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PURPOSE: To analyze the dimensions and characteristics of urban unemployment in Colombia.

RELATED TO: RAND's multifaceted study of Colombia, which is designed to examine Colombia's problems and possibilities and to suggest strategies and policies for AID in dealing with Colombia and for the Colombian government in its attempt to solve its economic problems. The study will include a series of substudies on population growth and rural-urban migration; agricultural stagnation; the process and problems of industrialization; and the balance of payments. The manufacturing industry in Colombia and its effect on urban unemployment is discussed in a recent RAND study: RM-5412-AID, *A Study of Industrialization in Colombia: Part I, Analysis*, December 1967.

ANALYSIS: Unemployment is unquestionably a major economic problem in Colombia today; it may also become a critical political problem. About 10 to 16 percent of the labor force in the larger cities are unemployed, and unemployment is rising. It is four to six times higher than it was 15 years ago. There is also a large and probably growing amount of disguised unemployment--people in low-productivity commerce and the artisan sector of industry.

The urban unemployed are younger than the employed and are less educated; however, the relationship between unemployment and education is fairly weak. Unemployment rates for high school graduates and those with a few years of college are almost as high as for those having no formal education. A relatively high proportion of unemployed are seeking office or sales work. The very small number of manual laborers in the sample data reflects the local conception of the lack of dignity of such occupations and indicates that a large proportion of the unemployed may not respond to an increase in the demand for manual labor directly implied by governmental public works programs.

The simplest way to reduce urban unemployment is to increase the growth rate of the nonagricultural sector, i.e., to increase the growth rate of aggregate demand and augment the supply of imports. However, a large urban public works program designed specifically to alleviate the unemployment problem could backfire if internal migration increased substantially. A more feasible remedy might be to encourage the substitution of labor for capital. This is basically a problem of transforming an imported technology, because, in Colombia, industrial technology is an import: It is considered cheaper to hire foreign technical personnel than to develop an alternative system of production. Also, there is a deficiency in the supply of the *very* well trained, although the supply of technically trained is in excess of the demand.

Two important conclusions emerge from the present study: (1) The urban unemployment problem is sufficiently important to warrant increased effort in the collection of information concerning its magnitude. (2) Urban unemployment is a more serious problem today than it was 3 years ago; it will be even more serious in the future unless there is a sharp quickening in the rate of economic growth. The labor force is almost certain to increase over the next decade as a result of changes in the age distribution. Colombia experienced a large increase in population during the 1950's; children born during this decade will be entering the labor force during the 1970's. An average annual total output growth rate of 5 percent would have been required to prevent an increase in the unemployment rate during the 1950's and early 1960's. In the next 10 years, the required rate of growth will have to be at least 6 percent. Unemployment is likely to double within the next 6 to 7 years if Colombia's rate of output continues to grow at its historic rate.

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JANUARY 1968

URBAN UNEMPLOYMENT IN COLOMBIA: MEASUREMENT, CHARACTERISTICS, AND POLICY PROBLEMS

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PREPARED FOR:
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SANTA MONICA • CALIFORNIA

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PREFACE

This Memorandum is part of a multifaceted study of Colombia being undertaken at The RAND Corporation under the sponsorship of the U.S. Agency for International Development, with supplementary funds provided by the Corporation. The RAND study of Colombia is designed to illuminate the problems and possibilities, promising strategies and desirable policies, for AID in its dealing with Colombia and for the Colombian government in its attempt to solve its economic problems. The study includes a set of linked substudies on various interactive phenomena: population growth and rural-urban migration, agricultural stagnation, the process and problems of industrialization, and the balance of payments. These substudies are concerned with identifying the nature of the economic problems and the policies that can deal with them and with the political mechanisms and forces that constrain or require policy action. The present study of unemployment both draws on and provides inputs to these.

The author is particularly indebted to Miguel Urrutia and Rafael Isaza of the Centro de Estudios sobre Desarrollo Economico of the Universidad de los Andes for providing access to the data collected by their organization and to Richard Nelson, Edward Park, and Paul Schultz of The RAND Corporation for many useful suggestions. Karsten Laursen and Richard Porter of the Harvard Development Advisory Service and James Lobenstine, William Rhoads, and Frank Masson of USAID, Bogota were also helpful.

SUMMARY

Urban unemployment is a serious problem in Colombia. The unemployment rate in the larger cities of Colombia today is about 10-16 percent. The available data indicate that the unemployment rate has risen over time and may be four to six times as high now as it was 15 years ago in spite of the fact that the proportion of teenagers who are actively seeking jobs has been falling. There is also a large and probably growing amount of disguised unemployment in the form of redundant labor.

Unless there is a sharp change in the rate and pattern of growth of total output, the unemployment situation will get considerably worse. This worsening of outlook is the result of a predictable increase in the rate of growth of the labor force. The increase in the rate of growth of the population in the 1950s manifested itself in a large increase in the proportion of children in the population. In the 1970s these children of the 1950s will be entering the labor force.

During the 1950s and early 1960s an average annual rate of growth of total output of about 5 percent would have been required to prevent any increase in the unemployment rate. In the next ten years this required rate of growth will be at least 6 percent. If the future rate of growth of output in Colombia is the same as the historic rate of growth, the unemployment rate is likely to double within the next six to seven years.

The urban unemployed tend to be younger and less educated than the average worker, but the relationship between unemployment and education is quite weak. Unemployment rates for high school graduates and those who have had a few years of college are about as high as for those who have had no formal education at all. As the unemployment rate has increased, the average length of time the unemployed have been seeking work has increased. There is no evidence, however, that the rising unemployment rate is the result of a large increase in the number of unemployed migrants from the countryside to the cities.

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I. INTRODUCTION

Unemployment is unquestionably a major economic problem in Colombia today and a potentially critical political problem. As such it is highly important that the dimensions and characteristics of unemployment be understood. Yet this study is no more than a beginning. Much further work needs to be done with respect to the determinants of the supply and demand for labor. For example, what are the determinants of internal migration? What are the elements entering into decision-making with respect to the labor-intensity of the technology embodied in new investment? What is the competitive structure of the labor market and how does it relate to the competitive structure of output markets? And what are the employment consequences of competitive industrial development strategies such as extending the scope of import substitution and increasing the volume of minor exports? Hopefully, some insight into these questions will derive from the comprehensive program of research we are currently pursuing on the interrelationships between labor market characteristics and growth experience. RAND is conducting studies of internal migration, the structure of growth of Colombian industry and the determinants of choice of technology, and changes of income distribution by occupation and the question of evidence for skill shortages and market efficiency in dealing with such shortages. The present study should thus be considered as part of a larger research program.

Any discussion of a policy problem in a country with limited data resources such as Colombia should include a discussion of the strengths and weaknesses of the statistical evidence as to the importance of the problem. Sections II and III contain a discussion of certain conceptual problems in the definition of unemployment and the statistical quality of the available data. Sections IV and V present the basic data themselves. Section IV indicates differences between cities and changes through time in unemployment rates. Section V points out the characteristics of the unemployed -- distribution by occupation or industry and distribution by personal characteristics. Section VI analyzes the causes of these changes in unemployment. Section VII is devoted to a

very preliminary discussion of possible policy actions that might alleviate the problem of growing unemployment.

II. THE BASIC DATA: SOME CONCEPTUAL PROBLEMS

Except for the census estimates of 1951 and 1964, the only available data on unemployment in Colombia are those figures on urban unemployment collected by private researchers associated with university research centers. The Centro de Estudios sobre Desarrollo Económico of the Universidad de los Andes (CEDE) has been the pioneer here.[1] Lesser efforts have been mounted by the Centros de Investigaciones Económicas of the Universidades del Valle, de Antioquia, and de Atlántico using the methodology developed by CEDE.

The most complete set of unemployment data is the quarterly survey of unemployment in Bogotá carried out by CEDE. These figures give a continuous picture of unemployment in metropolitan Bogotá from March 1963 to March 1967. Data for other cities are available only on an irregular basis. Data for Cali were obtained for two dates in 1965[2] and data for Medellin for 6 dates during the period 1963-1965. Only one observation, that for December 1966, is available for Barranquilla. Data on unemployment in small towns are virtually non-existent, being restricted to single observations of unemployment in four towns in Cundinamarca in 1963.

Each of the above studies is based on the same criterion of unemployment. An unemployed person is defined as an individual of age fourteen or older who worked less than thirty-two hours during the survey week and who was willing and able to work more than thirty-two hours, roughly 60 percent of the standard industrial work week of more than 50 hours. The unemployment percentage is the ratio of such persons to the total labor force. This binary definition of unemployment suffers from two major conceptual deficiencies: it does not deal adequately

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[1] See, for example, the work of Miguel A. Antequera Stand, Ocupación y Desocupación en Bogotá, Bogotá, Centro de Estudios sobre Desarrollo Económico, Universidad de los Andes, 1962; and Miguel Urrutia Montoya, Estudio Económico Social de la Población de Bogotá, Bogotá, Corporación Autonomo Regional de la Sabana de Bogotá, 1962.

[2] Centro de Investigaciónes Económicas Universidad del Valle, Empleo y Desempleo de la Mano de Obra en la Ciudad de Cali, Cali, 1962.

with the problem of partial employment, and it ignores the problem of measuring "disguised" unemployment.

With respect to the first difficulty it is fortunately possible to give some evidence as to the quantitative relationship between binary measurements of employment in Colombia and measurements that attempt to discriminate between total and partial unemployment. CEDE studies for 1963 give us an estimate of unemployment defined in terms of the ratio between labor hours used and labor hours available. There are two variants of this criterion. The first simply defines labor hours available as the product of the number of economically active persons and the number of hours in a standard work week. The second variant defines labor hours available as the number of hours of work actually sought by the respondents. Although obviously preferable on analytic grounds, the second variant is difficult to employ, since the interviewers require considerable skill to obtain unbiased responses as to the number of hours actually sought.

The data derived from the alternative employment criteria described above are summarized in Table 1. Criterion A is the standard "binary" criterion -- the ratio of the total of persons working less than 32 hours during the reference week to the total number of the economically active. Criteria B and C are ratios of man-hours not worked to man-hours available. Criterion B assumes the entire labor force wishes to work a standard work week -- in this case 48 hours. Criterion C is the preferred measurement, defining total man-hours available as the total number of man-hours that the interviewees actually wanted to supply.

Unemployment measurements for each of these three criteria exist only for Bogotá. There the ratio of total hours worked per person per week to the benchmark of 48 hours per person per week was (1-.126) = .874, and the ratio of total hours actually worked per person per week to the average work week actually desired was (1-.096) = .904. Together these figures imply that the desired average work week was 46.4 hours. If it is assumed that an average work week of this duration was desired in the other cities as well as in Bogotá, the

Table 1

ALTERNATIVE MEASURES OF EMPLOYMENT

(percent)

City	Unemployment Criterion		
	A	B	C
Bogotá (May 1963)	8.6	12.6	9.6
Zipaquirá (March 1963)	5.5	12.4	--
Facatativá (March 1963)	8.3	16.1	--
Chía	8.8	16.5	--

Note:
-- No survey available.

Source:
Miguel Urrutia Montoya, "Calculo del Desempleo, Revista del Banco de la República, Vol. XXXVI, No. 428, Junio 1963, p. 742.

employment rates on Criterion C may be calculated as 48.0/46.4 times the employment rates on Criterion B. Translating these calculations into unemployment rates yields estimated unemployment rates on Criterion C of 9.4, 13.2, and 13.6 percent respectively for Zipaquirá, Facatativá, and Chiá. These estimates are 71, 59, and 55 percent higher than the corresponding unemployment estimates on Criterion A. Since the actual "C" estimate for Bogotá is only 12 percent greater than the "A" estimate, the problem of partial unemployment may be considerably more severe in the smaller towns than in the larger cities.

The second deficiency of the binary definition of unemployment is less easily remedied, for there is no readily defensible basis for measuring disguised unemployment. This difficulty reflects the rather ambiguous character of the term itself. There are at least two distinct definitions of the term. One describes disguised unemployment in terms of differences between actual output or earnings and the output or earnings that would typically be attributable to labor of the relevant skill class. This definition is trying to get at unused skills. Another variant describes disguised unemployment in terms of differences between actual labor inputs and minimum required labor inputs given the existing technology and existing work week. This definition is trying to get at redundant labor. Neither variant is susceptible to operational definition.

Disguised unemployment in the form of unutilized labor skills, the first variant, can really be measured only in terms of income or output. What is really wanted is an estimate of the difference between labor income actually received by employed labor and income receivable by this group under terms of perfect efficiency of resource allocation. Unfortunately, our empirical knowledge of the general equilibrium structure of the economy is not such as to give us any defensible basis for estimating its performance under the assumption of optimal resource allocation. In the case of Colombia this fact is not too bothersome. The relatively low level of average education of the labor force suggests that the quantitative importance of underemployment in the form of skill underutilization is not likely to be significant.

Considerably more important in the Colombian environment is the second type of disguised unemployment -- redundant labor. For example, between 1951 and 1964 the percentage increase in employment in the sector labelled "commerce" was about 1-1/2 times the percentage increase in value added in that sector. This proliferation of street-vendors and family workers in small shops simply reflects the limited employment opportunities in the other urban sectors and the ease of entry -- low skill and capital requirements -- into petty trading. The presumption here is that the actual volume of commercial services in 1964 could have been performed with a much smaller labor force. Yet the measurement of this redundant labor presumes an exogenous knowledge of the technology of commerce that we do not possess.

If it could be assumed that the basic technology of commerce and average labor skills did not change in the period 1951-1964, it would follow that some 16 percent of the labor force employed in that sector in 1964 was redundant.[1] Yet such an assumption is arbitrary. Indeed, there is some evidence that redundant labor has been increasing in manufacturing even though output per worker in that sector has been increasing fairly rapidly. A high rate of growth of output per worker is no guarantee that redundant labor is <u>not</u> increasing; a negative rate is a virtual guarantee that redundant labor is growing in importance. It is for this reason that the example of the commerce sector stands out.

The above discussion of unemployment is based on the concept of unemployment as an economic cost deriving from the misallocation of resources. It would be advantageous if unemployment could also be looked at from the point of view of social or psychological cost in the sense of the degree of personal discontent felt by the members of the labor force arising from differences in employment aspirations and actual employment experiences. One attempt at such a measurement of unemployment is the total number of individuals working less than a

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[1]The calculation here is that the number of workers actually needed in commerce in 1964 was equal to total value added in commerce in 1964 divided by the value added per worker (in 1964 prices) in commerce in 1951.

given number of hours per week plus the number of individuals who are employed according to the above criterion but who are working in occupations of a lower income class than that of the occupation in which they have been habitually employed or for which they have been trained. Unfortunately, the data available in Colombia are not in such a form as to make such a calculation feasible.

III. THE QUALITY OF THE AVAILABLE DATA

The basic problems with the quality of the sample data stem from imperfect knowledge of the size and geographical distribution of the parent population, a low level of training and high rate of turnover of interviewers, and relatively small sample size. The divergence between the population sampled and the true population derives both from the incompleteness of the original housing or population censuses that form the populations from which the samples were chosen and the rapid rate of obsolescence of such censuses owing to the rapid growth of urban population.

The studies done for Bogotá in 1963-1964 were based on a housing census completed in 1962. The housing census iteself had been prepared from a 20 percent sample of the urban blocks in Bogotá, the population of blocks having been determined on the basis of aerial surveys. There are several reasons for questioning the representativeness of this housing census. First, there is the question of whether the 20 percent sample of blocks was a 20 percent sample of the population. The population density of urban blocks in Bogotá was and is quite variable, and certain low-income areas are not laid out in block form. Second, there is the question of whether the distribution of the blocks in the sample with respect to income was representative of the income distribution of the total population. Finally, there is the question of the rapid growth of population in areas not settled in any regular fashion at the time of the census. The studies done for Bogotá in 1965-1966 are based on the census of 1964 and thus are subject only to the last of the above criticisms.

In most cases the Bogotá unemployment samples are samples of a fixed sub-population rather than the population as a whole. The longer the period having elapsed between the initial survey or census the smaller the ratio of the sub-population to the true population and the greater the possible bias. If the experience with the samples of 1964 and 1965 is representative there is reason to believe that the effect of such sampling from a fixed sub-population is to reduce the

measured volume of unemployment. The most likely reason for this is the very rapid growth of tugurios (slums) in areas unsettled at the time of the initial survey or census and the tendency to under-report tugurio population in special inter-censal surveys. Since it is well known that unemployment is inversely related to income, if the incomes of the areas of current urban settlement that are unrepresented in the basic housing census are lower on the average than incomes in the areas that are represented in the census, the sample estimate of unemployment will be subject to a downward bias through time.

A similar procedure was adopted in the other unemployment surveys. In Cali the city was divided into a number of small census districts and a block chosen at random from each district. Four households were investigated in each block; in each case the first, third, fifth, and seventh housing units of the block. Although there was possibly some small bias inherent in including such a high proportion of corner dwellings, the chance of major bias probably rests on the adequacy of the basic population census. The population data used were not official figures but were preliminary estimates provided by the Comité Universitario de Investigaciones Sobre Poblacion de la Universidad del Valle. I do not know the adequacy of these estimates.

The degree of importance of achieving a housing or block sample that is representative of the underlying population is dependent upon the manner in which the characteristic being sampled is distributed geographically within the parent population. Since unemployment by barrio is quite variable, as Table 2 illustrates, the cost of not achieving "representativeness" is large. With the above variation in mind it is easy to appreciate the potential importance of introducing some element of geographical stratification in the sampling technique. Beginning in 1965 the CEDE surveys do in fact utilize such a procedure, the proportion of households in the sample coming from any given barrio (district) being approximately equal to the proportion of the total (census) population living in that barrio.

The potential distortions resulting from sampling from a fixed sub-population that is not fully representative of the total population

Table 2

UNEMPLOYMENT AND INCOME BY BARRIOS, BOGOTA, 1962[a]

Barrio	Status Class	Average Monthly Income Pesos	Percent Unemployed
Las Ferias	Upper Lower	246	16.9
Quiroga	Lower Middle	340	18.9
Los Alcázares	Upper Middle	950	7.7

Note:

[a]The absolute unemployment figures are relatively high in terms of the criteria employed in subsequent surveys since the unemployment total is defined in terms of the population 11 and older.

Source:

M. Antequera Stand, Ocupacion y Desocupacion en Bogotá, p. 43.

is illustrated by comparison of the CEDE surveys for Bogotá for 1963-1964 with those for 1965-1966. The surveys for 1965 and 1966 show a 10 percent decline in the proportion of managers and professionals in comparison with the figures for 1963-1964. This over-reporting in the earlier samples was compensated for by an under-reporting of manual workers. The proportion of manual workers in the sample increased by some 25 percent for 1963-1964 to 1965-1966. As a result of this change in the occupational structure of the sample the average income reported in the 1964 samples is significantly greater than the average income reported in the 1965 samples in spite of a strong upward trend in incomes for nearly every occupational class. The effect of this change in weights is less marked on unemployment estimates than on income estimates, but there is a calculable downard bias in the pre-census samples. When pre-census unemployment rates by occupation are given post-census occupational weights, the average pre-census unemployment rates increase by something more than .3 percent in absolute terms. This bias in 1963-1964 estimates should be kept in mind when one compares changes in unemployment rates through time in Bogotá.

In addition to the problem of sampling bias the unemployment surveys are susceptible to moderately large sampling errors. It is not possible to make an exact statement as to sampling variability but a maximal estimate can be given. If sampling were strictly random and were not clustered, the 95 percent confidence intervals for the estimated unemployment rates would be in the order of an absolute plus or minus 1.8 percent for samples of the size carried out in Bogotá.[1] That is, the probability of choosing a sample that would yield an unemployment estimate differing from the actual rate by more than 1.8 percent (absolute) is less than 5 percent. In fact, actual sampling variability is substantially smaller. The reason for this is the

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[1]The standard error of estimate of the unemployment rate "u" is equal to $[u(1-u)/n]^{1/2}$ where "n" is the number of members of the labor force in the sample. If "u" is assumed to be .100 and "n" is assumed to be 1000, the standard error of estimate of "u" is approximately .0095. This translates into a 95 percent confidence interval for estimates of "u" of .100 $\pm$ .018.

element of geographical stratification introduced into the sampling procedure -- thus assuring that the representation of each barrio in the sample is approximately proportional to the representation of the barrio in the total population. Given the large variation in employment ratios by barrio, this procedure will reduce the sampling variability of estimated unemployment. In the absence of detailed information on the distribution of unemployment within and between barrios the quantitative effect of stratification on sampling variability can only be guessed. The "reasonable" guess hazarded here is that for sample sizes of the sort collected in 1966, the 95 percent confidence interval for unemployment estimates in Bogota is about .070-.090 for an unemployment ratio .080 and .088-.112 for an unemployment ratio of .100.

The problem of calculating sampling variability is considerably complicated by the fact that the level of training of interviewers is quite variable and the rate of turnover of interviewers is high. Since the criterion for determining unemployment is subjective -- the respondent having to indicate that he is "actively" seeking work -- unemployment estimates are sensitive to the manner in which the interviewer poses his questions and the way he interprets the answers. An interviewer who wants to obtain a high figure is very likely to do so. Interviews in Bogotá for CEDE have been conducted both by professional interviewers and by students. Surveys elsewhere have been conducted entirely by part-time student personnel. The sampling variability problem is one of turnover in interviewing personnel. For financial reasons CEDE was forced to let go its staff of professional interviewers after September 1965. The sharp break between September and December 1965 may thus be partially a reflection of the change in interviewing techniques. There was a similar turnover in interviewers between the June and September 1966 samples that may account for a portion of the drop in estimated unemployment during that period.

The problem of variable quality of interviewers is of particular importance in considering the quality of the unemployment data generated by the census. According to census criteria a person is unemployed either if he is actively seeking work for the first time or if he has

been unemployed for more than three months of the preceding year. The difficulties of securing an accurate twelve-month labor history for the population can well be imagined. Another possible source of divergence between census data on unemployment and the sample data collected by the university research groups is the relative toughness with which the "actively seeking work" criterion is applied to young people seeking employment for the first time.

IV. UNEMPLOYMENT RATES: DIFFERENCES BETWEEN CITIES AND CHANGES THROUGH TIME

The available data on unemployment rates in Colombia are summarized in Table 3. Only for Bogotá is there a series of observations of sufficient length to permit any discussion of changes in unemployment rates through time. Although these data are dominated by year-to-year changes reflecting fluctuations in the general level of economic activity there appears to have been a slight upward trend in unemployment through time.

The relatively high rates of unemployment in the spring of 1963 reflect the economic disorders associated with the inflation that followed the devaluation of late 1962. The reduction in unemployment beginning in the fall of 1963 corresponds to the economic recovery associated with the reforms of Sanz de Santamaria in the summer of 1963 and the resumption of a normal rate of growth of nonagricultural output in 1964. The figures for 1965 and 1966 are similarly consistent with our knowledge of changes in the level of economic activity. The increase in unemployment in the spring of 1965 is contemporary with the slowdown in rate of growth initiated by the foreign exchange disorders and crisis in business confidence of that time. The peak unemployment rates in the spring of 1966 appear to have been the result of the exhaustion of inventories of imported intermediate goods in early 1966. Although large-scale international lending to Colombia was resumed in late 1965 the time-lags between the resumption of lending, increased import authorization, and actual landings of imports were such as to postpone any reduction of unemployment to the early summer of 1966. The lower levels of unemployment in the fall of 1966 reflect the more rapid rate of growth of output made possible by the increased flow of imports. The unprecedentedly large change in the unemployment rate in the spring of 1967 is difficult to explain satisfactorily at this time. Part of the increase may be seasonal. Another part may reflect certain non-random elements in the sampling procedure. This is treated in the appendix on CEDE's methodology. Since there are

Table 3

UNEMPLOYMENT BY CITIES, 1963-1966

(percent)

	Bogotá	Medellín	Cali	Barranquilla
March 1967	16.1	--	--	--
Dec. 1966	9.2	--	--	16.0
Sept. 1966	9.6	--	--	--
June 1966	11.6	--	--	--
March 1966	10.1	--	--	--
Dec. 1965	8.0	9.7	--	--
Sept. 1965	9.7	--	11.8	--
June 1965	8.8	10.7	--	--
March 1965	9.2	12.0	13.2	--
Dec. 1964	--	11.3	--	--
Sept. 1964	7.4 (7.7)	--	--	--
June 1964	7.2 (7.5)	13.6	--	--
March 1964	6.7 (7.0)	13.6	--	--
Dec. 1963	7.1 (7.4)	12.8	--	--
Sept. 1963	7.4 (7.7)	--	--	--
June 1963	8.7 (9.0)	--	--	--
March 1963	8.4 (8.7)	--	--	--

Note:
-- No survey made.

Source:
Rafael Isaza, Centro de Estudios sobre Desarrollo Económico, Universidad de los Andes.

no good indicators of current output I can only speculate as to the extent to which the increase in unemployment could be the result of a sharp decline in production. Although imports fell drastically during the first quarter of 1967 there were substantial inventories of imported intermediate goods at the beginning of the year, and there have been few reports of lay-offs resulting from import bottlenecks.

For every possible comparison the data of Table 3 show that unemployment rates in Bogotá are less than unemployment rates in the other cities. This agrees with the subjective impressions offered by Colombian economists and businessmen that urban unemployment is most severe in the coastal cities and in Cali and is somewhat less important in Medellín and Bogotá. The unemployment data from the census of November 1964 give the same findings. The census figure for the average rate of unemployment in the urban areas of Colombia is some 80 percent higher than the census rate for Bogotá.[1]

To some observers the figures in Table 3 appear rather low. "Guesstimates" of 20-25 percent unemployment rates have been offered at various times in the past, and the CEDE rates for Bogotá have often been criticized as being "unrealistically low." Although there is some justification for the suspicion that the CEDE estimates are generally biased downward, it is virtually impossible to arrive at the conclusion that the actual rate of unemployment in Bogotá is in the order of 25 percent as long as the CEDE definition of unemployment is used.

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[1]Because of differing criteria of unemployment the census estimates for Bogotá are not directly comparable with those of CEDE. The census estimate of the unemployed Bogotá labor force was only 3.7 percent. The criterion used in census measurement appears to have been whether or not the interviewee was "totally" unemployed for more than three months of the preceding year. Given the difficulty of compiling a twelve-month employment history and the problem of taking partial employment into account I feel that the CEDE figures are the more usable. The 3.7 percent figure for Bogotá compares with the 6.8 percent figure for all cabeceras, or political administrative centers. The breakdown between cabeceras and other localities is very similar but not identical to an urban-rural breakdown.

The chief problem with respect to bias is the question of whether the CEDE surveys give an adequate weight to the tugurios at the outskirts of Bogotá. According to the 1964 census the population of the barrios represented in the CEDE sample of Bogotá was some 96 percent of the total population of Bogotá using the census definition of the extent of the city. If it is assumed that all of the excluded population lived in slum conditions and that unemployment in such areas is between 20 and 40 percent, the actual unemployment ratio applicable to Bogotá would be some 4-12 percent greater on a relative basis, or .004-.012 in absolute terms.

A second possible source of bias could be a difference in the rates of unemployment in the older areas of the city represented in the sample and the districts that have been settled since the date of the population census. Since the census of 1964 the population of Bogotá has increased on the order of 15 percent. If it is assumed that two-thirds of this increase was concentrated in newly settled areas -- almost certainly an overestimate -- and if the average rate of unemployment of this group was some 50-100 percent higher than for the population of the older areas -- almost certainly an overestimate -- the actual employment rate would be increased by some 5-10 percent in relative terms or .005-.010 absolutely. This bias is, of course, an increasing function of time.

Under the above assumptions the CEDE estimates are currently subject to a maximum feasible downward bias of roughly 10-20 percent in relative terms or .01-.02 in absolute numbers. It should be stressed that this figure is not an estimate of the actual bias in the CEDE figures but an estimate of the largest bias that now appears feasible. In particular, it seems unlikely that the unemployment differential between older and newer areas of the city is of the magnitude assumed above.

To arrive at an estimate of unemployment for Bogotá of 20-25 percent it thus seems necessary to use a different set of criteria for the determination of employment. If twelve and thirteen year olds were counted in the labor force and twenty percent of the labor force

in commerce were accounted redundant labor (and hence unemployed) it might be possible to justify an unemployment estimate of 20 percent. If, in addition, the labor force participation rates by age and sex observed in the census of 1951 were assumed to hold today -- the observed decline assumed to be the result of response to the currently depressed state of the labor market -- an unemployment rate of 25 percent can be justified.

The point thus must be stressed that the criteria employed by CEDE are conservative. From the point of view of economic costs they neglect to account adequately for part-time employment or "disguised unemployment." From the point of view of psychological cost they underestimate the proportion of the population that is suffering a gap between employment aspirations and employment realities. From the point of view of development assistance strategy neither of these additional costs can safely be ignored.

It should be noted that the CEDE data on employment in Bogotá are quite inconsistent with the data on employment in manufacturing published by the Departamento Administrativo Nacional de Estadísticas (DANE). According to DANE, employment in manufacturing in the department of Cundinamarca only rose 3.8 percent during the period May 1962 to May 1966.[1] Yet CEDE figures show the proportion of the Bogotá labor force employed in manufacturing to have been roughly constant over time. During the period May 1962-May 1966 the labor force in Bogotá thus probably increased by about 25 percent. If the assumption of a 7 percent rate of unemployment in manufacturing in May 1962 is considered together with the CEDE findings of no time trend in the proportion of the labor force attached to manufacturing and a roughly 10 percent unemployment rate in manufacturing in May 1966, it follows that employment in manufacturing in Bogotá increased some 21 percent during the period in question. Since the DANE data for Cundinamarca are dominated by the experience of Bogotá, the discrepancy in the figures must relate to a difference in the populations sampled. The

[1]DANE, Boletín Mensual de Estadística, November 1966, p. 114.

DANE data relate to the experience of the relatively large, capital-intensive firms in the modern sector of manufacturing. The CEDE data include artisan activity. What has happened is that employment in artisan manufacturing has increased much more rapidly than employment in the modern sector. A very large proportion of those persons engaged in manufacturing according to the CEDE sample consists of self-employed artisans -- a sector that has of necessity grown rapidly given the recent stagnation in the growth of employment in large firms -- and a sector where one can expect to find a sizable proportion of redundant labor.

Figures on absolute rates of unemployment are by themselves not particularly good evidence of the current psychological or economic importance of the unemployment problem. It is well known that the average levels of unemployment are sensitive to differences in internal rates of migration, homogeneity of population, rate of change of industrial structure, and other socio-economic characteristics that define "norms" to which the population accommodates psychologically and that define levels of resource utilization that cannot usually be exceeded. But no matter how ambiguous the importance of any given absolute rate of unemployment a rising rate is certainly more serious than a falling rate. The evidence is that unemployment has been increasing over time.

The reported figures on average unemployment in Bogotá for 1964, 1965, and 1966 are 7.2 percent, 8.9 percent, and 10.1 percent respectively. Adjusting for known sampling bias will increase the earlier figure to about 7.5 percent, but the resulting picture is unchanged -- the unemployment rate in Bogotá has been increasing since 1964 and during the expansionary year 1966 was substantially in excess of the rate during the economic crisis year of 1963.

Additional evidence of a time trend in unemployment is given by the unemployment estimates of the censuses of 1951 and 1964. In 1951 only 1.2 percent of the labor force was reported as unemployed. By 1964 the census estimate of the national unemployment ratio had increased to 4.9 percent. The corresponding figure for <u>cabeceras</u> --

roughly speaking, the urban population -- was 6.8 percent. Since there was a considerable shift of population from rural to urban areas during this period, part of this change reflects the greater visibility of unemployment in the cities. Then too, the interviewers of the 1964 census may have been trained to be more sensitive to the possibility that an individual might be classified as unemployed. Yet in spite of these possibilities it appears almost certain that there was a large increase in the unemployment rate in the inter-censal period.

It has been noted earlier that the census procedure with respect to the measurement of unemployment yields estimates that are lower than estimates by CEDE. The census figure of 3.7 percent unemployment for Bogotá is half of the 7.4 percent figure that is the average CEDE estimate for the year preceding the census. If this relationship were to hold for all other localities, an investigation for all of Colombia that employed CEDE criteria would have given an estimated unemployment rate of roughly 10 percent for the country as a whole and 14 percent for the towns. These figures are little more than speculation, however.

V. CHARACTERISTICS OF THE UNEMPLOYED

THE OCCUPATIONAL AND INDUSTRIAL DISTRIBUTION OF UNEMPLOYMENT

Data on the distribution of unemployment by occupation or industry are not available for all of the urban unemployment surveys in Colombia. No tabulations are yet available for the surveys in Bogotá after March 1966 nor for any of the surveys in Medellín or Barranquilla. The information currently available is presented in Tables 4-8 below. The data summarized there cover the distribution of employed and unemployed by occupation and industry and the distribution of unemployment rates by occupation and industry.

The figures for the occupational distribution of the labor force reported in Tables 4-6 are somewhat different from the figures given in the original surveys of CEDE. The major difference is in the proportion of workers classified as professionals or managers. In all cases the original data show a smaller number of workers of this type. The reason for this discrepancy is that individuals with 12 or more years of education or an income of more than 1000 pesos per week are classified as "managers" in the tables but as "office workers," "salespeople," and so on in the original surveys. Another reclassification works to reduce the proportion tabulated as professionals. All individuals with less than eight years of education classified as "professionals" in the original data were assumed to be "sub-professionals" and reclassified as service workers. The net effect of these adjustments is to increase the proportion of the managerial/professional group in the total labor force sample.

The very small number of manual laborers in the samples reflects the local conception of the lack of dignity of such occupations. No attempt has been made to adjust for this bias although it can be presumed that many of the so-called "artisans/operators" -- the major component of the labor force employed in manufacturing -- would be more properly designated manual workers.

The sum of the percentages of a given row in Tables 4, 5, and 7 may not equal 100 percent. This is because the set of sector and

Table 4

DISTRIBUTION OF THE LABOR FORCE BY OCCUPATION

Sample	Percentage of the Labor Force by Occupation						
Bogotá	Manager/ Professional	Office Workers	Sales Workers	Transport Workers	Artisans/ Operators	Manual Workers	Service Workers
March 1966	11.5	15.9	13.7	4.6	27.3	2.2	19.1
Dec. 1965	12.4	15.4	14.6	6.7	29.1	2.6	16.1
Sept. 1965	12.4	17.7	12.2	6.1	28.3	1.1	19.1
June 1965	12.7	15.8	12.4	5.6	27.9	2.3	19.3
March 1965	10.6	14.1	15.3	5.6	30.6	3.1	18.9
Sept. 1964	13.7	15.3	15.3	4.9	26.0	2.0	21.1
June 1964	13.7	15.4	11.0	4.5	28.7	1.3	22.2
March 1964	12.3	17.5	12.8	4.4	28.6	1.7	20.5
Dec. 1963	13.7	15.6	14.0	5.0	26.2	2.3	20.5
Cali							
March 1965	9.7	10.9	14.3	8.0	29.3	3.7	20.3

Source:

Bogotá samples: unpublished data, CEDE. Cali sample: Centro de Investigaciones Economicas, Universidad del Valle, Empleo y Desempleo de la Mano de Obra en la Ciudad de Cali (Cali, 1965).

Table 5

DISTRIBUTION OF THE UNEMPLOYED BY OCCUPATION

Sample	Percentage Unemployed by Occupation						
Bogotá	Manager/ Professional	Office Workers	Sales Workers	Transport Workers	Artisans/ Operators	Manual Workers	Service Workers
March 1966	4.8	22.4	16.8	5.6	30.0	4.0	8.8
Dec. 1965	7.8	23.3	19.0	6.9	24.1	9.5	6.0
Sept. 1965	6.8	19.7	13.7	6.0	33.3	3.4	8.5
June 1965	6.3	29.5	15.2	0.9	33.9	4.5	5.4
March 1965	2.6	20.5	13.7	3.4	36.8	9.4	13.7
Sept. 1964	4.0	27.0	16.0	6.0	37.0	2.0	8.0
June 1964	4.0	31.0	8.0	8.0	36.0	1.0	9.0
March 1964	10.2	29.6	15.3	3.1	27.5	--	13.2
Dec. 1963	5.7	30.5	15.2	2.9	32.4	3.8	9.5
Cali							
March 1965	14.0	12.6	7.07	5.5	44.7	8.4	2.8

Source:

Bogotá samples: unpublished data, CEDE. Cali sample: Centro de Investigaciones Economicas, Universidad del Valle, Empleo y Desempleo de la Mano de Obra en al Ciudad de Cali (Cali, 1965).

Table 6

UNEMPLOYMENT RATES BY OCCUPATION
(percent)

Sample	Unemployment Rates						
Bogotá	Manager/ Professional	Office Workers	Sales Workers	Transport Workers	Artisans/ Operators	Manual Workers	Service Workers
March 1966	7.4	14.1	12.3	12.3	10.9	18.5	4.6
Dec. 1965	7.0	12.2	10.4	8.2	6.7	28.9	3.0
Sept. 1965	7.4	10.8	10.9	9.6	11.5	30.8	4.4
June 1965	6.7	16.4	10.8	1.4	10.7	17.2	2.4
March 1965	3.4	13.4	8.2	5.6	11.1	28.2	6.6
Sept. 1964	3.3	13.0	7.7	8.9	10.5	7.4	2.8
June 1964	3.2	14.7	5.3	12.9	9.2	5.6	3.0
March 1964	6.9	11.4	8.0	4.6	6.5	--	4.3
Dec. 1963	3.8	13.9	7.8	4.1	8.8	11.8	3.3
Cali							
March 1965	19.0	15.3	6.57	17.4	18.0	30.0	1.8

Source:

Bogotá samples: unpublished data, CEDE. Cali sample: Centro de Investigaciones Economicas, Universidad del Valle, Empleo y Desempleo de la Mano de Obra en la Ciudad de Cali (Cali, 1965).

Table 7

DISTRIBUTION OF THE LABOR FORCE BY INDUSTRIAL SECTOR[a]

Sample	Sector					
Bogotá	Manufacturing	Construction	Commerce	Transport	Service	Government
March 1966	26.0	7.0	20.8	6.2	28.3	5.2
Dec. 1965	26.0	8.0	22.5	7.8	25.3	6.1
Sept. 1965	25.6	8.7	20.8	6.6	29.4	5.4
June 1965	25.1	7.4	22.0	6.5	29.1	5.5
March 1965	27.2	9.5	22.7	6.2	27.0	4.2
Sept. 1964	24.2	8.4	22.5	6.5	30.4	5.1
June 1964	26.1	9.1	20.0	6.6	30.1	5.3
March 1964	27.1	8.2	20.0	5.7	31.0	4.7
Dec. 1963	25.4	8.0	18.5	6.1	32.0	7.2
Cali						
March 1965	23.9	8.2	19.8	5.0	33.0	4.6

Note:

[a]For purposes of this table the labor force by industrical sector is defined to exclude individuals who are seeking work for the first time. The data do not permit assignment of such individuals to an industrial sector.

Source:

Bogotá samples: unpublished data, CEDE. Cali sample: Centro de Investigaciones Economicas, Universidad del Valle, Empleo y Desempleo de la Mano de Obra en la Ciudad de Cali (Cali, 1965).

Table 8

UNEMPLOYMENT RATES BY INDUSTRIAL SECTOR[a]
(percent)

Sample	Sector					
Bogotá	Manufacturing	Construction	Commerce	Transport	Service	Government
March 1966	9.6	12.9	5.6	10.7	4.4	4.8
Dec. 1965	3.8	8.5	6.3	9.1	3.4	3.5
Sept. 1965	6.7	15.8	6.6	9.1	3.5	4.8
June 1965	7.4	13.0	3.3	3.8	5.8	2.9
March 1965	6.3	17.2	3.6	5.3	4.2	--
Sept. 1964	5.3	20.5	5.0	4.6	2.2	7.4
Jan. 1964	6.9	11.6	3.0	8.0	1.7	5.6
March 1964	5.2	6.8	3.2	4.9	2.0	4.5
Dec. 1963	7.4	10.4	4.2	1.1	2.6	2.9
Cali						
March 1965	11.6	22.1	3.9	15.4	5.8	7.9

Note:

[a]Unemployment rate means "lay-off" rate. The unemployed with no previous job experience are excluded from these calculations.

Source:

Bogotá samples: unpublished data, CEDE. Cali sample: Centro de Investigaciones Economicas, Universidad del Valle, Empleo y Desempleo de la Mano de Obra en la Ciudad de Cali (Cali, 1965).

occupation categories presented in the tables is not an exhaustive set of categories and because information on occupational or sector status was not always available for every individual.

With respect to the occupational distribution of the unemployed the most important point to notice is the relatively high proportion of the unemployed who are seeking office or sales work of some sort. For the last available sample for Bogotá less than half of the unemployed were seeking work in transport, as artisan/operators, or as manual laborers. The point here is not that the incidence of unemployment is relatively high among white collar occupations but that a large proportion of the unemployed is not likely to be willing to respond in most circumstances to an increase in the demand for manual labor directly implied by governmental public works programs. From this point of view the proportion of the male unemployed seeking work in the above three categories is probably the best single indication of the labor potential usable in public works programs, and this figure will generally be some 10-15 percent less than the figure for total unemployed in those occupations. It might be noted that the proportion of unemployed for which public works programs appear most relevant is substantially higher in Cali than in Bogotá. This also reflects in some part the higher proportion of males among the unemployed there. (See Table 9 below.)

Data on unemployment rates by occupation, shown in Table 6, indicate that there does seem to have been a slight tendency for unemployment rates to rise among the managerial/professional group during the period March 1965-March 1966. This change is consistent with the stability or slight decline of earnings of this group during the same period. Second, there has been a notable increase of the unemployment rate in the sales-worker category. This is not simply the result of the attempt of new entrants into the labor force to seek employment in an occupation that has few barriers to entry. The increase in unemployed salespeople has also been the result of an increase in the number of unemployed whose previous employment history has been in this occupational group.

The recent increase in unemployment rates for manual workers that is so obvious in Table 6 is very likely to be spurious in part. Changes in sampling procedures between September 1964 and March 1965 are probably responsible for the bulk of the change in unemployment rates over time in that category. Nevertheless the volume of construction declined in 1965 and the unemployment data reflect this.

Three occupational groups appear to have been able to insulate themselves from the recent increases in unemployment rates: office workers, artisan/operators, and service workers. The last group is distinguished by a very low incidence of unemployment. A large proportion of the service workers are female domestics, and the low unemployment rates may reflect an extreme degree of price flexibility resulting from a supply that is strongly price inelastic. The stability in the percentage of artisan/operators employed most likely reflects the self-employment opportunities in artisan manufacturing rather than any stability in the growth of manufacturing output. The stability of unemployment rates among office workers is more difficult to explain. The high rate of unemployment among office workers is very largely the result of the tendency of new entrants into the labor force to choose this occupation. Table 8 shows that job security in this field is relatively high for those workers who have managed to secure employment.

The data given in Tables 7 and 8 need to be interpreted with some care. In neither case do the figures reflect the industrial attachment of the unemployed who have no job experience. This results in no obvious bias in the distribution of the labor force by industrial sector that is given in Table 7, but Table 8 is considerably distorted. What is actually measured there is something akin to job security, since the so-called unemployment rates by industrial sector are calculated without reference to the sectors in which new entrants to the labor force are seeking employment.

OTHER CHARACTERISTICS OF THE UNEMPLOYED

Comparative data on age, education, and sex distribution for the employed and unemployed are given in Table 9. The results are more or less as expected. The unemployed are younger than the employed and somewhat less educated. For Bogotá the incidence of unemployment among males has been generally less than that for females.

A more detailed description of the age-education profile of the unemployed is given in Table 10. The first result given there -- the relative distribution of unemployment by level of education -- is somewhat surprising. Although there is a tendency for the better educated to suffer relatively less unemployment, the relationship is fairly weak. There is also one important exception; those with only one year of schooling or less are generally less likely to be unemployed than those with two to four years of primary schooling. This reversal is probably accounted for by the low level of unemployment among domestics -- the least educated of the urban occupational groups. There is virtually no reduction in the risk of unemployment associated with improving the level of education through the eighth year of schooling. Further, in periods of high unemployment -- the March 1966 sample for Bogotá and the March 1965 sample for Cali -- only university graduates enjoy a significantly lower rate of unemployment among educational groups. At such times of very slow growth even those individuals with post-secondary training of some sort do not appear to be much less susceptible to the threat of unemployment than the relatively uneducated.

There is, however, a complicating factor here in that the better educated members of the labor force tend to be somewhat younger than the average. This tendency is particularly marked for those individuals with secondary and post-secondary training. Given the strong tendency for unemployment to be inversely related to age, the apparent lack of a negative association between education and rates of unemployment may simply reflect differences in the age distribution of the various education groups.

Table 9

COMPARATIVE CHARACTERISTICS OF THE EMPLOYED AND UNEMPLOYED[a]

Sample	Mean Age		Mean Education (years)		Proportion of Males (percent)	
Bogotá	E	U	E	U	E	U
March 1966	32.9	25.5	6.2	5.5	63.1	55.6
Dec. 1965	32.3	23.7	6.1	5.5	66.2	60.3
Sept. 1965	33.3	27.8	6.0	5.2	66.1	65.0
June 1965	32.6	24.1	5.7	5.3	63.6	57.1
March 1965	33.2	25.9	5.5	5.1	64.6	58.1
Sept. 1964	32.5	26.3	5.8	4.9	60.6	69.0
June 1964	32.9	25.6	5.9	5.5	62.4	66.0
March 1964	33.0	26.3	5.8	5.5	60.0	54.0
Dec. 1963	32.8	24.6	5.8	5.1	60.5	58.0
Cali						
March 1965	33.4	26.6	5.0	4.9	65.8	67.1

Note:

[a]Columns headed by "E" refer to the employed labor force. Columns headed by "U" refer to the unemployed labor force.

Source:

Bogotá samples: unpublished data, CEDE. Cali sample: Centro de Investigaciones Economicas, Universidad del Valle, Empleo y Desempleo de la Mano de Obra en la Ciudad de Cali (Cali, 1965).

Table 10

UNEMPLOYMENT RATES BY LEVEL OF EDUCATION AND AGE
(percent)

Level of Education (years)	Sample			
	Bogotá March 1966	Bogotá March 1965	Bogotá March 1964	Cali March 1965
	A. Unemployment Rates by Level of Education			
0-1	8	7	6	7
2-4	12	10	6	13
5	11	12	9	19
6-8	13	10	8	11
9-10	8	8	8	10
11	8	8	5	9
12-15	10	8	4	16
16+	2	3	4	--
Age	B. Unemployment Rates by Age			
14-19	20	19	14	27
20-24	17	16	9	17
25-29	9	4	6	11
30-39	6	5	4	8
40+	4	5	4	8

Source:

Bogotá samples: unpublished data, CEDE. Cali sample: Centro de Investigaciones Economicas, Universidad del Valle, Empleo y Desempleo de la Mano de Obra en la Ciudad de Cali (Cali, 1965).

The distribution of unemployment rates by age group is reported in Part B of Table 10. As should be expected the inverse relationship between age and unemployment is quite strong. What might be considered surprising, however, is the apparent lack of a change in the pattern of age-specific unemployment rates given a change in the overall incidence of unemployment. Comparison of the low unemployment sample of March 1964 for Bogotá with the high unemployment observations of March 1966 for Bogotá and March 1965 for Cali reveals a roughly equiproportionate increase in all age-specific unemployment rates.

One very useful characteristic of the CEDE methodology is the distinction made between the unemployed with past work experience (cesantes) and the unemployed who are new entrants to the labor force. Certain comparative data with respect to these two groups are given in Tables 11-13. The availability of such data makes it possible to determine whether the brunt of changes in aggregate employment are borne by new entrants or by the pre-existent labor force. In this respect the data of Tables 11 and 12 confirm the suspicion aroused by the data on average age of the unemployed given in Table 10 that the increase in unemployment in Bogotá in the period 1963-1966 has not simply been an increase in the unemployment of new entrants into the labor market. To the extent that any trend is identifiable it would appear that the proportion of new entrants to the total number of unemployed has declined.

The strongest differences between the new entrants and the cesantes is with respect to the ratio of males to females in the two groups. Although roughly two-thirds of the unemployed with previous work experience are males, only two-fifths of the unemployed who are classified as new entrants are male. This difference is not the result of a relative increase in the female labor participation rate but rather stems from a longer average length of time required by females to obtain their first jobs.

This difference in the average period of unemployment for male and female new entrants is of considerable importance in explaining the differences of Table 13. The fact that the pattern of occupations

Table 11

CHARACTERISTICS OF THOSE
UNEMPLOYED WITHOUT PREVIOUS WORK EXPERIENCE

Sample	Proportion of Unemployed without Previous Job Experience (percent)	Mean Age	Mean Length of Time Seeking Work (weeks)	Mean Years of Education	Proportion of Males (percent)
Bogotá					
March 1966	30.1	18.7	17.9	5.9	42.1
Dec. 1965	31.9	18.5	21.4	7.4	32.4
Sept. 1965	31.6	20.1	22.6	6.6	35.1
June 1965	30.4	18.9	21.5	5.9	35.3
March 1965	38.4	18.7	12.9	5.7	42.3
Sept. 1964	22.8	19.0	14.8	5.3	30.4
June 1964	34.2	21.4	15.4	6.7	32.3
March 1964	39.8	23.3	15.2	5.7	30.8
Dec. 1963	35.2	19.4	11.7	6.3	40.6
Cali					
March 1965	28.0	21.0	18.8	5.7	47.5

Source:

Bogotá samples: unpublished data, CEDE. Cali sample: Centro de Investigaciones Economicas, Universidad del Valle, Empleo y Desempleo de la Mano de Obra en la Ciudad de Cali (Cali, 1965)

Table 12

CHARACTERISTICS OF THOSE
UNEMPLOYED WITH PREVIOUS WORK EXPERIENCE

Sample	Proportion of Unemployed with Previous Work Experience (percent)	Mean Age	Mean Length of Time Unemployed (weeks)	Mean Years of Education	Proportion of Males (percent)
Bogotá					
March 1966	69.9	28.5	14.8	5.3	61.4
Dec. 1965	68.1	26.2	14.9	4.6	73.4
Sept. 1965	68.4	31.3	14.9	4.6	78.7
June 1965	69.6	26.3	19.6	5.1	66.7
March 1965	61.6	30.4	12.8	4.8	68.1
Sept. 1965	77.2	28.2	11.2	4.8	80.8
June 1964	65.8	28.1	10.7	4.9	69.0
March 1964	60.2	28.3	14.0	5.3	74.6
Dec. 1963	64.8	27.4	13.4	4.4	67.6
Cali					
March 1965	72.0	29.0	14.7	4.6	74.7

Source:

Bogotá samples: unpublished data, CEDE. Cali sample: Centro de Investigaciones Economicas, Universidad del Valle, Empleo y Desempleo de la Mano de Obra en la Ciudad de Cali (Cali, 1965).

Table 13

A COMPARISON OF THE OCCUPATIONS SOUGHT BY THE UNEMPLOYED WITH WORK EXPERIENCE WITH THE OCCUPATIONS SOUGHT BY THE UNEMPLOYED WITHOUT WORK EXPERIENCE[a]

(percent)

Occupation Sought	Proportion of Unemployed Group Seeking such an Occupation			
	Bogotá March 1966	Bogotá March 1965	Bogotá March 1964	Cali March 1965
Professional/Managerial				
A	5	3	8	18
B	6	2	12	3
Office Workers				
A	18	10	34	8
B	36	37	26	25
Sales Workers				
A	13	10	8	3
B	30	20	26	17
Transport Workers				
A	8	5	5	7
B	0	0	0	3
Artisan/Operators				
A	37	46	30	46
B	12	22	26	40
Manual Workers				
A	3	12	0	11
B	6	4	0	2
Service Workers				
A	10	14	15	0
B	6	13	10	10

Note:

[a]The rows labeled "A" refer to the proportion of the unemployed with work experience seeking employment in the relevant occupational category. Rows labeled "B" refer to those individuals without previous experience.

sought by new entrants is quite different from the pattern of occupations sought by the cesante group does not necessarily imply a change in the relative pattern of labor supply by occupation. A marked (and apparently stable) difference in the relative ease with which male and female entrants into the labor force obtain their first jobs is part of the explanation. Another part of course is the tendency of new entrants to the labor force to aspire to jobs that are more prestigious and better paid than they can realistically expect to obtain.

A characteristic of the employed and unemployed that is of particular interest is unemployment of recent migrants relative to that of longer-term residents. A priori it is quite possible that interrelationships between internal migration and urban unemployment impair the usefulness of unemployment as an index of the state of health of the urban economy. That is, rising rates of unemployment could result in decreasing rates of rural-urban migration, and vice versa, to the point that unemployment cycles are greatly damped or even reversed, given a sufficiently strong reaction of migration to changes in labor market conditions. There is no evidence for this, however.

Data on the date of migration of individuals in the CEDE sample are not available, but where the proportion of the relevant group born outside Bogotá is used as a surrogate for recent migrants, there is no evidence of any recent trend toward an increase in the proportion of migrants among the unemployed. Table 14 summarizes changes in the proportion of employed and unemployed born outside Bogotá. It should not be inferred from Table 14 that the native Bogotano is likely to find it more difficult to get a job than the migrant. First of all, the number of individuals born outside Bogotá is only a very partial surrogate for the number of recent migrants. Second, the age distributions of Bogotanos and non-Bogotanos are quite different, the former being younger on the average than the latter. Bogotá has grown largely as a result of recent migration. The fathers are born outside Bogotá, the sons are the natives. Since unemployment is strongly related to age it would be expected that the Bogotá-born segment of the population would show a higher crude rate of unemployment. A

Table 14

EMPLOYED AND UNEMPLOYED BY PLACE OF BIRTH

(percent)

Sample Data	Proportion of Employed Born Outside Bogotá	Proportion of Unemployed Born Outside Bogotá
Dec. 1963	73	49
March 1964	71	67
June 1964	74	54
Sept. 1964	71	50
March 1965	70	68
June 1965	74	51
Sept. 1965	70	67
Dec. 1965	70	54
March 1966	72	59

Source:

Unpublished data, CEDE.

third possible explanation for this finding is that the would-be migrant does not move to Bogotá unless he has a reasonably secure job offer. Field workers from the Land Tenure Center of the University of Wisconsin suggest that this is, in fact, often the case.

VI. SOURCES OF CHANGE IN THE UNEMPLOYMENT RATE

By definition an increase in the rate of unemployment is the result of a rate of growth of the supply of labor in excess of the rate of growth of demand for labor. It is convenient to think of the rate of growth of the supply of labor as a joint function of the rate of growth of the population and the rate of change of the labor force participation rate. In a similar vein the rate of growth of the demand for labor can be thought of as a function of the rate of increase of total output and the rate of change of labor requirements per unit of output. The precise accounting relationships depend upon whether we are talking about instantaneous or annual rates of growth. If we are speaking of instantaneous rates of growth the unemployment rate will increase if the algebraic sum of the rates of growth of the population and the labor force participation rate exceeds the algebraic sum of the rates of growth of total population and the average labor requirement per unit of output.[1] If the rates of growth are annual rates of growth the relationship is slightly more complex.[2]

It should be stressed that the functional relationship described above is an accounting framework rather than a statement of causal relationships. Nevertheless it is a useful device in organizing a discussion of the various forces working for change in the rate of unemployment. The following analysis will thus be presented under four headings: the rate of growth of total output; the rate of growth of labor requirements per unit of output (or its reciprocal, the rate of growth of labor productivity); the rate of growth of population; and the rate of growth of the labor force participation rate.

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[1]The explicit model is as follows: Let Y = Output, D = Employment, P = Population, S = Labor Force, U = Unemployment $\equiv$ D-S, R = Labor Requirement per Unit of Output $\equiv$ D/Y, F = Labor Force Participation Rate $\equiv$ S/P, and W = the Unemployment Rate $\equiv$ U/S.

Then $W = (FP-YR)/FP = (1-YR/FP)$, and

$$dW = YR/FP(dP/P + dF/F - dR/R - dY/Y).$$

Thus $dW \gtreqless 0$ as $(dP/P + dF/F) \lesseqgtr (dR/R + dY/Y)$.

[2]The complication here is the necessity of considering the products of first differences.

$$\Delta W = YR/FP\{[\Delta P/P + \Delta F/F(1 + \Delta P/P)] - [\Delta R/R + \Delta Y/Y(1 + \Delta R/R)]\}/(1 + \Delta F/F + \Delta P/P + \Delta P\Delta F/PF).$$

Thus $\Delta W \gtreqless 0$ as $[\Delta P/P + \Delta F/F(1 + \Delta P/P] \gtreqless [\Delta R/R + \Delta Y/Y(1 + \Delta R/R]$.

CHANGES IN THE UNEMPLOYMENT RATE AS A FUNCTION OF THE RATE OF GROWTH OF OUTPUT

Section IV began with a brief discussion of the relationship between changes in unemployment rates and changes in the rate of economic growth in recent years. As unsatisfactory as that discussion may be it is difficult to describe this relationship in more exact terms. The data on variation in unemployment through time are limited to Bogotá; however, the data on variation in output relate to the economy as a whole. Furthermore, there are no data whatsoever on output for time periods less than a year.

Direct comparison of changes in the real rates of growth of gross domestic product for the non-agricultural sector[1] with changes in the average yearly rate of unemployment in Bogotá generally reveals a negative association. In 1963, when non-agricultural output was increasing at the relatively low rate of 4.3 percent, the average rate of unemployment in Bogotá was (an adjusted) 8.2 percent. In 1964 the rate of growth of output outside agriculture accelerated to 6.0 percent and the average rate of unemployment in Bogotá dropped to (an adjusted) 7.5 percent. These changes were reversed in 1965. The rate of growth of non-agricultural output dropped to 4.5 percent and the Bogotá unemployment rate climbed to 8.9 percent. In 1966 the pattern is somewhat different. Preliminary estimates of the Banco de la República suggest an increase in the rate of growth of non-agricultural output to about 5.7 percent. However the average rate of unemployment in Bogotá climbed to 10.1 percent. Thus although a 6.0 percent rate of increase of output was sufficient to reduce the unemployment rate substantially in 1964 a similar rate of increase in output in 1966 was not sufficient to keep the unemployment rate from rising.

There are several possible explanations of this. First of all the rate of migration into Bogotá and hence the rate of change of the labor force may have altered substantially in the period 1964-1966. Second,

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[1]Gross domestic product at market prices less gross domestic product originating in agriculture, mining, and silviculture.

the output and unemployment data do in fact relate to different populations. Yet given the importance of Bogotá to the urban economy of Colombia it is doubtful that figures on changes in output and employment for Bogotá are not reasonably representative of changes in the non-agricultural economy as a whole. Third, the increase in employment generated by a given increase in output may have fallen.

During the period 1963-1966 non-agricultural output increased at the average annual rate of 5.4 percent. The corresponding annual increase in the non-agricultural labor force was probably in the range 3.2-3.6 percent. If the Bogotá unemployment rates are assumed to apply for the country as a whole -- unemployment in the non-agricultural sector thus rising from 8.2 percent to 10.1 percent -- the implied rate of increase in output per worker during the period 1963-1966 was 2.4-2.8 percent and the rate of growth of output required to prevent a rise in the unemployment rate was about 6.1 percent.[1] These estimates are sensitive not only to the rate of increase of unemployment rates but also to the initial unemployment rate. Since it is known that unemployment rates in Bogotá tend to be less than elsewhere the estimated rate of growth of output per worker in the non-agricultural sector as a whole -- and hence the "required" rate of growth of output -- will thus be somewhat different. If it is assumed that the rate of unemployment in the non-agricultural sector in 1963 was 50 percent higher than the unemployment rate in Bogotá -- and that the annual rate of growth of both rates was the same over the period 1963-1966 -- the average rate of increase of output per worker in the non-agricultural sector during this period was in the range 2.7-3.1 percent. This implies that the rate of growth of non-agricultural output that would have been required to prevent a rise in the unemployment rate over this period was about 6.5 percent.

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[1] Where r_1, r_2, and r_3 are the <u>annual</u> rates of growth of employment, output, and output per worker respectively the basic algebraic relationship is $r_1 = r_2 - r_3(1 + r_2)$. The fact that a single-valued estimate for the "required" rate of growth is given even though the estimated rate of growth of the labor supply is given as an interval estimate results from the fact that the higher estimate of the rate of growth of labor supply -- and hence employment -- implies the lower estimate of the rate of growth of output per worker.

Further evidence as to these relationships is available from examination of labor force data from the censuses of 1951 and 1964. Table 15 summarizes the average annual rates of growth of employment and output per worker for various sectors of the economy during the inter-censal period. Three different estimates of the rates of growth of labor demand or supply and output per worker are offered. Those estimates implied by labor force definition A are based on figures for the 1951 labor force published in the official summary of the 1951 census. These data relate to a population estimate that is 191,683 less than the official estimate of the total non-indigenous (non-Indian) population. This difference is the official estimate of the undercounting involved in the preliminary tabulations. The calculations under the heading B are based on this higher figure for the total population. The official estimate of the undercounting in the 1951 census has been strongly criticized, however. It is commonly accepted that the most likely estimate of total undercounting is 500,000-600,000.[1] It is also probable that the preliminary estimates of the 1964 census are somewhat too low. The figures under the heading C have been calculated so as to take these likely errors into account. They are based on the assumption that the official population estimates of the 1951 and 1964 censuses are understated by some 500,000 and 100,000 respectively. The calculations for both the headings B and C further assume that the distribution of the uncounted population with respect to labor force participation and employment status was the same as for the population actually sampled. Since undercounting is more likely to have been concentrated in rural areas, this assumption probably results in a slight overestimate of the rate of growth of the agricultural labor force.

Given the figures for rates of increase in employment and output per worker shown in Table 15 it is evident that a rate of growth of total output of about 5.0 percent per year would have been required to prevent any increase in the unemployment rate for the economy as a whole during the period 1951-1964. The actual rate of increase of

[1]Economic Commission for Latin America, Some Aspects of Population Growth in Colombia (UNESCO: E/CN 12/618, 10 November 1962).

Table 15

RATES OF CHANGE OF LABOR SUPPLY, LABOR DEMAND, AND OUTPUT PER WORKER BY SECTOR, 1951-1964

Sector	Average Annual Percentage Rate of Increase of Labor Demand or Supply: Labor Force Definition[a] (A)	(B)	(C)	Average Annual Percentage Rate of Increase of Output Per Worker: Labor Force Definition (A)	(B)	(C)
Agriculture						
(Supply)	1.4	1.3	1.0			
(Demand)	1.3	1.2	.9	2.1	2.2	2.5
Mining						
(Supply)	-1.5			5.6[b]		
Transportation and communication						
(Supply)	3.0			2.7[b]		
Manufacturing						
(Supply)	3.1			3.3[b]		
Commerce						
(Supply)	6.1			-1.4[b]		
Construction						
(Supply)	4.0			2.1[b]		
Public utilities						
(Supply)	1.8			7.6[b]		
Services						
(Supply)	3.4			.9[b]		
Total other than agriculture						
(Supply)	3.5	3.4	3.1			
(Demand)	3.1	3.0	2.7	2.3	2.4	2.7
Total economy						
(Supply)	2.4	2.3	2.0			
(Demand)	2.1	2.0	1.7	2.5	2.6	2.9

Notes:

[a]The labor force definitions A, B, and C correspond to the following assumptions about the census of 1951: Definition A is based on the published figures for the 1951 labor force. Definition B is based on an estimate of the labor force that is adjusted in accordance with the official revisions of the population estimates of the 1951 census. Definition C is based on a labor force estimate adjusted for the most commonly accepted unofficial revisions of the 1951 census. For a discussion of these revisions see the text.

[b]These calculations are based on the assumption that the rates of increase of labor demand and supply are equal. Since unemployment rates were generally increasing over the period 1951-1964 the actual rates of change in output per worker were somewhat higher than shown here for most sectors.

Table 15 (continued)

Source:

Output: Cuentas Nacionales, Banco de la República. Labor Force: DANE, Censo de Poblacion de Colombia 1951, Resumen, and unpublished 1964 census data.

output was 4.7 percent per year. There are a number of reasons why the above estimate of the required rate of growth must be used cautiously. The estimated normal rates of increase of output per worker in both the agricultural and non-agricultural sectors are subject to strong biases because of changes in the proportion of redundant labor. The biases are partially offsetting, however. The large volume of rural-urban migration during this period probably caused a reduction in the proportion of redundant labor in agriculture. If so, the rates of increase in output per worker in agriculture given in Table 15 are somewhat overestimated. The opposite bias is present in the estimated normal rates of increase of output per worker outside agriculture.

The decline in output per worker in commerce reflects a proliferation of street vendors and family workers in petty retailing that should be considered disguised unemployment. The increase of output per worker in manufacturing is a composite of a very rapid increase in labor productivity in the modern sector and static or declining productivity in the artisan sectors. If the proportion of redundant labor outside agriculture had been held constant there is little doubt that the average rate of increase in labor and productivity would have been in excess of that measured in Table 15. What is not known is the extent to which the underestimates of productivity changes outside agriculture offset the overestimates of such change within the agricultural sector.

There is also a problem in whether or not the decline in labor force participation rates over the inter-censal period was independent of the increasing disequilibrium in the labor market. If there had been no drop in age-specific labor force participation rates the total labor force would have grown at the average annual rate of some 2.3-2.6 percent instead of the observed rate 2.0-2.3. The rate of growth of output required to maintain initial employment rates would then have been in the order of 5.3 percent.

CHANGES IN THE UNEMPLOYMENT RATE AS A FUNCTION OF THE RATE OF GROWTH OF LABOR PRODUCTIVITY

The most important limitation to the usefulness of any estimate

of the "required" rate of growth of output is the potential instability over time of the underlying estimate of the "normal" rate of increase of labor productivity. If the experience of the United States is any guide we can expect a tendency for the rates of growth of labor productivity and output to be positively related in the short run. What little data there are for Colombia are consistent with this hypothesis. In the high-growth period 1958-1961 the average rate of growth of output per worker in modern manufacturing was about 7.7 percent. This fell to 3.4 percent in the low-growth period 1961-1964. Since employment figures are not available on a yearly basis for other sectors, information as to the rate of change of labor and productivity outside modern manufacturing is limited to the estimates of the average rate of growth of output per worker over the 1951-1964 inter-censal period given in Table 15. There is therefore no empirical evidence as to any possible long-term trend in the rate of change of output per worker.

Changes in the rate of growth of labor productivity for the economy as a whole result both from changes in the rate of growth of output per worker in the various sectors of the economy and changes in the structure of output. Output outside agriculture grew at the average annual rate of 5.5 percent in the period 1951-1964. The corresponding rate for manufacturing was something less than 7 percent. Agricultural output grew about 3.4 percent during the same period. Unless the unexpected happens and there is an acceleration in the rate of growth of agriculture, the higher rates of growth of total product given by Alliance for Progress goals can be reached only if there is a rise in the ratio of the rate of growth of the non-agricultural sector to the rate of growth of agriculture. Within the non-agricultural sector a higher growth rate can be achieved only if there is a substantial increase in the rate of growth of manufacturing relative to the rates of growth of the other non-agricultural sectors. Since the rate of increase of labor productivity is higher outside agriculture than within, and since the rate of increase of labor productivity in manufacturing is greater than for the non-agricultural sector as a whole, these shifts imply a tendency for the rate of growth of labor productivity to increase both for the non-agricultural sector and for the economy as a whole.

The future course of the rate of change in labor productivity within the major sectors of the economy is particularly uncertain. Because of the short-term relationship between rates of change of output and productivity the recent decline of the rate of growth of output per worker in the modern sector of manufacturing cannot be accepted as evidence of what is likely to happen in the future. It is interesting to note, however, that the fall in the average rate of growth of labor productivity from 7.7 percent in 1958-1961 to 3.4 percent in 1961-1964 occurred in spite of a doubling of the marginal capital/labor ratio. Since the marginal capital/output ratio also doubled from 1958-1961 to 1961-1964 the marginal output/labor ratio remained stable.[1] What appears most likely is that both the high rate of productivity growth of 1958-1961 and the low rate of 1961-1964 were strongly influenced by changes in the degree of plant utilization. The rapid increase of industrial output in 1958-1961 was largely based on capital equipment acquired during the investment boom of the 1950s but not previously utilized. The slowdown in the rate of increase of output per worker in 1961-1964 was in part a result of the inefficiencies associated with the starting of new lines of production -- including low rates of plant utilization. In short, therefore, there is no empirical foundation for a conclusion as to possible changes over time in the rate of increase of labor productivity in Colombia.

Ordinarily an increase in the rate of increase of labor productivity (output per worker) is viewed as an economic achievement. Here, where the focus is on the problem of maintaining full employment, an increase in the rate of growth of output per worker appears to create difficulties. However, output per worker is not necessarily a very good criterion of economic performance. It is usually accepted that the objective of economic activity is the maximization of output per

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[1]Other things being equal, the rate of increase of output per worker will decline over time if the marginal output/labor ratio is constant and greater than the average output/labor ratio. The full relationship is

$$r_p = r_y[1 - (Y/N)/(dY/dN)],$$

where Y is output, N is employment, r_y is the rate of growth of income, and r_p is the rate of growth of output per worker.

member of society under the assumption of freedom of choice with respect to supply of labor. Maximizing output per worker is consistent with maximizing output per capita only under the assumption that full employment is maintained. It should be abundantly clear by now that full employment is not a characteristic of the Colombian economy. It is thus quite possible that there could have been a distribution of investment in recent years that would have yielded a lower rate of growth of output per worker but a higher rate of growth of total output.

There are, in fact, a number of reasons for believing that the recent growth process in Colombia has been unnecessarily capital intensive. "Unnecessarily" here refers to the point of view of society as a whole. First, the ratio of the private cost of capital to the private cost of labor has fallen sharply in comparison with the ratio of the social costs of capital and labor because of monopoly pricing of labor in modern manufacturing and government-imposed restraints on the upward drift of the nominal rate of interest and the foreign exchange rate. When we deal with price expectations rather than prices the distortion appears even greater. Second, the distribution of investment and hence the pattern of growth has been subject to direct controls through the licensing of capital goods imports. Licensing decisions on capital goods have been strongly influenced by the import substitution policy. As import substitution has proceeded from the consumer goods industries to the intermediate and capital goods industries, both the capital and skill requirements of new production have increased. The effect of these biases on the demand for labor depends upon the price elasticity of the supply of capital, the extent of wage flexibility, and the extent to which changes in technology permit the technical substitution of labor for capital. In the foreseeable future the supply of capital will be largely a function of the price and volume of exports and the supply of foreign public lending. Since the importance of augmenting exports is not a point at issue, it can be presumed that all feasible policy changes leading to an increase in the supply of foreign exchange will be adopted. The basic policy problem of maximizing the employment-generating effect of a given rate of economic growth thus reduces to the problems of maintaining wage flexibility

and increasing the degree of substitution possibilities between labor and capital. The policy issues involved here will be discussed in Section VII.

CHANGES IN THE UNEMPLOYMENT RATE AS A FUNCTION OF THE RATE OF CHANGE OF THE LABOR FORCE PARTICIPATION RATE

Perhaps the most interesting fact to emerge from a comparison of the labor force data of the 1951 and 1964 censuses is the sharp decline in labor force participation rates over the inter-censal period. In 1951 the labor force was 33.3 percent of the total population and 61.5 percent of the population between the ages 15-64. By 1964 these figures had fallen to 29.4 percent and 48.3 percent. The relevant labor force participation rates by age, sex, and location for the two censuses are given in Table 16. The decline in the ratio of the labor force to the total population is chiefly accounted for by an increase in the proportion of children in the total population and a decline in the labor force participation rates of the various age-sex-location classes. The decline in the ratio of the labor force to the population aged 15-64 is almost entirely the result of declines in age-sex-location specific labor force participation rates.

The most dramatic of the changes in labor force participation rates is the reduction in the proportion of young urban males who are classified as "economically active." The labor force participation rate of urban males aged 15-19 dropped from about 72 percent to about 48 percent. The rate for rural males aged 15-19 fell only from 92 percent to 85 percent. The proportion of 15-19 year-old females, urban or rural, in the labor force fell a similar amount. In the cities the decline in male labor force participation even extended into the 20-24 age group. Another area of declining labor force participation rates was the aged. This was most marked among urban males.

Why did these rates decline? Any answer must be largely speculative, but certain answers can be excluded. The decline in the labor force participation rates of urban males aged 15-19 was not basically

Table 16

LABOR FORCE PARTICIPATION RATES BY
AGE, SEX, AND LOCATION, 1951 AND 1964

(percent)

	Cabeceras			Other Localities		
Age	Total	Male	Female	Total	Male	Female
1951						
10-14	11.2	12.8	9.8	11.9	19.0	3.8
15-19	50.2	71.6	34.8	54.2	92.2	14.1
20-24	60.1	91.8	34.9	58.2	97.8	14.0
25-34	58.6	96.6	27.7	57.3	98.5	13.3
35-44	57.6	97.2	25.1	58.7	98.6	14.4
45-54	54.5	95.0	21.1	59.6	97.9	15.3
55-64	47.0	88.5	16.3	58.4	95.0	15.3
65+	29.4	63.2	9.6	44.7	78.2	11.5
1964						
10-14	6.1	6.4	5.6	14.3	24.6	2.7
15-19	37.0	47.6	28.9	50.3	85.4	11.1
20-24	57.0	83.5	36.2	55.5	96.6	12.3
25-34	58.3	94.7	27.9	55.2	98.2	11.4
35-44	58.4	96.5	25.7	57.1	98.3	12.5
45-54	55.4	94.3	22.5	59.3	97.6	14.2
55-64	46.6	84.6	16.3	57.8	94.3	13.8
65+	24.8	48.7	8.4	39.4	69.0	8.4

Source:

DANE, Censo de Población de Colombia 1951, Resumen, and unpublished 1964 census data.

the result of an increase in the proportion of the group enrolled in secondary schools or universities.[1] The decline in female labor force participation in the 15-19 year old group does not seem to have been the result of earlier age of female marriage. Although it is possible that the labor force participation rates of 1951 were super-normally large there is no reason to expect this nor is there any apparent reason to expect a secular decline in the willingness of the younger age groups to enter the labor force. The suspicion remains that the decline in the labor force participation rates of the urban young and aged was largely a response to the increasing difficulty of obtaining employment. It is a classical finding that the very young and very old suffer the most difficulty in obtaining jobs during the periods of general excess supply of labor. If an individual feels that there is virtually no chance of employment he is much less likely to convey the impression to an interviewer that he is actively seeking work. As such it can be argued that much of the apparent decline in labor force participation is spurious and that the "actual" totals for the labor force are greater than the measured totals. Since this difference in the actual and the measured labor force is also a difference in actual and measured unemployment, the measured unemployment rate is less than the actual rate.

This difference may be substantial. If it assumed that the pr portion of each age-sex-location class actually desiring employment was the same in 1964 as in 1951 -- the measured and actual labor force participation rates in 1951 defined to be identical -- the actual unemployment rate according to the 1964 census was about 10.4 percent.[2]

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[1]There was, however, a substantial increase in the proportion of urban males aged 15-19 enrolled in primary schools. There are several factors to be considered in explaining this change. First, there was an increase in the capacity of the primary educational system. Second, as an excess of labor developed, the formal educational requirements for employment in the more modern sectors of industry and commerce tended to increase. Many disappointed job-seekers presumably returned to finish their primary schooling. What would have happened to the primary school enrollment of the 15-19 year old males under the assumption of a strong demand for labor is uncertain.

[2]The actual unemployment rate is thus equal to measured unemployment plus spuriously excluded labor force participation divided by the

This corresponds to a measured rate of 4.9 percent. For cabeceras (roughly the urban areas) the figures are 14.9 percent actual and 6.8 percent measured unemployment. These rates can be compared with the measured unemployment rate of 1.2 percent for the country as a whole given by the census of 1951.

The validity of the assumption that all of the change in age-sex-location-specific labor force participation rates in the inter-censal period was the result of an involuntary withdrawal from the labor market is, of course, somewhat questionable. If we were to assume that the decline in the measured labor force participation rate between 1951 and 1964 was independent of changes in the volume of unemployment, the difference between the hypothetical unemployment rate of 10.4 percent for 1964 and the measured rate of 4.9 percent takes on a different meaning. Rather than measuring the difference between actual and measured unemployment it measures the impact on the actual unemployment rate of those social changes, such as urbanization, that are responsible for changes in the rate of voluntary labor force participation.

Neither of the above extreme assumptions appears defensible. The experience of developing countries, such as Taiwan, that have not been plagued with problems of massive unemployment suggests that some decline in labor force participation rates is an inevitable concomitant of urbanization and industrialization. There seems to be no way of giving any meaningful quantitative estimate of the "natural" rate of change of labor force participation. The best that can be said is that the rate of decline of the labor force participation rate will be a function of the rate of rural-urban migration, the rate of increase of the capacity of the school system, the rate of change of formal educational prerequisites for employment, and the rate of growth of unemployment. Given the still high proportion of the population living in rural areas and the predictable increase over the next ten years in the relative size of the 15-19 and 20-24 age cohorts it is hard to conclude either that the measured rate of decline of the labor

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sum of the measured labor force and spuriously excluded labor force participation.

force participation rate will fall in the near future or that the decline in the rate of labor force participation will cease to disguise a reasonably large volume of actual unemployment.

CHANGES IN THE UNEMPLOYMENT RATE AS A FUNCTION OF THE RATE OF GROWTH OF THE POPULATION

In considering the likely severity of the unemployment problem in the near future one important and melancholy fact to be kept in mind is that the rate of growth of the labor force is almost certain to increase somewhat over the next decade even if there is no change in the rate of decline in the labor force participation rate. This will result from changes in the age distribution of the population. Between 1951 and 1964 the ratio of the population in the 10-14 age cohort to the population aged 15-64 increased from 22.0 to 25.8 percent. The increase in relative importance of the 5-9 age cohort was even greater -- from 25.9 percent of the population aged 15-64 to 31.4 percent.[1] The growth of the relative importance of these age cohorts implies that the ratio of new entrants to the total labor force will increase unless the rate of decrease in the labor force participation rates of the 15-19 year olds greatly accelerates.

The increase in the rate of growth of the labor force resulting from these changes in age distribution of the population is likely to be quite large. If the average crude death rate during the period 1964-1974 is assumed to be 13.5 per 1000 and the relative distribution of deaths by age group is the same as that embodied in the data on reported death rates for 1965, roughly 15,970,000 of the 17,570,000 persons estimated to be alive in 1964 will survive in 1974.[2] If the

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[1]This calculation includes an adjustment for the under reporting of the younger age cohorts in the 1951 census. For this adjustment see the publication by the Economic Commission for Latin America, Some Aspects of Population Growth in Colombia (UN, Economic and Social Council: E/CN. 12/618, 10 November 1962).

[2]For deaths by age group for 1965 see DANE, Boletín Mensual de Estadística, October 1966. For aggregate death rates see R. Albert Berry, "Breve Estudio de los Determinantes del Crecimiento de la Población en Colombia," Revista del Banco de la República, July

age-specific labor force participation rates of 1964 should still hold in 1974 the above estimate of the population age 15 and above implies a labor force of roughly 7,160,000. If the rate of decrease of labor force participation rates of the 10-14, 15-19, 20-24, and 60-64 age groups that was observed for the 1951-1964 period should continue unchanged the implied labor force estimate is 6,800,000. The average annual rates of increase implied by these labor force estimates are 3.4 percent and 2.9 percent respectively. These should be compared with the estimated rate of increase of the labor force of 2.0-2.3 percent for the inter-censal period.

Since it appears likely that some decline in labor force participation rates is characteristic of periods of rapid urbanization the higher of the above estimates is probably not relevant for planning purposes. Just as there is interdependence between rates of growth of labor productivity and rates of growth of output there is an interdependence between rates of change of labor force participation and rates of growth of unemployment. If the rate of increase of unemployment could be slowed it is quite likely that the rate of decrease of labor force participation rates would decline. The rate of decrease of labor force participation rates observed over the inter-censal period is thus probably higher than would be observed over a period of stable unemployment rates. Therefore, in estimating the future rate of growth of output required to maintain current employment rates, it appears likely that the average annual rate of increase of the supply of labor under such conditions will be in the neighborhood of 3.0-3.1 percent. This rate is of course independent of any change in the birth rate over the period 1964-1974.

If the annual future rate of increase in labor productivity for the economy as a whole is in the range 3.0-3.3 percent per year the rate of growth of output required to prevent any future increase in the unemployment rate will thus be about 6.2-6.6 percent. For the period 1951-1964 this "required" rate of growth was probably around

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1965. These calculations are further based on the assumption that the 1964 census underestimated the population aged 0-1 by about 80,000.

5.0 percent. Estimates of the future rate of increase of labor productivity are quite speculative of course, but it does not appear likely that this rate will decline substantially. Even if the future rate of increase of labor productivity should be no higher than that observed for the inter-censal period, the rate of growth of output needed to prevent any further increase in the unemployment rate would be no less than 6.0 percent. If output should grow at the rate of 5.0 percent per year -- a rate roughly characteristic of the Colombian growth experience since 1961 -- unemployment will continue to rise. If it is assumed that the unemployment rate for the total economy today is 10 percent and the "required" rate of growth of output is the minimal estimate of 6.0 percent -- defined by a 3.0 percent rate of increase of the labor supply and a 2.9 percent annual increase in labor productivity -- the unemployment rate will rise roughly 50 percent within the next six years. Because both the rate of change of labor force participation and the rate of increase of labor productivity are not independent of further increases in the unemployment rate, this figure is probably an overestimate of the changes in the unemployment rate that would actually be observed. Yet any short-fall in such a prediction will be the result of increases in the proportion of redundant (but employed) labor or withdrawals from the labor market that are basically involuntary. As such, the predicted rate of increase of unemployment is a better measure of the social cost of a failure to meet the target of the "required" rate of growth than the observed increase.

VII. POLICY CHANGES

There is no question but that the simplest way to reduce urban unemployment is to induce a quickening of the pace of growth of the non-agricultural sector. By increasing the pace of growth I mean, chiefly, increasing the rate of growth of aggregate demand and augmenting the supply of imports. Precisely how that is to be accomplished is beyond the scope of this Memorandum. I also want to avoid discussing the pros and cons of a labor-intensive public works program. We do not yet know how sensitive the rate of rural-urban migration is to the relative availability of jobs. A large urban public works program designed for the specific purpose of alleviating the potentially explosive urban unemployment problem could backfire if internal migration increased substantially. The discussion here will be limited to possible means of preventing further increases in the rate of substitution of capital for labor.

EMPLOYMENT DISINCENTIVES IN CURRENT PUBLIC POLICY

An inventive mind can quickly come up with a very long list of possible deterrents to the substitution of labor for capital that are the result of government policy and are thus relatively easy to eliminate. A short list follows: very fast rates of write-off for tax purposes of capital goods; investment tax credits; tariff or import license discrimination against or outright prohibition of the import of used capital goods; subsidized rates of interest; "earmarked" lines of credit for the importation of new capital goods, exchange rate differentials favoring capital goods or new good capital goods; payroll taxes; under-valued exchange rates; unusual second shift or "overtime" wage differentials required by law; legal restrictions on the firing of workers. The list could be extended but there would be little increase in insight into the problem. The suspicion here is that most of the government policies enumerated above either have little effect on the private sector's choice as to the labor intensity of production or that they represent political decisions that would be exceedingly difficult to reverse.

Several possible issues can be disposed of quite easily. The amortization procedures permitted in the computation of the income tax do not encourage capital intensive techniques of production in any important way. Amortization is usually limited to straight-line write-off on the basis of original cost. Given the rapid rate of inflation in Colombia the value in terms of reduced taxes of an increase in labor cost greatly exceeds that of an increase in capital cost. In comparison with the case of no taxation at all, Colombian tax policy thus probably encourages the substitution of labor for capital. Neither tariff nor import licensing policies appear to act as important disincentives to the choice of used as opposed to new capital equipment.

The importance of credit market policy to choice of technology cannot be so easily denied. The prime issue here is not so much that of a general government subsidy of the credit market as it is distortions in the structure of interest rates resulting from government policy. The attempts by the international lending agencies to introduce "investment banking" through the provision of subsidized credit to financieras and commercial banks by means of the Private Investment Fund may not have succeeded as well as hoped in "institution-building," but such programs have reduced the cost of funds secured by capital equipment relative to other types of loans. It is a curious phenomenon that such medium or long-term money as is available in Colombia is available on more favorable terms than short-term money. If the Instituto de Fomento Industrial is to initiate lending on a large scale this situation may be exacerbated.

The effect of price subsidies on loans for fixed capital acquisition is to encourage the use of capital intensive techniques. The rationale of subsidized loans for capital goods purchase is that such a policy increases the profitability of investments. With an extension of the margin of profitability the total volume of investment will increase, but if entrepreneurial choice between labor- and capital-intensive techniques were sufficiently interest-elastic, the total volume of employment generated by the larger investment would in fact fall.

It is also not clear that a subsidy of loans secured by fixed assets necessarily results in an increase in the profitability of investment. The profitability of investment depends upon many prices other than those of the fixed assets involved. If the fact of minimal guaranteed access to such loans is used as a rationale for exercising an increasingly restrictive control over the volume of total lending to the private sector, the price of working capital will increase sharply. The relative profitability of capital intensive investment programs will be enhanced but the aggregate volume of investment may in fact fall.

A more important source of bias toward choice of capital-intensive techniques of production is the current undervaluation of the foreign exchange rate. In the course of debate over exchange rate policy this fact is often overlooked, but it remains one of the chief consequences of exchange distortion. In the recent past the problem was even worse in that a multiple exchange rate system that discriminated in favor of capital goods import was maintained. Although the dominant determinant of the volume and allocation of imported capital goods is undoubtedly the import license system rather than the exchange rate, continued undervaluation of the price of imported capital goods does have an effect on choice of technology. The probability of receiving an import license is very likely to be virtually independent of whether or not the capital goods requested represent a labor- or capital-intensive production method. The entrepreneur will presumably respond to the price subsidy and be more likely to choose the capital-intensive alternative. It is conceivable but unlikely that this bias could be eliminated through administrative screening of new investment projects. The government planning office, Planeación, recently announced that it will examine all requests for capital goods licenses from the point of view of foreign exchange saving -- the rate of exchange to be used in the examination being a "shadow" price that would be a more adequate reflection of the relative scarcity of foreign exchange. The obvious question is the administrative capacity of Planeación to undertake such a task. Although an administrative remedy may be sufficient to compensate for a lack of coordination between tariff and domestic

excise policies it is doubtful that it can compensate for a generalized price distortion.

Of the policy instruments likely to provide an important disincentive to entrepreneurial choice of a relatively labor-intensive technology the most difficult to evaluate is the labor code. It is also probably the disincentive politically least amenable to change. The chief provisions of the labor code that militate against increases in employment are the terms under which employment can be terminated and those defining relative wage rates for multiple shift operation. Without question, the shift differential required by the labor code is a nuisance, but there is no evidence that it is a major deterrent to employment. It would be a more serious handicap if means could be found to design production technologies adapted to Colombian rather than American or European scales or production.

The provisions of the labor code that are designed to provide job security are a more serious matter. The high costs of terminating employment in terms of severance pay, service bonus, or outright proscription discourage the hiring of labor when there is uncertainty as to the long-run stability of demand. It is commonly felt that the severance cost of the typical "qualified" worker is something on the order of half a year's wage. Under such circumstances the act of hiring is not to be taken lightly.

More difficult to evaluate are the relationship between the labor code and the phenomenon of labor dualism, and the effect of labor dualism on the rate of growth of employment. There has been a strong tendency toward the development of a dual labor market in Colombia -- a high wage segment employed by the larger and technologically more advanced firms and a low wage segment employed by smaller enterprises. The growth of this wage differential between large and small firms is an important element in the explanation of the rate of survival of the small, inefficient producers in Colombia. Differences in the size distribution of firms within industries are as important in explaining inter-industry wage differentials as are differences in skill requirements. For example, the average wage in the (oligopolized) beverage

industry in Bogotá was over two and a half times as large as that of the (fragmented) local clothing industry in 1963 and almost twice as large as that in the (fragmented) electrical machinery industry.[1] There are many causes of this dualism. The activities of labor unions have been important, as has what appears to be a paternalistic tradition in Colombian labor relations. A limited supply of skilled labor and entrepreneurship are also important to the explanation. The relevance of the labor code to this tendency is twofold. First, the job security provided by the labor code facilitates union organization and also increases the need of management to insure high labor morale; second, the exemption of smaller firms from the costs of the social security system creates a cost differential that helps the small producer compete with the more modern sector.

In the long run the persistence of labor dualism will represent a severe resource cost to Colombia. One important consequence of such a state of affairs is the distribution of a large part of the increases in productivity in an industry to workers in the form of high wages that are, in fact, monopoly rents. Yet the ability of Colombia to increase its supply of manufacturing exports is dependent upon whether or not it can pass on productivity increases to the consumer in the form of lower prices. In the short run, however, there is something to be said in favor of a dual market -- at least from the point of view of minimization of unemployment. In many industries the confrontation between large and small producers is not simply a confrontation between the industrial and handicraft systems. If wages are not fully flexible the implications of such a confrontation for employment in the older section may be catastrophic. The existence of a labor cost differential between the (inefficient) labor- and (efficient) capital-intensive sectors will permit a somewhat more orderly shift of production from the former to the latter and a more orderly reduction in the total volume of employment in the industry. What is important is that the size of this differential not be

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[1] Departmento Administrativo de Planificación, Alcaldía Mayor de Bogotá, Desarrollo Económico de la Capital, Bogotá, 1966, p. 8.

encouraged to grow through time. Yet it is growing now in Colombia.

If it were certain that the labor code were an important element in the explanation of the change in wage differentials a strong effort should be made to achieve suitable amendments to the job security provisions of the code. In fact, there is no such assurance that the labor code per se is the chief culprit. It is commonly held that the recent changes in the labor code were adopted in order to establish legal minimums for job security provisions that would be more in line with those previously negotiated by the stronger labor unions. If true, the problem of restraining the growth of non-wage labor costs would appear to reduce to the problem of influencing the results of collective bargaining in the modern sector of manufacturing. There is no obvious way of doing this.

AUGMENTING THE SUPPLY OF TECHNOLOGICAL ALTERNATIVES

The problem of encouraging the substitution of labor for capital in Colombia is basically the problem of transforming an imported technology. The previous section discussed certain possibilities of augmenting the incentive to transform this most important of Colombian imports. This section will discuss the possibilities of increasing local capability to do so.

It is important to emphasize that industrial technology in Colombia is an import. As an import from the developed economies it has been adapted to the resource endowment of the capital rich. If the transformation of an existing technology were costless the problem of suitability would disappear. A relatively labor-intensive productive technique would be implemented and the problem of secular decrease in the rate of increase of employment generated from a given pace of growth would cease to be a problem. Unfortunately, the transformation of an existing technology is not costless. Production on license or the hiring of foreign technical personnel to recreate locally a technology with which they are familiar is likely to appear cheaper than the development of an alternative system of production. In general

the attitude of the industrial decisionmaker in Colombia has been that the costs of technological adaptation exceed the potential savings in production costs. Yet technological adaptation need not mean major re-design. The industrialization experience in Japan gives ample evidence of the feasibility of achieving important reductions in operating costs through minor changes in machine design or production layout. It is this tradition that appears lacking in Colombia.

This lack would appear to be the result of the very small supply of highly trained managerial and technical personnel. The remedy would appear to be the usual palliative of the development advisor -- technical assistance and investment in education. The argument that the rate of return to investment in education is in excess of the rate of return on alternative investments is an old one and can be abused. There is, in truth, little empirical justification for it in Colombia. On the aggregate basis the evidence today is that the supply of technically trained personnel in Colombia is in excess of the demand. Wages for such persons are relatively low and have probably been falling in real terms over the last few years. Emigration of the technically trained has been proceeding at a rate that is alarming to Colombian educational authorities. Why then presume a need to invest further in education?

There are two main arguments for increasing local technological capabilities through increased investments in "human capital." The first, and more readily defensible, is that although there may be an excess supply of technically trained personnel in the aggregate, there is a supply deficiency in certain important sub-markets. In particular, there is a deficiency in the supply of the <u>very</u> well trained. The relatively low evaluation given by the labor market to the marginal productivity of the sort of technically trained person generally produced by the Colombian educational system may simply reflect the quality of the product.

Like the first, the second argument is more properly a hypothesis. The low evaluation given by the labor market to the marginal productivity of the technically trained may not be a correct evaluation. It may

instead by a phenomenon of bad management -- a failure of management to allocate labor resources efficiently.

If the first hypothesis is correct, the appropriate remedy is a combination of selective investment in education of high quality in the long run and an increase in the publicly subsidized import of highly skilled personnel in the short run. If the second hypothesis is correct, the appropriate remedy is less obvious. The public provision of technical consultant services at a subsidized rate on a much vaster scale than at present is one possible avenue of approach. Another is the introduction of a system whereby the government might share directly in the labor costs of certain types of highly trained personnel.

The hypotheses are by no means mutually exclusive. The suspicion here is that both arguments are operative and that the appropriate solution is joint policy of increased public support of foreign graduate training in a restricted set of fields connected with an increase in the magnitude of the publicly supported technical consultant services -- the increase in the public support of the latter phased with the increased flow of the foreign trained -- and the fields of support for foreign training determined by the pattern of private demands for technical assistance.

The above discussion is obviously more of a research agenda than a recommendation. Too little is known at present about Colombian technological capabilities for even a conclusion as to whether the lack of a tradition of modifying imported technology is the result of an inadequate set of incentives to economize on capital or the lack of a capability of doing so. In the absence of further information we must assume that both inadequacies are important.

Most of the inferences and conclusions offered in this Memorandum are tentative. One conclusion that is certain is that the urban unemployment problem is of sufficient importance to warrant increased effort in the collection of information concerning its magnitude. Another conclusion that can be offered with a high degree of certainty is that urban unemployment in Colombia is almost certainly a more

serious problem today than it was three years ago. Unless there is a sharp quickening in the rate of economic growth it will be an even more pressing economic problem five years from now. The further step to the judgment of whether the urban unemployment problem is politically urgent today -- or will become urgent five years from now -- cannot be made with the kind of evidence offered here. Urgency is a matter of the political consequences of a failure to act, and the political costs of unemployment have been outside the purview of this Memorandum.

Appendix

A NOTE ON CEDE'S SAMPLING PROCEDURE

The selection of the sample by households to be interviewed by CEDE is a two-stage process. The first stage is the selection of a group of n blocks or manzanas. This is a quite straightforward fixed-interval sample with a random start. First, the estimated total population is divided by the number of blocks to be visited -- in recent samples, 125 -- the resulting number being designated I_1, or the fixed sampling interval. Second, the list of barrios and manzanas together with their estimated populations is arrayed in the following fashion:

Barrio	Manzana	Cumulative Population
A	1	1,000
A	2	2,200
...	...	...
A	40	49,000
B	1	49,200
...	...	...
M	37	1,650,000

The array above signifies the total population of 1,650,000 to be divided into M barrios, the first barrio containing 40 blocks, the last containing 37 blocks, etc. A random number W_1 between 0 and I_1 is then chosen. If it is less than the population of the first barrio the first block chosen for sampling will come from that barrio, the precise block chosen being the first block to have a cumulative population figure in excess of W_1. Then the (n-1) numbers $W_1 + I_1$, $W_1 + 2I_1$, ... , $W_1 + (n-1)I_1$ are obtained and the (n-1) blocks whose cumulative population numbers least exceed them are selected. Thus any barrio with a population of more than kI_1 and less than $(k+1)I_1$ will provide k blocks to the sample of n.

When the above sample of n blocks has been obtained, the second stage of selecting a sample of households is begun, and a procedure

analogous to stage 1 is carried out. First, a complete listing of all N households in the chosen sample of n blocks is obtained. Second, a sampling interval $I_2 = N/n$ is calculated. A random number W_2 is chosen between 0 and I_2, and the set of n numbers W_2, $W_2 + I_2$, $W_2 + 2I_2$, ... , $W_2 + (n-1)I_2$ is defined. A key group of n households whose ranks or numbers in the array of N households are the same as the above set W_2, $W_2 + 2I_2$, $W_2 + (n-1)I_2$ is then chosen. The complete sample of 4n households consists of the n households of the key group plus the three households that follow each member of the key group in the array of N. The second stage procedure is thus a fixed interval cluster sample with a random start.

The most curious feature of the above sampling procedure is the second stage. The simplest thing would be to choose four households at random from each of the n blocks chosen in the first stage -- a procedure guaranteeing that the probability of any household being chosen is the number of households to be chosen divided by the total number of households. Instead a complicated additional step is taken guaranteeing that the probability of a particular household being chosen in the sample is an increasing function of the number of households in the block containing that particular household.

This can perhaps best be expressed in the following terms. The probability of a household being chosen for the sample is the product of the probability that the <u>manzana</u> containing the household will be chosen in the first stage times the probability that the household will be chosen in the second stage from the array of households given by the first stage.

Where it is assumed that the average household size is the same for all blocks the first-stage probability is $\frac{nH_i}{H}$, where n is the number of blocks to be chosen, H_i is the number of households in the block i containing the household in question, and H is the total number of households in the population.[1] If the second stage probability were

[1]The assumption that the average household size is the same for all blocks does not strictly hold. As far as is known, however, the variation in average family size between blocks is not particularly large.

$\frac{4}{H_i}$ the compound two-stage probability would be 4n/H, since the probability of any particular household being chosen being the same for all households. In fact, the second-stage probability is $4n/[H_i + (H-H_i)(n-1)/(j-1)]$, where $(H-H_i)(n-1)/(j-1)$ is the expected number of households in the (n-1) blocks other than block i in the sample of n, j being the total number of blocks in the population.

The compound two-stage probability is thus

$$\frac{4n}{H} \div \frac{nH_i}{\left[H_i + \frac{(H-H_i)(n-1)}{(j-1)}\right]} \gtreqless \frac{4n}{H} \text{ as } H_i \gtreqless \frac{H}{j} = \bar{H}.$$

The probability of any two households being chosen is not the same unless they both come from blocks that have the same number of households.

The explanation of this phenomenon is straightforward enough. If H_i is greater than $\bar{H}$ the expected proportion of households from block i in the array of households from the n blocks given in stage one will be greater than $\frac{1}{n}$. Thus if 4n households are to be chosen from the array it can be expected that more than 4 will be chosen from H_i. The converse is true if H_i is less than $\bar{H}$.

The effect of this peculiarity in sampling procedure on the unemployment estimates is not certain. The variation in number of households per block is quite large, but I don't know whether large blocks are typically to be found in poor, high-unemployment areas or not. My guess is that block size is negatively related to income level and hence positively related to the incidence of unemployment. As such the CEDE sampling procedure would give unemployment estimates that were subject to an upward bias.