

Origins of the Unemployment Rate:
The Lasting Legacy of Measurement without Theory

David Card
UC Berkeley and NBER

Between 1980 and 2005 over one thousand articles with “unemployment” in the title were published in the economics journals indexed in JSTOR. Twenty percent of these appeared in the top five journals of the field. Especially in recessionary times the unemployment rate also attracts broad interest from policy makers and the general public. Most professional economists (and many non-economists) know that the unemployment rate represents the fraction of people in the labor force who are currently searching for work. Surprisingly, it was not until 1940 that our current conception of the labor force -- and the equating of unemployment with active job search -- finally emerged. The birth of the modern definition of unemployment represents a remarkable triumph of practical measurement needs over persistent concerns about the absence of theoretical underpinnings. Economists continue to remain skeptical of any single theoretical definition of “unemployment”. In the end, however, the profession has largely accepted the measurement techniques developed by statisticians at the Works Progress Administration and the Census Bureau in the late 1930s.

a. Unemployment Measures Up to 1931

The earliest attempt to measure unemployment at the national level was the 1880 Census, which asked all those age 10 or older who reported a “profession, occupation, or trade” the number of weeks they had been unemployed during the Census year (from June 1, 1879 to May 31, 1880). Implicitly, the questionnaire defined what we would now call the labor force as those with a “gainful occupation” (see Hauser, 1949; Ransom and Sutch, 1986). The Census instructed its enumerators to identify gainful workers as those who *usually* worked at an occupation paying wages or business income, or otherwise assisted in the production of marketable goods, and to disregard the experiences of any

others.¹ Whether the disabled and retired were coded as having a gainful occupation is a matter of some debate (e.g., Moen, 1987), though enumerators were instructed to distinguish between those still pursuing a profession and those who had retired (see U.S. Department of Commerce, 1989, p. 27).

A similar question on retrospective unemployment for gainful workers was included in the 1890 and 1900 Censuses. In the 1910 Census, the query on gainful work was expanded to include information on industry and “class” (i.e., paid worker or self employed). A question was also added on employment status on the day of the census.² The exact questions are reproduced in the first panel of Table 1. Tabulations of the (recently re-assembled) 1910 micro data show that the average unemployment rate among non-farm gainful workers was 5.3% in April 1910, and averaged 5% over all of 1909 (James and Thomas, 2003).

Ironically, the questions on unemployment were dropped from the 1920 Census, which was fielded just as a major recession took hold of the U.S. economy. The severity of the downturn led Secretary of Commerce Herbert Hoover to establish a special commission on unemployment, whose findings were reported in an NBER book (Committee of the President's Conference on Unemployment, 1923). Reflecting the poor state of knowledge on labor market statistics, estimates of the number of unemployed at the height of the recession ranged from 3.5 to 5.5 million (van Kleeck, 1923). As an outgrowth of the commission, the American Statistical Association established a Committee on Governmental Labor Statistics (CGLS), which sponsored a series of studies on the collection of labor market statistics (e.g., Hurlin and Berridge, 1926), and played an important role in the design of the questions for the 1930 Census.³

¹ The instructions stated: “If a person having a gainful occupation was unemployed during any part of the census year, it should be so stated in months and parts of months....For all persons not engaged in gainful occupation the symbol X should be used.” U.S. Department of Commerce Bureau of the Census (1989, p. 38). On the critical question of how to classify gainful workers, the 1880 enumerator instructions refer to the definitions and instructions for the 1870 census, which Hauser (1949, p. 339) credits with “setting the pattern for measuring workers” up to 1940.

² The instructions for the 1910 census noted that “out of work” meant “...enforced unemployment for those who want work and can not find it”. Thus, people who were on strike, voluntarily idle, incapacitated for work, on sick leave, or on vacation were not counted as out of work (U.S. Department of Commerce Bureau of the Census, 1989, p. 53).

³ An earlier joint advisory committee of the American Economic Association and the American Statistical Association

These questions are reproduced in the second panel of Table 1. After the same three questions on occupation, industry, and class as in the 1910 census, the 1930 questionnaire included a single question on employment status the day prior to the enumeration (in April/May of 1930). Those who were not working filled out additional questions on ability to work, job search, duration of unemployment, and reason for unemployment. Though the latter questions appear quite “modern,” they were only asked of gainful workers, implicitly defining the relevant labor force in the same way as the earlier censuses. Unfortunately, the answers to these additional questions were collected on a separate *Schedule of Unemployment* and these forms have been lost. Only the cross-tabulations constructed by the Census Bureau remain. These show that in April/May of 1930, some 5.0% of gainful workers were out of work, able to work, and searching for a job (these were labeled as “Class A”), and another 1.6% were laid off, though not yet searching for a new job (these were labeled as “Class B”).⁴

Initial findings from the 1930 Census were published in June 1930, and were immediately controversial. Van Kleeck (1931), who had participated in Hoover’s conference on unemployment and later chaired the CGLS, underscored the lack of information on the “under-employed” (those who were working part time but desired more work), despite the earlier recommendations of her committee. She and others (e.g., Arner, 1933) also expressed concerns over the responses to the question on reasons for being out of a job (column 15) which were used to identify Class B.

Perhaps most importantly, however, by the time the results were made public the extent of unemployment measured in the Census seemed too low to many observers and politicians, and Congress passed a law authorizing a special follow-up “census of unemployment” in January 1931.

appeared to be relatively unconcerned about unemployment. Their post-censal report (Rossiter et al., 1923) included 28 recommendations but no mention of unemployment. The actual questions proposed by the Committee on Governmental Labor Statistics for the 1930 Census are described in a committee report in the *Journal of the American Statistical Association* (Committee on Government Labor Statistics, 1929). In particular the committee aimed to collect information on people who were working less than full time.

⁴ See U.S. Department of Commerce Bureau of the Census (1932, page 2). Other classes of non-workers included those who were unable to work (Class C), and those who were sick or disabled (Class D).

This was conducted in 21 cities using the *Schedule of Unemployment* from the 1930 Census.⁵ In these cities 8.2% of gainful workers were classified as Class A unemployed at the time of the 1930 Census, and 1.5% as Class B. By January 1931, the fraction in Class A had risen to 20.4% and the fraction in Class B to 1.8%, confirming the seriousness of the downturn.

b. The Evolution of Unemployment Measures and the 1937 Unemployment Census

One of the lasting benefits of the Great Depression was the recruitment of young and able statisticians to assist in the modernization of the national statistical infrastructure and the administration of emergency relief programs (see e.g., Stephan, 1948, Waksberg and Goldfield, 1997). Two closely related tasks were the development of sampling techniques to replace the need for a complete enumeration, and the refinement of (what we would now call) labor force measurement techniques. The Civil Works Administration and subsequent Works Progress Administration (WPA) sponsored a series of surveys of the unemployed, including a 1933/34 Trial Census of Unemployment that compared alternative sampling schemes for estimated employment and unemployment rates (Clark, 1934). While the earliest of these surveys relied on the gainful workers concept to implicitly define the labor force, the limitations of this approach led to interest in more objective ways of directly measuring the unemployed (Webb, 1939). These ideas were put into place in the pathbreaking Enumerative Check Census that was included in the 1937 Census of Unemployment.

In August 1937, Congress authorized a national “voluntary registration” of the unemployed.⁶ Statisticians at the Census Bureau recognized that there were likely to be serious problems in interpreting the results of such a registration, and managed to secure approval (and funding) for a

⁵ According the Census, the enumerators “... were instructed to visit each family and to inquire of some responsible person whether or not any member of the household who ordinarily worked at a gainful occupation was unemployed on the preceding day, or on the last working day, and if so to ask the specified questions ... on the special unemployment census”. In tabulating the results the census relied on the 1930 Census counts to measure the number of gainful workers (i.e., the denominator for the unemployment rate). U.S. Department of Commerce Bureau of the Census, 1932.

⁶ Earlier efforts to have a national census of unemployed (e.g., in 1935) had failed but the WPA and Census Bureau staff apparently had anticipated that a census would be authorized – see Meyers and Webb (1937).

follow-up sample survey based on direct interviews.⁷ Since the registration forms were to be delivered by postal carriers, it was decided to use the postal carriers on a stratified random sample of routes as interviewers for this Enumerative Check Census (ECC) – essentially re-interviewing a sample of families who had received the earlier voluntary registration form.⁸ The ECC was the first scientifically constructed national sample conducted by the Census Bureau, and the first to utilize the modern definition of the labor force, based on *activities in the previous week*. The published tabulations of the ECC were also the first Census Bureau reports to include confidence intervals.

The questions from the 1937 ECC are reproduced in the third panel of Table 1. The first question identified all those who were working in the Census week. Those who were not working were asked if they usually worked for pay or profit (effectively asking if they considered themselves gainful workers) and if they wanted to work.⁹ Those who wanted work were then asked if they were able to work (question 10) and actively seeking work (question 11). Importantly, the latter questions were asked of all non-workers who said they wanted to work. The unemployed were identified as those who responded “yes” to questions 10 and 11. The population of those who were “employed or available for employment” – i.e., the *labor force* – was defined to include everyone who worked, as well as those who were able to work and actively searching. The measured unemployment rate for people age 15-74 in the ECC (which was reported in January 1938, just a month after the enumeration) was 20.2% (\pm 0.9%).¹⁰ Another 10.2% of the labor force reported themselves as under-employed (i.e., responded yes on questions 4 and 7).

⁷ The discussion here is based on several sources, including Stephan (1948), Eckler (1984), Hansen (1987), and Wakesberg and Goldfield (1997).

⁸ The ECC universe consisted of households served by a mail carrier (approximately 82% of the US population). The 92,000 postal routes were grouped into 9,596 (more or less homogeneous) blocks of 50, based on data from the 1930 Census, and one of these blocks (#42) was selected for inclusion in the sample (Dedrick and Hansen, 1938, pp. 1-2).

⁹ The report of the ECC (Dedrick and Hansen, 1937) does not include any cross tabulations that would allow us to determine what fractions of non-workers considered themselves as gainful workers, though such tabulations would be very helpful in resolving on-going controversy about this issue.

¹⁰ Excluding workers employed on relief projects (which the ECC counted as unemployed) the rate was 16.4%. The ECC estimate of the number of relief workers was very close to the number actually employed on these projects according to WPA records.

c. The Monthly Report on the Labor Force

Following the ECC, researchers at the WPA began planning for a national multi-stage sample of the labor force, to be conducted monthly (Stephan, 1948; Hansen, 1987). This survey, called the *Monthly Report on the Labor Force* (MRLF) was fielded in 64 counties starting in December 1939, and used a 6-month rotating panel (Frankel and Stock, 1939). The labor force questions from the original MRLF are reproduced in the 4th panel of Table 1. Following the format of the ECC, the survey begins with a question on whether the individual was employed in the survey week. Those who were not were asked if they were actively seeking work. In a departure from the ECC, non-searchers were then asked the reasons why they were not searching, allowing the identification of two groups of non-searchers who were also considered as unemployed: those who were temporarily ill, and those who believed no work was available (a group we now call “discouraged workers”).

The first reported unemployment rate from the MRLF, for April 1940, was 8.8% (Monthly Labor Review, 1941, Table 1). The 1940 Census questions on labor force activity were designed to closely match those of the MRLF (see Hauser, 1949) and in fact the MRLF and the 1940 Census yielded relatively very similar estimates of the number of employed workers (45 million in each case), though the MRLF recorded a higher number of unemployed workers, implying a higher unemployment rate (Monthly Labor Review, 1941, Table 2). An interagency panel ultimately concluded that the MRLF sample statistics were probably closer to the truth than the results from the (much larger) Census enumeration (Bancroft, 1957, pp. 74-75).

As in the past, many observers were critical of the new scheme for directly estimating the size of the unemployment pool based on search activity. Among the most negative (and persistent) critics was economist Clarence D. Long¹¹, who wrote:

“The single, all-use measure of the WPA is not unemployment at all, but some magnitude of illegitimate conception with the courtesy title. The father of the magnitude is more likely to be

¹¹ After writing several studies of the labor force unemployment (e.g., Long, 1958), Long went on to Washington, ultimately becoming a powerful Congressman best known today for his role in funding the Afghan resistance during the 1980s.

statistical expediency than economic theory, social philosophy, or even government policy.” (Long, 1942, p. 5).

Nevertheless, the new concept of the labor force gained rapid acceptance, especially as the policy focus in Washington switched from a shortage of available jobs to a shortage of available workers over the course of the war.

In 1942 responsibility for the MRLF was moved to the Census Bureau. Experimentation with additional questions and detailed analyses of responses led to concerns that the enumerators were often “jumping to conclusions” about the activities of the interviewees, leading to an undercount of both employment and unemployment (see Bancroft and Welch, 1948 and Bancroft, 1957). The MRLF questionnaire was revised to a form that is quite similar to the one still used today. The questions from the revised questionnaire – introduced in July 1945 – are shown in the fifth panel of Table 1. They begin with a question about the respondent’s main activity last week. Those whose main activity was not working are asked if they did any work for pay or profit, and if not whether they were looking for work. Finally, non-searchers were asked if they had a job at which they were not working (question 13) and if so the reason for their absence (question 14). Importantly, the new survey dropped the question about reasons for not searching. As a direct consequence, discouraged workers were no longer counted as unemployed – a situation that persists today.

d. Why Did the Modern Concept of Unemployment Emerge so Late?

The idea of directly asking non-workers whether they were looking for work – and defining those who were as “unemployed” – seems relatively natural today. As one of the group at the WPA responsible for the idea noted at the time: “It is difficult to see why the ‘seeking work’ concept has not been more extensively used in unemployment surveys; not as secondary sorter, but jointly with ‘working’ as the best means of identifying the total labor supply. Like ‘working’, ‘seeking work’ is an activity that can be reported in terms of what the individual is doing at the time of inquiry.” (Webb,

1939, p. 54).¹² The idea evidently appealed to people outside the U.S. as well. In 1947 the International Conference of Labor Statisticians replaced its previous “gainful workers” standard for labor force measurement with one based on the WPA method (Galenson and Zellner, 1957, pp. 441-442).

There are several explanations for the continued reliance on gainful workers concept until the late 1930s. One is institutional rigidity: the gainful worker definition made sense in a world in which adult men all worked (or desired to work) and women were engaged in home production. By the 1920s, this model of the labor market was increasingly obsolete (Goldin, 1990), but in the absence of a clear alternative it was the default. A second is that an active search definition ignores two important groups: the under-employed; and discouraged workers. The issue of the under-employed was raised repeatedly throughout the depression (e.g., Givens, 1933), and 1937 ECC included a question on reasons for part-time work that enabled their enumeration (see Table 1), though this group was not incorporated in the main estimate of unemployment. Today, we continue with the convention that a person is either working, searching, or out of the labor force, enabling a simple “person count” of the labor force.¹³ Discouraged non-searchers were a also concern of analysts throughout the 1920s and 1930s and were counted in the original MRLF survey, though issues of reliability in the answers to the reasons for non-search led to the dropping of this group from the “main” definition of the unemployed. Ultimately, the issue of discouraged search was addressed by expanding the time window for active search to the previous 4 weeks (in the 1967 revision to the CPS), and by adding questions for the outgoing rotation groups which are now used to construct a measure that includes discouraged workers.

¹² Eckler (1984) describes the history this way: “I recall a conversation that John Webb, who was the chief of the economic side of this (WPA) research division, had with Howard Meyers, and he had a couple of people under him who were very bright young fellows, Les Frankel and Steven Stock, who had among them a concept of directly measuring the people who were looking for work, and having a sample survey to measure this”.

¹³ Questions on the reasons for part-time work were finally added to the survey permanently in May 1955, allowing the calculation of a jobless rate that includes the under-employed.

e. Measurement Ahead of Theory?

Another possible reason for the late adoption of the search-based definition of unemployment is that social scientists (and economists in particular) had not yet developed a theory of job search. In the prevailing supply-demand framework of the time, a person was either working or not: there was no distinct role for search. In fact, judging by the content of the leading academic journals, unemployment was not an important topic of research interest among economists until well after World War II. In the 30 year period from 1920 to 1949, the *American Economic Review* published only 16 articles with “unemployment”, “unemployed” or “labor force” in the title in the regular pages of the journal (21 more appeared in the *Papers and Proceedings*). Over the same period the *Journal of Political Economy* published 14 articles and the *Quarterly Journal of Economics* 19 articles.¹⁴ By comparison 40 articles appeared in the *Journal of the American Statistical Association*, including many papers written by WPA and Census Bureau staff.

This conclusion is strengthened by an examination of the content of these articles (see Table 2). The main interest of the economics articles with “unemployment” in the title was unemployment insurance (40% of articles). Theoretical studies of unemployment -- nearly all simple macro models -- were also relatively common. The vast majority of the measurement-related papers (16 of 19) appeared in *JASA*.¹⁵ Economists apparently left the question of how to define and measure unemployment to the statisticians and bureaucrats.

Despite its atheoretical origins, the idea of equating unemployment with active search has thrived. A major step was the development of job search theory, starting with Stigler’s (1962) recognition of the importance of wage dispersion, and culminating most recently with the award of a

¹⁴ Sociologists were also not very focused on the issue. There were only 9 articles with these 3 key words in the title in the *American Journal of Sociology* over the 30 year period.

¹⁵ Of the three papers in the economics journals discussing measurement issues, one is the article by Long cited above (Long, 1942) criticizing the WPA measure for its lack of theoretical foundations, a second was a discussion of added worker effects (Humphrey, 1940), and the third is a one-page summary in the *AER Papers and Proceedings* of a session on the measurement of unemployment (Givens, 1934).

Nobel prize to Peter Diamond, Dale Mortensen, and Christopher Pissarides for their work in the area.

This paradigm has provided belated justification for a construct that has lasted longer than many of the theories created in the same era.

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Table 1: Questions Used to Measure Unemployment 1910-1945

1910 Census

Under the heading "Occupation"

Col. 18 Trade or profession of, or particular kind of work done by this person, *spinner, salesman, laborer, etc.*

Col. 19 General nature of industry, business, or establishment in which this person works, *cotton mill, dry goods store, farm, etc.*

Col. 20 Whether an employer, employee, or working on own account

If an employee:

Col. 21 Whether out of work on April 15, 1910

Col. 22 Number of weeks out of work during 1909.

1930 Census

Under the heading "Occupation and Industry"

Col. 25 Trade, profession, or particular kind of work, *spinner, salesman, riveter, teacher, etc.*

Col. 26 Industry or business, *cotton mill, dry goods store, shipyard, public school, etc.*

Col. 27 Class of worker

Col. 28 Whether actually at work yesterday (or last regular working day) (yes or no)

For those answering "yes" to column 28 (completed on a separate "Schedule of Unemployment")

Under the heading "If this Person has No Job of Any Kind":

Col. 12. Is he able to work? (yes or no)

Col. 13 Is he looking for a job? (yes or no)

Col. 14 For how many weeks has he been without a job?

Col. 15 Reason for being out of a job (or for losing his last job) *plant closed down, sickness, off season, machine introduced, strike, etc.*

1937 Enumerative Check Census

Qu. 4 Was this person working for pay (or profit) during the week of November 14-20? (yes or no)

If yes on question 4:

Qu. 5 Was he working full time? (yes or no)

Qu. 6 How many hours did he work?

Qu. 7 Did he want more work?

If no on question 4:

Qu. 8 Does he usually work for pay or profit? (yes or no)

Qu. 9 Did he want work? (yes or no)

If yes on question 6:

Qu. 10 Was he able to work? (yes or no)

Qu. 11 Was he actively seeking work? (yes or no)

Qu. 12 Was this person employed on WPA, NYA, CCC, or other emergency work during the week?

Note: table continues

Table 1: Questions Used to Measure Unemployment 1910-1945, continue

1940-45 Monthly Report on the Labor Force (as designed by WPA)

Under the heading "Activity During Census Week"

Qu. 9 At work on private or government job. Enter PE-W (private employment- wages) OA (own account) E (employer) UP (unpaid family worker) G (government worker) **or no**.

If no on question 9:

Qu. 11 Actively seeking work? Enter date present searching began **or no**.

Qu. 12 If no in 9 and 11: Reason for not seeking work. Enter code.

Codes: H (engaged in home making) S (enrolled in school) U (permanently unable to work) J (has a job, business, etc) I (temporary illness as reason for not seeking work) L (layoff, temporary, with no specific instructions to return to work, off season in particular trade or industry) N (believes no work available) OTH (specify in footnote)

July 1945 Monthly Report on the Labor Force (so-called "New Schedule")

Under the heading "Activity During Census Week"

Qu. 10 Last week what was your main activity (working, looking for work, keeping house, going to school, or something else?)

If main activity was other than working in question 10:

Qu. 11 In addition did you do any work for pay or profit last week (or without pay on a family farm or business)? (yes or no)

Qu. 12 If no in 11: Were you looking for work? (yes or no) **Do not ask if major activity is looking in qu. 10**

If no in 12

Qu. 13 Do you have a job at which you did not work last week? (yes or no)

Qu. 14 If yes in 13: What was the reason you were not working last week

Codes: ILL (illness) DIS (labor dispute) VAC (on vacation) NEW (waiting to start new job)

WEA (bad weather) OFF (layoff) OT (other)

Sources: 1915 and 1930 Census questions from U.S. Department of Commerce Bureau of the Census, 1989. 1937 questions from Dedrick and Hansen, 1938. Remaining questions from Hauser (1949).

Table 2: Content of Articles on Unemployment-Related Topics, Published 1920-49

	Total 4 Journals (1)	AER (including P&P) (2)	JPE (3)	QJE (4)	JASA (5)
All Topics	110	37	14	19	40
Measurement-related	19	1	1	1	16
Descriptive Analysis (unemployment/labor force)	19	3	5	2	9
Theoretical Models of Unemployment	30	11	2	9	8
Unemployment Insurance	35	16	6	7	6
Other Policy-Related	7	6	0	0	1

Note: based on JSTOR query of articles published January 1, 1920 to December 31, 1949 with "unemployment", "unemployed" or "labor force" in title. Book review articles excluded. There were 31 book reviews in the sample period with one or more of the key words in the title: 28 in the JPE and 3 in the QJE.