

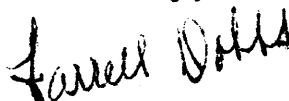
TO NATIONAL COMMITTEE MEMBERS

Dear Comrades:

Attached is a memorandum on "Productivity, Employment and Unemployment" prepared by Comrades David Herman and John Pederson. It is submitted as part of the research on economic developments which the Secretariat is organizing in accordance with the Political Committee directive of November 20, 1964, on the subject.

As provided in the PC directive the memorandum is submitted as factual information to facilitate discussion of the economic situation within the National Committee. Additional economic data will be supplied to NC members as the research project goes forward.

Comradely,



Farrell Dobbs

PRODUCTIVITY, EMPLOYMENT AND UNEMPLOYMENT*

(Memorandum submitted by David Herman and John Pederson)

Recently there has been an outpouring of literature on the subject of automation and its implications (The Triple Revolution; Conference on the Cybercultural Revolution, U.S. Government Reports, etc.).

The purpose of this is to gather the facts about technological change, employment and unemployment necessary to develop a general picture of the economic situation, from which political conclusions can be drawn.

Definition of automation and cybernation

The term "automation" has been used in at least two senses: 1) As a new method of production which involves automatic control of production processes; 2) As a new term for any change which raises labor productivity. The term "Cybernation" has been used for an automated plant controlled by computers. In this study we will use the term automation to mean any form of automatic control of production, either feedback mechanisms or computers. That is, it will include so-called cybernation.

The meanings of these terms are often confused. This contributes to the idea that recent increases in labor productivity are necessarily the result of some qualitative change in the mechanism of production. As a matter of fact most of the increase of labor productivity since World War II has had little to do with the introduction of computers or systems of automatic control.

Causes of increases in labor productivity

A prominent feature of capitalism has been the increase of labor productivity through a variety of methods. In the period 1919 to 1947 labor productivity grew at an average rate of 2% annually (this and the succeeding figures cover the private or non-governmental sector of the economy). From 1947 to 1963 the rate of change averaged 3%. One might be tempted to attribute the acceleration in the rate of productivity increase to automation, but this is only one of a

* The term productivity is used in this memorandum to mean simply output per man hour as used in the Government economic reports. It is not used in the strictly Marxist sense as a value term holding intensity of labor constant.

number of factors.

Productivity can be increased through the introduction of more and faster machinery, speed-up, the concentration of production in larger units, the use of new methods and materials, as well as through automation.

Changes in labor productivity

The following table gives a breakdown of changes in labor productivity for several sectors of the economy.*

<u>Sector</u>	<u>Period</u>	
	1947-1962	1957-1962
Total private:	3.0	3.0
Agriculture	5.8	4.7
Non-agriculture	2.4	2.7
Manufacturing (all persons)	2.7	3.4
Manufacturing (prod. workers)	3.6	4.1
Non-manufacturing	2.3	2.4

*Average % changes in output per man hour

In the decade 1919 to 1929 when labor productivity increased relatively rapidly the average rate of productivity increase was about 2.9% for the total private economy. Agricultural productivity increased much more slowly during that period. In the years between 1909 and the mid-1930's the rate of labor productivity increase in agriculture was less than 1% per year. It should be pointed out that in the 1919-1929 decade output per man hour of production workers in manufacturing increased at the rate of 5.3% per year.

The comparison between the post WW I decade with the post WW II period is useful in getting some perspective on the recent rates of productivity change. The post WW I period is most comparable to the present. Both were periods of general expansion.

The most marked change between the two periods is in agriculture. The post WW I period was one of stagnation of labor productivity in agriculture while the post WW II period produced a rapid increase in agricultural labor productivity.

What accounts for this change? After WW I there was a world-wide, chronic crisis in agriculture with overproduction, low prices, low profit rates and therefore little investment in agriculture. World War II brought about a world-wide food shortage. The government instituted a policy of stimulating agricultural production

through guaranteed high prices and this policy was continued after the war.

These policies produced a marked increase in investment in agriculture. This investment went into larger and better farm machinery, application of insect control, more and better fertilizers, improved seeds, etc. Much of this investment could only be profitably utilized on larger farms requiring large capital outlays. This resulted in a consolidation of larger farms which drove out smaller and more inefficient farmers. Thus, the average size of American farms and amount of capital per farm has increased dramatically in the post WW II period. Automation has played little direct role in this dramatic increase in agricultural productivity.

The results of the increase in labor productivity can be seen in the following figures. The index of farm output rose from 81 in 1947 to 108 in 1962 while the index of farm labor declined from 157 to 86 in the same period. Farm population was 25.8 million in 1947 or 18.0% of the total population and in 1963 farm population had declined to 13.4 million or 7.1% of the total population.

The decline among Negroes in the farm population has been even more striking. In 1950 the number of farms rented, owned or managed by nonwhites in the South was 559 thousand; in 1959 it had declined to 266 thousand.

In 1950 64.3% of whites were urban and only 61.7% of nonwhites were urban while in 1960 69.6% of whites were urban and 72.4% of nonwhites were urban. Well over 90% of nonwhite are Negro. Most of the nonwhites classified as rural were not farm workers but lived in towns smaller than the lower limit for urban places (1000 persons). 1.6 million were classified as rural farm population and 4.1 million were classified as rural nonfarm population in 1960. (Source: Statistical Abstract of U.S. 1964)

Surprisingly enough the early period (1919-1929) saw a higher rise in productivity for production workers in manufacturing (5.3%) than the post WW II period (3.6%). In the period after WW I mass production was introduced on a large scale, especially in the auto industry. This was the primary factor, along with a high rate of investment, accounting for the rapid productivity increase.

Despite the high rate of productivity increase in the 1920's employment of production workers remained approximately constant due to a compensating growth in manufacturing output.

Technological change has been much greater in the post WW II period than in the earlier period. However, the rate of productivity increase is not determined by technology alone. Rather the rate of introduction of better techniques is what determines the rate of productivity increase.

In the post WW II period, as compared to the earlier period, a large amount of capital which might have gone into new plant and equipment went instead into huge armaments expenditures. In addition a high proportion of profits has been absorbed in the dramatic expansion of consumer credit, especially mortgage credit. In 1929 the short and intermediate term consumer credit outstanding was \$7.1 billion; in 1947, \$11.6 billion; and in 1962 \$63.3 billion. Mortgage debt on one to 4 family houses has expanded from \$28.2 billion in 1947 to \$168.7 billion in 1962.

CHANGES IN LABOR PRODUCTIVITY

Year-to-year percent change in output per man hour, total private economy and major sectors, 1947-1962.

<u>Period</u>	<u>total private</u>	<u>agri- culture</u>	<u>manu- facturing</u>	<u>nonmanu- facturing</u>
1947-48	3.5	18.7	2.7	1.8
48-49	2.9	- 4.7	2.2	5.0
49-50	7.2	13.9	6.6	4.3
50-51	2.5	- 1.1	1.8	1.4
51-52	2.2	9.2	1.4	1.3
52-53	4.1	11.3	4.9	1.3
53-54	1.8	7.2	- .9	3.4
54-55	4.5	3.6	6.9	2.8
55-56	.1	2.2	1.1	-1.3
56-57	3.5	6.7	.2	4.5
57-58	2.5	9.3	1.8	2.3
58-59	3.6	- .2	4.6	2.3
59-60	1.9	6.3	2.1	1.4
60-61	3.3	5.9	4.2	2.6
61-62	3.9	3.4	4.3	3.2
62-63	3.5	n.a.	n.a.	n.a

Some economists point to the three successive years (60-61, 61-62 and 61-63) in which labor productivity in the total economy rose by more than 3% annually as an indication of a new trend. A glance at the table shows that this had not occurred previously in the post-war period.

However, several things shown by the table cast serious doubt about a new trend. First, annual changes in productivity have varied greatly. A number of years experienced much larger increases than those since 1960. Moreover the three year periods 1947-50 and 1948-51 experienced greater average increases in productivity than in the 1960-63 period. And the period 1952-55 saw an average annual rise only 0.1% less than in the period 1960-63. So the last three year period can hardly be considered unique or even exceptional.

Second, it is important to note that changes in labor productivity are closely related to the business cycle. The periods of greatest increase in productivity coincide with changes from times of recession or stagnation to expansion. This can be seen most clearly by examining the graph of civilian employment below. The periods in which productivity in both the total private economy and manufacturing rose more than 4% (1949-50, 1952-53, 1954-55) were periods of expanding employment and production, as were the years 1960-63.

The 1960-63 period of high labor productivity increase spanned the longest continuous economic expansion in the whole post-war period. It started in 1961 and is still on the rise (Jan. 1965). The prolongation of this expansion is primarily a result of the government's policy of stimulating economic growth through tax cuts for business and other incentives to invest. The increased investment has raised labor productivity, utilization of capacity, output, and employment.

Employment*

A glance at the chart on employment shows a general increase in employment over the entire period from 1949 to 1964. The recessions in 1953-54 and 1957-58 produced a downturn in employment. Others like the one in 1960 produced stagnation in employment. Each of the recessions is marked by a sharp upturn in unemployment. It must be kept in mind that the labor force has been constantly growing and so a constant level in employment results in growing unemployment. This is what happened in 1960. (In comparing the two charts it must be kept in mind that the vertical scales are different. An increase of 1 million in unemployment looks twice as great as

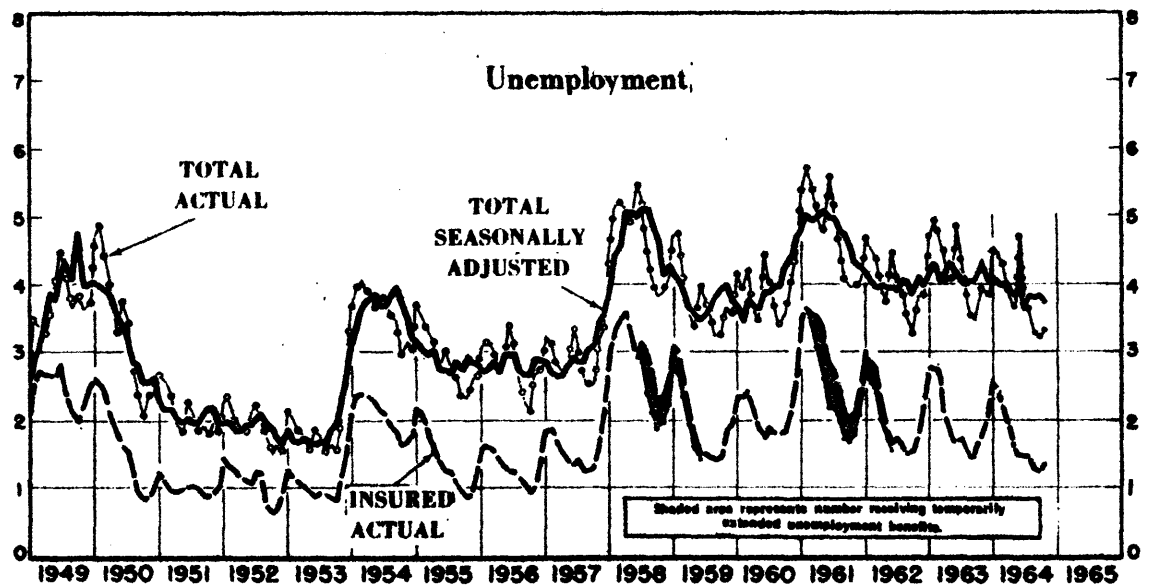
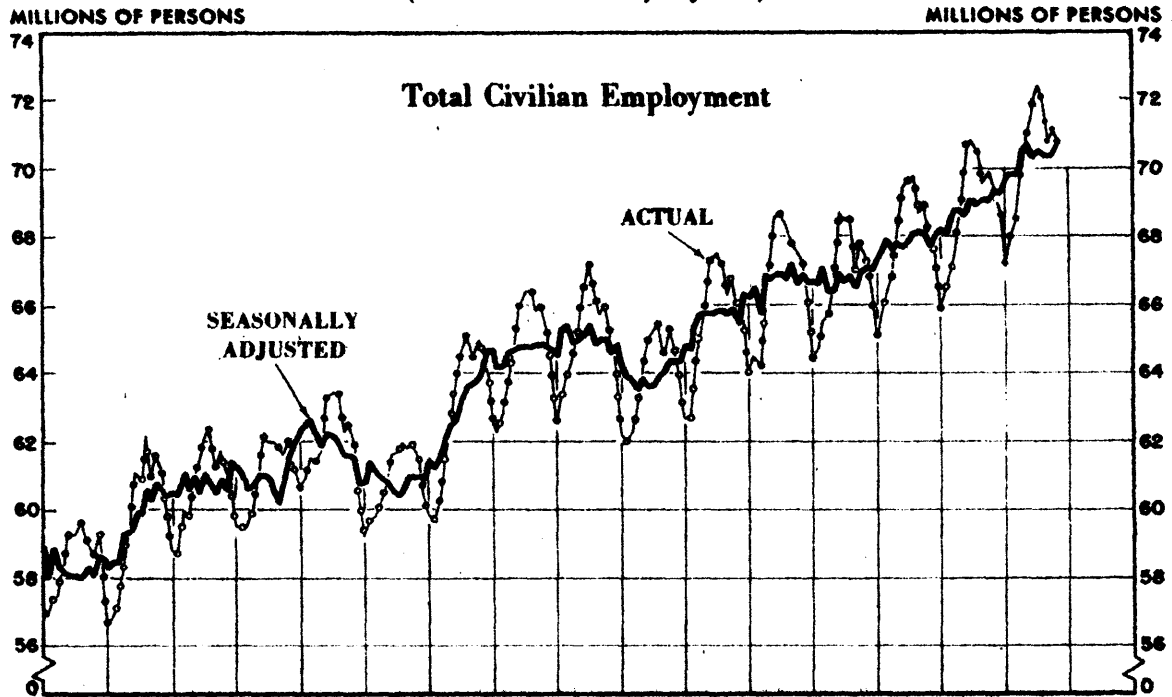
* Employment varies seasonally with the low point in January and the high usually in July. The difference in recent years between the highest and lowest months has been over 4 million. Therefore the figures used are usually annual averages. Figures for employment and unemployment in individual months are usually seasonally adjusted.

Chart 1.

TRENDS IN EMPLOYMENT AND UNEMPLOYMENT

January 1949 to date

(Actual and seasonally adjusted)



Inured under following programs. State unemployment insurance, unemployment compensation for Federal employees, veterans, ex-servicemen, railroad workers (RUB) and temporary programs.

Beginning in January 1955, data include Alaska and Hawaii.

an equal change in employment.)

The second striking feature of the graphs is the increase in residual unemployment in each successive expansion. From 1951-53 unemployment averaged about 2 million; from 1955-57 about 3 million; from 1959-60 about 3.7 million; and from 1962-64 about 4 million were unemployed. It is this pattern that has stimulated great concern about the unemployment rate.

Composition of the employed and unemployed labor force

In order to get a clearer picture of what is happening to the working class as a result of technical change it is necessary to examine the changing composition of the work force. The series of tables below give some of the basic statistics available.

CIVILIANS EMPLOYED IN AGRICULTURE AND NONAGRICULTURE BY YEAR

(Survey taken in week in May calculated in millions of persons 14 years of age and over. Includes self-employed, proprietors, domestic servants. Adds up to the Civilian Labor Force.) Alaska and Hawaii added after 1959.

<u>Year</u>	<u>Agriculture</u>	<u>Nonagriculture</u>
1950	8.0	51.4
1955	6.9	55.5
1960	5.8	61.4
1964	5.0	66.1

Source: Statistical Abstract of the United States, 1964, p.220.

EMPLOYEES IN NONAGRICULTURE ESTABLISHMENTS -- ANNUAL AVERAGES BY INDUSTRY

(Excludes: proprietors, self-employed, farm workers, domestic servants, unpaid family workers, personnel of Armed Forces.) Alaska and Hawaii added after 1959. In millions.

Year	total	1	2	3	4	5	6	7	8*
1940	32.4	.925	1.29	11.0	3.04	6.75	1.50	3.68	4.20
1945	40.4	.836	1.13	15.5	3.91	7.31	1.50	4.24	5.94
1950	45.2	.901	2.33	15.2	4.03	9.39	1.92	5.38	6.03
1955	50.7	.792	2.60	16.9	4.14	10.5	2.34	6.27	6.91
1960	54.4	.712	2.89	16.8	4.00	11.4	2.67	7.39	8.52
1963	57.2	.634	3.03	17.0	3.91	11.9	2.87	8.30	9.54
Aug. 1964	59.0	.634	3.19	17.4	4.00	12.3	2.94	8.68	9.81

- * 1 -- mining
- 2 -- contract construction
- 3 -- manufacturing
- 4 -- transportation and public utilities
- 5 -- wholesale and retail trade
- 6 -- finance, insurance and real estate
- 7 -- service and miscellaneous
- 8 -- government

Source: Statistical Abstract of the United States, 1964, p.220.

PRODUCTION WORKERS BY YEAR AND INDUSTRY -- ANNUAL AVERAGES

Industry	1950	1955	1960	1963	1964
Manufacture	12.5	13.1	12.6	12.6	12.8*
Wholesale and retail trade	7.49		8.77	8.99	not available

*(approx. for first 9 mos.)

(In millions)

Alaska and Hawaii added from 1960 on.

Source: Statistical Abstract of the United States, 1964, pp.221,222.

CIVILIAN LABOR FORCE EMPLOYMENT AND UNEMPLOYMENT (in millions and percent)

Year	Agriculture	Nonagriculture	Unemployed	
			number	percent
1940	9.5	38.0	8.1	14.6
1945	8.6	44.2	1.0	1.9
1950	7.5	52.3	3.4	5.3
1955	6.7	56.2	2.9	4.4
1960	5.7	61.0	3.9	5.6
1963	4.9	63.9	4.2	5.7
1964			3.9	5.2

Annual figures are average of monthly figures.

Source: Statistical Abstract of the United States, 1964, p.216.

The tables show that the only sectors of the economy that have experienced a pronounced decrease in employment, despite the growing number of jobs, are agriculture and mining.

Employment in transportation and public utilities grew fairly rapidly from 1940 to 1945, then more slowly, and has declined slightly in recent years.

Employment in construction grew very rapidly from 1945 to 1951 and much more slowly since then. Employment in manufacturing grew rapidly during the war, from 1940 to 1945, and has grown slowly since then.

The number of production workers in manufacturing has varied insignificantly from 1950 to the present. There was a slight increase from 1960 to the present.

Since 1960 employment has grown most rapidly in government and the service and miscellaneous category. Most of the expansion in government employment has been at the local and state level, and much of this growth is due to an increase in the number of teachers and other school employees that has been the result of the baby boom generation going through the schools.

The service and miscellaneous group includes a large number of small industries, none of which accounts for a big part of the total. This category includes many of the lowest paid manual workers, like laundry workers, hospital workers, hotel workers. For example, average hourly earnings of production workers in laundries, cleaning and drying plants was \$1.33 in 1963.

The finance, insurance and real estate category has grown next most rapidly in recent years. Wage scales in the "production workers" category in these industries are also low -- averaging \$2.01 in banking.

PERCENTAGE DISTRIBUTION OF EMPLOYEES IN NONAGRICULTURAL ESTABLISHMENTS

<u>Industries</u>	<u>1950</u>	<u>1960</u>	<u>1963</u>	approx. % change	average hourly
				<u>1950-1963</u>	earn. of prod. wkrs <u>1963</u>
Mining	2.0	1.3	1.1	-45	\$2.75
Construction	5.2	5.3	5.3	+2	3.42
Manufacturing	33.4	30.9	29.8	-11	2.46
Transportation	8.9	7.4	6.8	-25	2.41 - 3.40*
Trade	21.6	20.9	20.8	-4	2.01
Finance, Insurance	4.1	4.9	5.0	+22	2.01(banking)
Service & Misc.	11.3	13.6	14.5	+29	1.22 - 1.33**
Government	<u>13.5</u>	<u>15.7</u>	<u>16.7</u>	+24	n.a.
TOTAL	100.0	100.0	100.0		

* Overall average not given. Averages for sectors of the industry range from \$2.41 in local and suburban transportation to \$3.40 in radio and TV broadcasting. Most sectors average about \$2.80 or less.

** Overall average not given. Hotels, tourist courts, and motels average \$1.22; laundries, cleaning and dyeing plants average \$1.33.

As the above table shows those industries which experienced a decrease in per cent of total employment of at least 10% from 1950-1963 had average hourly earnings for production workers ranging from \$2.41 to \$3.46. Those industries that increased significantly in employment had average hourly earnings of \$2.01 or less.

The "% change" column in the above table gives a measure of the change in relative size of employment in the nonagricultural economy from 1950-1963. Trade for example shows a decline of 4%, although the number of people employed in trade increased by about 27%. But it has increased less than total nonagricultural employment (33%) and thus has suffered a relative decline. In other words, the % change figures abstract from the growth in total employment.

Below, a similar table is given for employment in 1919 to 1929. The figures are only approximate.

% DISTRIBUTION OF EMPLOYEES IN NONAGRICULTURAL ESTABLISHMENTS

<u>Industry</u>	<u>1919</u>	<u>1929</u>	<u>% change</u>
Mining	4.2	3.4	-19
Construction	3.8	4.7	+24
Manufacture	39	34	-13
Transportation	14	12	-14
Trade	17	19	+12
Finance	4.1	4.8	+17
Service & Misc.	8.4	11	+31
Government	9.9	9.6	- 3.0

Source: Calculated from figures given in Employment and Earnings, October, 1964.

The pattern of changing relative employment for the two periods is similar. The main differences are in government, which grew very rapidly in the 1947-63 period; mining, which accelerated its already rapid decline to -45% in the 1947-63 period; construction, which grew rapidly in 1919-29 but stagnated in 1947-63.

The decline in manufacturing and the growth in services and finance was about equal in the two periods.

Part-time employment and unemployment

The graphs of employment and unemployment include the total figures for both full-time and part-time workers. One of the significant labor developments of the postwar period has been the growth of the part-time labor force. A description of the part-time work force is necessary for an accurate picture of what has happened in the postwar growth of the work force.

Part-time workers are classified by the Bureau of Labor Statistics as voluntary part-time workers, such as housewives and those in school who would not work full time if they could and involuntary part-time workers, those who work part time for economic reasons, that is, those who would work full time if they could find a full time job.

The number of voluntary part-time workers rose from 3.8 million in May of 1950 (an annual survey of hours of work is conducted in May, and those figures cited here are not seasonally

adjusted) to 8.4 million in May, 1964. Voluntary part-time workers held about 7½% of nonfarm jobs in May, 1950 and about 13% in May, 1964.

While part-time jobs more than doubled, full-time nonfarm jobs increased by about 20% in the same period from 1950 to 1964. This is often brought up to show how little the number of full-time jobs have expanded.

However, unemployment among those seeking part-time work has risen just as spectacularly. In 1950 179,000 unemployed workers seeking part-time work constituted 5.4% of total unemployment. In 1964 596,000 unemployed workers or 16.4% of total unemployment were seeking part-time work.

The following table gives a breakdown of employment by percentage working full-time and part-time in October, 1964.

Full-time 85.2%

Part-time

for non-economic reasons (voluntary) -- 11.7%

for economic reasons (involuntary)

usually work full-time -- 1.5%

usually work part-time -- 1.5%

(Part-time employment for economic reasons - those who would like to work full-time but are working part-time - is small compared to voluntary part-time work.)

CORRECTIONS for pages 14 and 21 in memorandum on "Productivity,
Employment and Unemployment."

Page 14: Second paragraph after table should read: "The average hours worked in nonagricultural industries in October, 1964 was 39.8. In agriculture it was 45.5."

Page 21: Last paragraph, last sentence should read: "About 5,000 computers were installed in 1964 bringing the total to over 22,000 computers, according to a survey in a computer industry journal."

STATUS OF THE PART-TIME LABOR FORCE - Averages of first nine months
1964 (in millions)

Total part-time labor force.....	<u>All workers</u>	<u>Men-20 yrs. and over</u>	<u>Women, 20 yrs. and over</u>	<u>Both sexes 14-19 yrs.</u>
.....	9.2	1.7	4.5	3.0
Employed	8.5	1.6	4.3	2.7
Unemployed	.66	.11	.20	.36
Unemployment rate (in %).	7.2	6.4	4.4	11.8

Source: Monthly Report on the Labor Force, October, 1964

PERCENTAGE OF EMPLOYED WHO WORK FULL-TIME October, 1964

<u>Industry</u>	<u>Percent</u>
Total	85.2
Const.	91.3
Mfg.	94.4
Trans.	93.8
Trade	77.2
Finance	90.6
Service	72.6

Source: Employment and Earnings, October, 1964

The part-time unemployment rates hardly changed from 1963 to 1964 despite a rapid growth in the part-time labor force. Approximately one-fourth of the jobs created between 1963 and 1964 were part-time jobs.

Hours of work

Average hours of work for the employed labor force has remained close to 40 per week for many years. A closer examination of hours worked is necessary for an understanding of the effect of overtime on employment.

PERCENTAGE OF EMPLOYMENT IN NONAGRICULTURAL ESTABLISHMENTS BY HOURS,
for October, 1964.

<u>Hours</u>	<u>Percentage</u>
1-34	21.8
35-40	48.7
41-48	14.7
49-	14.8

Source: Employment and Earnings, October, 1964.

The above table shows that almost 30% of workers outside of agriculture worked over 40 hours in October 1964 -- 14.8% more than 48 hours a week.

The average hours worked in nonagricultural industries in October, 1964 was 39.3. In agriculture it was 45.5.

If all work over 40 a week were eliminated in nonagricultural industries, it would require an increase in the number of jobs of at least 6% to compensate for the eliminated overtime work in October. That would create almost 4 million jobs, slightly more than the total number officially counted as unemployed.

Number of persons with two or more jobs

The total number of persons holding two or more jobs in 1963 was 3.9 million, in 1962 3.3 million, This constituted 5.7% of the total number of employed in 1963 and 4.9% in 1962. The rate was considerably higher in agriculture than in nonagricultural industries: 7.5% in agriculture and 5.5% in nonagriculture in 1963.

Projected growth of the labor force

Due to the baby boom the labor force will expand at an unusually high rate during the next six years. The total labor force including the armed forces is projected to average 85.7 million in 1970 (this includes both part-time and full-time workers). Assuming that the number of people in the armed forces remains the same, about 9 million new jobs must be added if the number of unemployed is not to increase. That is an average of 1.5 million more jobs must be created each year.

In the last five years (1959-64) an average of one million jobs have been created each year. This is a reasonable figure to use in projecting future increases in employment. 1959 was the last full year of the 1958-60 expansion. 1964 was the last full year of the current expansion. The mild recession of 1960 is included in this five year period. The average annual expansion of employment over two or more business cycles is less than one million, 830,000 per year in the period since 1952.

In the last year (1964) employment rose 1.5 million -- which was somewhat greater than the expansion of the labor force.

A projection of the one million per year expansion in jobs indicates that the average number of unemployed will grow 3 million to reach nearly 7 million in 1970, barring a serious recession. This would correspond to an 8% unemployment rate for the civilian labor force.

The projected 7 million unemployed for 1970 would correspond to the nearly 4 million unemployed in 1964 -- that is, the hard core unemployment remaining after a period of expansion. During a recession a higher level of unemployment could be expected.

The official labor force projections are based on trends in average annual labor force participation rates between 1947 and 1961. Some of these trends are very likely to change as unemployment grows. The trend for increased participation in the labor force of married women, for example, might very well decline. (From 1950 to 1963 the participation of women in the civilian labor force rose from about 33% to 37.5%.)

Participation rates

The official labor force figures depend on the number of people actively seeking work. This depends on how hard it is to find a job and on wages as well as other factors. As unemployment increases, some people drop out of the official labor force.

An examination of the participation rates, that is, the percentage of the total number of people who theoretically could work, who are actually counted in the official labor force figures, is useful in evaluating the unemployment picture.

Participation rates using the total labor force, including those in the armed forces, and the total "noninstitutional population" all people over 14 years of age not in mental institutions, prisons,

etc., are available since 1940. In 1940 the rate was 56.0%. It rose to a peak of 63.1% in 1944; dropped to a low of 57.2% in 1946; then rose slowly to a peak of 59.3% in 1956. Since then it has declined steadily. The 1960 rate was estimated as 58.3%; the 1962 rate as 57.5%. (Source: Economic Report of the President, 1963, p. 194.)

A revised estimate (not comparable with the above figures) put the 1960 rate as 57.4%. The same study projected the 1965 rate as 57.1%, the 1970 rate as 57.0%. (Source: Statistical Abstract of the United States, 1964, p. 217.)

Current composition of unemployment

The following graphs and tables give a picture of the composition of unemployment as of October, 1964. The figures are not seasonally adjusted. The total unemployment rate given for October is 4.4%. This would correspond to a seasonally adjusted rate of 5.2%.

UNEMPLOYMENT BY OCCUPATION October, 1964

<u>Occupation</u>	<u>Unemployment rate</u>	<u>% Distribution</u>
White collar	2.4	23.3
Blue collar	5.2	43.2
Service	4.8	14.4
Farm	2.1	3.2
No previous work	---	15.8

Source: Employment and Earnings, November, 1964.

ANNUAL AVERAGE UNEMPLOYMENT RATES FOR EXPERIENCED WAGE AND SALARY
WORKERS IN MANUFACTURING

1958 -- 9.2
1959 -- 6.0
1960 -- 6.2
1961 -- 7.7
1962 -- 5.8
1963 -- 5.7
1964 -- 5.2*

* 1964 average for first 9 months

Source: Monthly Report on the Labor Force, October, 1964.

Chart 3.

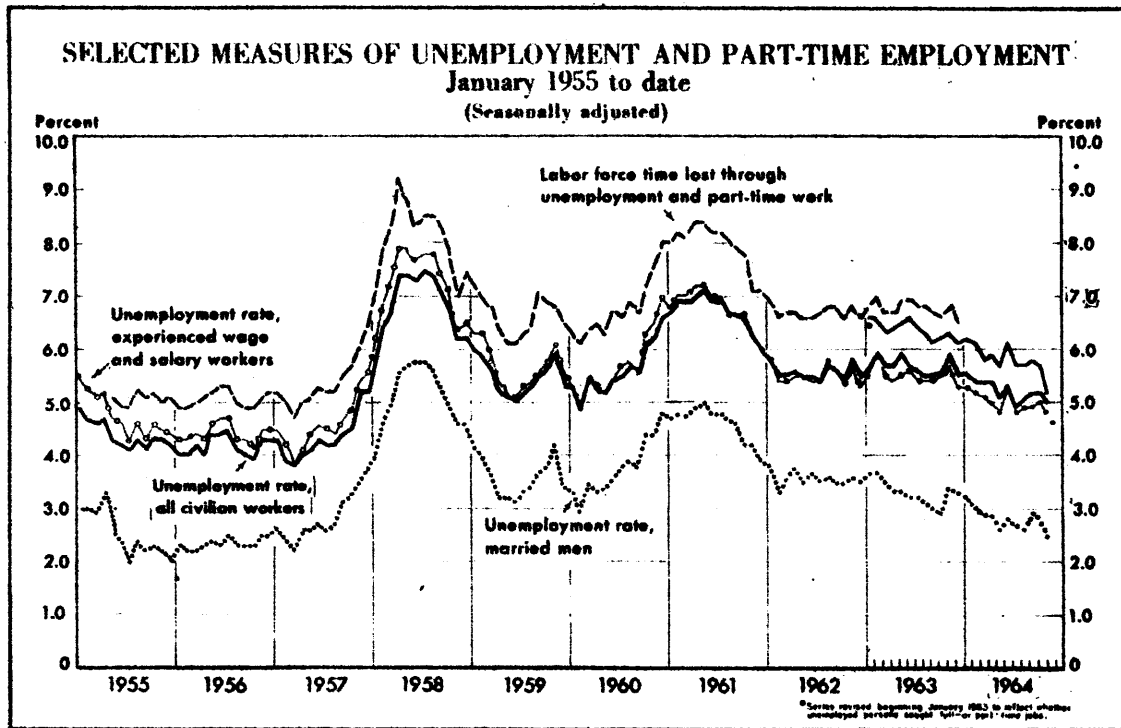
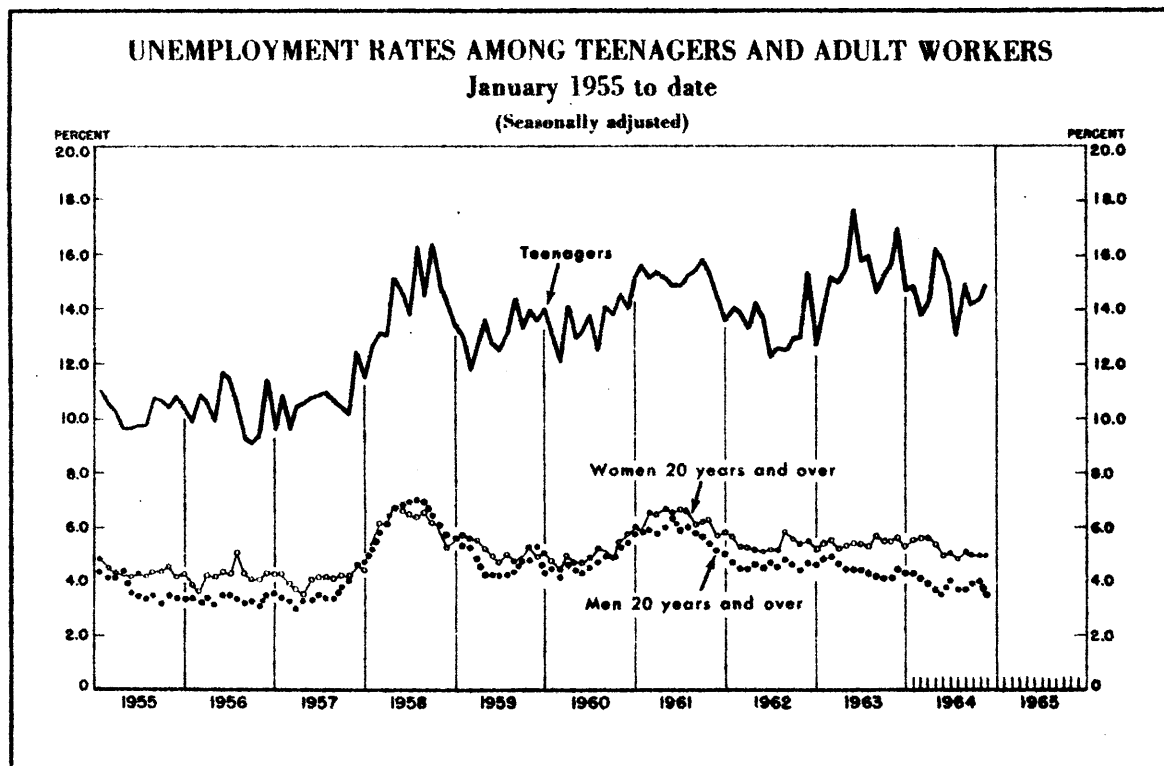


Chart 4.



UNEMPLOYMENT BY INDUSTRY OF LAST JOB October, 1964

<u>Industry</u>	<u>Unemployment rate</u>	<u>% Distribution</u>
Agriculture	6.3	3.9
Mining, forestry, fisheries	7.2	1.4
Construction	7.5	9.3
Manufacturing	4.3	25.0
Transport. & public utilities	2.5	3.6
Trade	5.1	18.2
Finance, insurance, real estate	1.6	1.5
Service & Misc.	3.7	16.9
Self-employed & unpaid family workers	.6	2.5
No previous work	---	15.8

Source: Employment and Earnings, November, 1964.

UNEMPLOYMENT BY COLOR October 1964

	<u>Unemployment rate</u>	<u>% Distribution</u>
White	3.9	79.4
Nonwhite	7.9	20.6

Source: Employment and Earnings, November 1964.

UNEMPLOYED PERSONS BY AGE AND SEX October, 1964

	<u>Unemployment rate</u>	<u>% Distribution</u>
Male - Total	3.7	54.2
14-15	6.6	1.3
16-19	11.5	10.1
20-24	7.1	10.5
25-34	2.6	7.9
35-44	2.4	8.4
45-54	2.3	6.9
55-64	3.4	7.2
65-over	3.1	2.0

(Table continued from preceding page)

	<u>Unemployment rate</u>	<u>% Distribution</u>
Female - Total	5.7	45.8
14-19	13.8	11.4
20-24	8.1	7.9
25-34	5.6	7.3
35-44	4.5	7.9
45-54	3.7	6.5
55-64	2.7	3.0
65-over	5.3	1.5

Source: Employment and Earnings, November 1964

Examination of the above tables and graphs shows the following:

- 1) The unemployment rate for blue collar and service workers is over twice that for white collar workers.
- 2) The unemployment rate for nonwhite workers is twice that for white workers.
- 3) Those who have never held a job make up 15.8% of the unemployed.
- 4) Those under 25 make up 41.2% of the unemployed.
- 5) The unemployment rate for teenagers is much higher than for any other age group -- about 3 or 4 times as high as for those age groups over 25.
- 6) The unemployment rate for married men was considerably lower than for other categories. It was below 3% in 1964.

The above figures combine both part-time and full-time unemployment. Almost half of the unemployed teenagers were seeking part-time jobs. The average unemployment rate for the period January-October 1964 for teenagers seeking full-time jobs was 17.6%. For those seeking part-time jobs it was 11.8%.

Nonwhite and white unemployment compared

The table below gives a picture of the relative rate of unemployment for whites and nonwhites during the past eleven years. The table is based on the average unemployment rates for three-month periods (quarters).

The relationship of the two unemployment rates can be seen most easily by taking the ratio of nonwhite to white unemployment rates. The following table gives a picture of these ratios.

RATIOS OF NONWHITE TO WHITE UNEMPLOYMENT RATES BY SEX AND AGE

	<u>All Workers</u>	<u>Males 20-older</u>	<u>Females 20-older</u>	<u>Both 14-19</u>
Average for 11 annual figures	2.1	2.4	1.9	1.8
Range for annual data	2.0 - 2.3	2.2 - 2.6	1.7 - 2.0	1.0 - 2.2
Ratio for first 9 mos. of 1964	2.1	2.2	2.0	1.9
Third quarter of 1964	2.3	2.2	2.3	2.3

Source: Calculated from figures given in the Monthly Report on the Labor Force, November, 1964.

There has been no persistent trend to the ratios over the eleven years. Certainly, there has been no tendency for them to decline.

The highest unemployment rates have been experienced by non-white teenagers: 23.4% in 1963 amounting to 198,000 unemployed.

Throughout the eleven years Negro adult men have suffered higher unemployment ratios to white men than Negro women have to white women. Until 1963 Negro men had persistently higher unemployment rates than Negro women.

Automation

While automation is only one of a number of ways that labor productivity is increased, it has recently received a great deal of attention in the press, labor movement, etc. Claims have been made that the introduction of automation makes it possible to raise labor productivity at such an extremely high rate that in the course of one, two or three decades, human labor will become obsolete.

The preceding discussion of the rate at which labor productivity is being raised currently and was raised in the past, shows that as yet no qualitative change has taken place. But an investigation of the process of automation itself is required to be able to project future changes.

Automation is associated with and depends on the use of two kinds of devices: 1) computers 2) "feedback" mechanisms or self-regulating devices of a wide variety. These two kinds of devices make it possible to regulate machinery automatically in very intricate ways.

Feedback mechanisms are not a new idea, but it was only during and since WW II that they have been systematically and widely put to use. The thermostat is an example of a feedback device. Such examples of automation as the famous Ford engine block line in Cleveland built in 1949, depend on feedback devices. This kind of automation has been technically feasible for a long time. A similar automated line was first introduced by Morris Motors in England in 1927. It didn't prove economical at the time, and was not generally introduced.

The linking together of automatic mechanisms to form an automatic unit of production is not new. For example: the first completely automatic hydroelectric station, with no attendants was installed in 1917. But mass production was invented a hundred years before it was introduced on a wide scale.

What has caused the wide publicity about automation is not so much the use of feedback devices as the introduction of computers on a wide scale. Though the basic ideas were known long before, it was only during WW II that electronic computers of considerable power were built. The first commercial computer was installed in 1951. According to the July 13, 1964 Wall Street Journal computers were, in 1964, a \$1.3 billion a year business.

By mid-1962 an estimated 11,100 computers had been delivered in the U.S. -- 1,200 of them large-scale computers costing more than \$750,000. Another 1,700 were estimated to have been shipped abroad. Another estimate put the number of installed computers in the U.S. in mid-1963 at 12,000.

Alan O. Bates, former manager of a consulting firm specializing in automation, predicted that the value of computer systems installed in the U.S. by 1967 would be \$13.4 billion and reach \$25 billion by 1972. He estimated annual installations thereafter at \$3 billion a year.

In 1964 the value of the general purpose computer market increased by about 20% to about \$2 billion (according to the Jan. 11, 1965 New York Times supplement on "Trends in the Economy of the U.S."). About 5,000 computers were installed in 1964 bringing the total to over 22,000 computers, according to a survey in a computer

Industry Journal

What are these computers used for?

It should be kept in mind that the vast majority of computers are used for two purposes: most often, for data processing, that is record keeping -- the mechanization of office work; and secondly, for scientific computations -- which could not be accomplished otherwise. Only a few hundred computers are as yet used to control production processes -- that is to run "cynbernated" plants.

In recent years there has been a great expansion of office workers relative to production workers. Despite the mushrooming of paperwork, very little was done until recently to mechanize this labor intensive sector of the economy. The typewriter was the only important step in that direction for a long time. The use of IBM cards along with sorting and tabulating machines was the main means for large-scale record processing until commercial computers were made available in the 1950's.

Computers are much more economical than card equipment for handling large volumes of records. They offer great advantages in any operation where speed is important. Moreover, most card equipment was rented from IBM rather than owned by users; so few old investments lost their value to users when computers were introduced. The new computers occupy considerably less space than card equipment and thus cut down rent as well as labor costs.

For all these reasons computers were introduced at a rapid rate. One estimate is that less than 10% of office work has been automated thus far. The number of clerical workers has continued to grow, though at a slower rate in recent years than previously.

NUMBER OF CLERICAL AND KINDRED WORKERS (in millions)

<u>1950</u>	<u>1955</u>	<u>1960</u>	<u>1963</u>
7.63	8.37	9.73	10.3

The above table shows that in the field where computers have been introduced most extensively, employment has continued to rise. As more computers are introduced and new office equipment developed, the trend toward more clerical workers may very well end.

The use of computers for scientific computations has made no sizeable dent in the rapid growth of employment of scientists and engineers.

The use of computers for "process control systems," that is, for the control of automated plants is a newer development than the use of computers in the other two areas. The first such system

was installed only in 1959. One estimate of the number of such systems in mid-1963 is 250 in the U.S. and a total of 400 worldwide.

A partial breakdown by industry for the U.S. estimate cited is as follows: electric power 89; steel 41; petroleum and gas 26; paper 11; cement 4.

Another kind of automatic device that has recently been introduced is the control of machine tools by numerically coded information on punched cards, punched tapes or magnetic tapes. This innovation was introduced in 1957. By early 1963 3,000 numerically controlled machine tools had been installed out of a total of 2 million machine tools. It has been predicted that within 5 or 6 years between 30% and 50% of all new machine tools purchased will be numerically controlled.

The installation of computers in office automation is a process that usually requires several years. Most large-scale users of computers have not yet completed the switch to computers, but are in the process of putting more and more of their work on computers.

There have been studies of the impact of the introduction of computers on employment in the offices affected. One such study by the Atlanta region of the Internal Revenue Service estimates that in the period from 1960 to 1966 during which automation will be introduced, employment will be reduced by 51% in the offices affected.

The economics of automation

It is clear that if the highest level of technology available were introduced throughout the economy in a few years -- that is, at a rate much faster than the expansion of output -- there would be an enormous displacement of labor. But this was true during many periods in the past. The use of interchangeable parts and mass production techniques based on them was invented and used by Eli Whitney for the production of 10,000 guns more than 100 years before it was used on a very wide scale.

The economic factors that determine the rate at which new technology is introduced must be examined to get a realistic perspective about the likely effects of technical change on unemployment.

A general study of the economy is also necessary to foresee the likely lines of development in employment and unemployment. The last prolonged investment boom in the U.S. which raised labor productivity greatly followed WW I and was ended by the Great Depression. There are similarities between the two post war periods, so far as changes in employment are concerned. The possibility that a boom based on automation would be ended by a depression long before most workers were unemployed must be considered.

The effects of government intervention in the economy, the rate of expansion of government, consumer and business debt and the limits of this expansion, the economic situation of foreign capitalist countries, as well as trends in automation, must all be considered to foresee how the economy will change.

The permanent technical revolution

Since the beginning of WW II there has been an acceleration in the funds invested in research and development. While this was generally the case during wars previously, the high spending has continued after the war -- spurred on by the cold war. The amount spent by government, industry, universities and other institutions tripled in the decade from 1953 to 1963 -- going from about 5.1 billion to about 16.4 billion.

About two thirds of all these funds are provided by the federal government, and the great bulk of these go for military and space research. Private industry conducts about 3/4 of all R & D work.

A survey in 1962 showed that 47% of companies responding planned to concentrate R & D money on new product research, 40% planned to concentrate on improving products, and only 13% planned to concentrate on new-process research -- the phase of research and development likely to have the greatest effect in increasing productivity.

New products have had a significant effect on the growth of the economy -- creating jobs rather than eliminating them.

This new emphasis on research has resulted in a continual stream of cost-saving and labor-saving inventions.

Factors limiting the introduction of new technology

1. Monopoly -- lack of competition. The domination of most industries by a few corporations which can therefore fix prices, output, determine markets and control the introduction of new technology results in a number of the following factors having considerably more weight than they would otherwise.

2. Investment in old equipment. The fact that capitalists have large investments in old equipment means that the introduction of new technology wipes out the value of these old investments. In monopolized sectors especially, new techniques are often suppressed. Even when they are introduced, it is often more profitable to use the old equipment until it depreciates rather than scrap it and take the loss.

3. Rate of expansion of industry. Innovations tend to be introduced most in rapidly expanding industries, since there will be investment in these industries in any case and new plants are usually built using the latest technologies. When individual industries, or the whole economy stagnates or declines, investments tend to decline.

4. Time required to install and debug new equipment. Many of the new methods such as the use of computers for clerical work require years for the conversion from the old system to the new. Almost all users of large scale computers for data processing are still involved in this conversion.

5. Availability of capital. Much automated equipment is extremely costly, involving very large capital outlay. The rate of introduction of capital intensive methods may be limited by a lack of capital.

6. Wage rates vs. cost of capital. Though most jobs could be done by machine, or done automatically in some way, it is often cheaper to use human labor. Wage rates therefore influence what jobs are automated.

7. Alternative investment opportunities. Even where automation is economical and capital is available in the industry, it may be more profitable to invest in something else entirely, like lending money to consumers at high interest rates. This is true especially in highly monopolized industries where companies may not want to expand capacity.

8. Scale of industry. Automation and other methods of increasing labor productivity are usually economical only where production is on a large scale. It was the enormous increase in paper work that made the application of computers economical on a wide scale.

Efforts are being made to develop automatic machinery that can do a wide variety of jobs, and produce small lots efficiently. "Programming" of general purpose computers is a step in this direction. The use of punched tapes to control numerically controlled machine tools is another such step. But these efforts have not gone very far as yet.

9. Restrictions imposed by organized labor. The rate of introduction of labor eliminating methods depends on the efforts of organized labor to prevent the elimination of jobs.

10. Labor intensive methods of production are preferred by capitalists over capital intensive methods because workers can be laid off if demand for the product decreases, but idle plant and equipment depreciates and must be maintained.

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