MINISTÉRIO DO PLANEJAMENTO E COORDENAÇÃO GERAL

Instituto de Planejamento Econômico e Social

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" THE BRAZILIAN POPULATION AND LABOR FORCE IN 1968 "

Documento para discussão interna

Rio de Janeiro, 13 de março de 1969

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## F. S. O'Brien*

### I

Information about a variety of population and labor force characteristics is presently being collected through a new household sample survey program initiated in 1967 by the IBGE, the Pesquisa Nacional por Amostra de Domicílios (PNAD). This paper analyses the data on population and labor force for 1968 and the trends in these variables since 1960. In order to facilitate this analysis I will begin with a brief examination of the organization of the PNAD and the concepts which have been employed in collecting this information.

For the purposes of the PNAD the country has been divided into seven geographic regions as follows:

I    Guanabara and Rio de Janeiro

II    São Paulo

III    Paraná, Santa Catarina and Rio Grande do Sul

IV    Minas Gerais and Espírito Santo

V    Maranhão, Piauí, Ceará, Rio Grande do Norte, Paraiba, Pernambuco, Alagoas, Sergipe and Bahia

VI    Brasília

VII    Remainder of the country

At the time this report was being written results had been published for the first and second quarters of 1968 for regions I-IV and for the third quarter for region V. These data are used in this paper; since the information pertaining to two different quarters must be combined when all five regions are considered the conclusions drawn may not be completely accurate, but the discrepancy is not significant. It should also be noted that PNAD region V includes nine northeastern states (the SUDENE region) while in the preceeding demographic censuses the states of Sergipe and Bahia were included in the eastern region. In this paper the regional breakdown of the

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PNAD has been followed and the earlier census data by region have been adjusted to conform to it. The discussion will usually be in terms of the three larger regions - South, East, and Northeast - where the South corresponds to PNAD regions II and III, the East to PNAD regions I and IV, and the Northeast to PNAD region V.

The number of domiciles sampled is approximately 4,000 per region except in region V where the number indicated is 6,400. The selection of domiciles is based on the census areas defined in the 1960 census. The domiciles are chosen on a random basis within each census region and they are then sub-divided into thirteen equal lots, one of which is selected for investigation during each week of the quarter. Only the population resident in private domiciles (individual and collective) is included in the sample; the institutional population -- members of the armed forces, persons in hospitals, orphanages, retirement homes, prisons, and members of religious orders -- is excluded. However, estimates for these groups are added to the sample population to produce an estimate of the total population.

The labor force inquiry is made of all persons in the sample of fourteen years and over. (This presents difficulties in the analysis since in 1950 and 1960 this enumeration was made for all persons 10 years of age and above.) The class-ification of persons as being outside the labor force or in it and, if in the labor force, whether employed or unemployed, is derived, through a series of steps, from the basic question, "What were you doing the major part of the past week?" ("Que estêve fazendo a maior parte da semana passada?") The possible responses to this question are:

1. Trabalhando
2. Tem emprêgo, mas não está trabalhando
3. Procurando trabalho
4. Afazeres domésticos
5. Frequentando escola
6. Não pôde trabalhar
7. Outra

On the basis of these responses the following breakdown of the population fourteen and over can be made:

I. Persons outside the labor force - persons who are not economically occupied and who are not seeking employment.

IA. Housewives - afazares domésticos (no. 4 above) includes persons whose principal activity is non-remunerated work in their own household. It does not include domestic servants who are considered a part of the labor force.

IB. Students - persons whose only activity during the week of reference was attendance at a school of any type, including vocational, where the students receive no compensation in goods or money. (5 above)

IC. Those permanently unable to work because of physical or mental handicaps. (6 above)

ID. Those voluntarily inactive or retired. (7 above)

II. Persons in the labor force

IA. Persons economically occupied.

1. Persons employed and working during the week of reference. Employment is defined as any agreement for the realization of work which is regularly remunerated in money or in goods. The work may be full time (40 or more hours per week) or part time (any number of hours less than 40 per week). (no. 1 above)

2. Persons who, while not working during the week of reference, had some regular employment from which they were temporarily absent for reason of sickness, injury, vacation, bad weather, labor dispute, etc. (2 above)

IB. Persons not economically occupied - the un-employed.

1. Persons seeking employment. Those not working during the week of reference and not temporarily absent from a job who had, in the preceeding two months, taken some action of a positive nature to obtain work. This could include consulting an employment agency or employers or friends or relatives or placing or responding to newspaper advertisements or similar actions. (3 above)

2. The seasonally unemployed. Persons who reported that they had employment but were not working during the week of reference because of seasonal factors. (2 above) Presumably these are treated like those who are procuring work - in the labor force if they have actively sought employment in the past two months and out of the labor force if not.

3. Persons who did not work during the week of reference but who were expecting new employment which would begin within thirty days. (2 above)

This system of classification seems clear and would seem to have covered all possible categories of labor force participation or non-participation. However, I feel that there are several questions which are left unanswered by this set of definitions, and I have not found satisfactory answers to these questions from a careful study of the PNAD questionaire, the instructions to enumerators, or from other descriptive documents pertaining to the PNAD. My doubts concern the following:

Non-remunerated family workers. According to the definition of employment given above these would not be included in the employed population. However, they clearly are included in the labor force - they comprised 27 percent of the labor force in PNAD region III in the second quarter of 1968. This group has been included in the labor force in the past and it should be included in a country like Brazil where it makes an important contribution to total output, but its inclusion makes inconsistent the definition of employment which is used.

The seasonally unemployed. There certainly exists in Brazil a large group of seasonal agricultural laborers who find employment only during the seasons of planting or harvesting of regional crops. Some of these may migrate each year from region to region according to the crop cycles in different parts of the country, but they may still find gainful employment during only a part of the year. These workers may not seek employment during the slack season, knowing that none is available. According to the above definitions such persons would fall outside the labor force if they had not sought employment for as long as two months. Instead, they should be included in the unemployed labor force during this period. It is possible that this factor is partly responsible for the very low rates of rural unemployment reported by the PNAD.

Persons recently unemployed. According to the above definition a person who had lost his job ten days prior to being interviewed and who had not yet sought other employment, whether from uncertainty about the prospects for returning to his former job or laziness or whatever reason would fall outside the labor force. He would have been unemployed during the reference week but would not have been actively seeking employment during the prior two months. This is undoubtedly an unimportant example but it is illustrative of the type of confusion that can be created by even the most carefully designed questionaire.

Persons seeking employment for the first time. The act
of seeking employment seems to qualify a person for
inclusion in the labor force and presumably persons
seeking work for the first time would be included in the
economically active population despite their never
having had a job. This would represent a change in
classification from the 1960 demographic census where
such persons were excluded from the labor force on the
ground that it was too difficult to determine when they
were really looking for work.

Persons expecting new employment to begin within 30 days.
I do not know whether these persons are considered to
be part of the employed or unemployed labor force.

Students who are members of the labor force. The above
definitions seem to make it clear that a person is
either a student or a worker but not both. This type
of distinction is difficult to make in any country but
especially in Brazil where we know that many people are
both full-time students and full-time workers. It
would seem that such persons would be included in the
labor force and only those who attend school and do
nothing else are considered students. However,
confusion about this point is compounded by the fact
that the PNAD tables on the labor force include a
category of persons who are unemployed and looking
for work and attending school at the same time.

Family workers in agriculture. It is always extremely
difficult to arrive at a definition of the agricultural
labor force, and particularly difficult to assign
family workers to the labor force or non-labor force
categories. Every family member does something which
contributes to output, even the youngest child who
gathers eggs or throws food to chickens. When these
family members are not directly remunerated it is even
more difficult to assign them to categories. I do not
know how these classifications were made for the PNAD,
but the assignment of family members to the labor force,
particularly female members, appears to have been more
extensive in the PNAD than in past censuses. This is
discussed more fully below.

The above comments are not intended as criticisms of the
PNAD but merely as questions about the way in which the concepts
have been developed. It is possible, however, that some loopholes
may exist in these definitions and these loopholes may account
for some divergence of the reported figures from the true labor
market situation in Brazil. A more basic criticism is that some
of these concepts, derived from many years of sampling experience
in a highly developed labor market in the United States, may not
be useful or meaningful when applied to the Brazilian situation.

II

## Analysis of the data.

In Table I the estimated rates of population growth by region are shown for 1950-60 and 1960-68, based on data from the 1950 and 1960 demographic censuses and the PNAD. This comparison is made difficult by the fact that the final 1960 demographic census has not been published as yet. Several adjustments in the data were necessary to produce comparability for all three years; these are explained in the footnotes to Appendix Table I.

TABLE I

POPULATION GROWTH IN BRAZIL BY REGIONS: 1950-1968

| REGION | ANNUAL RATE OF GROWTH | |
|---|---|---|
| | 1950-60 | 1960-68 |
| SOUTH | 3.7 | 3.7 |
| EAST | 2.9 | 2.6 |
| NORTHEAST | 2.1 | 1.8 |
| SUB-TOTAL | 2.9 | 2.7 |
| NORTH+CENTER-WEST | 4.3 | |
| BRAZIL | 3.0 | |

SOURCE: Appendix Table I. See footnotes for that
table for explanations.

The results shown in Table I are quite interesting for they indicate that the population growth rate is falling from the peak attained in the 1950's. Before 1960 the net population growth rate was rising steadily from decade to decade because the death rate was declining much more rapidly than the birth rate. In the decade of the 1950's the gap between the birth and death rates reached 3 percent.[1] Any decline in the net population growth rate since 1960 must be due to a continuation of the gradual decline in the birth rate, since a rise in the death rate is most unlikely. If this has been the case we should expect to find, other things being equal, that the percentage of

(1) Based on an estimated birth rate of 4.15 percent and an estimated death rate of 1.15 percent. See IPEA, Demografia, Diagnóstico Preliminar, Aug. 1966, p. 39.

the population in the youngest age group has declined slightly
since 1960. For the three regions covered by the PNAD the
combined share of the total population in the 0-4 age group has
fallen from 15.85 percent in 1960 to 15.35 percent in 1968.

It might be expected that this decline in the birth
rate would be positively associated with levels of per-capita
income and urbanization and thus would be greater in the South
and East than in the Northeast, but the evidence shows the
greatest relative decline in the rate of population growth in
the Northeast. The South and East, particularly the states of
São Paulo and Guanabara, have traditionally been recipients of
heavy migration from the Northeast and the decline in population
growth in the Northeast could be a reflection of accelerated out-
migration rather than reduced births. It is impossible to
provide a definitive answer to this question with the evidence
available but it can be pointed out that all of the states of
the Eastern region as well as São Paulo have had declining rates
of population growth since 1960. (Minas Gerais and Espírito
Santo fell from 2.6 percent in 1950-60 to 2.3 percent in 1960-68;
Guanabara and Rio de Janeiro from 3.6 to 3.1 percent; and São
Paulo from 3.4 to 3.2 percent. Only the states of the extreme
south, Rio Grande do Sul, Santa Catarina and Paraná, have had
an increase, from 4.0 to 4.2 percent. This increase just off-
sets the decrease in São Paulo and is probably accounted for by
movement of Paulistas into the new coffee region of northwestern
Paraná.) This would indicate that there has not been accelerated
migration of northeasterners to the South and East; thus any
additional outflow would have had to go primarily to the North
and Central-West. However, this would represent more than
500,000 additional migrants into this region from the Northeast
since 1960 (the difference between Northeastern population in
1968 projected at the 1950-60 rate of 2.1 percent and actual
growth at 1.8 percent.) The conclusion which I draw is that the
birth rate is declining in each of the three regions and that
out-migration from the Northeast has not accelerated since 1960.

The result of these differing regional growth rates has
nevertheless been to continue the shifting of the Brazilian
population from the Northeast to the South that has been going
on for as long as population statistics have been available.
In 1940 the Northeast (9 states) had 37.5 percent of the

combined population of the three regions while the South had
only 33.5 percent.  In 1968 the Northeast had 32 percent while
the South had over 40.  Throughout this period the Eastern
region has more or less maintained its share of the combined
total with perhaps a slight decline.

As a footnote to this discussion of overall population
it should be pointed out that the data for the first two
quarters of 1968 are not entirely consistent.  When the Southern
and Eastern regions are combined the population of the two
regions grew by more than 1.6 percent between the two quarters,
or by a rate exceeding six percent per year.  This is, of course,
complàtely out of line with the other information which we have
on the Brazilian population.  When these data are examined in
greater detail they show other quarter to quarter changes which
cannot be easily explained.  For instance, the urban population
of PNAD regions III and IV declined absolutely from the first
quarter to the second.  The female population of region III grew
1.6 percent between the two quarters while the male population
grew by only o.2 percent.  These extreme variations may result
from changes in the sample population and they may be adjusted
for in the future, but they raise the question of whether these
data can be used as the basis for analysis of fractional move-
ments in population, labor force, unemployment, etc., over
reasonably short periods of time.

We turn next to a consideration of the total labor force
and an analysis of its composition by sex and age.  A decline in
the growth rate of the total population since 1960, if it came
from reduced nativity, could not affect the labor force in 1968.
The labor force may actually have been growing faster than the
population if participation by various age/sex groups has been
increasing.  We should expect this since participation of women
has historically been quite low in Brazil, only 11.5 percent
overall in 1960.

Labor force participation rates (LFPRs) for 1960 and
1968 are compared in Table II.  The LFPR for the three regions
rose significantly between 1960 and 1968, from 32.4 percent to
35.9 percent.  The increase was actually greater than indicated
by these figures since the 1960 census included in the labor
force all economically active persons 10 years of age and older
while the PNAD includes only persons 14 and over.  To get an

## TABLE II
### LABOR FORCE PARTICIPATION RATES: 1960 AND 1968

| REGION | MALE LFPR | | FEMALE LFPR | | TOTAL LFPR | |
|---|---|---|---|---|---|---|
| | 1960 | 1968 | 1960 | 1968 | 1960 | 1968 |
| SOUTH | 54.4 | 53.4 | 12.1 | 22.8 | 33.6 | 38.0 |
| EAST + NE | 52.3 | 49.9 | 11.6 | 19.6 | 31.7 | 34.4 |
| SUB-TOTAL | 53.1 | 51.3 | 11.8 | 20.8 | 32.4 | 35.9 |
| BRAZIL | 53.1 | | 11.5 | | 32.3 | |

SOURCE: Appendix Table II. See footnotes for that table for explanations.

estimate of the 1968 participation rate according to the 1960 definition we can apply the 1960 participation rate for the 10-14 age group (14.9 percent for males and females combined) to the 10-13 age group for 1968. This would add some 850,000 persons to the labor force in 1968 and would raise the overall LFPR from 35.9 percent to 36.9 percent. This calculation undoubtedly produces an overestimate since it is likely that the average LFPR of the 10-14 group is heavily weighted by the higher participation of 14 year olds, meaning that the LFPR of the 10-13 year olds would be below the average for the group. At the same time the LFPR of this group has probably fallen since 1960 because of a relative increase in school attendance. Thus the overall LFPR in 1968 for the population 10 and older was probably between 35.9 and 36.5 percent.

By whatever measure we choose the aggregate LFPR did rise between 1960 and 1968. It also rose in each of the three regions but by relatively more in the South. Table II shows that the overall increase was due to a sharp rise in the female LFPR which more than offset a slight decline in the male LFPR. I will first examine the sources of the increase in female participation and then consider briefly the decline in male participation.

The female labor force can be divided into its urban and rural components as shown in Table III. Both the rural and the urban female labor force grew much more rapidly than the female population in 1960-68. In absolute terms the growth in the non-agricultural labor force was much greater, 2.9 million compared with 1.7 million in agriculture, but in relative terms

## TABLE III

### FEMALE LABOR FORCE PARTICIPATION RATES: 1960 AND 1968

| REGION | RURAL LFPR | | URBAN LFPR | | TOTAL LFPR | |
|---|---|---|---|---|---|---|
| | 1960 | 1968 | 1960 | 1968 | 1960 | 1968 |
| SOUTH | 7.2 | 18.0 | 16.4 | 26.7 | 12.1 | 22.8 |
| EAST + NE | 6.4 | 12.4 | 17.9 | 26.8 | 11.6 | 19.6 |
| SUB-TOTAL | 6.7 | 14.5 | 17.3 | 26.7 | 11.8 | 20.8 |

SOURCE: Appendix Table III. See footnotes for that table for explanations.

the increase in the agricultural labor force was greater, 150 percent versus 107 percent.

It seems reasonable to find increased participation of women in non-agricultural jobs as a natural outcome of the development process - increased urbanization leads to more jobs in the tertiary sector, particularly in commerce and services, that are suitable for women, as factory work is increasingly mechanized more jobs are created that women can perform, the urban middle class looks more favorably upon employment for unmarried girls, increased education of women raises their eligibility for employment, etc. However, it is perhaps surprising that the non-agricultural labor force, which fell as a percentage of the urban population between 1950 and 1960 (from 18.4 to 17.3 percent) should have risen so sharply in 1960-68. It is possible that part of the increase could result from a difference in definitions that resulted in the inclusion of more unpaid family workers in 1968 than in 1960. This was not, however, the case. The share of unpaid family workers in the female non-agricultural labor force did increase between 1960 and 1968 from 2.7 percent to 5.5 percent but this represents a very small absolute difference. If the percentage of unpaid family workers in 1960 had been maintained in 1968 the female non-agricultural LFPR would drop only from 26.7 percent to 26.0 percent. This is still a sizeable increase over 1960; if we are to believe these figures we must accept the fact that the participation of females in the urban labor force has risen significantly since 1960.

When we examine the female agricultural labor force
we see a different result; here the sharp rise in the LFPR may
have been due in large part to a change in definition. Appendix
Table III shows that there were 1.117 million females employed
in agriculture in 1960; of these 642,000 or 57.5 percent were
unremunerated.[1]  In 1968 there were 2.804 million females
employed in agriculture and of these 2.015 million or 71.9
percent were unremunerated family workers. The increase in
remunerated female workers in agriculture was therefore from
475,000 to 789,000, or from 2.85 percent of the female rural
population to 4.07 percent. The increase in unpaid family
workers was especially great in the South, by 275 percent when
the female rural population of the region was growing by only
30 percent. This change can only be attributed to a different
definition of the agricultural labor force applied in 1968. If,
in order to circumvent this issue we consider only the remunerated
female labor force, we have the following result:

|  | 1960 | 1968 |
|---|---|---|
| Total female labor force (000) | 3,835 | 8,427 |
| (-)Non-remunerated agric.+ extr.ind. | 667 | 2,015 |
| (-)Non-remunerated non-agriculture | 74 | 293 |
| Total remunerated female l.f. | 3,094 | 6,119 |
| Remunerated female LFPR | 9.5% | 15.1% |

The increase in the remunerated labor force was 98 percent over
1960 while that of the total female labor force was 119 percent.
Similarly, the LFPR grew by 60 percent instead of 76 percent.
However, it cannot be denied that the female labor force is
growing rapidly and that the major part of this growth is not
spurious.

It is interesting to look at the age groups in which
this increased participation has occurred. While we have LFPRs
by age and sex in considerable detail for 1968 we have only
estimates for the entire country for 1960; thus we can only
compare the rates for the total labor force in 1960 with those

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(1) The total number of unremunerated family workers is given only
for agriculture and extractive industries combined. I assumed
that the percentage unremunerated was the same for each group.
Since 96 percent of the total employment is in agriculture and
only 4 percent in extractive industries little distortion is
introduced by this assumption.

for the sub-total of the three regions in 1968. These LFPRs
are shown in Table IV.

### TABLE IV
FEMALE LABOR FORCE PARTICIPATION RATES BY AGES: 1960 AND 1968

| AGE | LFPR 1960 | LFPR 1968 | RELATIVE INCREASE | ADJ.LFPR* 1968 | REL. INCR.* |
|---|---|---|---|---|---|
| 14-19** | 23.4 | 40.9 | .75 | 26.4 | .13 |
| 20-24 | 22.5 | 43.6 | .94 | 33.9 | .50 |
| 25-34 | 17.8 | 35.3 | .98 | 25.8 | .45 |
| 35-44 | 17.1 | 35.2 | 1.05 | 26.6 | .55 |
| 45-54 | 15.6 | 30.9 | .98 | 23.1 | .48 |
| 55-64 | 12.6 | 21.4 | .70 | 16.0 | .27 |
| 65 + | 8.5 | 9.5 | .12 | 7.5 | -.12 |

SOURCES: 1960 estimates from Manoel Costa, "Aspectos Demo-
gráficos da População Economicamente Ativa," Nov. 1968,
p. 21. 1968 rates calculated from PNAD.
* Adjusted by removing all non-remunerated family workers from
each age bracket.
**For 1960 represents age group 15-19.

In the second column of Table IV we have the 1968 age-
specific LFPRs calculated from the PNAD. Column 3 shows that
these rates have increased by 70 to 100 percent since 1960 for
all age groups except 65 and over. Since we have reason to
believe that these 1968 rates are biased upward by the inclusion
of relatively more unpaid family workers than were in the labor
force in 1960, I have recalculated, in column 4, the female
LFPRs after removing all unpaid family workers from each age
group. These are not, of course, comparable with the 1960 rates
since unpaid family workers were included in the labor force in
that year, 784,000 in total or 19.3 percent of the female labor
force. Column 5 therefore gives an underestimate of the increase
in participation by ages but it is significant to note that even
after this adjustment the increases in the primary working age
groups between 20 and 54 remain on the order of 50 percent. The
final conclusion which we can draw, despite difficulties of
comparability of the data, is that the female labor force
participation, urban and rural, has been increasing for all
age groups in the population, but especially for women in the
ages between 20 and 54.

I will now discuss briefly the trend of male labor force participation. Table II showed that the male LFPR had declined slightly between 1960 and 1968 which would be consistent with the trend from 1950 to 1960. In Table V the male LFPRs by age groups are shown for 1950, 1960 and 1968 and here, with the inclusion of an estimated participation rate for the 10-13 age group in 1968, the overall LFPR shows no change from 1960 to 1968. It must be remembered that here, as was the case for female LFPRs by ages, we are comparing national averages for 1950 and 1960 with sub-totals for the three major regions in 1968. However, since the overall male LFPR for Brazil in 1960 did not differ from that for the sub-total of the three regions in that year, there is no reason to expect differences in the LFPRs by age groups.

TABLE V

MALE LABOR FORCE PARTICIPATION RATES BY AGE GROUPS

1950, 1960 AND 1968

| AGE | 1950 LFPR | 1960 LFPR | 1968 LFPR |
|---|---|---|---|
| 10-14* | 30.8 | 23.0 | 15.0*** |
| 15-19** | 80.7 | 72.4 | 74.3 |
| 20-24 | 93.8 | 92.3 | 94.4 |
| 25-34 | 97.4 | 97.2 | 97.5 |
| 35-44 | 97.1 | 96.9 | 97.0 |
| 45-54 | 94.8 | 94.0 | 92.8 |
| 55-64 | 88.4 | 83.2 | 82.0 |
| 65 + | 66.0 | 59.1 | 51.9 |
| TOTAL | 56.4 | 53.1 | 53.0 |

SOURCES: 1950 and 1960 estimates from Manoel Costa, "Aspectos Demográficos da População Econômicamente Ativa," Nov. 1968, p. 19. 1968 rates calculated from PNAD.

\* Ages 10-13 for 1968.
\*\* Ages 14-19 for 1968.
\*\*\* Estimated.

No information is available on a LFPR for 10-13 year olds in 1968 and thus whatever assumption is made about this group is completely arbitrary. I have merely wished to show that a reasonably low LFPR for this group is sufficient to raise

the overall male LFPR to the 1960 level. It seems reasonable
to state that there has been no decline in the overall male
LFPR since 1960; the slight drop indicated in Table II can be
attributed to the omission of the 10-13 group. Furthermore, in
none of the groups between ages 20 and 64 has there been any
appreciable change since 1960. In the 65 and over group there
was a decline, a continuation of the trend which can be traced
back to 1940 and which can be attributed to the growth of
retirement programs. However, since this group represents only
3 percent of the male population any moderate change in its LFPR
has almost no influence on the aggregate rate.

One group for which we might have expected a decline
since 1960 is the 14-19 group, which included 14 year olds in
1968 but did not in 1960. In fact, this LFPR increased slightly.
This increase is even more surprising when we consider that
secondary education enrollment has been growing much more rapidly
than the population in this age group in recent years. Between
1950 and 1960 secondary school enrollment for males grew from
305,000 to 648,000 or at a rate of 7.8 percent per year while the
male population 10-19 grew at 2.8 percent per year. (This is
not intended to be an exact comparison of secondary school
enrollments with the secondary school population but merely an
indication of relevant rates of growth. In Brazil the minimum
age for entry into secondary school is 11 years and most students
would complete the course by age 18 or 19. However, there are
some students of 12 to 15 and even older who are still in primary
school and some who begin university education as early as 17.
Unfortunately, Brazil does not have data on school attendance
by age and course and the 1960 census data do not permit a finer
breakdown by age.) This disparity of rates was reflected in the
decline in the LFPR for both the 10-14 and 15-19 age groups.
Since 1960, on the other hand, the male secondary school
enrollment has been growing at 11.7 percent per year (1960-67
average) and the male population 10-19 has been growing at 3.3
percent, yet the LFPR for the 14-19 group has apparently not
declined.

This puzzling inconsistency cannot be explained here
because of the difficulty in comparing school enrollments with
population age groups which was referred to above, but several
hypotheses can be suggested. First, as we did in the case of the
female LFPR, we can ask whether there has been an apparent

modification in the definition of the labor force between 1960
and 1968 with the result that many more non-remunerated family
workers were included in the labor force in the latter year.
In other words, were there males in this age bracket in 1960
who were neither in school nor in the labor force while in 1968
there were proportionally many more in school and also propor-
tionally more included in the labor force as unpaid family
workers? This was not the case. The percentage of non-
remunerated family workers in the male labor force fell from
13.3 percent in 1960 for the three regions combined (13.6
percent for all Brazil) to 11.6 percent in 1968. In the 14-19
group the proportion of non-remunerated workers is high - 40
percent of the labor force in 1968, but there is no way to
verify whether this proportion has increased since 1960. Since
the overall proportion of non-remunerated workers has fallen
this seems unlikely.

A second hypothesis is that much of the increase in
secondary school enrollment since 1960 has come in the lower
age group, i.e., in the 11-13 bracket, leaving the 14-19 group
unaffected. This would imply that school drop-out rates have
increased significantly since the number entering secondary
school is increasing rapidly while the number continuing beyond
the second or third year is increasing only at the rate of
population growth. It seems unlikely that this factor alone
could account for the continuing high LFPR of the 14-19 group,
but it may have had some influence. Finally, it could be
argued that some or all of the relevant data are inaccurate.
It is possible that the LFPR for 1960 is not accurate since these
are estimates based on sample information from the incomplete
demographic census of that year.

By way of a footnote to this discussion of labor force
participation and school attendance it is interesting to note
the figures on school attendance by PNAD regions shown in Table VI.
The high percentage of persons in school in region I (Guanabara
and Rio de Janeiro) is to be expected although it is perhaps
surprising that it is so much higher than the other regions,
particularly São Paulo, when we recognize that half of this
population resides in the state of Rio de Janeiro which is neither
wealthy nor urban and thus should not have a higher than average
rate of school attendance. The most startling aspect of this
table, however, is the fact that the lowest rate of school

TABLE VI

FREQUENCY OF SCHOOL ATTENDANCE BY REGION
1968

| PNAD REGION | PERCENT OF PERSONS 14-19 IN SCHOOL | | |
|---|---|---|---|
| | MALES | FEMALES | TOTAL |
| I | 40.8 | 40.1 | 40.4 |
| II | 23.9 | 25.1 | 24.5 |
| III | 16.7 | 18.4 | 17.6 |
| IV | 19.2 | 23.0 | 21.1 |
| V | 18.6 | 24.0 | 21.3 |

SOURCE: Pesquisa Nacional por Amostra de Domicílios

attendance for both males and females is found in region III,
the states of Paraná, Santa Catarina and Rio Grande do Sul.
The percentages for these states are lower even than those for
the Northeast. It is apparent from the PNAD data that rates of
school attendance are highly correlated with the degree of
urbanization (the ratio of urban to rural population for each of
the five regions, respectively, is 4.67, 2.04, 0.67, 0.81 and
0.65.) A linear regression of the school attendance rates shown
above on the degree of urbanization produces a simple correlation
coefficient (r) of .906 which is significant at the 1 percent
level. The difference between the three southern states and
regions I, II and IV can be explained largely in terms of this
variable, but the difference between these states and the North-
east, which is slightly more rural, remains unexplained. It is
likely that the addition of per-capita income as a second
independent variable would add to the explanatory ability of
the regression, but it would not deal with this extreme-south/
Northeast differential. Further analysis of this relationship
is beyond the scope of this paper, but this configuration of
school attendance rates must certainly provide food for thought.

In summarizing this information on the total labor force
we can state the following. The population has been growing at
2.7 percent per year since 1960 while the labor force has been
growing at roughly 4.2 percent (considering the economically
active population to include persons 10 and over in 1960 and 1968.)

This differential has been entirely due to the more rapid growth of the female labor force. The male and female population and the male labor force have all been growing at rates of 2.6 - 2.8 percent per annum, but the female labor force has been growing at over 10 percent. If we confine our attention to the remunerated female labor force we still have an annual growth rate of 9 percent. The implications of this trend for employment policy in Brazil are serious. The female labor force (including non-remunerated) still includes only 21 percent of the female population. It is quite reasonable to expect that the urban female labor force will continue to expand to 35 or 40 percent of the urban female population within the next two decades. If this trend does continue the labor force will grow at roughly 1.5 times the growth rate of population, and the total number of new jobs that must be created per year will average 1.5 million over the next ten years.

I will now turn from this discussion of the overall labor force to a consideration of the distribution of the labor force among economic sectors. Table VII shows the percentages of the labor force employed in the various sectors and subsectors in the three major geographic regions in 1950, 1960 and 1968. These regional comparisons are complicated by the fact, previously mentioned, that Bahia and Sergipe were included in the Eastern region in 1950 and 1960 and in the Northeast in 1968. Since no breakdown of the labor force by states is available for 1960 some arbitrary method of reclassification of these two states was necessary. It was, of course, a simple matter to transfer these two states to the Northeast in 1950. For 1960 it was assumed that Bahia and Sergipe had the same aggregate LFPR as the other seven northeastern states in that year and that this total labor force was distributed among sectors exactly as was that of the other seven states. The size of the labor force in each sector and sub-sector was then calculated by applying these percentages to the estimated 1960 population of the two states and these numbers were subtracted from the labor force of the census eastern region and added to the northeast. The reader who doubts the validity of these assumptions may concentrate his attention on the 1950 to 1968 changes and on the totals for the three regions. It should also be noted that this distribution refers to the employed population only

## TABLE VII

## PERCENTAGE OF LABOR FORCE IN EACH SECTOR BY REGION

### 1950, 1960 AND 1968

| SECTOR | NORTHEAST | | | EAST | | | SOUTH | | | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1950 | 1960 | 1968 | 1950 | 1960 | 1968 | 1950 | 1960 | 1968 | 1950 | 1960 | 1968 |
| Agric. | 71.9 | 66.3 | 55.2 | 49.3 | 43.2 | 33.7 | 50.7 | 44.6 | 38.3 | 57.7 | 51.4 | 42.5 |
| Extr. Ind | 2.3 | 3.1 | 5.1 | 1.7 | 1.7 | 2.4 | 1.6 | 1.3 | 1.3 | 1.9 | 2.0 | 2.8 |
| Primary | 74.2 | 69.4 | 60.3 | 51.0 | 44.9 | 36.1 | 52.3 | 45.9 | 39.6 | 59.6 | 53.4 | 45.3 |
| Mfg. | 5.3 | 6.1 | 9.0 | 9.7 | 7.6 | 10.6 | 14.2 | 13.3 | 16.2 | 9.8 | 9.3 | 12.5 |
| Constr. | 2.2 | 1.8 | 3.2 | 4.6 | 4.7 | 5.5 | 3.9 | 3.8 | 4.3 | 3.5 | 3.4 | 4.3 |
| Second. | 7.5 | 7.9 | 12.2 | 14.2 | 12.3 | 16.1 | 18.1 | 17.1 | 20.5 | 13.3 | 12.7 | 16.8 |
| Comm. | 4.4 | 4.7 | 6.7 | 6.4 | 7.6 | 8.6 | 6.3 | 7.9 | 8.9 | 5.7 | 6.8 | 8.1 |
| Transp. | 2.4 | 2.9 | 2.3 | 5.2 | 6.1 | 5.2 | 4.9 | 5.6 | 4.8 | 4.1 | 4.9 | 4.1 |
| Service | 7.6 | 9.4 | 11.5 | 12.7 | 15.8 | 17.9 | 10.3 | 12.2 | 14.6 | 10.0 | 12.3 | 14.4 |
| Other | 3.9 | 5.7 | 7.1 | 10.5 | 13.3 | 16.2 | 8.0 | 11.4 | 11.6 | 7.3 | 10.1 | 11.3 |
| Tertiary | 18.3 | 22.7 | 27.6 | 34.8 | 42.8 | 47.9 | 29.5 | 37.1 | 39.9 | 27.1 | 34.1 | 37.9 |

SOURCE: Appendix Table IV. See footnotes to that table for
explanations.

for 1968; it excludes the unemployed which represented slightly
less than 3 percent of the total labor force of the three regions.
For 1960 the data supposedly include the unemployed, or at least
some of the unemployed, and it is this approximation to the
total labor force which has been allocated to sectors. There is
clearly a discrepancy here but it is not large.[1]

This regional comparison shows marked variations in
the sectoral distribution of the labor force. In 1950 and 1960
the Northeast had 50 percent more of its labor force in the
primary sector than the East and South and in 1968 the relative
differential was even greater. In 1950 and 1960 the South had
more than twice the Northeast's share of the labor force in
secondary activities but since 1960 this difference has been
narrowing. The tertiary sector has the greatest relative
importance in the East; this difference shows up in all of the

(1) See my paper, "Notes on the Brazilian Population and Labor
Force," pp. 2-4, for a discussion of this problem of total labor
force and employment in the 1950 and 1960 censuses. The 1960
census did not include in the labor force the long-term unemploy-
ed (more than one year) or those seeking work for the first time.
It would clearly be difficult to assign these to a sector.

tertiary sub-sectors as well, but particularly in the "Other" category which reflects the concentration of governmental activities in the East.

From a superficial point of view these regional variations and trends can be easily explained. The Northeast is an underdeveloped region with 60-70 percent of its labor force concentrated in primary activities and with small secondary and tertiary sectors. In the East and South the development process has proceeded much further; agriculture still employed 50 percent of the labor force in 1950 but the secondary and tertiary sectors were already developed. Between 1950 and 1960 the percentage of the population in agriculture fell in all regions. This was the decade of import-substitution industrialization; aggregate manufacturing output grew more than 140 percent in real terms over the decade.[1] However, as is well known, this industrialization was highly capital-intensive and, as a result, the manufacturing labor force grew only 25 percent during the same period. The consequence of this was that much of the growth of the urban labor force was absorbed in tertiary activities, in particular personal services. To what extent this represented the growth of underemployment in the urban sector is impossible to determine.

Since 1960 there appears to have occurred a reversal of these trends. The decline in the agricultural share of the labor force has been even more rapid than in the 1950s, but much more of the growth has been absorbed in the secondary sector than in the 1950s.

These trends can be observed more clearly if we look at the average annual rates of growth of the labor force by sector and region. These are given in Table VIII. Since these growth rates are particularly sensitive to the adjustment that was made between the East and Northeast in 1960, the rates are shown here for the combined labor force of these two regions. Since 1960 there has been an acceleration in the growth rate of the labor force but at the same time the primary and tertiary sectors have continued to grow at their 1950-60 rates. Thus all of the marginal labor force growth has been absorbed by the secondary sector. Within the secondary sector the expansion

(1) IPEA, "A Industrialização Brasileira: Diagnóstico e Perspectivas," Jan. 1969, p. 72.

TABLE VIII

ANNUAL AVERAGE RATE OF GROWTH OF LABOR FORCE BY SECTOR AND REGION
1950-60 AND 1960-68

| SECTOR | NORTHEAST + EAST | | SOUTH | | TOTAL | |
|---|---|---|---|---|---|---|
| | 1950-60 | 1960-68 | 1950-60 | 1960-68 | 1950-60 | 1960-68 |
| Agriculture | 1.4 | 0.2 | 1.9 | 2.9 | 1.5 | 1.2 |
| Extractive Ind | 4.2 | 9.0 | 1.5 | 4.0 | 3.4 | 7.9 |
| Primary Sector | 1.5 | 0.7 | 1.8 | 2.9 | 1.6 | 1.5 |
| Manufacturing | 1.8 | 7.6 | 2.5 | 7.5 | 2.2 | 7.5 |
| Construction | 2.1 | 6.6 | 2.8 | 6.6 | 2.4 | 6.6 |
| Secondary Sec. | 1.9 | 7.3 | 2.6 | 7.3 | 2.2 | 7.3 |
| Commerce | 3.8 | 5.7 | 5.5 | 6.4 | 4.5 | 6.0 |
| Transport. | 4.3 | 0.1 | 4.5 | 3.0 | 4.4 | 1.5 |
| Services | 4.7 | 4.8 | 4.9 | 7.2 | 4.8 | 5.8 |
| Other | 5.5 | 5.3 | 6.9 | 5.0 | 6.1 | 5.2 |
| Tertiary Sec. | 4.7 | 4.6 | 5.5 | 5.8 | 5.1 | 5.1 |
| Total | 2.4 | 2.8 | 3.2 | 4.8 | 2.7 | 3.6 |

SOURCE: Appendix Table IV.

was rapid in both construction and manufacturing. In the primary
sector there was a decline in the agricultural growth rate but
a sharp increase in employment in the extractive industries,
leaving the overall growth rate essentially unchanged. This
shift could be due to definitional changes between 1960 and
1968. Note that there was a rise in the growth rate of the
agricultural labor force in the South while in the East and
Northeast this sector of the labor force was scarcely changing
in 1960-68. Within the tertiary sector there were shifts in the
sub-sectors; commerce and services grew more rapidly while the
transportation and "other" categories grew less rapidly. These
latter may both be reflections of changes in government policy -
a reduction in the rate of growth of the federal bureaucracy
and the government's efforts to hold the line on employment in
government owned transportation networks, particularly the
railroads.

These figures present a very optimistic picture of
the evolution of the Brazilian economy since 1960. The labor
force has been growing very rapidly and there has been a

continuation of the movement out of agriculture, but this
growth in the non-agricultural labor force has been absorbed
in industry, construction and commerce, i.e., in "hard"
employment categories and not in disguised unemployment in
the "soft" service sub-sector. Nowhere has this healthy
expansion been more pronounced than in the Northeast, the
direct result of the industrial incentive program applied to
that region. But can these PNAD figures and the trends derived
from them be accepted? In an attempt to examine this question
I have compared the above labor force growth rates with real
product growth rates in Table IX. A considerable amount of
adjustment was necessary to produce these growth rates and
they should be regarded as only crude approximations, given
the limitations of the data. The sectors have been reorganized
as shown in the footnotes to Table IX to bring the employment
series into agreement with the Fundação Getúlio Vargas real
product series. No comparison was made for the services or
government sub-sectors because the FGV real product indices
for these employ constant arbitrary rates of growth which are
not usable for this purpose. The 1950 and 1960 bench-mark data
are national totals; for 1968 the PNAD totals are expanded by
the ratio of national employment to the total for the three
regions by sector in 1960. Since real product indices are
available only to 1967 the comparison is made for 1960-67 and
it was simply assumed that the 1960-68 average employment growth
rates by sector applied as well to 1960-67. It must also be
emphasized that these real product indices are preliminary
unpublished estimates of the FGV which are subject to revision.

        Bearing in mind these cautionary statements we can
proceed to examine the data in Table IX. The results do serve
to cast doubts on the PNAD employment figures for 1968. In the
primary sector the relationship between real output and employ-
ment in 1960-67 is quite consistent with that for 1950-60; the
residual factor was almost identical in each period. In the
transportation sub-sector as well the results do not appear out
of line. The productivity factor increased somewhat in 1960-67
but this would not be inconsistent with a contraction of rail-
road employment and a shift to highway transport. On the other
hand, for the secondary sector and for commerce, the two areas
where the change in the employment growth rate over 1950-60 was
the greatest, the results do not seem reasonable. We have

TABLE IX

RATES OF GROWTH OF OUTPUT AND PRODUCTIVITY: 1950-68

| SECTOR | RATE OF GROWTH 1950-60 | | | RATE OF GROWTH 1960-67 | | |
|---|---|---|---|---|---|---|
| | EMPLOY-MENT | REAL OUTPUT | PRODUCT-IVITY | EMPLOY-MENT | REAL OUTPUT | PRODUCT-IVITY |
| Agriculture* | 1.7 | 4.4 | 2.7 | 1.4 | 4.3 | 2.9 |
| Industry* | 2.4 | 9.2 | 6.8 | 7.7 | 4.7 | -3.0 |
| Commerce | 4.7 | 6.5 | 1.8 | 6.0 | 4.5 | -1.5 |
| Transport. | 4.6 | 7.3 | 2.7 | 1.5 | 5.7 | 4.2 |

SOURCES: Employment from Censo Demográfico for 1950 and 1960, Pesquisa Nacional por Amostra de Domicilios for 1968. Real output growth rates calculated from unpublished data of Fundação Getulio Vargas.

* Agriculture includes farming, forestry, hunting, fishing and vegetable extraction. Industry includes manufacturing, mining, construction, and production and distribution of electricity and gas.

negative growth rates of productivity in each sector, and it is difficult to accept the hypothesis that output per man in the secondary sector has been falling by 3 percent per year on the average since 1960.

Manufacturing is the only one of these sub-sectors for which PNAD employment data can be compared with information from another source; we have the Censo Industrial for 1960, the Registro Industrial for various years and the annual Dados Gerais for manufacturing. The 1960 demographic census reported 2.006 million persons economically active in manufacturing on 1 September 1960 while the 1960 industrial census showed 1.754 million manufacturing employees (in firms of all sizes) on 31 December 1959. This difference of 14 percent can be largely accounted for by the difference in census dates, by the inclusion of unemployment in the demographic total, by underreporting of employment by employers, and by inaccuracies in enumeration such as the tendency of persons in extractive industries, garages, repair shops, etc., to identify themselves as industrial workers.[1]

(1) Almost all of this difference appeared in the Northeast; with less than 15 percent of the industrial labor force the Northeast accounted for 84 percent of the absolute difference - reported employment of 208,000 in the industrial census and labor force of 419,000 in the demographic. There was virtual identity of the two censuses in the South and a variation of only 4 percent in the East.

For 1968 the PNAD reported 3.480 million persons employed in manufacturing in the South, East and Northeast combined. Since these three regions have recently accounted for about 98 percent of national manufacturing employment[1] this number would have to be raised only slightly to produce an estimated national total for 1968 - to 3.550 millions or slightly more. The IBGE Dados Gerais for the first semester of 1968 show total employment in manufacturing on 30 June 1968 of 2.184 million (for firms with five or more employees only.) To adjust this figure to allow for the inclusion of firms with 1-4 employees we should add no more than 15 percent[2] which would give a total of about 2.5 million. Thus a comparison for 1968 of the lower bound PNAD estimate (3.55 millions) with the upper bound Dados Gerais estimate results in a difference of 40 percent, much greater than that in 1960 and impossible to explain away as due to the factors listed above.

The average rate of growth of manufacturing employment derived from the comparison of the 1968 Dados Gerais with the 1960 Censo Industrial (31 December 1959 to 30 June 1968) was 4.0 percent or somewhat less if I have overstated employment in small firms in 1968. This rate of growth is at least below the 1960-67 rate of growth of industrial output.

We can calculate in a gross manner the amount of this difference of over 1 million persons which is attributable to each region as was done for 1960 in the footnote on page 22. For this purpose we must use the 1965 Registro Industrial since the Dados Gerais do not give a complete regional breakdown of information. According to the register total manufacturing employment on 31 December 1965 (in firms of all sizes) was 2.320 millions, divided as shown in the first column of Table X. If we assume that the approximately 2.5 million employment based on the Dados Gerais for June 1968 was divided in the same percentages we have the absolute totals by regions shown in column 3. These are compared with the PNAD totals by regions and the differences are given in column 5.

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(1) 97.1 percent in the 1960 Censo Demográfico, 98.2 percent in the 1960 Censo Industrial, and 98.0 percent in the 1965 Registro Industrial.

(2) The ratio of employment in firms with 1-4 employees to employment in firms with 5 or more employees was 10.9 percent in the 1958 Registro Industrial and 13.0 percent in the 1960 Censo Industrial.

## TABLE X

## COMPARISON OF MANUFACTURING EMPLOYMENT IN 1968 BY REGIONS

| REGION | EMPLOYMENT 31 DEC.'65 (000) | PERCENT. | EMPLOYMENT 30 JUN.'68 (000) | EMPLOYMENT 1968(PNAD) (000) | DIFF-ERENCE |
|--------|------|------|------|------|------|
| SOUTH | 1434 | 61.8 | 1545 | 1939 | 394 |
| EAST | 517 | 22.3 | 557 | 749 | 192 |
| NORTHEAST | 322 | 13.9 | 348 | 792 | 444 |
| NORTH + C-W | 47 | 2.0 | 50 | 70* | 20 |
| TOTALS | 2320 | 100.0 | 2500* | 3550* | 1050 |

SOURCES: 1965 from Registro Industrial. 30 June 1968 calculated
by applying 1965 percentages to 1968 estimated total.
Column 4 from PNAD for second and third quarters 1968.

* Estimates.

This comparison of course assumes that the manufacturing
labor force of each region grew at the same rate between 1965 and
1968 when in fact they probably did not. The rates of growth of
manufacturing employment by region derived from the 1960 Censo
Industrial and the 1965 Registro Industrial as benchmarks are:
South, 4.7 percent; East, 3.4 percent; Northeast, 7.6 percent;
and North and Center-West, 6.6 percent. If the 1965 regional
totals are projected ahead to 1968 at these rates the resultant
total is about 100,000 greater than the 2.5 million estimate
for 1968 which I have used because the 1965 total lies slightly
above the 1959-68 trend rate of growth of four percent. Since
the changes in the 1968 totals by regions are rather small
when one method of projection is used instead of the other I
have chosen to adopt the simpler method shown in Table X.

The absolute difference between the industry source
and the demographic source (PNAD) in 1968 has been shown to be
at least four times that of 1960. We have no proof that the
information issuing from one department of the IBGE is a better
picture of reality than that from another, but the industrial
registers and the Dados Gerais are more in accord with the
output data of the FGV, the employment surveys of the Ministry
of Labor and various local labor market surveys than are the
PNAD results. In 1968 the difference appears in each of the
three major regions and not alone in the Northeast. Until such

large variations between the PNAD and other sources have been
eliminated or explained we must doubt the reliability of these
employment data, at least for the manufacturing sector.

I will turn finally to a brief analysis of the PNAD
data on unemployment and underemployment. Here we have no
prior information with which to make comparisons since these
data are, so far as I know, the first to be published on
unemployment in Brazil. Data are available for both the first
and second quarters of 1968 for the South and East, but only
the percentages for the second quarter have been calculated in
Appendix Table V, along with third quarter rates for the North-
east. The first quarter rates were somewhat higher -- a full
percentage point in the South and half a percentage point in
the East. Whether changes of this magnitude are significant
can only be determined when data for several quarters becomes
available.

The pattern of unemployment rates by age and sex
appears reasonable. Rates for women are higher than for men,
generally by about a percentage point. Unemployment rates are
above average for the younger age groups of both sexes; the
rate is up to three times the average for males 14-19 and up
to twice the average for females 14-19 and for both sexes 20-24.
This is to be expected since many of these young workers are
newly hired and lack seniority and thus are the first to be let
go when production slumps. They are generally less skilled
because they lack training and experience and there is thus less
incentive to retrain them or retain them for their skills. They
have fewer family responsibilities than older workers and thus
are more mobile; they can more easily afford to change jobs
several times seeking more desirable employment. They also
tend to remain unemployed longer; the information on length of
unemployment by age shows clearly that long-term unemployment
is concentrated in the youngest age groups.

The overall unemployment rates are extremely low by
whatever standard of judgement is used -- under 3 percent in the
South and Northeast and under 4 percent in the East. The fact
that the Northeast has the lowest unemployment rates of any
region is itself cause for surprise. There is somewhat more
spread to the unemployment rates by PNAD regions, but not a
great deal; for the second quarter these varied from a low of

2.2 percent in region III to 3.9 percent in region IV.

The important question to be asked is why unemployment rates are so low as these. There is no other developing country in the world with rates this low and few high income countries with so little unemployment. The first part of the explanation is that the PNAD reports almost no unemployment in agriculture; the rural unemployment rate (agricultural unemployment divided by rural labor force) is below one-half of one percent in all regions. Another way to state this is that, while the agricultural labor force represented 41.4 percent of the total labor force of the three regions, agricultural unemployment accounted for less than 7 percent of total unemployment. Leaving aside for the moment the question of why there is no rural unemployment, we will concentrate attention on urban or non-agricultural unemployment.

Within the non-agricultural labor force unemployment is heavily concentrated in the employee group; there is little or no unemployment reported for the employer, self-employed and non-remunerated family worker groups. Unemployment rates for this non-agricultural wage earning labor force are shown in Table XI. When this calculation is carried out the unemployment

TABLE XI

UNEMPLOYMENT RATES IN THE URBAN LABOR FORCE

1968

| REGION | MALES | FEMALES | |
|---|---|---|---|
| II (São Paulo) | 4.5 | 5.1 | 4.7 |
| III(Paraná, Santa Cat.,R.G. do S) | 4.3 | 6.9 | 5.1 |
| SOUTH | 4.4 | 5.8 | 4.8 |
| I (Guanabara, Rio de Janeiro) | 3.7 | 4.8 | 4.0 |
| II (Minas Gerais, Esp. Santo) | 9.2 | 7.6 | 8.6 |
| EAST | 6.0 | 6.2 | 6.0 |
| V NORTHEAST | 7.8 | 10.5 | 8.7 |

SOURCE: PNAD. Rates are for second quarter for South and East, for third quarter for Northeast. Urban labor force defined to include all non-agricultural workers less employers, self-employed, and non-remunerated family workers.

rates rise significantly and the differences among regions increase. The low overall rate in the Northeast is seen to be attributable to the heavy weight of agriculture in that region; the unemployment rate of urban wage earners is well above those for the South and East. Such is also the case within the South; in terms of overall unemployment sub-region III was below São Paulo but in Table XI São Paulo has a slightly lower overall rate. The spread between the rates for the two eastern sub-regions is widened by this adjustment.

These rates, while they range from 4 to 10 percent, still seem low in comparison with other developing countries.[1] One further adjustment can be made and that is to combine unemployment with underemployment. The PNAD information on underemployment reports simply the number of persons working less than 40 hours per week who would prefer to work full time. This data is available only for the non-agricultural labor force. If we add these persons to the unemployed and compare the sum to the non-agricultural labor force we have a rate which is, strictly speaking, not a measure of any well defined concept, but which can perhaps be called a measure of underutilization of labor.[2] Rates of combined unemployment and underemployment for all components of the non-agricultural labor force are shown in

(1) Unemployment rates in developing countries have generally been found to be in the range of 10-15 percent. For reference see Fred Dziadek, "Unemployment in the Less Developed Countries," USAID Memorandum, December 29, 1966.

(2) Many definitions of underemployment or "disguised unemployment" have been advanced. It would seem reasonable to define underemployed or surplus labor as that which does not earn enough to repay its cost of production, i.e., subsistence. A profit-maximizing employer would not hire such workers at a wage cost greater than subsistence, that is he would not pay them a subsistence wage if their marginal product were less. However, in contrast to the wage-labor system, we may find such persons working in subsistence agriculture or in self-employment in the urban areas. These marginal workers produce less than their subsistence but they exist by sharing in the total product of a family unit. Since the family unit must try to support all of its members on whatever income is received, any additional contribution from an otherwise unemployed member whose opportunity cost is zero is worth the effort. This concept is much broader than the measure used above -- the number of persons in the urban area who wish to work longer hours, and thus this latter measure of underemployment is only a partial one. In addition to these there may be many more who work long hours, 40 or more per week, for very little pay, producing less than the cost of keeping them alive. These are, logically, underemployed as well but we have no measure of their importance. For a summary of these concepts see Howard S. Ellis, "A Note on Unemployment in Underdeveloped Countries," Zeitschrift fur Nationalokonomie, XXVI, 1966, pp.65-8.

TABLE XII

UNEMPLOYMENT PLUS UNDEREMPLOYMENT IN THE NON-AGRICULTURAL
LABOR FORCE

1968

| REGION | EMPLOY-EES | EMPLOY-ERS PLUS SELF-EMPL | NON-REMUN. FAMILY WORKERS | TOTAL |
|---|---|---|---|---|
| II (São Paulo) | 8.1 | 8.8 | 6.5 | 8.2 |
| III (Paraná,S.C.,R GS) | 12.7 | 13.7 | 12.2 | 12.9 |
| SOUTH | 9.8 | 11.0 | 9.5 | 10.0 |
| I (Guan.,Rio de Jan.) | 7.8 | 11.2 | 6.9 | 8.3 |
| IV(Minas Ger.,Esp.San) | 14.3 | 11.0 | 14.5 | 13.6 |
| EAST | 10.7 | 11.1 | 11.9 | 10.8 |
| V NORTHEAST | 16.2 | 15.7 | 21.8 | 16.4 |

SOURCE: PNAD. Rates shown are for males and females combined.
Underemployment defined as those working part time (less
than 40 hours per week) who would prefer to work full time.
See also notes to Table XI.

Table XII. These rates are considerably higher still, 10-11
percent in the South and East and over 16 percent in the North-
east. The greatest absolute amount of underemployment is to be
found in the employee group - the rates in Table XII for empl-
oyees are about twice those of Table XI - but the largest
increases in relative terms of underemployment over unemployment
appear in the self-employed and non-remunerated worker groups.
These two categories, with almost no unemployment (1-2 percent
and 0 percent, respectively) have quite high rates of under-
employment, particularly in the Northeast. This underemploy-
ment, like unemployment, is much higher in relative terms in
the younger age groups.

While the rates in Table XII represent, I feel, a
better indication of the slack in the labor market than do the
global rates shown in Appendix Table V, we still have no measure
of underemployment for the rural sector and unemployment there
is nonexistent according to the PNAD. This may occur because
the long-term seasonal unemployment in agriculture falls outside
the labor force. If this is the case then the definition which
is being used is not reflective of the true situation in the
rural sector. If, on the other hand, these people are able to

find a few hours of part-time work each week then we need a measure of underemployment in agriculture such as the PNAD provides for non-agricultural employment.

The addition of information on underemployment may not have compensated for deficiencies in the unemployment statistics which still produce very low unemployment rates. I would suggest that this is at least partly due to the fact that there is no incentive for a person to declare himself unemployed in Brazil. There is no true system of unemployment compensation nor is there a functioning federal or state employment service. Whether reliable unemployment data can be collected without one or both of these seems problematical.

APPENDIX TABLE I

BRAZILIAN POPULATION BY STATES AND REGIONS

1950, 1960 AND 1968

| STATE OR REGION | 1950 POPULATION | | 1960 POPULATION | | 1968 POPULATION | |
|---|---|---|---|---|---|---|
| | NO.(000) | % | NO.(000) | % | NO.(000) | % |
| II (São Paulo) | 9134 | 18.9 | 12765 | 19.7 | 16230 | 20.3 |
| III(Pa.,S.C.,RG) | 7841 | 16.2 | 11681 | 18.1 | 16065 | 20.1 |
| SOUTH | 16975 | 35.1 | 24446 | 37.8 | 32295 | 40.4 |
| I (GB, Rio de J) | 4675 | 9.7 | 6663 | 10.3 | 8424 | 10.6 |
| IV(MG, Esp.San.) | 8739 | 18.0 | 11292 | 17.5 | 13418 | 16.8 |
| EAST | 13414 | 27.7 | 17955 | 27.8 | 21842 | 27.4 |
| V NORTHEAST | 17973 | 37.2 | 22228 | 34.4 | 25686 | 32.2 |
| TOTAL 3 REGIONS | 48363 | 100.0 | 64630 | 100.0 | 79823 | 100.0 |
| NORTH+Cen-West | 3582 | | 5489 | | | |
| BRAZIL | 51944 | | 70119 | | | |

SOURCES: Censo Demográfico for 1950, 1960, PNAD for 1968.

Census regions have been adjusted to agree with PNAD group-
ing. For all years the South corresponds to PNAD sub-
regions II and III, the East corresponds to PNAD sub-
regions I and IV, and the Northeast corresponds to PNAD sub-
region V. For 1960 complete final census totals by state
are not available and the regional and state totals are
estimates based on the Resultados Preliminares. For each
region the regional total from the Resultados Preliminares
was compared with the preliminary estimates shown in the
Anuario Estatistico (which are overestimates) and this
ratio was applied to the state populations from the
Anuario. These estimates for Sergipe and Bahia were
transferred from the Eastern census region to the North-
east.

## APPENDIX TABLE II

### LABOR FORCE BY SEX AND REGION

### 1960 AND 1968

(ooo)

| REGION | MALES | | | | FEMALES | | | | TOTAL POPULATION | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Labor Force | | Population | | Labor Force | | Population | | Labor Force | | Population | |
| | 1960 | 1968 | 1960 | 1968 | 1960 | 1968 | 1960 | 1968 | 1960 | 1968 | 1960 | 1968 |
| South | 6 744 | 8 603 | 12 402 | 16 119 | 1 462 | 3 682 | 12 044 | 16 176 | 8 206 | 12 285 | 24 446 | 32 295 |
| East + Northeast | 10 359 | 11 622 | 19 801 | 23 285 | 2 373 | 4 745 | 20 383 | 24 243 | 12 732 | 16 367 | 40 184 | 47 528 |
| TOTAL | 17 103 | 20 225 | 32 203 | 39 404 | 3 835 | 8 427 | 32 428 | 40 419 | 20 938 | 28 652 | 64 630 | 79 823 |

SOURCE: Censo Demográfico for 1960, PNAD for 1968.   Data for second and third quarters of 1968 are combined.

# APPENDIX TABLE III

## FEMALE URBAN AND RURAL POPULATION AND LABOR FORCE BY REGION

### 1960 AND 1968

#### (000)

| REGION | AGRIC. LABOR FORCE | | RURAL POP. | | NON-AG. LABOR FOR. | | URBAN POP. | |
|--------|------|------|------|------|------|------|------|------|
| | 1960 | 1968 | 1960 | 1968 | 1960 | 1968 | 1960 | 1968 |
| SOUTH | 401 | 1303 | 5579 | 7254 | 1061 | 2379 | 6465 | 8922 |
| EAST + NE | 716 | 1501 | 11145 | 12142 | 1657 | 3244 | 9238 | 12101 |
| TOTAL | 1117 | 2804 | 16724 | 19396 | 2718 | 5623 | 15704 | 21023 |

SOURCE: Censo Demográfico for 1960, PNAD for 1968.

# APPENDIX TABLE IV

## TOTAL LABOR FORCE OF NORTHEAST, EAST AND SOUTH BY SECTORS

## 1950, 1960, 1968

### (ooo)

| SECTOR | NORTHEAST | | | EAST | | | SOUTH | | | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1950 | 1960 | 1968 | 1950 | 1960 | 1968 | 1950 | 1960 | 1968 | 1950 | 1960 | 1968 |
| Agriculture | 4028 | 4578 | 4840 | 2178 | 2519 | 2390 | 3043 | 3658 | 4578 | 9249 | 10755 | 11808 |
| Extr. Industries | 129 | 212 | 447 | 76 | 97 | 170 | 95 | 110 | 150 | 300 | 419 | 767 |
| Primary Sector | 4157 | 4790 | 5287 | 2254 | 2616 | 2560 | 3138 | 3768 | 4728 | 9549 | 11174 | 12575 |
| Manufacturing | 294 | 419 | 792 | 427 | 441 | 749 | 852 | 1087 | 1939 | 1573 | 1947 | 3480 |
| Construction | 123 | 126 | 281 | 202 | 274 | 388 | 235 | 310 | 515 | 560 | 710 | 1184 |
| Secondary Sector | 417 | 545 | 1073 | 629 | 715 | 1137 | 1087 | 1397 | 2454 | 2133 | 2657 | 4664 |
| Commerce | 248 | 323 | 590 | 283 | 445 | 606 | 378 | 648 | 1065 | 909 | 1416 | 2261 |
| Transportation | 135 | 203 | 198 | 231 | 357 | 365 | 293 | 457 | 578 | 659 | 1017 | 1141 |
| Services | 423 | 648 | 1006 | 562 | 919 | 1266 | 620 | 998 | 1743 | 1605 | 2565 | 4015 |
| Other | 219 | 391 | 621 | 463 | 778 | 1151 | 481 | 937 | 1381 | 1163 | 2106 | 3153 |
| Tertiary Sector | 1025 | 1565 | 2415 | 1539 | 2499 | 3388 | 1772 | 3040 | 4767 | 4336 | 7104 | 10570 |
| TOTALS | 5599 | 6900 | 8775 | 4422 | 5830 | 7085 | 5997 | 8205 | 11949 | 16018 | 20935 | 27809 |

SOURCE: Censo Demográfico for 1950, 1960, Pesquisa Nacional por Amostra de Domicílios for 1968.

NOTES: Data for 1968 are for second quarter for South and East, third quarter for Northeast.
Northeast includes nine states of PNAD region V in each year, East includes 4 states of PNAD regions I and IV in each year and South includes 4 states of PNAD regions II and III.
Agriculture includes farming and forestry.
Extractive Industries includes vegetable extraction, mining, hunting and fishing.
Manufacturing represents Indústrias de Transformação.
"Other" includes electricity and gas production and distribution, finance, liberal professions, social services, government, armed forces, miscellaneous.

## APPENDIX TABLE V

UNEMPLOYMENT RATES BY AGE, SEX AND REGION

1968

| AGE | SOUTH | | | EAST | | | NORTHEAST | | |
|-----|-----|-------|-------|-----|-------|-------|-----|-------|-------|
| | MEN | WOMEN | TOTAL | MEN | WOMEN | TOTAL | MEN | WOMEN | TOTAL |
| 14-19 | 6.2 | 5.0 | 5.7 | 9.5 | 6.8 | 8.6 | 3.9 | 5.4 | 4.4 |
| 20-24 | 3.3 | 5.0 | 3.9 | 4.7 | 5.8 | 5.1 | 3.7 | 7.5 | 5.0 |
| 25-34 | 1.6 | 2.5 | 1.9 | 2.0 | 3.5 | 2.4 | 2.3 | 3.3 | 2.6 |
| 35-44 | 1.1 | 1.4 | 1.2 | 1.6 | 3.4 | 2.1 | 1.4 | 0.9 | 1.2 |
| 45-54 | 1.6 | 1.3 | 1.6 | 1.5 | 2.0 | 1.6 | 1.4 | 1.2 | 1.4 |
| 55-64 | 1.5 | 1.4 | 1.5 | 1.0 | - | 0.8 | 1.3 | 0.6 | 1.1 |
| 65 + | - | - | - | 0.6 | - | 0.5 | - | - | - |
| TOTAL | 2.5 | 3.8 | 2.7 | 3.4 | 4.4 | 3.7 | 2.4 | 3.5 | 2.7 |

SOURCE: PNAD. Data are for second quarter for South and East, for third quarter for Northeast.