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Labor Market Conditions and Employment of the Mentally Ill

Ralph Catalano[1]*, Robert E. Drake[2], Deborah R. Becker[2] and Robin E. Clark[2]

[1]*University of California, Berkeley, USA*
[2]*Dartmouth Medical School, Hanover, New Hampshire, USA*

Abstract

Background: The mental health services literature includes assertions that workers with mental illness are at earlier risk of unemployment than other workers when the economy contracts. This possibility is important for several reasons. One is that such a phenomenon would support the argument that the lives of mentally ill persons are made unnecessarily stressful by the stigma of mental illness. Another is that the phenomenon could distort comparisons of the effectiveness of programs designed to prepare persons with severe mental illness for work. Despite its importance, the assertion that severely mentally ill workers are at early risk of unemployment has never been empirically tested.
Aims of the Study: We aim to test the hypothesis that unemployment among persons with severe mental illness (SMI) increases before job loss among other workers.
Methods: We test the hypothesis by applying Granger causality methods to time-series data collected in two communities in the United States (i.e., Concord and Manchester, NH) over 131 weeks beginning on 12 May 1991.
Results: We find no relationship between job loss in the labor market and the likelihood that persons with SMI will be unemployed.
Discussion: We speculate that persons with SMI participate in the secondary labor market and that their employment status is unlikely to be well described by data gathered in the primary labor market. This implies that widely available measures of labor market status, which are designed to describe the primary labor market, cannot be used to improve the evaluation of programs intended to prepare the mentally ill for work. We also discuss the possibility that persons with SMI may have needs that are better met by the secondary than by the primary labor market.
Conclusions: The intuition that workers with severe mental illness are affected earlier than other workers by labor market contraction may not be correct. We infer that persons with severe mental illness may participate in the secondary labor market about which we know relatively little. We cannot, therefore, easily adjust program evaluations to disentangle intervention effects from those, if any, of the labor market.

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The severely mentally ill have lower employment rates than persons with other disabilities.[1–3] People with severe mental illness who return to work are more likely to reapply for disability benefits than returnees with other disabilities.[4] The incidence of disability awards for mental illness appears to increase during recessions.[5,6] These facts, combined with the literature on stigma,[7] have apparently led psychologists and psychiatrists to assume that persons with mental illness are at earlier risk of unemployment than other workers when the labor market contracts.[8–10]

Measuring the effect of labor market contraction on the employment of persons with mental illness is important for several reasons. Among them is that such an effect should be considered in the evaluation of programs designed to prepare mentally ill persons for work. Evaluating the efficacy and effectiveness of vocational rehabilitation programs is central to identifying best practices.[11,12] Evaluations, e.g.,[13–18] however, could be flawed if labor market conditions differentially affect employment of program participants, controls, and persons without histories of mental illness. An evaluation at the onset of a recession could conclude that a program was not effective because the difference between controls and participants was not statistically significant. The effectiveness of the program, however, might have been underestimated because the ability of both groups to find or hold jobs may have been reduced by the impending recession. The relative effectiveness of vocational rehabilitation programs may, therefore, have to be estimated in light of the labor market circumstances at the time of the measurements.

The literature includes no attempts to measure the effect of labor market conditions on the employment of persons with mental illness. We attempt to fill a portion of this void by testing the hypothesis that unemployment among mentally ill persons who are willing and able to work will predict subsequent claims for unemployment compensation in two New Hampshire labor markets.

Methods

Data

The independent variable for this study was the likelihood of unemployment among mentally ill persons who were willing and able to work. Data for the independent variable

*Correspondence to: Ralph Catalano, School of Public Health, University of California, Berkeley, Berkeley, CA 94720, USA
Telephone: 510-642-3103. Fax: 510-658-4066. Email address: rayc@uclink4.berkeley.edu
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came from a federally funded study of supported employment for persons with severe mental disorders.[14] The study took place in two New Hampshire metropolitan areas, Concord and Manchester, with populations of 119 000 and 166 000 respectively, between 1990 and 1994. Participants were 143 persons with severe mental disorders (schizophrenic disorders, major mood disorders, and severe personality disorders) who wanted a job but were not, when enrolled in the study, working. Their demographic characteristics were as follows: 51.7% female, 95.1% non-Hispanic white, average age of 37.0 (sd = 9.5) years, 90.2% unmarried, average education equivalent to high school and 83.9% in independent living situations.

Participants in the two cities were randomly assigned to either of two models of employment preparation. One program (Group Skills Training) was conducted in a private rehabilitation agency that was entirely separate from the mental health agency.[19] The other program (Individual Placement and Support) offered an integrated model in which mental health and vocational services were combined.[20] The main study considered differences in these two models of service organization, but, for the purpose of this analysis, data from all clients were combined.

A time series of the odds of a participant being unemployed (i.e., looking for work but not working) as opposed to employed was created for the period during which the programs were operating at full capacity. The period spanned the 131 weeks beginning on 12 May 1991. The mean odds of unemployment among Manchester participants was 2.214 with a range of 0.888 to 7 and a standard deviation of 1.21. The mean for Concord was 2.729 with a range of 1.153 to 9 and a standard deviation of 1.28. The odds were transformed to their natural logarithms to make their distribution normal.

Several labor market indicators could have served as our dependent variable. Among these are the number or persons unemployed (i.e., persons who are not working but are looking for work), the unemployment rate (i.e., the unemployed divided by the sum of those employed and unemployed), and the number of persons who are laid off (i.e., persons who lose jobs due to reduced demand for labor). Most labor market indicators (e.g., the unemployment rate, number of unemployed persons) are derived from surveys that yield monthly estimates. Months, however, would likely cover too great a time span to determine the temporal ordering of change in our independent and dependent variables. Changes in either would be attributed to the same time, the month, even if our independent variable tended to move a week or two before our dependent variable.

The only dimension of labor market performance measured more often than monthly is weekly incidence of initial claims for unemployment compensation. These claims measure the number of persons who have lost jobs due to slack demand for labor. While such claims can be made only by persons who are covered by unemployment insurance, weekly changes in claims is a closely watched indicator of the status of the larger labor market. Our dependent variable, therefore, was initial claims for unemployment compensation in the Concord and Manchester labor markets for the 131 weeks beginning on 12 May 1991.

The mean number of claims for Manchester was 254 with a range of 132 to 940 and standard deviation of 122. The mean for Concord was 134 with a range of 63 to 399 and standard deviation of 69. The claims data were transformed to their natural logarithms to normalize their distribution.

Analyses

We test our hypothesis using the approach typically attributed to Granger.[21] The method is intended to identify the lag structure of bivariate relationships that may be confounded by shared autocorrelation. We implement the method as recommended by Hamilton.[22] The steps are as follows.

(i) The following equation is estimated and the sum of the squared residuals (i.e., RSS_1) is calculated.

$$y_t = c + \alpha_1 y_{t-1} + \alpha_2 y_{t-2} + \alpha_3 y_{t-3} + \alpha_4 y_{t-4} + \alpha_5 x_{t-1} + \alpha_6 x_{t-2} + \alpha_7 x_{t-3} + \alpha_8 x_{t-4} + u_t \quad (1)$$

y_t is the natural log of the weekly incidence of initial unemployment compensation claims in the test area (i.e., either Manchester or Concord) in week t.
c is a constant.
$\alpha_{1\ldots n}$ are effect parameters.
x_t is the natural logarithm of the odds of a participant in the employment preparation program in the respective area being unemployed in week t.
u_t is the residual of the equation at week t.

(ii) The following equation is estimated and the sum of the squared residuals (i.e., RSS_0) is calculated.

$$y_t = c + \alpha_1 y_{t-1} + \alpha_2 y_{t-2} + \alpha_3 y_{t-3} + \alpha_4 y_{t-4} + u_t \quad (2)$$

(iii) The test statistic S is calculated for equations with lagged dependent variables as follows:

$$S = \frac{T(RSS_0 - RSS_1)}{RSS_1} \quad (3)$$

T is the number of weeks in the test period (i.e., 131) less the number of lags estimated in equation (1) (i.e., 4).

(iv) The test statistic S is compared to the tabled value of χ^2 with four degrees of freedom at the 95% confidence level. If S exceeds the tabled value of χ^2 (i.e., 9.48), the null hypothesis of no lagged association between unemployment among the mentally ill and job loss in the larger labor force is rejected.

Results

Equation (1) was estimated for Manchester with the following results.

$$y_t = 1.85 + 0.0161 y_{t-1} + 0.0209 y_{t-2}$$

$$+ 0.0292y_{t-3} - 0.1141y_{t-4} + 0.7374x_{t-1} - 0.1514x_{t-2} \quad (4)$$
$$+ 0.0147x_{t-3} + 0.0653x_{t-4} + u_t$$

The sum of the squared residuals (i.e., RSS_1) was 9.042.

Equation (2) was estimated for Manchester with the following results.

$$y_t = 1.78 + 0.7416y_{t-1} - 0.1559y_{t-2} \quad (5)$$
$$+ 0.0086y_{t-3} + 0.0798y_{t-4} + u_t$$

The sum of the squared residuals (i.e., RSS_0) was 9.131. The lags of unemployment among the mentally ill added less than 1% to the variance explained by autocorrelation alone.

The S statistic was computed to be 1.288. This value did not exceed the tabled value of χ^2 with four degrees of freedom (i.e., 9.48). The null hypothesis was accepted.

The test procedure was repeated for Concord. Equation (1) was estimated for Concord with the following results.

$$y_t = 1.518 - 0.0953y_{t-1} + 0.0916y_{t-2}$$
$$+ 0.1044y_{t-3} - 0.1083y_{t-4} \quad (6)$$
$$+ 0.5866x_{t-1} - 0.0538x_{t-2} + 0.1336x_{t-3} + 0.0214x_{t-4} + u_t$$

The sum of the squared residuals (i.e., RSS_1) was 12.217.

Equation (2) was estimated for Concord with the following results.

$$y_t = 1.460 + 0.5894y_{t-1} - 0.0733y_{t-2} \quad (7)$$
$$+ 0.1484y_{t-3} + 0.0317y_{t-4} + u_t$$

The sum of the squared residuals (i.e., RSS_0) was 12.395. Unemployment among the mentally ill added less than 2% to the variance in the dependent variable explained by autocorrelation alone.

The test statistic for Concord was 1.906. The null hypothesis was accepted.

The tests for both areas were repeated using the raw data rather than their natural logarithms. The results did not change.

The results raise the question of whether tests such as ours have the power to detect effects of interest to scholars and practitioners. We made the conservative assumption that our findings would be of interest if unemployment among the mentally ill added 5% to the variance accounted for by autocorrelation in the dependent variables. We calculated the power of our test using Cohen's method for changes in R^2 for multiple regression equations.[23] Although Cohen did not explicitly apply the method to time-series regressions, we know of no reason why doing so would lead to an inferential error. The calculation assumed the following:

(i) autocorrelation accounted for 43 and 36% of the variance in the dependent variables for Manchester and Concord respectively (i.e., the R^2 of equations (5) and (7);
(ii) the number of parameters needed to identify autocorrelation was five (i.e., the constant and four autoregressive parameters);
(iii) the number of test parameters is nine and
(iv) n in 131 weeks.

Based on these assumptions, we calculate that our tests had power of greater than .90 to detect associations that added 5% to the explained variance.

Discussion

Unemployment among persons we studied did not predict job loss in the primary labor market. Our findings are contrary to the argument that persons with SMI are at earlier risk of unemployment than other workers during periods of economic contraction.

What could account for the failure to find so intuitive an association? An appealing explanation for the negative findings can be found in labor market theories often referred to collectively as the dual-labor-market model. The model assumes that most regional economies support a primary and secondary labor market.[24] The primary labor market includes employers and workers looking for commitments for extended periods of full-time employment. The jobs are presumed to require skills that labor and management attempt to improve because both are benefited by increases in productivity. Jobs in the primary labor market confer benefits that include unemployment compensation.

The remainder of the labor force participates in the secondary labor market. This market is characterized by part-time, temporary, and high-turnover jobs that require relatively few skills. Employers typically do not invest in worker skills or cultivate commitment because the jobs are transitory. Pay is relatively low, and few, if any, benefits are conferred.

Persons with psychiatric impairment are plausibly more likely to participate in the secondary than primary labor market. The economic incentives for many people with severe mental disorder to work full time are minimal. The amount of money that they make displaces a portion of their Supplemental Security (i.e., SSI) benefits and, therefore, adds little to total income. Disincentives, moreover, are significant, since they may also lose Medicaid if their income exceeds eligibility criteria. Giving up Medicaid in the hope of obtaining insurance tied to employment is a precarious strategy because mental illness is rarely covered as generously by private insurance as by Medicaid. 'Pre-existing condition' clauses, moreover, make any private coverage problematic given the chronic nature of the illness.

Our findings may reflect a convergence of the short-term interests of employers and of mentally ill persons. Work in the secondary labor market may better fit the psychological needs of persons with psychiatric impairment. They are eager to find competitive employment because working often serves as a way to escape the role of dependent mental patient and to develop a normal identity.[25] They may, however, pursue the low-skill, part-time jobs common in the secondary labor market in order to limit stress and to become accustomed to working without giving up Medicaid.

The long-term effects of these arrangements are, however, unknown. Are these jobs satisfying over time? How long do people remain in the secondary labor market? Do people progress to better jobs, more satisfying careers, or to

independence from the disability system? These questions need to be answered by more long-term studies.

Our findings also imply that volatility in the primary labor market does not invalidate evaluations of vocational rehabilitation programs. The findings do not, on the other hand, imply that the success of these programs is unaffected by the economy. The secondary labor market may greatly affect their success. This possibility cannot, however, be tested with standard indices of labor market performance since these measure the primary labor market.

Our tests need to be repeated in other communities because the external validity of our findings is unknown. We do not know whether the population of persons in the programs we studied in representative of such persons elsewhere.

Our results may not, moreover, generalize to persons with mental illness who have not received rehabilitation services. We intentionally used persons in occupational rehabilitation to insure that they could meet the standard definition of unemployed (i.e., not working yet able, at least in the opinion of rehabilitation professionals, and willing to work).

Additional tests of our hypothesis would ideally cover longer periods than ours to insure that greater variation in labor market conditions than that we observed is included. Longer periods would also allow tests on higher levels of temporal aggregation. Variation in weekly data may include noise that would have less effect on, for example, fortnightly or monthly data.

The phenomena considered in this study deserve further investigation to understand how the labor affects vocational rehabilitation and how participation in the secondary labor market affects satisfaction and long-term employment.

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