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PART IV
*Alternative Approaches to Measuring
Job Vacancies*



*Job Openings and Help-Wanted Advertising as
Measures of Cyclical Fluctuations in Unfilled
Demand for Labor*

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I: INTRODUCTION

Scope of Paper

The purpose of this paper is to evaluate the usefulness of certain existing information as a gauge of the behavior of unfilled demand for labor.

This paper will be largely restricted to an analysis of time series. Since the problem of matching jobs and job seekers is, at least to some extent, a cyclical one, it is well to ask how the unfilled demand for labor fluctuates in the course of business cycles.

The term "unfilled demand for labor" needs some clarification. I certainly do not intend to solve, in this mainly descriptive report, one of the most difficult problems that may be before this conference, i.e., what a theoretically adequate and operationally useful definition of unfilled demand for labor—or of job vacancies—ought to be. However, in order to interpret the behavior of the available measures properly, it is necessary to mention a few considerations. The backlog of unfilled demand for labor depends on the interaction of demand, supply, wages and other costs, revenues, stipulations in union contracts, and various other factors. In this sense the

NOTE: For good advice and helpful suggestions, I am grateful to Gerhard Bry, Jacob Mincer, and Geoffrey H. Moore.

level of unfilled demand is a residual, and its change over time is the composite effect of changes in its determinants. An economic analysis on this level is probably beyond the realm of our present analytic capabilities; certainly it is beyond the scope of this paper. What I shall attempt to do is to follow the time path of vacancies—or rather of the statistical approximations to vacancies—and to deduce whatever generalizations can be derived from observation, measurement, and comparison. Such generalizations cannot be obtained without a certain amount of *ex ante* speculation and *ex post* rationalization.

An important question is related to the origin of vacancies. To what extent are they brought about by labor turnover, such as voluntary quits, and to what extent by the creation of new positions—either as a consequence of increased cyclical activity or of increased long-term demand for labor? The distinction is important because, although a high level of vacancies is an *indication* of “prosperity” (tight labor market), it is not, by itself (or in combination with unemployment), a *measure* of labor shortage. If it is accompanied by a high level of voluntary quits, actual labor shortage is of course not as large as it would be—for the same level of vacancies—if quitting were negligible. Since quits create vacancies and vacancies create quits, there follows a spiraling reinforcement which has no measurable relationship to labor shortage. Hence, for the proper interpretation of vacancy behavior, the concurrent behavior of labor turnover must be considered.

Another important dimension of job vacancies is the length of time during which they exist. A two-day vacancy is not the same phenomenon as one that lasts three months or three years. The very short-term vacancy may be considered “frictional,” in the same sense in which the unemployment of a person who is between jobs is called frictional; and the very long-term vacancy is perhaps not an “urgent” vacancy, or one with conditions so unusual that it cannot possibly be filled.

The problems posed by long-term unemployment and those posed by long-term vacancies are not entirely parallel, either economically or socially. Filling a long-term vacancy is to a much larger extent within the discretion of the firm than finding a job

is within the discretion of the long-term unemployed. It is possible for the firm to fill or eliminate a long-term vacancy by modifying its production function or its wage offer. The long-term unemployed is usually limited in making analogous adjustments by a lack of internal and external resources and by the existence of minimum wage laws and union rates.

The intermediate-term vacancies—whether they are brought about by labor turnover (quits, deaths, dismissals) or by the need for additional personnel—which reflect genuine “demand” for labor in a given occupation and labor market area, at acceptable wage rates, are for analytic purposes the most important ones. The above considerations indicate, in a general way, the direction which the evaluation of the available data will have to take. To be fully useful analytically, vacancy measures should be more than just a count of currently open positions without distinction between those that are open only as a consequence of normal labor turnover, those that are not “urgent,” those that are imposing unrealistic conditions, and those that are genuine labor deficits due to quantitative shortages or to qualitative deficiencies in the labor supply.¹

In what follows, we shall supply a description of the types of available statistics, including coverage and classification. We shall also offer a quantitative analysis of cyclical and longer-term changes over time. We shall attempt to evaluate the analytical contribution of the information toward measuring the unfilled demand for labor. Finally, we shall attempt to pinpoint the suggestions arising from our analysis for the development of better measures.²

Existing Collections of Data

The data at our disposal approximate, to different degrees, the backlog of unfilled demand for labor. The first collection of data to be described consists of “Display Ads for Executive Positions,” as they are published by Heidrick and Struggles in their *Executrend*. Secondly, we will describe the time series on “Help-Wanted Adver-

¹ These distinctions have, of course, their analogies in the classification which would be desirable for a fuller understanding of unemployment.

² The information available permits some analysis by industrial, occupational, regional, and other classification. Although these subgroups will not be treated in the present paper, it is hoped that this will be done at a later time.

tising" which were originally collected and published by the Metropolitan Life Insurance Company and are now published on an extended basis by the National Industrial Conference Board. The third group of data describes nonagricultural employment opportunities, referred to as "job openings," registered at state employment offices and published monthly by the Bureau of Employment Security. The order of treatment goes from the more remote to the closer approximations of total job vacancies.

Since the three bodies of data reflect different ways of filling vacancies, their analysis and comparison are, of course, of some intrinsic interest, apart from the fact that they may shed light on the behavior of vacancies—the central topic of this conference.

We shall have occasion to present data for related labor market activities, in order to show the behavior of our series within a broader labor market framework, and perhaps to supply some explanation of typical or atypical behavior of our series. The data presented have been adjusted for seasonal variation. A survey chart providing a conspectus of the three aggregates and of some closely related labor market variables is presented as Chart 1. The chart is restricted to the postwar period, although some of the data will be analyzed for a longer span.

Since the three main groups of data differ in concept, coverage, breakdown, and other characteristics, the analysis will be undertaken separately for each group.

Some Findings on Cyclical Behavior

Despite the heterogeneous nature of the statistical series described above, we are able to observe rather consistent cyclical behavior in the three samples. Classified help-wanted advertising, display ads for executive positions, and job openings pending at state employment offices all show strong cycles moving in close conformity with cyclical fluctuations in general business conditions. Their amplitudes are large relative to those in employment, of roughly the same magnitude as those in unemployment, and fairly similar to each other (see Chart 1). From cycle to cycle, they reflect broadly the difference in the severity of cyclical contractions in business conditions at large. The cyclical turns of each of the three series tend to

CHART 1

Job Openings and Related Labor Market Variables,
United States, 1950-64

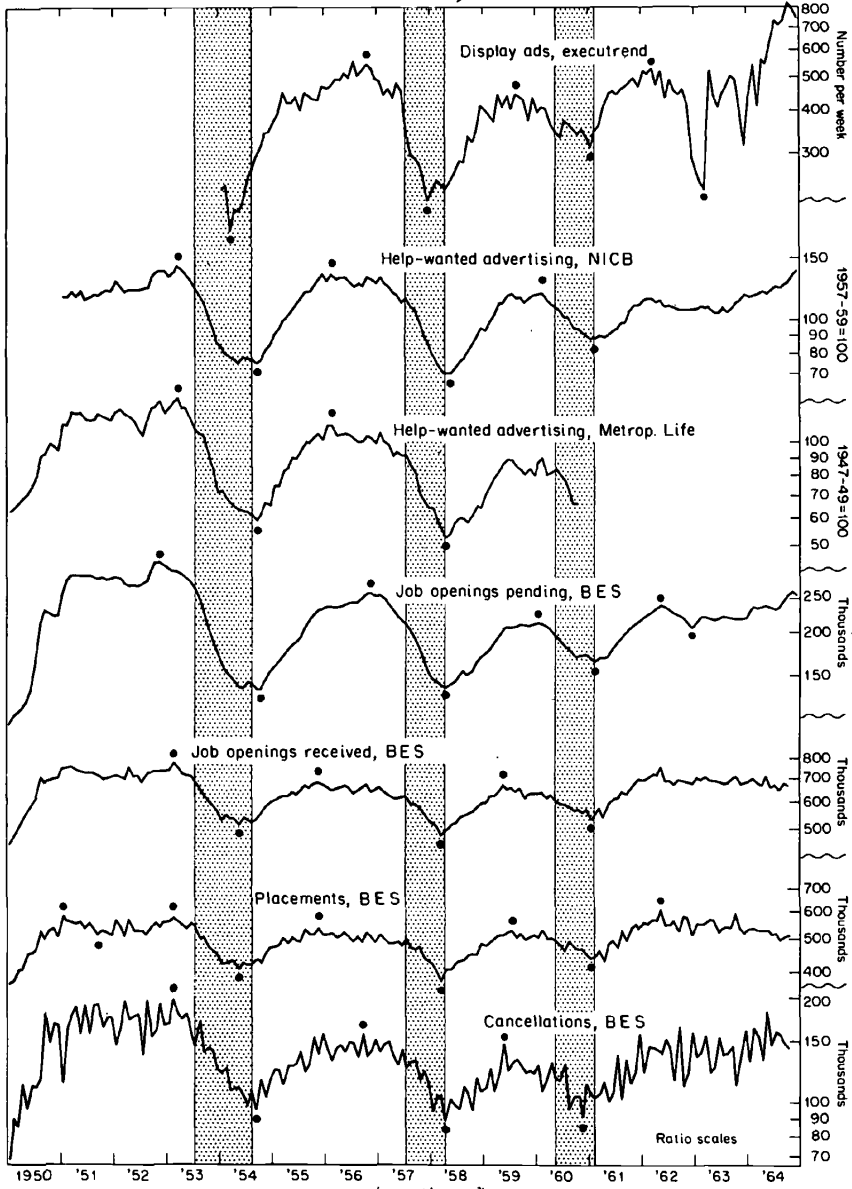
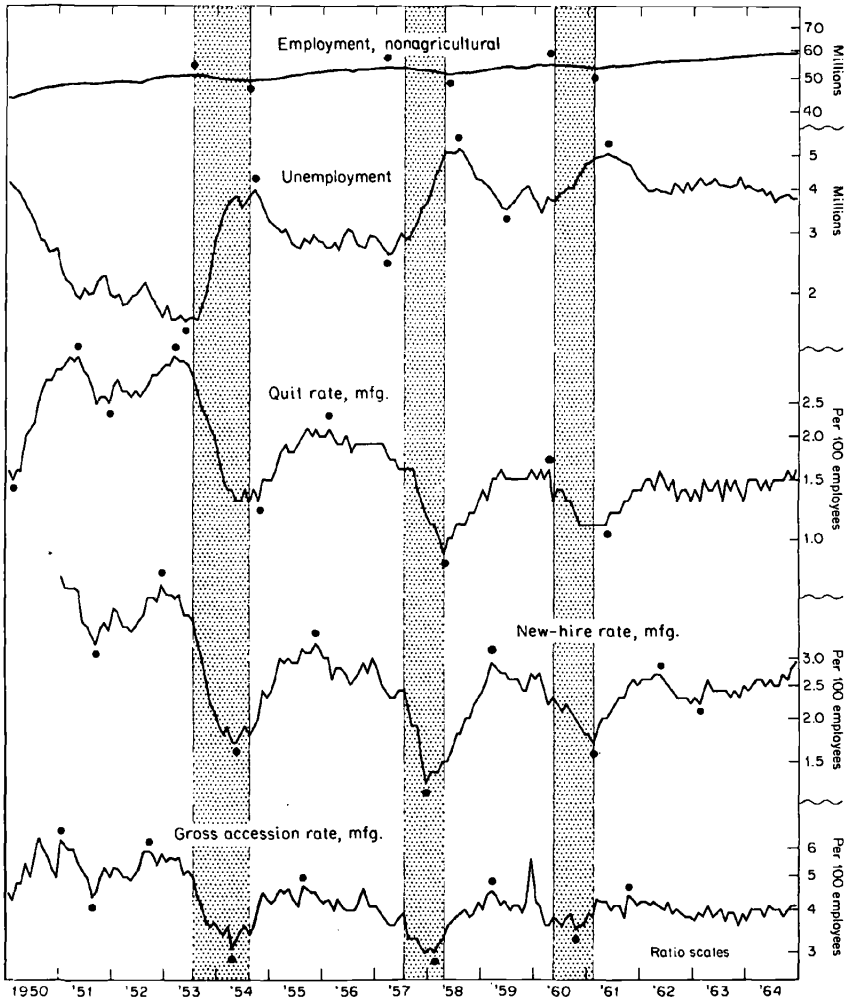


CHART I (concluded)



NOTE: Dots identify peaks and troughs of specific cycles. Shaded areas represent business cycle contractions; unshaded areas, expansions.

show long leads before business cycle peaks, and smaller leads or coincidences at business cycle troughs. The regularity of the timing relations may, in fact, qualify some or all of the series as business cycle indicators. These broad generalizations hold also for the major subgroups of the series for which information is available. Since,

in addition, the three samples together cover probably more than a third of total job vacancies, it seems likely that their cyclical behavior is broadly representative of vacancies at large. However, this expectation must be qualified, in view of some obvious elements of bias which are discussed later in the paper.

II: NEWSPAPER DISPLAY ADS FOR EXECUTIVE POSITIONS

Description of Data

These data are compiled by Heidrick and Struggles, an executive recruiting firm which "helps organizations find executives." They are published in a monthly publication called *Executrend*, which is designed for "measuring the pulse of the market for executives."

The series represents the number of executive positions which are offered in the form of so-called "display ads" in the *Wall Street Journal* and in Sunday newspapers of eleven metropolitan areas (New York, Chicago, San Francisco, Dallas, Cleveland, Philadelphia, Pittsburgh, Boston, Los Angeles, St. Louis, and Detroit). Ads must be for executive positions or for positions offering a salary of \$10,000 or more. Employment agencies' display ads, listing several openings, are not counted. The series starts in 1954. Separate data are available for seven executive job categories: general administration, marketing, finance, general engineering, defense engineering, manufacturing, and personnel administration. The analysis in this paper is restricted to the total.

It is obvious that these data are only very tenuously related to job vacancies at large. In the first place, they refer only to executives, a small segment of the labor force; secondly, they are collected only in eleven metropolitan areas; and finally, they are based exclusively on display advertising in selected Sunday newspapers. Nevertheless, the data do describe a segment—albeit a small one—of the phenomenon in which we are interested, and a study of the behavior of the executive openings may be significant with respect to their cyclical characteristics, as well as with respect to the development of approaches toward the measurement of unfilled demand for labor.

Furthermore, these positions are of special interest since they are key positions upon which the creation and filling of other vacancies may depend.

Cyclical Behavior of Aggregate

As can be seen in Chart 1, display ads for executive positions show clear positive conformity with the business cycle. They declined during the 1957-58 and 1960-61 recessions in the economy at large. The reasons for positive conformity of job vacancies in general are not hard to find. More jobs become vacant during business expansions, partly because the total number of jobs increases and partly because, as the number of unemployed candidates decreases, job openings become harder to fill and remain open longer. Moreover, in a tightening labor market more employees quit one job to move to another, thus causing the number of temporarily unfilled jobs to increase. It is likely that this last cause is not as strong for executive positions as it is in general, because by and large the quit rate for executives is lower than for other employees.

Since this series is available only from 1954 on, any generalization concerning the relationship of its turning points to turning points in the economy at large must be of limited validity. At the two peaks substantial leads can be observed, of twelve months and nine months, respectively.³ The situation is somewhat different at troughs. Of the three troughs, one leads by five months, one by four months, and the other by only one month, for an average lead of about three months.

Let us venture an explanation for the consistent difference between the leads at peaks and at troughs, although generalizations and explanations based on two or three cycles are hazardous. The longer lead at peaks than at troughs can be understood most readily if we again think of vacancies as stemming partly from newly created jobs and partly from the separation of old em-

³ An extra turn in 1962 also occurs before corresponding turns in usually coinciding labor market variables. A specific trough in March 1963 that cannot be related to a business cycle turn is greatly influenced by newspaper strikes in New York and Cleveland.

ployees.⁴ With the decline in the rate of expansion before business cycle peaks, the number of new jobs—particularly executive jobs—declines before the decline in levels of employment and business activity in general. As far as replacement of former employees is concerned, this is done mainly for employees who have quit and it must, therefore, be expected to vary with the number of quits. For the quit rate (in manufacturing industries), the evidence shows a fairly consistent lead before business cycle peaks and a short lag behind business cycle troughs (see Chart 1). The relative brevity of the lead at troughs is probably brought about by that part of vacancies which is created by the quitting of employees and which does not increase until the economy is on its way to recovery. This could cause vacancies to lag behind business cycle troughs. The fact that display ads for executives show any lead before troughs—if it turns out that the lead persists—may have to do with the practice of staffing departments from the top down, so that the need for executives may lead that for other workers. That is, the demand for executives may also be related to commitments for new investment, which typically lead at both the upturn and downturn of business cycles.

The short time-coverage of the series also makes generalizations on its amplitude difficult. However, those cycles which it does cover are clearly defined and, in comparison with other labor market series, rather large in amplitude (see Chart 1). Also, the decline corresponding to the 1957–58 recession is stronger than that during the 1960–61 recession—a difference which corresponds to the relative severity of the two recessions in the economy at large.

Relative amplitudes of job vacancies must, of course, be expected to be larger than those of employment, since they are more closely related to changes than to levels of employment. As far as amplitudes of vacancies for executives are concerned, it is difficult to form a reasonable judgment a priori. However, amplitudes of display ads

⁴ Promotions and internal transfers of workers do not create vacancies, but at best merely shift them. Existing vacancies are shifted if promotions create the need for replacement at the lower level; they are eliminated if such replacement is not necessary.

for executive job openings should be expected to be larger than amplitudes of the vacancies themselves, primarily because during recessions it is easy to fill whatever vacancies there are without resort to display advertising. Perhaps the important determinant for display advertising is not so much the number of vacancies as the ratio of vacancies to available (unemployed) applicants. There is an additional factor in the display ads for executives which tends to cause larger amplitudes; that is, the fact that these ads are costly. The cost of a display ad "is seldom under \$50 and may run as high as \$2,000."⁵ Hence it is likely that this form of recruiting is resorted to more frequently when the labor market is tight and when funds for recruiting are plentiful.

Apart from causing larger cyclical amplitudes, the high cost of display ads also tends to insure the authenticity of the advertised vacancies. It is likely that vacancies thus advertised are not easy to fill and that—at least in the opinion of the advertiser—it is not hopeless to try to fill them. It has been alleged, however, that some display ads are used mainly for prestige purposes—they advertise the company and suggest a prosperous condition. When recession strikes, this luxury may have to be sacrificed.

The amplitudes of the occupational subgroups of display ads show considerable variations—variations which tend to reflect labor market conditions and recruitment practices in the respective fields.

III: HELP-WANTED ADVERTISING

Description of Data

A monthly index of help-wanted advertising was originated in the mid-twenties by William A. Berridge, and later published by the Metropolitan Life Insurance Company. This index is available from 1919 to 1960. It has been constructed by linking together the median monthly percentage changes in the number of help-wanted ads published in about thirty newspapers for the period up to 1927,

⁵ Letter from Oscar M. Beveridge (of Beveridge Organization, Inc., which distributes *Executrend*) to Geoffrey H. Moore, June 1, 1962.

about 100 papers in the early thirties, and about sixty newspapers in the postwar period.⁶

Data on help-wanted advertising are now compiled by the National Industrial Conference Board. A monthly index—covering the period 1951 to date—is published, based on the total number of help-wanted ads that appear each month in the classified section of one leading newspaper for each of fifty-two cities, representing as many labor market areas. These labor market areas accounted, in 1962, for about half of total nonagricultural employment in the United States. For each city paper the numbers of ads, converted to relatives on a 1957–59 base, are combined, using as weights the civilian labor force in each of the labor market areas represented in the sample.⁷ Separate indexes are published for each of the fifty-two cities and for nine regions; they are, however, not analyzed in this paper.

Help-wanted ads are more closely related to total job vacancies than are display ads for executive positions, mainly because the sample is not restricted to “executive” positions. However, help-wanted ads clearly cover a more restricted population than vacancies in general. Advertisements are mainly placed to attract professionals, urban white collar employees, and skilled workers; they are largely for “better-paid” positions. Unskilled workers are usually recruited at the gate or through employment agencies.

Some advertisements are duplicated in different newspapers and even in newspapers appearing in different cities. Since only one newspaper for each city is included in the sample, duplication in the index can come about only if the same job is advertised in two or more newspapers which are in different cities and included in the sample. For classified ads this is probably a rare occurrence.

⁶ For a more detailed description of this index and its history, see William A. Berridge, “Barometers of Employment Advertising Volume,” *The Classified Journal*, February 1930; “Observations on Metropolitan Life’s Help-Wanted Advertising Index” and “Welcome to the Conference Board!” *The Conference Board’s Business Record*, February 1961.

⁷ From January 1, 1958, on, the weights are based on the labor force in 1960. For a full description of the revised index see *The Conference Board’s New Index of Help-Wanted Advertising*, National Industrial Conference Board, Technical Paper 16, 1964.

Cyclical Behavior of Aggregate

Cyclical movements in help-wanted advertising conform very closely to cycles in the economy at large. For the entire period, 1919–64, their conformity to business cycles is perfect. Help-wanted ads went down in every business contraction and up in every business expansion except for the postwar expansion of 1945–48.⁸ This exception is probably due to the fact that by 1946 the absorption into civilian employment of men released from the armed forces was practically completed and the period of high labor turnover had ended. In the next few years the force of the cyclical expansion was not strong enough to offset the decrease in labor turnover and vacancies, due to the gradual settling down of people into jobs.

In view of the good conformity of help-wanted ads to business cycles, this series seems to be suitable as a business cycle indicator, and its timing characteristics have been investigated repeatedly.⁹ It is indeed included among the roughly coinciding indicators in the monthly *Business Cycle Developments*, published by the Bureau of the Census. A review of the timing relationship of this series to turning points in the economy at large should shed light on the adequacy of this classification.

There is no doubt about the troughs. Since 1919 all lower turns in the help-wanted index occurred within two months of business cycle troughs. At peaks, however, the picture is different. Leads at peaks prevail, particularly in recent cycles. During the entire period, 1919–64, there were five leads among the nine upper turns, resulting in an average lead of about three months. During the

⁸ The index of business cycle conformity, a measure devised by the NBER, is +100 in spite of this exception. This is due to the fact that help-wanted ads do reflect the 1945–48 expansion—albeit in the form of differential rates of change. For a description of the measure see Arthur F. Burns and Wesley C. Mitchell, *Measuring Business Cycles*, New York, NBER, 1946, pp. 31 ff.

⁹ William A. Berridge, "National Monthly Help-Wanted Advertising Index," American Statistical Association, Business and Economics Section, *Annual Proceedings*, 1955, pp. 262 ff, and the "Comments" by Gerhard Bry; Berridge, "The Cyclical Behavior of Help-Wanted Advertising and Selected Labor Turnover Variables," American Statistical Association, *Annual Proceedings*, 1961, pp. 31 ff, and the "Comments" by Geoffrey H. Moore; and Nestor F. Terleckyj, *Help Wanted Advertising as a Business Indicator*, National Industrial Conference Board, Technical Paper 9, 1961

postwar period there were leads at each of the three peaks of help-wanted ads, and the average lead was about eight months (see Chart 1). This record would seem to warrant classifying help-wanted advertising as a business cycle indicator that tends to lead at peaks and to coincide at troughs.

This timing behavior may be caused by a combination of factors. As far as advertisements for vacancies created by desired additions to the work force are concerned, the rate of change in employment is a relevant factor. This rate leads the troughs in general business conditions as well as the peaks. However, at peaks the need for additional labor declines with the decline in the rate of increase of employment, hence ads tend to lead at peaks; at troughs, a decline in the rate of decrease still does not imply an increase in new jobs, hence ads do not tend to lead at troughs.

Advertisements for jobs created by labor turnover should be considered in relation to the type of turnover which caused them. Vacancies created by quits will, of course, vary with the quit rate, which in manufacturing industries leads at peaks and lags at troughs. Layoffs themselves do not create vacancies, but the renewed need for the laid-off worker does. Since the rehire rate, unlike the new-hire rate, tends to be countercyclical (at least in manufacturing) a similar countercyclical behavior of "vacancies to be filled by rehires" could be suspected. However these vacancies are filled, as far as possible, by direct recall and thus do not affect help-wanted advertising. Those that cannot be filled by direct recall may affect advertising, but the cyclical characteristics of this effect are difficult to foresee.

All these factors combine to cause help-wanted ads to lead at business cycle peaks and to roughly coincide at business cycle troughs.¹⁰

Both the NICB and the Metropolitan Life series have well-defined cycles with wide amplitudes.¹¹ The severity of cyclical declines is highly correlated with the severity of recessions in the economy at

¹⁰ For further explanatory comments on the timing of help-wanted advertising see also *ibid.*, pp. 12-14, and Moore, "Comments," pp. 34-35.

¹¹ For the period during which both series are available, their amplitudes are very similar to each other.

large. This is borne out by the rank correlation between the size of declines in help-wanted ads and the severity of business cycle contractions.¹² The rank correlation coefficient is about .8.

Chart 1 indicates that, during the postwar period, cyclical amplitudes of help-wanted ads were larger than those of employment, roughly similar to those of unemployment and job openings pending, and smaller than those of display ads for executive positions.

Data on help-wanted advertising have been collected for a sufficiently large number of business cycles to permit some comments on intracyclical patterns. Reference patterns¹³ for each cycle and averages for the interwar period, the postwar period, and the entire period 1919-61 are found in Chart 2. The simple symmetry of the average pattern for the total period hides the variety of individual patterns and their systematic change over time. During the interwar period, contractions tended to be considerably deeper than during the postwar period. During the postwar period, there was a marked flattening out of movements between Stages III and IV and a clear lead at peaks, indicated by the fact that the downturn occurred at Stage IV rather than V of the business cycle. This is, of course, in keeping with the monthly timing measures at peaks, as described in the preceding section. However, the observed monthly leads do not necessarily bring about a shift of a full stage in the peak of the patterns. A shift, incidentally, is found in the pattern of each of the three individual postwar cycles, while during the interwar period it occurs only in two out of five cycles.

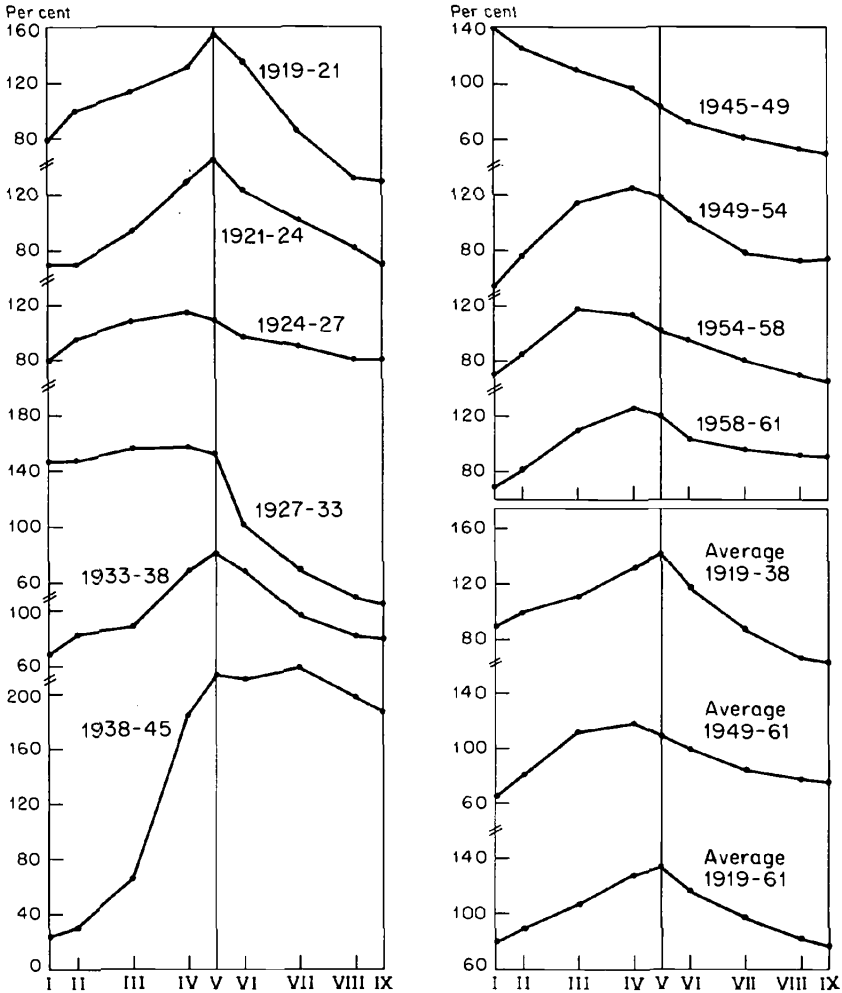
Help-wanted ads fail to display any long-term upward trend since 1919. This might be surprising in view of the long-term growth of the labor force and the increasing role of skilled blue collar and white collar occupations. However, there are several reasons why

¹² For a ranking of business contractions by severity, see Geoffrey H. Moore, *Measuring Recessions*, New York, NBER, Occasional Paper 61, 1958.

¹³ The reference cycle patterns used are the nine-stage patterns which form part of the National Bureau's business cycle analysis. Each business cycle is divided into nine stages by designating the initial trough as Stage I, the subsequent peak as Stage V, the terminal trough as Stage IX, and by dividing expansions and contractions each into three equal periods. Chart 2 shows cycle relatives (stage averages in per cent of cycle averages) for these stages against a uniform stage grid, which, in effect, standardizes the duration of business cycle phases. For detail see Burns and Mitchell, *Measuring Business Cycles*, Chapter 5.

CHART 2

Reference Cycle Patterns, Help-Wanted Advertising, United States, 1919-61



such a trend might not be apparent in our index of help-wanted ads. For one thing, these ads are compiled for a semifixed sample of cities and newspapers; when this sample changes, the new segment is linked to the old so that the index does not reflect any in-

crease in the number of existing newspapers. Furthermore, there is the custom of multiple job advertising, and growth of the average number of jobs per ad would not be reflected in the index. There may also have been a shift from classified ads to display ads and to other means of employee procurement, such as the relatively new public employment service.¹⁴

In short, nothing can be deduced from the trend of help-wanted ads with regard to the trend of vacancies, and certainly the levels of the help-wanted index provide no information on the absolute levels of vacancies. Knowledge of these levels is crucial for the evaluation of labor market conditions, particularly for the comparison of vacancy with unemployment levels. In order to estimate these levels, we have to search for evidence that reflects vacancies in a more reliable way.

IV: NONAGRICULTURAL JOB OPENINGS

Nature and Coverage of Data

Job opening statistics are a by-product of the employment service operations of the state offices of the Bureau of Employment Security, U.S. Department of Labor. The data are published monthly in the Bureau's publication *Employment Service Statistics, Supplement to Employment Service Review*.¹⁵ Three different time series on nonagricultural job openings are available from late 1949 on: (1) "job openings received" by the employment service during the month, (2) "job openings pending" at the end of the month, and (3) "job openings available," which is the sum of those received during the month and those pending at the end of the previous month. In addition to these statistics, the Bureau of Employment Security also publishes the number of nonagricultural placements, i.e., the number of job openings which were filled through the services of the agency. With this information it is possible to compute the number of "cancellations," i.e., the number of openings which

¹⁴ See also Terleckyj, *Help Wanted Advertising*, p. 9, and Berridge, *The Conference Board's Business Record*, February 1961, pp. 3 and 4.

¹⁵ Prior to 1964, they were published in the monthly release, *Statistical Supplement, Labor Market and Employment Security*.

were originally received by the employment service but which were subsequently filled independently or withdrawn from the labor market, or at least from the employment service.¹⁶

The various time series are depicted in Chart 1. Of the three job openings series, job openings pending, which describes an inventory of vacant jobs, is the one most closely related to the concept of job vacancies which we are trying to approximate. For this reason we shall be mainly concerned with that series.

Statistics on job openings are available for each state. However, differential performance of individual states could be caused by differences in managerial practices of state employment offices and by changes of such practices over time. Differences in the performances of states thus do not necessarily reflect differences in labor market conditions. The major part of the job opening data is not available by industry or by occupation. However, since 1951 the Bureau of Employment Security publishes a detailed occupational breakdown of a part of job openings pending, covering those hard-to-fill openings that were placed in interarea recruitment by state employment services. Because of these characteristics, the occupational distribution cannot be regarded as representative of vacancies in general or even of job openings pending at employment offices. Neither the geographical nor the occupational detail will be analyzed in this paper.

"Nonagricultural job openings pending" at employment service offices approximate job vacancies more closely, at least in concept, than does either of the two advertising measures previously analyzed. While the advertising indexes are merely circumstantial indicators of vacancies, job openings pending constitute a sample—however biased—of the population of vacancies, and they are counted in the same units. Moreover, job openings include many types of vacancies besides those for which ads are put in newspapers. This difference implies, however, that a larger number of purely frictional and perhaps easily and quickly filled openings may be included. In general, the closer we get to an all-inclusive concept

¹⁶ Job openings pending at beginning of month, plus job openings received during month, less placements during month, less job openings pending at end of month, equal cancellations during month.

of job vacancies, the more frictional vacancies will be included, and the more important it becomes to be able to classify vacancies by duration or similar criteria.

A major difference between openings pending at employment offices and all vacancies is brought about by the fact that only a relatively small fraction of all vacancies,¹⁷ but a considerably larger fraction of all job seekers, is represented at employment offices. This has consequences for the measure of job openings pending which will be discussed later.

Cyclical Behavior of Aggregate

The cyclical movements of the number of nonagricultural job openings pending conform closely to the cyclical changes of general business conditions (see Chart 1). This means simply that at times of high demand for additional labor more jobs remain unfilled at the end of each month, and that at a time of low demand fewer positions remain open.

Job openings pending (as well as job vacancies in general) represent a stock. In order for a stock to conform positively and with fairly close timing to cycles in the economy, it is necessary that during expansions the inflow be larger than the outflow, that the outflow begin to exceed the inflow around peaks in general business conditions, and that it stay larger until a trough in the economy is reached. This process, which implies that during contractions vacancies are filled faster than they are generated, becomes more plausible if it is realized that vacancies do not disappear only because of the successful "filling" of openings, either by the employment service or by other sources. Vacancies also disappear because of drying-up of specific job opportunities, be it because the demand for labor disappeared in the course of the contraction,

¹⁷ It is estimated that only about 30 per cent of all vacancies are filled by employment service offices. This rough estimate is based on the Department of Labor's recent job vacancy surveys. See the paper by Vladimir D. Chavrid and Harold Kuptzin in this volume.

In terms of new hires in manufacturing (new-hire rate times employment), BES employment service offices account for roughly one-third. This ratio varies inversely with the business cycle, mainly because of a more radical decrease of new hires than of placements. For 1953-54, the ratio of placements to new hires jumped from 0.26 to 0.37, and for 1957-58 from 0.32 to 0.36.

or because different arrangements were made when supply was not forthcoming for a given specification.

The inflow for job openings pending at employment offices consists of job openings received; the outflow consists of placements made by the employment service plus cancellations. As can be seen from Chart 1, the relative amplitudes and patterns of job openings received and of placements are strikingly similar, reflecting a fairly stable proportion of openings filled at about 80 per cent of those received (Table 1).¹⁸ This means that the cyclical characteristics of the stock must be explained by the interplay between the sta-

TABLE 1
*Job Openings and Related Measures at Business
Cycle Turns, 1953-61*
(thousands)

	Reference Dates					
	P	T	P	T	P	T
	7/53	8/54	7/57	4/58	5/60	2/61
1. Job Openings Received	680.0	522.2	609.1	491.4	606.1	552.5
2. Placements	535.9	424.9	484.0	394.2	491.7	448.2
3. Cancellations	163.1	105.8	128.4	97.5	116.2	107.2
4. Job Openings Pending	257.9	139.6	205.5	138.8	192.9	166.7
Ratios						
Placements/Received (2/1)	.788	.814	.795	.802	.811	.811
Cancellations/Received (3/1)	.240	.203	.211	.198	.192	.194
Pending/Received (4/1)	.379	.267	.337	.282	.318	.302
Pending/Placements (4/2)	.481	.329	.425	.352	.392	.372

NOTE: Table refers to three-month averages centered at business cycle turns. Basic data are adjusted for seasonal variation.

¹⁸ Table 1 shows that the levels of this ratio, at business cycle peaks and troughs, have a range of only two percentage points (79 to 81 per cent). However, on a quarterly basis the ratio varied between 75 and 82 per cent during the years 1950-63. The variation is systematic, showing a long-term rise by about four percentage points and countercyclical variations of diminishing amplitudes (about five points in the early cycle and about three in the later one). The lowest levels of about 76 per cent prevailed during the years 1950-52, a period of relatively tight labor markets. Both trend and countercyclical behavior can be explained by the greater ease of filling vacancies during slack labor market conditions. However, it should be remembered that these observations and interpretations refer to very small variations in the ratio of placements to openings received, and that the underlying data are restricted to BES employment office operations.

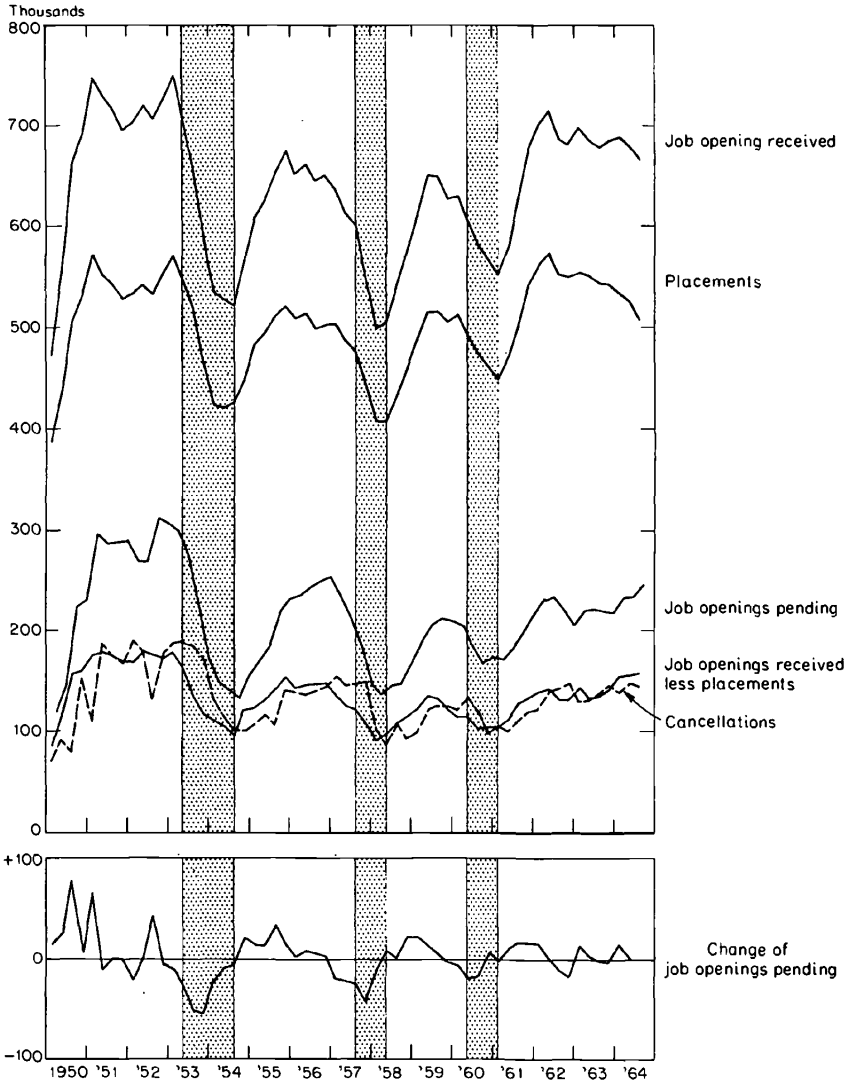
bility of this ratio and the fluctuations in the third element of the flow, i.e., in cancellations. Because of the similar relative amplitudes and the higher levels of job openings received as compared with placements, the difference between these two series varies in phase with the series themselves. Cancellations, which have nearly the same magnitude and similar amplitudes as this difference, lag consistently behind it. Chart 3 shows job openings received, placements, their difference, cancellations, job openings pending, and the change in job openings pending. The lag of cancellations behind the difference between job openings received and placements is apparent. The area between job openings received minus placements and cancellations represents the difference between total inflow and total outflow of jobs, and constitutes the changes in the stock of job openings pending (bottom line).

In order to understand the cyclical behavior of job openings pending it is necessary to understand why the components behave as they do. The reason why placements are an almost constant percentage of openings received must probably be sought in the prevalence of labor surpluses at employment service offices—where the insured unemployed register automatically, while unfilled jobs may but need not be reported. At state employment offices there is characteristically a surplus of applicants and, as a general rule, workers can be found very soon once jobs are available. The fact that only 80 per cent of incoming jobs are filled is not only due to the problem of finding suitable employees but also to cancellations.

The behavior of cancellations must be understood in terms of its two components: jobs filled from sources other than the employment service, and jobs never filled but withdrawn from the market. As far as the first category is concerned, its continued increase, after new openings and placements have declined, could be explained by the fact that a softening of the labor market makes independent filling of jobs easier. The employment service is less needed and companies can fill openings themselves—those that they have reported to the employment service as well as those that are not reported. At troughs the increase of cancellations of job openings at the employment service must wait until job openings re-

CHART 3

Job Openings Pending and their Determinants,
United States, by Quarters, 1950-64



NOTE: Shaded areas represent business cycle contractions; unshaded areas, expansions.

ceived increase. This might, at least partially, explain the lag at troughs, which incidentally appears to have a shorter average duration than that at peaks. The category of openings which disappear without ever having been filled may have a tendency to conform inversely with general business conditions (or at least their percentage of job openings received does). However, since we can only observe the combined effect of the two component categories, it is difficult to test the above speculations.

The result of these various flows is that the difference between the inflow (job openings received) and the outflow (placements plus cancellations) is highest in mid-expansion, changes from positive to negative before the business cycle peak, becomes lowest in mid-contraction, and stays negative until the trough in general business conditions. This configuration imparts positive cyclical conformity to the cumulation of this difference, i.e., to the stock of job openings pending.

The differences between levels and amplitudes of inflows and outflows which explain the conformity of the stock are, of course, also responsible for the amplitudes of job openings pending. The relative amplitudes of the latter are almost twice as large as those of placements and new job openings, and about the same as those of cancellations. The larger relative amplitudes of job openings pending are largely due to the fact that they are on a lower base. The absolute amplitudes are in fact only about 70 per cent of those of job openings received.

An interesting feature of the behavior of amplitudes of job openings pending is their apparent tendency to decline during the postwar period. Although only three cycles are covered by the available data, the downtrend of amplitudes is quite pronounced. (To a certain extent this is true also for the postwar cycles of help-wanted advertising.) The downtrend can be traced to a similar downtrend of the amplitudes of job openings received. As can be seen in Chart 1, the decline is brought about by both a decline in peak levels (from 1952 to 1956 to 1960) and an increase in trough levels (from 1958 to 1961 to 1963). The reason for the decreasing levels at peaks may be that, at high levels, job openings are determined by high

levels of quits and high rates of increase in employment; and the level of quits, particularly at peaks, has been decreasing during the postwar period—perhaps partly because of an increasing attachment of the workers to their jobs and partly because of the persistence of relatively high unemployment levels even during prosperous periods. Chart 1 shows the upward trend of trough levels in unemployment in the neighborhood of peaks in general business conditions and in job openings pending. It is more difficult to explain the upward trend in the troughs of job openings pending, i.e., the fact that even around troughs, job openings pending have not declined to previous levels. This might be partly due to more intensive solicitations for openings by employment services. It may also reflect an increase in residual openings, due to rapid changes in technological requirements and the lag of adjustment in labor force qualifications to these needs. Further study is needed to substantiate these speculations.

The timing relationships of the job opening statistics discussed in this section are summarized in Table 2. The three cyclical peaks of job openings pending occurred considerably before peaks in general business conditions. The average lead is about seven months. The troughs, on the other hand, were more or less coincident, all occurring within two months of the business cycle trough. These timing relations are very similar to those exhibited by the help-wanted advertising series.

In order to understand the mechanisms leading to the timing of the turning points of job openings pending, we would have to study the relative behavior of the various flows which affect the

TABLE 2
Timing Measures, Job Openings and Related Series, 1953-61

	P	T	P	T	P	T	P	T
	7/53	8/54	7/57	4/58	5/60	2/61	Average	Average
Job openings received	-5	-3	-20	-1	-12	-1	-12.3	-1.7
Placements	-5	-3	-20	-1	-10	-1	-11.7	-1.7
Cancellations	-7	+2	-6	+1	-11	0	-8.0	+1.0
Job openings pending	-8	+2	-8	0	-4	0	-6.7	+0.7

stock. It is clear, however, that an upturn or a downturn of the stock has a meaning of its own, whether it was caused by changes in inflows or in outflows. Basically, changes in the stock of job openings pending reflect changes in the relative "softness" (i.e., in the relation of unused supply to unfilled demand) of that part of the labor market which is serviced by the employment offices. Around business cycle peaks these changes tend to lead turning points in the economy at large, primarily because, as was pointed out above, the need for new employees and the need for replacement of quits both decrease before employment does.¹⁹ The absence of a lead at troughs is probably caused by the facts that (1) the early hiring, when business turns up, is not done through the employment service but from the ranks of previously laid off workers; (2) a decrease in the rate of decrease of employment does not bring about the need for new jobs; and (3) the labor force continues to grow, creating high levels of unemployment and softness of the labor market, which inhibits an increase in quits and the openings they produce.

The consistency of leads at peaks and of coincidences at troughs may make this series eligible as a business cycle indicator, albeit an indicator with different (but consistent) timing at peaks and troughs.²⁰ Confidence in the systematic character of these timing relationships is enhanced by the fact that help-wanted advertising shows similar timing over a more extended period of time.

Implications for Labor Market Analysis

Perhaps the most interesting finding, because of the light it sheds on the balance between labor demand and supply—at least at the BES employment offices—is the closeness and the high stability of the relationship between job openings received and placements.

¹⁹ It should be noted that the series describing the number of employees in nonagricultural establishments itself has led at two of the last three business cycle peaks. At the last three peaks the timing entries were 0, -4, and -1 month, respectively. But the leads of job openings pending exceeded these in each instance (see Table 2).

²⁰ Job openings received tend to show longer leads than job openings pending. However, the fact that they are somewhat more erratic detracts from their merit as cyclical indicators.

In the face of variations during cyclical expansions and contractions, placements remain close to 80 per cent of job openings received. Moreover, the remaining 20 per cent do not represent openings for which employees could not be found, for they include those that were filled independently or that "dried up" for other reasons. This means that, at employment offices, workers can usually be found for registered openings. That this is basically true is confirmed by the fact that the stock of job openings is relatively small compared to the flow. Characteristically, the ratio of job openings pending to job openings received during a month is about one-third. That is, on the average it takes about a third of a month to fill a job opening.

As can be seen in Table 3 (column 3) this ratio shows cyclical fluctuations between a high of .38 at the July 1953 peak and a low of .27 at the 1954 trough. The procyclical nature of the ratio reflects the fact that during prosperous business conditions a smaller part of the newly registered job openings can be filled. Thus the stock of job openings pending fluctuates with larger amplitude than the flow of new openings.

In contrast to the small stock of unfilled jobs relative to the monthly flow of new openings, the stock of registered unemployed workers is large relative to their monthly flow. The number of insured unemployed tends to be about 1.3 times as high as the monthly flow of initial claims for unemployment insurance, implying an average duration of registered unemployment of about six weeks. This ratio (see column 6) exhibits countercyclical fluctuations between about 1.0 at the July 1953 business cycle peak and about 1.6 at the 1958 trough. At low levels of business activity a larger proportion of the new claimants remains unemployed; thus the stock of insured unemployed fluctuates with larger amplitude than the flow of new claims.

The large difference between the two stock/flow ratios may be due largely to the fact that employment offices fill only a fraction of all vacancies in the economy, but have access to nearly all the unemployed. It may also reflect conditions prevailing in the economy, however. Since the two outflows (from the stock of all vacant

TABLE 3
*Job Openings and Unemployment, Stock-Flow Ratios of Employment Service
Offices, Business Cycle Turns, 1953-64*

Reference Turns	Job Openings, BES			Insured Unemployment, BES			Relation of Stock/Flow Ratios (6)/(3) (7)	Total Unemployment Rate (per cent) (8)
	Pending (Stock) (thousands) (1)	Received (Flow) (thousands) (2)	Stock/Flow Ratio (1)/(2) (3)	Registered (Stock) (thousands) (4)	Initial Claims (Flow) (thousands) (5)	Stock/Flow Ratio (4)/(5) (6)		
P 7/53	257.9	680.0	.379	910.3	911.2	.999	2.6	2.62
T 8/54	139.6	522.2	.267	2,015.3	1,350.6	1.492	5.6	5.93
P 7/57	205.5	609.1	.337	1,376.7	1,080.2	1.274	3.8	4.23
T 4/58	138.8	491.4	.282	2,852.7	1,840.2	1.550	5.5	7.16
P 5/60	192.9	606.1	.318	1,775.3	1,346.3	1.319	4.1	5.27
T 2/61	166.7	552.5	.302	2,491.3	1,734.5	1.436	4.8	6.79
Last quarter 1963	223.2	690.0	.323	1,707.0	1,239.8	1.377	4.0	5.67
Last quarter 1964	258.3	689.3	.375	1,448.7	1,099.8	1.317	3.5	5.03

SOURCE: Cols. 1, 2, 4, and 5, Bureau of Employment Security; col. 8, Bureau of Labor Statistics and Bureau of the Census. Weekly initial claims have been revised to a monthly level (col. 5).

jobs and from the stock of all unemployed workers) should be similar,²¹ a larger stock-to-outflow ratio for unemployment than for vacancies would mean a larger absolute stock of unemployment. The measured relation of the two stock/flow ratios (Table 3, column 7) is about four to one. However, this relationship must be expected to deviate from that existing in the economy at large, not only because the component ratios are based on inflows rather than on outflows but also because the relationship of BES job openings pending to insured unemployment is not the same as that of total vacancies to total unemployment. The bias of the BES ratios is apparent in the fact that even at the 1953 peak, when the labor market was very tight, the unemployment stock/flow ratio was still two and a half times as high as the corresponding job openings ratio. However, the cyclical changes in the relationship between the two ratios appears plausible (see column 7). The measure is high at troughs in general business conditions and low at peaks. At the 1954 trough it was as high as 5.6, at present it is about 3.5, and at the height of the 1953 prosperity it was 2.6—lower than it has been since. Furthermore, the fluctuations are closely related to those of the total unemployment rate (column 8). Although the measure may faithfully reflect cyclical changes in the relationship between vacancies and unemployment, nevertheless it does not provide the solution to the problem of estimating levels of vacancies relative to levels of unemployment.

If vacancy statistics had the same coverage as unemployment statistics, there would be no need to speculate about the comparative size of the two stocks. Ideally, they could be measured, and the excess of unemployment over vacancies would be a gauge of that part of unemployment which reflects the excess of aggregate labor supply over demand, and is not "frictional" or "structural." Similarly, an excess of vacancies over unemployment would be a measure of net labor shortage.

The distinction between frictional and structural components of

²¹ The two outflows are the same, except for (1) the difference between withdrawals of jobs from the job market and withdrawals of unemployed from the labor force and (2) the difference between the filling of jobs which were never reported as being vacant and the employment of workers who were never unemployed.

vacancies and unemployment might also be based directly upon the stock-to-flow ratio, that is, the ratio between the stock of unfilled vacancies and the flow of new vacancies reported during a given period. If this ratio is compared with a suitable standard of frictional delay, say, one-half month, it may be possible to roughly segregate vacancies into frictional and structural. Suppose, for example, the stock of vacancies were about 3 million. If the monthly flow were 1 million, then the frictional part of vacancies could not be more than one-half million, and the structural part would be about 2.5 million. In order to make such estimates, it would be necessary not only to compile the stock of vacancies at a given time but also to ascertain the total new vacancies reported during a given time period (corresponding to the present job openings received at employment offices). If a breakdown by duration were part of the contemplated vacancy information, the need for the flow data would of course be less pressing, since the important distinction between frictional and other vacancies could be based directly on some reasonable standard of duration. This would also permit variation in the standard from one occupation to another. Such a use of information on vacancies by duration would be analogous to the use of data on duration of unemployment.