILO 1974, Sinha 1974, Sabot 1975, Sen 1975, Thormann 1975, Bardhan 1976, Krishna 1976, Raj 1976, Visaria 1976, Dantwala 1979, Squire 1979, Lal 1981, Visaria 1980, Bardhan 1982.
- 3/ It can be seen in Table 16 that the sample size averaged about 142,000 in two surveys in the 1950s; 334,000 in four surveys in the 1960s and 750,000 in two surveys in the 1970s. Thus for these eight years the sample estimates of various ratios have a relatively reliable statistical basis.
- 4/ All unemployment rates presented and discussed in this paper are ratios of unemployment to the relevant labor force or labor supply. Where the original data provide only unemployment/population ratios and employment/population ratios, unemployment/labour force ratios have been computed.
- 5/ The weights are the proportion of each worker's labor supply in the aggregate labour supply for the week. Since a sample of workers is interviewed every quarter, the aggregate daily status rate for the whole year is also a weighted sum of the aggregate rates for survey years.

- 6/ For definitional changes see Appendix 3.I and Appendix 3.2.
- 7/ Two features of the figures in Tables 1, 2, and 3 need to be stressed. First, there was an important change in the definition of "usual status" employment and unemployment between the 1973 and 1978 surveys. (See Appendix 3.1, Section 3.) But the National Sample Survey Organisation (NSS) published for 1978 adjusted figures comparable with the 1973 figures. These adjusted figures are used in Table 1. Second, the 1981 Census figures released during 1981 and 1982 revealed a much higher population in March 1981 than the earlier projection. Therefore the population, and hence the labour force and unemployment aggregates, in the intermediate survey years (1973 and 1978) would have been higher than the estimates based on earlier projections. Revised estimates of these aggregates have accordingly been made with new, interpolated population figures, and (unchanged) labour force/population ratios and unemployment/population ratios from the sample survey data for 1972-73 and 1977-78. Only these revised higher, aggregates are presented in Tables 1, 2, and 3.
- 8/ If the unemployment rates are assumed to have remained unchanged between 1973 and 1978 the volume of chronic unemployment would still be 4.5 million in 1978. Even this lower volume in 1978 is 3.3 times the volume in 1961.
- 9/ Though lines join the available observations in Chart 1 it should be remembered that the time series of observations is discontinuous.
- 10/ The rural share of daily status unemployment also fell from 81 to 74% between 1972-73 and 1977-78.
- 11/ Seminar discussions of trends reported in this paper has often elicited this reaction.
- 12/ This number is calculated by multiplying the poverty ratio for 1977-78 given in the Sixth Plan (India 1981, p. 16) and the estimated population in 1981.
- 13/ The volume of unemployment (19.17 million personyears in 1978) and the population in poverty (305.98 million in 1978) cannot be compared directly. The former number refers to economically active persons; the latter is the total number of members of households with per capita expenditure below the poverty line. But the latter number can be converted into the equivalent number of "workers in poverty" by multiplying the "population in poverty" by the ratio of economically active persons to household size. (These ratios for 1977-78 are given separately for rural and urban areas in NSS Report No. 298). The conversion yields 120.5 million "workers in poverty," that is, workers not earning enough to afford poverty line expenditure for their families. Thus with roughly comparable magnitudes the volume of poverty appears to be more than 6 times the volume of unemployment.

- 14/ Nonparametric analysis is appropriate because only a few observations are available. For a simultaneous-equation model (estimated without the time series of unemployment). (See Krishna 1983).
- 15/ The time for each observation is the mid-point of the survey year. See Table 16.
- 16/ The difference between the growth rates of weekly status unemployment (1.8% a year during 1959 and 1978) and daily status unemployment (0.58% a year between 1973 and 1978) is due to the differences between the two concepts and between the lengths of the two periods, and, above all, the fact that both of the two latter years (1973 and 1978) were abnormal: 1973 was a drought year and 1978 a bumper crop year.
- 17/ The six schemes are the Employment Guarantee Scheme (in the State of Maharashtra), the dairy scheme Flood II (in several States), the Food for Work Program (now renamed National Rural Employment Program, in several States), the Antyodaya scheme (in the State of Rajasthan, now merged in other schemes), the agricultural development schemes for accelerated irrigation growth (2.5 million hectares a year) and fertiliser nutrient consumption growth (at least 15% a year), and the Small Farmer Development programs. For a brief description of these programs, their achievements and potentials, see Krishna 1980.





NOTATION USED IN TABLES

E = "employment" = work force WF.  
g = growth rate.  
LF = labor force = work force (WF) plus unemployment (U).  
P = population.  
p = participation rate = LF/P.  
RF = rural females.  
RM = rural males.  
RP = rural persons (males plus females).  
TF = total females.  
TM = total males.  
TP = total persons.  
U = aggregate unemployment.  
u = the rate of unemployment = U/LF.  
u' = the unemployment/population ratio = U/P.  
UF = urban females.  
UM = urban males.  
UP = urban persons (males plus females).  
UU = underemployment (time criterion alone).  
U UW = underemployed seeking or available for more work.  
WF = work force.

TABLE 1

USUAL STATUS UNEMPLOYMENT, INDIA, 1961-1978\*  
(age 5 years and above)  
(1981 Census data base for 1973 & 1978)

Year	Rural			Urban			Total		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
<u>Rates (Percent)</u>									
1961	0.48	0.10	0.35	3.17	1.40	2.90	0.96	2.03	0.72
1971	1.41	0.56	1.11	3.95	3.57	3.88	1.92	0.85	1.57
1973	1.16	0.48	0.92	4.78	6.05	5.03	1.91	1.03	1.62
1978	1.28	2.01	1.55	5.40	12.40	6.97	2.20	3.32	2.58
<u>Aggregates (Millions)</u>									
1961	0.51	0.06	0.57	0.73	0.06	0.79	1.25	0.11	1.36
1971	1.75	0.38	2.14	1.22	0.25	1.47	2.97	0.64	3.61
1973	1.49	0.34	1.83	1.60	0.47	2.07	3.09	0.81	3.90
1978	1.82	1.64	3.46	2.19	1.46	3.65	4.01	3.10	7.11
1978(a)	1.64	0.37	2.01	1.92	0.58	2.50	3.56	0.95	4.51

\*1961: The aggregate unemployment (U) figure is directly available from Census data. (IAMR 1968.) Labour force (LF) is estimated as U + the work force (WF). WF figures are given in RGI 1974. The unemployment rate U/LF is computed.

1971: In the 1971 Census the unemployed were classified as "other non-workers". The source is RGI 1974. The LF of 1971 is estimated by applying the "usual status" 1972-73 participation rates for 24 categories to the 1971 Census population. The categories are 6 age-groups of rural males, rural females, urban males and urban females. The unemployment rates  $u=U/LF$  are then computed. U and LF relate to all age-groups 5 years and above.

For 1973 and 1978 see Appendix 1.

(a) Estimated on the assumption of unchanged 1972-73 unemployment/population ratios for RM, RF, UM, UF, and the projected population in January 1978.

TABLE 2

WEEKLY STATUS UNEMPLOYMENT, INDIA, 1959-1978\*  
(age 5 years and above)  
(1981 Census data base for 1973 & 1978)

Year	Rural			Urban			Total		
	Males	Females	Persons	Males	Females.	Persons	Males	Females	Persons
<u>Rates (Percent)</u>									
1958-59	3.64	9.83	5.56	3.57	3.67	3.58	3.63	9.33	5.28
1959-60	3.15	8.35	4.60	4.97	6.70	5.26	3.38	8.19	4.70
1960-61	2.59	6.49	3.85	2.47	2.21	2.42	2.57	6.10	3.64
1961-62	3.74	8.53	5.13	3.02	3.32	3.06	3.60	8.05	4.80
1964-65	2.61	6.13	3.74	2.58	5.58	3.08	2.60	6.07	3.64
1966-67	1.82	4.35	2.67	1.52	1.84	1.57	1.76	4.15	2.50
1972-73	3.03	5.36	3.84	5.97	9.19	6.45	3.60	5.91	4.34
1977-78	3.57	4.13	3.74	7.11	10.96	7.84	4.37	5.07	4.56
<u>Aggregates (Millions)</u>									
1958-59	3.65	4.45	8.10	0.74	0.14	0.88	4.39	4.59	8.98
1959-60	3.32	3.41	6.73	1.07	0.29	1.36	4.39	3.70	8.09
1960-61	2.64	3.17	5.81	0.55	0.11	0.66	3.19	3.28	6.47
1961-62	3.65	3.40	7.05	0.68	0.13	0.81	4.33	3.54	7.87
1964-65	2.67	2.98	5.65	0.63	0.28	0.91	3.30	3.26	6.56
1966-67	2.03	2.44	4.47	0.39	0.09	0.48	2.42	2.53	4.95
1972-73	3.86	3.59	7.45	1.97	0.68	2.65	5.83	4.27	10.10
1977-78	4.88	2.41	7.29	2.84	1.02	3.86	7.72	3.43	11.15

\*1958-59 to 1966-67: The Population of RM, RF, UM and UF, at NSS Survey period midpoint dates, is estimated with data for March 1 of each year supplied by the Registrar General of India in September 1980. The assumption of a constant monthly growth rate between two successive March 1 figures is made. Thus, for example, the estimated population on 1 January 1959 will be:

$$= P (1 \text{ March } 1958) \times (1 + g)^{10} \text{ where } g = \left( \left[ \frac{P (1 \text{ March } 1959)}{P (1 \text{ March } 1958)} \right]^{1/12} - 1 \right).$$

$\frac{LF}{P}$  and  $\frac{U}{P}$  figures are given in the NSS "Note." These are used to compute LF, P, and LF/P, separately for RM, RF, UM, and UF. Aggregative figures (RP, UP, TM, TF, and TP) are sums. Unemployment rates for RP, UP, TM, TF, and TP are implicitly weighted averages. The data used for 1964-65 are 16th schedule data.

For 1972-73 and 1977-78, see Appendix 1.

TABLE 3

DAILY STATUS UNEMPLOYMENT, INDIA, 1973 and 1978\*  
 (age 5 years and above)  
 (1981 Census data base)

Year	Rural			Urban			Total		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
<u>Rates (Percent)</u>									
1972-73	6.83	11.22	8.21	8.02	13.68	8.99	7.08	11.48	8.35
1977-78	7.11	9.18	7.69	9.42	14.62	10.34	7.64	9.94	8.23
<u>Aggregates (Millions)</u>									
1972-73	8.60	6.46	15.06	2.64	0.94	3.57	11.23	7.40	18.63
1977-78	9.48	4.74	14.22	3.72	1.23	4.95	13.20	5.97	19.17

\*See Appendix 1.

TABLE 4

DAILY STATUS UNEMPLOYMENT RATES OF SMALL FARMERS AND LANDLESS WORKERS  
25th ROUND (1970-71)

Class	July- September	October- December	January- March	April- June	July June
(Percent)					
<b><u>Small Farmers</u></b>					
Males	5.26	4.61	5.71	5.92	5.38
Females	6.49	8.04	9.37	9.99	8.47
Persons	5.69	5.82	6.92	7.17	6.40
<b><u>Landless Workers</u></b>					
Males	5.69	4.50	6.79	7.54	6.13
Females	7.98	9.53	9.40	13.78	10.17
Persons	6.53	6.34	7.69	9.64	7.55

**Source:** NSS Reports Nos. 230/1, 242, 245, 246.

TABLE 5

WEEKLY STATUS UNEMPLOYMENT AND UNDEREMPLOYMENT\*  
(time criterion alone)

Year	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
				<u>Rates (Percent)</u>					
1958-59	37.33	67.17	46.97	32.05	61.16	36.96	36.41	66.68	45.15
1959-60	39.68	68.14	47.39	33.73	67.47	39.83	38.66	68.10	46.37
1960-61	31.35	59.87	40.62	-	-	-	-	-	-
1961-62	31.20	57.79	38.86	-	-	25.81	-	-	36.79
1964-65	24.30	47.30	31.76	20.12	50.90	25.73	23.50	47.59	30.59
1966-67	-	-	-	-	-	19.66	-	-	-
				<u>Aggregates (Millions)</u>					
1958-59	37.40	30.40	67.80	6.78	2.48	9.26	44.18	32.88	77.06
1959-60	41.89	27.83	69.72	7.36	2.95	10.31	49.25	30.78	80.03
1960-61	32.00	29.32	61.32	-	-	-	-	-	-
1961-62	30.48	23.06	53.54	-	-	6.85	-	-	60.39
1964-65	25.00	23.08	48.08	4.90	2.17	7.07	29.90	25.25	55.15
1966-67	-	-	-	-	-	6.09	-	-	-

\*The basic data on "employment" rates E/P, and unemployment/population and under-employment/employment ratios U/P and UU/E are derived from the NSS "Note."

$$\frac{LF}{P} = \frac{E}{P} + \frac{U}{P} \text{ and } \frac{UU}{P} = \frac{UU}{E} \times \frac{E}{P} \text{ are computed.}$$

The population figures from survey years are estimated with 1951, 1961 and 1971 Census data by interpolation on the assumption of a constant annual growth rate.

The NSS rates are multiplied by the estimated population to get LF, U, and UU. Unemployment rates  $\frac{U + UU}{LF}$  are then computed.

The figures include (1) the wholly unemployed on a weekly status basis, (2) the "severely underemployed" getting less than 28 hours of work, and (3) the "moderately underemployed" getting 28 to 42 hours of work in the reference week.

1964-65 figures are based on 16th Schedule data.

TABLE 6

WEEKLY STATUS UNEMPLOYMENT AND UNDEREMPLOYMENT  
(time and availability criteria)

Year	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
				<u>Rates (Percent)</u>					
1958-59	13.28	22.30	16.10	9.24	12.58	9.87	12.58	21.50	15.15
1959-60	12.56	20.33	14.68	11.57	16.52	12.43	12.40	19.96	14.38
1960-61	9.69	16.06	11.77	-	-	-	-	-	-
1961-62	11.13	17.16	12.97	-	-	8.84	-	-	12.22
1964-65	-	-	9.24	-	-	7.31	-	-	-
				<u>Aggregates (Millions)</u>					
1958-59	13.30	10.09	23.39	1.96	0.51	2.47	15.26	10.60	25.86
1959-60	13.26	8.30	21.56	2.53	0.72	3.25	15.79	9.02	24.81
1960-61	9.89	7.86	17.75	-	-	-	-	-	-
1961-62	10.87	6.85	17.72	-	-	2.34	-	-	20.06
1964-65	-	-	14.01	-	-	2.09	-	-	16.10

\*See the note in Table 5 "Weekly Status Unemployment and Underemployment (Time Criterion Alone)."

The data source and procedure for computations in this Table are the same as for Table 5, except that the rates for the underemployed available for more work UUW/E are used.

TABLE 7

SHARE OF RURAL AREAS AND OF WOMEN IN AGGREGATE UNEMPLOYMENT:  
INDIA, SELECTED YEARS, 1959-1978

Year	<u>Percentage Share of Rural Areas</u>		<u>Percentage Share of Women</u>	
	Labor Force	Unemployment	Labor Force	Unemployment
	<u>Weekly Status</u>			
1958-59	85.22	90.20	28.89	51.11
1959-60	84.82	83.19	26.19	45.74
1960-61	84.72	89.80	30.20	50.70
1961-62	83.83	89.58	26.77	44.98
1964-65	84.12	86.13	29.43	49.70
1966-67	84.46	90.30	30.72	51.11
1972-73	82.61	73.76	31.02	42.28
1977-78	79.84	65.38	27.68	30.76
	<u>Daily Status</u>			
1972-73	82.21	80.84	28.87	39.72
1977-78	79.42	74.18	25.81	31.14

Sources: Tables 1, 2, 3 for unemployment. Tables LF/17B, 27, 10/5/83 for labor force.



TABLE 8  
SHARE OF AGRICULTURE, MINING AND MANUFACTURING IN THE WORK FORCE:  
INDIA, 1911-1981

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Year	Agriculture	Mining and Manufacturing
1911	72.3	9.8
1921	73.1	9.0
1931	72.0	8.7
1941	74.0	9.2
1951	72.8	9.3
1961	73.0	10.4
1971	73.8	9.8
1972-73(a)	74.0	9.3
1977-78(a)	70.7	10.5

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Source: Government of India, Draft Sixth Five Year Plan 1978-83 (Revised), New Delhi, December 1979. Based on Census data.

Agriculture includes animal husbandry, fishery and forestry.

(a) Based on National Sample Survey data for "usual status" workers.

Source: Government of India, Sixth Five Year Plan 1980-85, New Delhi, January 1981.

TABLE 9  
RATIO OF URBAN TO TOTAL POPULATION, INDIA

Year	Percent	Rate of Growth of Urban Population Since Previous Census Year
1951	16.08	-
1961	17.97	3.11
1971	19.90	3.27
1981	23.32	3.89

Source: Computed from population figures in Table PLFU/20, October 1982.

TABLE 10  
SHARE OF WOMEN IN EMPLOYMENT IN ORGANIZED SECTORS

<u>Year</u>	<u>Percent</u>
1966-67	11.2
1967-68	11.2
1968-69	11.1
1969-70	11.1
1970-71	11.0
1971-72	11.2
1972-73	11.3
1973-74	11.3
1974-75	11.3
1975-76	11.9
1976-77	12.0
1977-78	12.4

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Source: India, December 1979, p. 164.

TABLE 11  
POVERTY AND UNEMPLOYMENT  
INDIA, 1972-73

Monthly Per Capita Expenditure Class (Rs.)	Daily Status Unemployment Rate	
	Rural	Urban
	(percent)	
0.00- 10.99	22.42	29.21
11.00- 20.99	14.08	15.88
21.00- 33.99	9.82	11.87
34.00- 54.99	7.12	9.97
55.00- 99.99	5.18	7.88
100.00 and above	2.24	4.92
All	8.24	8.97

Source: India, December 1979, p. 152.

TABLE 12  
POVERTY AND UNEMPLOYMENT  
INDIA, 1977-78

Monthly Per Capita Expenditure Class (Rs.)	Daily Status Unemployment Rate	
	Rural	Urban
	(percent)	
0.00- 9.99	14.71	17.60
10.00- 19.99	15.70	26.89
20.00- 29.99	12.35	16.91
30.00- 39.99	9.54	14.23
40.00- 49.99	8.85	13.01
50.00- 74.99	7.05	11.07
75.00- 99.99	6.15	10.10
100.00-149.99	5.25	9.18
150.00-199.99	3.53	6.88
200 and above	3.95	5.83
All	7.70	10.34

Sources: Sundaram and Tendulkar, 1982, Table 3, for rural areas. NSS Report No. 298, Table 19 for urban areas.

TABLE 13  
 DECOMPOSITION OF WEEKLY STATUS UNEMPLOYMENT GROWTH:  
 INDIA, 1959-1978  
 (8 NSS Observations)

Appendix expression	Effect	Growth rate per year (Percent)
<u>Decomposition D 1</u>		
(4a)	Population effect	41.68
(4b)	Participation effect	-3.41
(4c)	Capital growth effect	-90.98
(4d)	Capital intensity effect	54.38
	Unemployment growth rate	<u>1.67</u>
<u>Decomposition D 2</u>		
(4'a)	Population effect	41.68
(4'b)	Participation effect	-3.41
(4'c)	Output growth effect	-60.48
(4'd)	Labor productivity effect	23.88
	Unemployment growth rate	<u>1.67</u>
<u>Computed Growth Rates 1959-1978</u>		
	Population	2.20
	Participation rate	-0.18
	Capital stock (net)	5.07
	Capital intensity	3.03
	Domestic product (net)	3.37
	Labor Productivity	1.33

Sources: National Accounts Statistics (NAS) for domestic product and capital stock. Sources in Table 2 for other data. Decomposition from printout 6, October 1982. For growth rates exponential trend equations are fitted to observations computed for midpoints of NSS years.

TABLE 14  
 DECOMPOSITION OF DAILY STATUS UNEMPLOYMENT GROWTH:  
 INDIA, 1973-1978  
 (2 NSS Observations)

Appendix expression	Effect	Growth rate per year (percent)
<u>Decomposition D 3</u>		
(4a)	Population effect	25.41
(4b)	Participation effect	-15.16
(4c)	Capital growth effect	-52.22
(4d)	Capital intensity effect	42.55
	Unemployment growth rate	<u>0.58</u>
<u>Decomposition D 4</u>		
(4'a)	Population effect	25.41
(4'b)	Participation effect	-15.16
(4'c)	Output growth effect	-47.73
(4'd)	Labor productivity effect	38.06
	Unemployment growth rate	<u>0.58</u>
<u>Computed Growth Rates 1973-1978</u>		
	Population	2.12
	Participation rate	-1.27
	Capital stock (net)	4.76
	Capital intensity	3.86
	Value added (output)	4.35
	Labor productivity	3.47

Sources: See Table 13 and Table 3.

TABLE 15

GROWTH RATES OF PARAMETERS REQUIRED FOR DAILY STATUS  
UNEMPLOYMENT TO BE 1 PERCENT BY 2000 A.D.\*

Rate of Growth of	Percent Per Annum	
	Required 1978-2000	Assumed or Actual
Unemployment	-7.36	-
Population	+0.44	2.20
Participation	-1.76	0.00
Capital stock	+6.92	5.00
Capital intensity	+1.94	3.86
Unemployment	-7.36	-
Population	-0.51	2.20
Participation rate	-1.89	0.00
Output growth	6.46	3.50
Labour productivity	0.44	3.40

Source: DECOM/010183.

\*The parameters assumed in column 2 are derived as follows:

The population growth rate was 2.23% a year (continuous compounding) during the decade, 1971-1981. It is assumed that it may decelerate to the rate for the 1960s, i.e., 2.2%.

Since there are only two observations on the daily status participation rate (DSPR) for 1973 and 1978, and both years were abnormal, it would not be reasonable to assume for the future the rate of decline in the DSPR between these two years. Also, the overall rate declined between those two years mainly due to the steep reduction in the rural female participation rate. This reduction is widely believed to be the result of the undercounting of rural female workers in 1978.

The long-term rate of decline in the weekly status participation rate between 1959 and 1978 (0.18% a year) too cannot be assumed to be applicable in future, because the trend coefficient of this rate was nonsignificant ( $r^2 = 0.195$ ). Therefore it is assumed that the rate (DSPR) will remain unchanged at its low 1978 level (0.3654).

The rate of growth of capital stock was 5.1% a year during 1959-1978 and 4.76% during 1973-1978. The rate assumed for the future is 5%.

Capital intensity grew 3% a year during 1959-1978 and 3.88% a year during 1973-1978. Its growth assumed for the future is the same as in the latter period.

The growth rate of national income assumed is the stable long-term rate (3.5% a year).

Productivity growth has accelerated: over the long period 1959-1978 it was 1.3% a year; in the recent period 1973-1978 it has been 3.6% a year (partly because of the abnormality of the two years (1973 and 1978)). The growth rate assumed for the future is 3.4% a year.



TABLE 16  
SAMPLE SIZE (PERSONS)  
FOR NATIONAL SAMPLE SURVEYS OF LABOR FORCE DATA

Round Number	Year	Midpoint of Survey Year	Sample Size	Source
14	1958-59	1 January 1959	87,750	(a)
15	1959-60	1 January 1960	196,274	(a)
16	1960-61	1 January 1961	192,722	(a)
17	1961-62	15 February 1962	471,266	(a)
19	1964-65	1 January 1965	(d)	
21	1966-67	1 January 1967	476,690	(a)
27	1972-73	1 April 1973	800,000	(b)
32	1977-78	1 January 1978	706,079	(c)

**Sources:**

(a) India 1970, pp. 56-59.

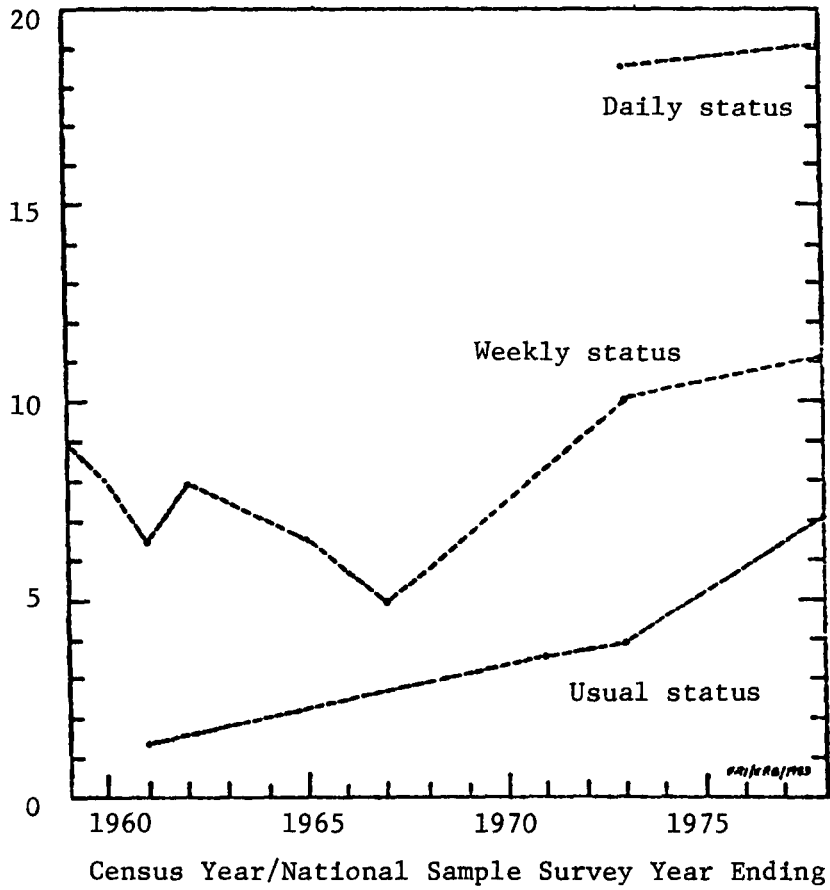
(b) NSS Report No, 255/10, p. 3. Approximate.

(c) NSS Report No. 298, Table 10.

(d) 39,314 households for Integrated Household Schedule.

CHART 1

Aggregate Unemployment, India  
Selected Years, 1959-78



APPENDICES

APPENDIX 1

COMPUTATION OF POPULATION, LABOR FORCE AND UNEMPLOYMENT (AGE 5 YEARS AND ABOVE)  
ON 1 APRIL 1973 and 1 JANUARY 1978  
(1981 Census Data Base)

Let "co" denote the pre-1981 Census Registrar General's projections;  
"cn" = the 1981 Census figures or Census base; "5+" = the age group 5 years  
and above, and "aa" = all ages.

The population of all ages on 1 April 1973 is computed as

$$(1) \quad P/cn/aa/1.4.73 = (P/co/aa/1.3.71 * ( \frac{P/cn/aa/1.3.81}{P/co/aa/1.3.71} )^{\frac{25}{120}}).$$

The age ratio

$$(2) \quad (P/co/5+/1.3.73) \div (P/co/aa/1.3.73)$$

is then computed, with the numerator from SARVEKSHANA, April 1977, and the  
denominator from RGI, 1980.

The population estimate (1) is multiplied by (2) to get

$$(3) \quad P/cn/5+/1.4.73.$$

The population of all ages on 1 January 1978 is similarly computed as:

$$(4) \quad P/cn/aa/1.1.78 = (P/aa/co/1.3.71) * ( \frac{P/cn/aa/1.3.81}{P/co/aa/1.3.71} )^{\frac{82}{120}}.$$

The age ratio

$$(5) \quad (P/co/5+/1.1.78) \div (P/co/aa/1.1.78)$$

is computed with the numerator and denominator figures from NSS Report No. 298.

The population estimate (4) is multiplied by (5) to get

$$(6) \quad P/cn/5-/1.1.78.$$

Sample Survey estimates of U/P and LF/P from SARVEKSHANA, October 1977  
and NSS Report No. 298 for 1972-73 and 1977/78, respectively, are used to  
generate revised U, LF and U/LF estimates for RM, RF, UM and UF.

All absolute figures are calculated separately for RM, RF, UM and UF.

Other aggregates are sums:

$RP = RM + RF$ ;  $UP = UM + UF$ ;  $TM = RM + UM$ ;  $TF = RF + UF$ ; and  $TP = RP + UP$  .

Ratios  $u = U/LF$  are computed from calculated absolute figures.

APPENDIX 2

DECOMPOSITION OF UNEMPLOYMENT GROWTH

For decomposing the variation in unemployment, we use the following notation:

E = employment,

gx = growth rate of variable x over the relevant period,

K = capital stock,

k = capital intensity =  $K/E$ ,

L = labor force,

N = population,

p = participation rate,

u = unemployment rate =  $U/L$ ,

U = unemployment,

V = value added, and

v = labor productivity =  $V/E$ .

Writing the labor force as the product of population and the participation rate

$$(1) \quad L = pN,$$

employment as capital stock divided by capital intensity, or as value added divided by labor productivity

$$(2) \quad E = K/k, \text{ or}$$

$$(2') \quad E = V/v,$$

we have unemployment

$$U = L - E$$

$$(3) \quad = pN - K/k, \quad \text{or}$$

$$(3') \quad = pN' - V/V .$$

In growth rates

$$(4) \quad g_U = \frac{1}{u} (g_N + g_p) - \left(\frac{1}{u} - 1\right)(g_K - g_k)$$

$$(4') \quad = \frac{1}{u} (g_N + g_p) - \left(\frac{1}{u} - 1\right)(g_V - g_v) .$$

The growth rate of unemployment is thus made up to

$$(4a) \quad \frac{1}{u} (g_N) , \quad \text{the population effect,}$$

$$(4b) \quad \frac{1}{u} (g_p) , \quad \text{the participation effect,}$$

$$(4c) \quad - \left(\frac{1}{u} - 1\right)g_K , \quad \text{the capital growth effect, and}$$

$$(4d) \quad \left(\frac{1}{u} - 1\right)g_k , \quad \text{the capital-intensity effect.}$$

Alternatively the components are:

$$(4'a) \quad \frac{1}{u} (g_N) , \quad \text{the population effect,}$$

$$(4'b) \quad \frac{1}{u} (g_p) , \quad \text{the participation effect,}$$

$$(4'c) \quad - \left(\frac{1}{u} - 1\right)g_V , \quad \text{the output growth effect, and}$$

$$(4'd) \quad \left(\frac{1}{u} - 1\right)g_v , \quad \text{the labor productivity effect.}$$

APPENDIX 3.1  
"USUAL STATUS" CONCEPTS

1. Census 1961

The criterion for inclusion in the work force was at least one day of work in the reference fortnight for regular workers; and one hour a day of work through the greater part of the working season for non-regular workers. "Nonworkers" included houseworkers, students, retired persons, dependents, beggars, residents of institutions and "others." Persons whose usual status was "other nonworkers" but who were available for more work were counted as "unemployed."

2. Census 1971

In the 1971 Census the criterion for inclusion in the "worker" category was that a person's "main" activity was productive work on at least one day of the reference week for regular workers. For non-regular workers the main status was defined by normal activity "in the last one year."

Besides "main workers" "nonworkers with secondary work" were included in the adjusted estimates of the work force comparable with the 1961 Census estimates.

The unemployed by usual status were "other nonworkers" seeking or available for full-time or part-time work according to Census Resurvey 1971. (RGI 1974, p. 6.)

The estimate of the labor force for 1971 used in this paper is not based on RGI 1974 but estimated by the procedure mentioned in Table 1. (For definitions in the Censuses of 1961 and 1971, see RGI 1971 and RGI 1974.)



### 3. NSS Rounds 27 (1972-73) and 32 (1977-78)

The "usual status" unemployment rates and aggregates for 1973 and 1978 are not comparable because of a major change in the definition of the usual status categories introduced in the 1977-78 survey (the 32nd Round). In the 32nd Round a person would be counted as employed, unemployed or "not in the labour force" (by usual status) if he/she was employed, unemployed or "not in the labor force," for a major part of the reference period, i.e., one year preceding the survey. Thus if a person worked for 5 months, and was seeking or available for work for 7 months, in the preceding year, he/she would be counted as "unemployed." (NSS Report No. 298, pp. 4-5, 44). The 27th Round (1973) categorisation of usual status was different. In that Round the "major time spent" status was not strictly interpreted to mean the status in which a person was for a major part of the preceding 12 months. The period, as well as the proportion of the period used as the cutoff for determining status, was left vague: "the activities (or inactivities) which dominated for a long period of time in the past (say, one year or so) and which were likely to continue also in future were considered as their usual activity status." (NSS Report No. 298, p. 5). In the case of a change of status between a long period in the past and the recent past apparently the recent status was recognised if it was likely to continue in the future. Thus if a person who was unemployed for a major part of the previous year came to be employed recently, and was likely to remain employed, he/she would be counted as "employed" according to the 27th Round practice; but he/she would be counted as "unemployed" with the strict application of the "major time spent" criterion in the 32nd Round (1978.)

This definitional change has led to a substantial increase in the usual status unemployment rates between 1973 and 1978.

With a tight definition of the reference period (the previous year) and the cut-off period (half of the previous year), anybody who was seeking or available for work for more than 6 months (not necessarily continuously) over the past 12 months has been counted as unemployed in the survey of 1978.

This procedure has narrowed the earlier (1973) difference between the usual status and weekly status rates of unemployment. In other words, the gap between the number of people not getting even an hour of work in the 7 days before the survey has been reduced. The actual persons in the two sets are not the same. But the overlap between the two sets is evidently greater in the 32nd Round than in the 27th.

An alternative interpretation of the change is that the magnitude of "chronic unemployment" is much larger if it is defined as unemployment for more than 6 months in the past year, than if it is vaguely defined as unemployment for a long time in the past. The "long time" must have been closer to a whole year or more in the understanding of the field investigators and respondents of the 27th Round (1973) so that a smaller number were recorded as having the usual status of unemployment. Thus the 27th Round (1973) would have captured the hard core of chronic unemployment; while the 32nd Round (1978) simply netted the set corresponding to a particular definition of underemployment (unemployment for more than 6 months out of 12) which would include the hard core as well as many more.

The relative usefulness of the two estimates depends on the policy question that is being answered. There is already a consensus among Indian economists that the most inclusive and useful of the three unemployment

estimates (usual status, weekly status and daily status) generated by the 27th and 32nd Round data is the daily status estimate, for it covers open, continuous unemployment as well as intermittent unemployment. The latter is more massive, and any employment policy for a dominantly rural economy must be targeted at it. A similar reasoning would suggest that the more inclusive 32nd Round (1978) estimate of usual status unemployment is preferable to the 27th Round (1973) estimate of hard core chronic unemployment.

APPENDIX 3.2  
"WEEKLY STATUS" CONCEPTS

NSS Rounds	Year	Reference Period	Definition of the Unemployed by Weekly Status	Definition of the Employed by Weekly Status
<u>Rural Areas</u>				
14	1958-59	One week	No work at all in the reference week, and seeking or available for work. <u>a/</u>	Gainful employment on at least one day in the week "however nominal it may be." <u>a/</u>
15	1959-60			
16	1960-61			
17	1961-62			
19	1964-65			
21	1966-67			
27	1972-73	One week	No work at all in the reference week, and seeking or available for work. <u>b/</u>	Working even "very little (say one hour) for even one day of the reference week." <u>b/</u>
32	1977-78	One week	No work at all in the reference week, and seeking or available for work. <u>c/</u>	Engaged in gainful activity "at least one hour on any one day of the reference week." <u>c/</u>
<u>Urban Areas</u>				
14	1958-59	One week	Same as for rural areas.	Same as for rural areas.
15	1959-60	One week	Same as for rural areas.	Same as for rural areas.
16	1960-61	One week	Persons below 14 and above 60 years excluded. Those without any self-employment should have had no work even for a single day in the reference week, and should have been looking for full-time work. If they were self-employed, their livelihood should have been lost. <u>d/</u>	Those in the labor force but not unemployed according to the definition in column 4.
17	1961-62			
19	1964-65			
21	1966-67			
27	1972-73	One week	Same as for rural areas.	Same as for rural areas.
32	1977-78	One week	Same as for rural areas.	Same as for rural areas.

The effective age-group coverage of the labor force for all the survey years has been kept at persons of age 5 years and above.

Persons are taken to be available for work "at current rates of remuneration in prevailing conditions of work." (Bhattacharyya, in India, 1970, p. 36).

In view of the definitional change cited above affecting urban unemployment, urban unemployment/population ratios for the 4 years 1960-61, 1961-62, 1964-65, and 1966-67 have been adjusted upward to make them comparable with ratios for other years. The adjustment was made using estimates based on alternative definitions available for 1964-65.

(a) Bhattacharyya, in India, 1970, pp. 35-36. For 1958-59 and 1959-60 the definition of availability included "on at least one day."

(b) NSS Report No. 255/10, p. 6.

(c) NSS Report No. 298, pp. 5-6.

(d) Bhattacharyya, in India, 1970, pp. 36-37.

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