A COMPARISON OF UNEMPLOYMENT RATES PRIOR TO THE GREAT DEPRESSION AND IN THE POSTWAR PERIOD

by

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It is widely believed that the macroeconomic performance of the U.S. economy is substantially better now than it was prior to the Great Depression. Indeed, Franco Modigliani (1976) has used this superior performance as evidence that Keynesian stabilization policy has been successful, and as disconfirming the monetarist's case for a monetary rule. On the other hand, the 1971 (McCracken) Council of Economic Advisers (1971, p. 21) has argued that:

> The unemployment rate during the past 25 years has averaged 4.6 percent and the highest yearly rate was 6.8 percent in 1958....If we look at the quarter of a century before the Great Depression....the average was 4.7 percent, the highest unemployment rate was 11.7 percent in 1921....This suggests that we have not appreciably reduced the incidence of small departures from maximum employment, but that we have reduced the incidence of large departures which is just what one would expect aggregate economic policy to be able to do.

The purpose of this paper is to provide empirical evidence bearing on both of these propositions primarily by comparing unemployment rates prior to the Great Depression with those of the postwar period. I will try to show that when the unemployment data are adjusted to make them comparable, the unemployment rate--and its variance--did decline, but that this fact does not imply that the private sector is unstable, and it does not invalidate the case for a monetary rule. I will deal only with unemployment and other indicators of output fluctuations. As far as price stability is concerned Klein (1975) has shown that on a year-to-year basis the variance of the inflation rate has decreased, but that when measured over five year periods it has increased.

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I-The Period Covered

For the postwar period the years to be included do not create much of a problem. I included all the years 1948-1975 except for 1951 and 1952 which were heavily affected by the Korean War.[1] For the prewar period Lebergott gives yearly estimates of unemployment as a percent of the total labor force starting in 1890. But he provides the more detailed data needed for the adjustments described below starting only with 1900. Hence, depending upon the measure of unemployment to be considered I started with either 1890 or 1900. I excluded the war years 1917-1918, as well as the immediate postwar year 1919. It is unclear how one should treat the immediately following years since the sharp recession of 1920-1921 was closely connected with the way the war had been financed.[2] Hence, I provide two sets of tabulations, one including and one excluding 1920-1922.

II-The Data

There are several measures of unemployment that can be used to compare the period prior to the Great Depression with the postwar period. The most obvious one is to express unemployment as a percentage of the total labor force. This figure is given by Lebergott (1964) calculated in a way to be as comparable as possible with the subsequent official BLS estimates. However, Coen (1973) has pointed out that the Lebergott data are not strictly comparable with the subsequent BLS data because the latter are based on interpolations from decennial census data, and thus make no allowance for the changes in the size of the labor force that result from the "discouraged worker" effect. And since the evidence for the postwar period suggests that this discouraged worker effect outweighs the "added worker effect" of other

family members seeking work when the household's main earner is unemployed, Coen suggests that Lebergott's data overstate the variance of the unemployment rate. But this is not necessarily so. Although the discouraged worker effect has predominated over the added worker effect in the postwar period, this need not necessarily have been the case prior to the Great Depression when there was no unemployment compensation system to buttress family income. Hence, there is no way of telling whether the variability of Lebergott's unemployment data is overstated or understated relative to the contemporary BLS estimates.[3]

But beyond the problem of the accuracy with which the data are measured there is the conceptual problem that the unemployment rate, measured as the percent of the total labor force unemployed, is misleading for long run comparisons, because it fails to take account of changes in the proportion of the labor force that is self-employed or consists of unpaid family workers. For both of these groups a decline in aggregate demand shows up not in measured unempoyment but in a decline in the amount of work done while employed, or, in the case of the farm sector, in a decline of earnings below what was anticipated when most of the agricultural work was done. It is therefore preferable to measure the unemployment rate by the number of persons unemployed as a percent of all wage and salary workers.[4] While this implies a relative overstatement for the pre-Depression period since <u>some</u> of the unemployed were previously self-employed or unpaid workers, this overstatement is presumably minor, and a small price to pay to avoid the bias that results from ignoring the secular shift out of self-employment. Section IV discusses what happens if the assumption of no unemployment among the self-employed and unpaid family workers is replaced by an alternative one.

But this adjustment for self-employment and unpaid family workers does not remove all bias because there has also been a substantial shift in the composition of wage and salary earners. Since unemployment is more likely to go undetected among farm workers than among industrial workers there is a bias unless one adjusts the recorded unemployment rates for the shift of labor from farms to industry. And an adjustment is also needed for the well-known shift from blue-collar work to white-collar work and to the service industries.

Hence, I reestimated the unemployment rate for the postwar period by reweighting the recorded postwar unemployment rates for farm workers, blue collar workers, white collar workers and service workers by the proportion of the labor force represented by each of these groups in the period 1900-1929.[5] This is only a rough estimate because it assumes that the unemployment rates actually experienced by each of these categories would have been the same with a different occupational composition of the labor force, and also because of limitations of the data base. Thus the availabile data give only the proportion of <u>all</u> workers in each of the above occupations. But what is needed is the proportion of wage and salary workers. Hence I had to make a crude and impressionistic estimate of the proportion in each category that were self-employed or unpaid family workers. I assumed that self-employment or unpaid family work accounted for 25 percent of the professionals (including teachers), 75 percent of the managers, 10 percent of the sales employees, 20 percent of the service workers, and 8 percent of the blue collar workers. The results of modifying these assumptions are discussed in Section IV.

Apart from occupational shifts there has also been a major shift in the sex composition of the labor force. But it is by no means clear that one

should adjust the unemployment rate for this shift. The justification for the occupational adjustment is that without it the data do not reflect the hidden unemployment that occurs when workers stay on the job, but operate at less than normal capacity due to a decline in demand (and in agriculture, the data do not reflect the loss that occurs when the marginal product of labor is less than was anticipated at the start of the production period). But an increase in the proportion of women in the labor force has neither of these effects. Instead, the only justification for adjusting for the increased proportion of women in the labor force is that their less permanent labor force attachment, as well as discrimination, leads to more frictional unemployment. But while the frictional unemployment rate has been raised by the increased proportion of women in the labor force it has presumably been lowered by other factors, such as the decreasing proportion of teenagers. While it would certainly be desirable to estimate the natural unemployment rates for the two periods, and to compare the excesses of the actual over the natural rates, the data for this are generally not available. And it is not clear whether anything is gained by making the adjustment for changes in the natural rate in one case, where this can be done, the sex composition of the labor force, while not adjusting for the many other factors that have also changed the natural rate.[6] Hence Table 1 shows the data both with, and without, an adjustment for the change in the sex composition.

III-Results

The first column of Table 1, which measures the unemployment rate in the conventional way, i.e., as a percent of the total labor force, shows that it was about the same in the period 1900-1929 as in the period, 1948-1975, though its standard deviation was substantially higher. However, as discussed above,

Table 1

Comparison of Unemployment Rates

Years:	(1) Civilian Labor Force	(2) Civilian Labor Force adjusted for Self-employed and Unpaid Family Workers	(3) Civilian Labor Force adjusted for Self-employed, Unpaid Family Workers and Occupational Composition	(4) Civilian Labor Force adjusted for Self-employed, Unpaid Family Workers and Occupational and Sex Composition
		Mean Unemployment Rates (Percent)		
1890-1916 & 1920-1929	6.4	N.A.	---	---
1900-1916 & 1920-29	4.9	7.7	---	---
1890-1916 & 1923-1929	6.3	N.A.	---	---
1900-1916 & 1923-1929	4.7	7.2	---	---
1905-1916 & 1920-1929	5.1	7.6	---	---
1948-1970[a]	4.8	5.6	5.5	5.3
1948-1975[a]	5.1	5.8	5.7	5.5
		Standard Deviations of Unemployment Rates		
1890-1916 & 1920-29	4.0	N.A.	---	---
1900-1916 & 1920-1929	2.2	3.3	---	---
1890-1916 & 1923-1929	4.8	N.A.	---	---
1900-1916 & 1923-1929	1.8	2.9	---	---
1905-1916 & 1920-1929	2.4	3.7	---	---
1948-1970[a]	1.1	1.3	1.3	1.4
1948-1975[a]	1.2	1.4	1.4	1.4

a. Excluding 1951-1952.

N.A. denotes not available.

--- denotes adjustment not applicable.

Sources: See duplicated Appendix.

this higher standard deviation may have an upward bias.) Only if one adds the depressed decade of 1890-1900, for which the data are relatively poor, does the prewar period show a higher unemployment rate. Specifically, column 1 (rows 5 and 6) shows an only sightly higher unemployment rate for the twenty-five years ending in 1929 than for the twenty-five years 1948-1970, thus supporting the (McCracken) Council's position cited above, even though I excluded some years it included.[7]

But the story changes radically in columns 2-4 which adjust for the decline in self-employment and unpaid family workers, and in the occupational and sex compositions of the labor force. If one adjusts only for self-employment and unpaid family workers the unemployment rate is 7.7 percent for the period 1900-1929 excluding 1917-1919 (and 7.2 percent if 1920-22 are excluded as well), while for the postwar period it is 5.8 percent. If one adjusts for occupational composition and for both occupational composition and sex composition the postwar unemployment rate falls to 5.7 percent and 5.5 percent respectively. Thus, the data support Franco Modigliani's conjecture that the unemployment rate was substantially higher prior to the Great Depression.

Admittedly this higher unemployment rate might reflect merely a higher natural rate of unemployment, rather than inadequate aggregate demand. But this is unlikely. To start with, the standard deviation of the unemployment rate is much larger in the pre-Depression period, though admittedly it may be upward biased due to the interpolated data not allowing for a discouraged worker effect. But the frequency distribution of the unemployment rates given in Table 2 also shows no evidence of a higher natural unemployment rate before the Depression. Not only are there some instances of lower unemployment rates in the this period, than in the postwar period, but also the salient

Table 2

Frequency Distribution of Unemployment Rates[a]

Unemployment Rate	1900-1916 & 1920-1929	1948-1950 & 1953-1975
	Percent of Years	
0-3.0%	7%	0%
3.1-6.0%	22	50
6.1-9.0%	37	46
9.0-12.0%	22	4
Over 12%	11	0

[a]Civilian labor force adjusted for self-employment and unpaid family workers.

difference between the two periods is that the earlier one shows many more examples of very high unemployment rates. In fact, if one eliminates all the years with unemployment rates in excess of 10 percent, the unemployment rate (adjusted for self-employment and unpaid family workers) falls from 7.7 percent to 6.5 percent for the pre-Depression period while for the postwar period it is unchanged.

This conclusion that unemployment was greater prior to 1929 conflicts with Knowles' findings. Knowles (1960) fitted a production function for the years 1909-1958, and used it to derive the ratio of actual to potential labor inputs. In the period 1909-1958 (excluding 1917-1922) this ratio averaged 101 percent, and in the postwar period 1948-1958 (excluding 1951-52) it averaged slightly less, 98 percent. (Knowles included the 1930's in his sample period, and this may account for the high level of activity he shows for other years.)

However, an alternative measure of the GNP gap shows results that are more consistent with the above adjusted unemployment estimates. Using logarithmic trends between major peaks (and excluding 1917-1922) the shortfall of GNP below these peak trend lines is as follows:[8]

	Mean	Standard Deviation
1890-1929	6.3	5.0
1900-1929	5.0	4.4
1953-1975	4.9	3.6

Thus on this estimate the GNP gap was greater prior to the Great Depression than in the postwar period, though for the 1900-1929 period (excluding 1917-1922) the difference in the means--but not the standard deviations--is minimal. And a comparison of the severity of recessions also suggests that contractions were probably somewhat more severe prior to the Great Depression.[9]

IV-Alternative Assumptions

Since the above estimates are based on some rather arbitrary assumptions it is worth seeing how the results are changed if these assumptions are varied. In adjusting the postwar unemployment rates for the effects of occupational shifts I had to make an assumption about the proportion of workers in each occupational group who were self-employed or unpaid family workers. Columns 2 and 3 of Table 3 show how the results are changed if these assumptions are replaced by alternative ones. (Column 1 merely repeats the data from Table 1 to facilitate comparison). As Table 3 shows the assumptions made about the self-employment ratio of different occupational groups make some difference but they do not change the overall results.

A more important assumption made above is that only wage and salary workers are subject to unemployment. Column 4 of Table 3 shows the results of replacing this assumption with the alternative one that self-employed farmers and their unpaid family workers had an unemployment rate equal to 10 percent of that of wages and salary workers, while the nonfarm self-employed and their unpaid family workers had one third the unemployment rate of wages and salary workers. This change in assumptions causes the estimated unemployment rate to fall by 9.1 percent of its previous level in the 1900-1929 period, and by only 3.4 percent in the postwar period. Thus while this change brings the unemployment rates of the two periods somewhat closer together it still leaves a substantial difference.

The self-employed are not the only ones who experience less unemployment than the rest of the labor force; another group is government employees. To check the sensitivity of these data to the growth of government employment, I reweighted the unemployment rates of private sector employees and government employees in the postwar period by the relative importance of these two groups

Table 3

Effect of Alternative Assumptions

	Previous Assumptions	Alternative Assumptions about Self-employed or Unpaid Family Workers		Alternative Assumptions about Labor Force Subject to Unemployment
		A[a]	B[b]	
		Mean Unemployment Rates[c]		
1900-1929[d]	7.7	---	---	7.0
1948-1975[e]	5.8	5.9	5.6	5.6
		Standard Deviations		
1900-1929[d]	3.3	---	---	3.1
1948-1975[e]	1.4	1.5	1.4	1.3

a. assumes the following percentages of self-employment and unpaid work: blue collar workers-2 percent; white collar workers-40 percent; and service workers-10 percent.

b. assumes the following percentages of self-employment and unpaid work: blue collar workers-20 percent; white collar workers-20 percent; and service workers-30 percent.

c. labor force adjusted for self-employment and unpaid family workers.

d. excluding 1917-1919

e. excluding 1951 and 1952

Source: (col. 1) Table 1

in the pre-Depression period. This adjustment had very little effect; the unemployment rate for the total labor force was raised only from 5.1 to 5.2 percent, and the stardard deviation rose from 1.2 to 1.3.

V-Implications

One implication of the above is that the statement of the (McCracken) Council that the unemployment problem was no worse in the twenty-five years prior to the Great Depression than in the postwar years is rejected by the data once one makes adjustments for self-employment and unpaid family workers. The unemployment problem has become less severe. But these unemployment data, as well as the evidence from the GNP gap and the severity of recessions, also reject the view that there is a radical difference in the prewar and postwar underemployment problem.

But while these data thus support Modigliani's conjecture, they do not confirm the conclusion he draws from them, that discretionary stabilization policies have been successful. This is so because as Table 4 shows the money growth rate was more variable prior to the Great Depression than in the postwar period.[10] Hence, monetarists and other supporters of a stable growth rate rule, would expect, as do Keynesians, that unemployment was higher prior to the Great Depression. In fact, if one assumes the same magnitude of external shocks in the two periods, those monetarists who believe that changes in the money growth rate are of central importance, and fiscal policy of very little importance, would have had their case disconfirmed if the data had shown lower unemployment rates prior to the Great Depression.

Furthermore, even if the variance of the money growth rate had been the same in both periods the higher unemployment rate prior to the Great

Depression would not suffice to build a case for discretionary monetary policy. In the pre-Depression period sharp declines in the money growth rate were associated with bank failures during a recession, and hence were very badly timed with regard to stabilization. With discretionary monetary policy declines in the money growth rate can be better timed than that and still yield worse results than a constant growth rate rule would.

Table 4

Variations in the Monetary Growth Rate

	Year to Year Change Over 7 Year Period		Year to Year Change Over 2 Year Period	
	Standard Deviation	Coefficient of Variation	Standard Deviation	Coefficient of Variation
1890-1899	6.3	1.1	10.8	1.1
1900-1909	4.1	.5	7.0	.4
1910-1916	5.0	.7	6.2	.4
1923-1929	3.1	.6	4.4	.4
1950-1959[a]	1.1	.3	2.9	.5
1960-1969	2.2	.4	4.2	.3
1970-1975	2.6	.3	4.4	.2

a. excludes 1951-1952

Sources: Bureau of the Census Historical Statistics of the United States, Bicentennial Edition, p. 992; Board of Governors, Federal Reserve System, Banking and Monetary Statistics, 1941-1970, pp. 18-19; Annual Statistical Digest 1971-1975, p. 49.

FOOTNOTES

1. I did not exclude the Viet-Nam war period since the immediate economic impact of this war was mild.

2. For a discussion of this period see John Judd (1975). The accomodative policy followed after World War II was also carried over into the postwar period, but I did not exclude all of those years because this accomodative monetary policy appears to have had less of a destabilizing effect than after World War I. Moreover, after World War II the Federal Reserve did not react with a sharp deflationary policy as it did in 1921.

3. In 1966 the BLS labor force data were changed from a 14 years and over, to a 16 years and over basis. I did not adjust for this because a check for the years 1955-1966 indicated that these two bases give virutally the same unemployment rate.

4. Specifically, I expressed the number of persons unemployed as a percent of employees of nonfarm enterprises, farm employees, domestic service employees and the unemployed. (The data are given in Lebergott, 1964, pp. 512-513.)

5. A duplicated appendix discussing the procedures and sources used in making the various estimates in this paper is available upon request.

6. One factor that, in principle, could have had a powerful effect on the natural rate prior to the Great Depression was the high level of immigration. To the extent that a recession reduced immigration, the U.S. was, in a way, exporting unemployment. However, as is discussed in the duplicated appendix mentioned above, this effect was actually rather minor.

7. While the Council compared all the years 1905-1929 and 1946-1970, I excluded the years 1917-1919, 1951-52, and 1946-1948.

8. The major peak years used were: 1892, 1906, 1912, and 1926 with the trends being projected backwards to 1890, and forward to 1929. For the postwar period I commenced with 1953 because of the difficulty of projecting the trends backwards for 1948-1950, and used the peaks of 1953, 1969 and 1973. The data used were derived from U.S. Bureau of the Census (1976, p. 224) and Council of Economic Advisers (1976, pp. 172, 191).

9. Geoffry Moore (1961, p. 104) has compared business cycle contractions in the period 1899-1957. His ranking shows the postwar contractions covered by this ranking as moderately less severe than the earlier ones. A subsequent ranking of postwar contractions (Moore, 1972, p. 18), which unfortunately cannot be integrated with the previous ranking, shows that the next three contractions, 1960, 1967 and 1969 were milder than the

previous postwar ones. On the other hand, the most recent contraction has, of course, been the most severe in the postwar period. Bert Hickman (1960, p. 26) concluded that "postwar fluctuations...are similar in magnitude and duration to a number of their forerunners. The difference between them and earlier fluctuations are no greater than the differences among earlier fluctuations," though he pointed out that in the postwar period we avoided major contractions as severe as 1907-1908 and 1920-1921.

10. Table 4 relates only to M_2 because reliable M_1 data are not available for the whole period.

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APPENDIX

Derivation of Estimates

Unemployment rates for wage and salary workers to 1960 were obtained by dividing the number of unemployed by the sum of the unemployed, employees of nonfarm enterprises, domestic employees and farm employees. (The data are given in Lebergott, Manpower in Economic Growth, pp. 512-13.) For subsequent years nonagricultural wage and salary workers plus hired farm workers were used. (The data come from the 1976 Economic Report, Statistical Abstract, Historical Statistics of the U.S. and Farm Labor.) An alternative method for the postwar period is to subtract the self-employed directly from the total labor force. This yields estimates that are trivially different from the ones obtained in the way described above for some years but have the same mean and standard deviation.

To make the adjustment for changes in the occupational mix of the labor force, I first calculated the occupational distribution of wage and salary workers 1900-1929. To do so the occupational distribution of the whole labor force (as given in Historical Statistics of the U.S. Bicentennial edition, p. 130) had to be adjusted for self-employment. Unfortunately, no data on self-employment are available for this period. But an estimate of the detailed distribution of the labor force among the major occupational groups is available (Bureau of the Census, Occupational Trends in the U.S. 1900-1950, Working Paper #5). I used this to make the rather arbitrary assumption that 25 percent of the professionals (including teachers), 75 percent of the managers, 10 percent of the sales workers, 20 percent of the service workers and 8 percent of the blue collar workers were self-employed. Having adjusted the data for the self-employed I then took a weighted mean of the decennial

estimates by giving a weight of one half to the two end years, 1900 and 1930, and a weight of one to the years 1910 and 1920. The next step was to reweigh the unemployment rates for white collar, blue collar service and farm workers in the postwar period by these weights. (The data come from the Manpower Report of the President, 1965, pp. 202 & 207 and unpublished BLS tabulations.)

To adjust for the changing sex composition of the labor force I used the decennial data on the sex composition of the labor force given in Historical Statistics of the U.S., Bicentennial edition, (p. 127) again alloting a weight of a half to the end years. I then reweighed the postwar male and female unemployment rates by these weights. The data needed to adjust the unemployment rate for the rise of government employment are given in Lebergott (1964, pp. 512 & 514), U.S. Department of Labor Employment and Training Report of the President, (1976, pp. 237 & 245) and Economic Report of the President.

Immigration

Insofar as immigration cycles conform positively to business cycles, the domestic unemployment rate understates the amplitude of business fluctuations. Since some potential immigrants do not enter the country they are not counted as unemployed, so that the recorded unemployment rate understates the decline in job opportunities. In other words, a decline in immigration can be a form of hidden unemployment.[1]

A way of measuring the magnitude of this is to think of the U.S. as potentially absorbing a steady flow of immigrants. But in some years actual immigration fell off due to high unemployment. This short-fall in the immigration of workers can then be treated as hidden unemployment. Note

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1. I am indebted for this point to Albert G. Hart.

however, that this is an overestimate because had immigration proceeded at its normal level the expenditures by immigrants out of funds they brought with them would have raised aggregate demand. But even ignoring this bias, it turns out that hidden unemployment via reduced immigration was not very large, being very roughly 0.1 percent of the labor force for the average year 1900-1929.[2]

2. To obtain this exceedingly rough estimate I assumed that immigrants not listing an occupation were not in the labor force. Since no data on emigration are available prior to 1908 I assumed that net immigration equalled 55 percent of gross immigration (which is the average rate of net to gross for 1908-1912). To obtain net labor force immigration I quite arbitrarily, assumed that two thirds of the emigrants were in the labor force. I then took the average net labor force immigration rate for 1900-1929 and derived the shortfall in specific years from the average. Then I expressed this shortfall as a percent of the total civilian labor force. I excluded again the years 1917-22. To account for the fact that recessions were not the only factor resulting in declines in immigration, I looked only at the years when there was both a shortfall of immigration, and the unemployment rate of the civilian labor force exceeded 4 percent. There are five such years. I then divided the shorfall in immigration expressed as a percent of the civilian labor force for these five years by all the twenty-four years in my prewar period to obtain the average hidden unemployment rate due to declines in immigration. One reason why this is only a crude estimate is that I took no account of the legal restriction in immigration imposed in the 1920's. (The data sources used were U.S. Department of Commerce; Historical Statistics of the United States, 1961, p. 60; Lebergott, Manpower in Economic Growth, p. 512; Kuznets and Rubin, Immigration and the Foreign Born; NBER Occasional Paper, pp. 95-96.)