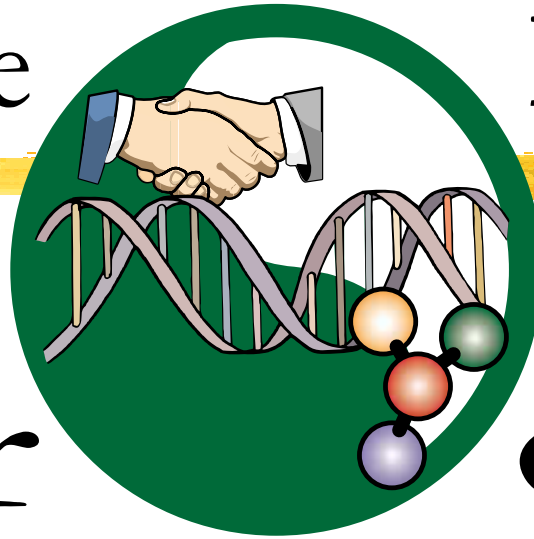

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Labor Supply of Poor
Residents in Metropolitan
Miami, Florida: The Role of
Depression and the Co-Morbid
Effects of Substance Use

Pierre Kébreau Alexandre, Ph.D.

Michael T. French, Ph.D.

Chronic Drug Use, Depression, and Labor Supply
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Introduction



- 1999: First White House Conference on Mental Health
- 1999: First release of Surgeon General's Report on Mental Health
 - 20 million Americans were depressed in 1999
 - 1 in every 20 employees were depressed
- Social Costs: over \$43 billion in 1990
 - Absenteeism alone contributed to \$12 billion

Introduction (Cont.)



- Recently, researchers have been focusing more on the relationship between mental health and labor market outcomes:
 - Björklund (1985)
 - Hamilton, Merrigan, and Dufresne (1997)
 - Ettner, Frank, and Kessler (1997)
 - French and Zarkin (1998)

Introduction (Cont.)



- Some studies have examined depression and functional outcomes associated with labor market
 - Mintz, et al. (1992)
 - Conti and Burton (1994)
 - Berndt, et al. (1998)
- Lack of detailed information on mental health and labor markets: a barrier to advanced research

Introduction (Cont.)



- This study uses a unique set of 1996-1997 data collected in high-risk neighborhoods of Miami-Dade County, Florida to:
 - Examine the determinants of depression and employment
 - Estimate the effects of depression on annual weeks worked
 - Examine the stability of the model estimates to the comorbid effects of substance use

Introduction (Cont.)



- “Depression” status for this study was defined from the 20-item Zung Self-Rating Depression Scale (SDS)
- The SDS uses simple language, is brief, and highly correlated with other depression scales (Bech, 1996)
- The SDS defines 4 clusters: normal, minimum to mild, moderate to marked, severe to extreme

Sample and Data



- Data were collected from April 1996 to September 1997 from a questionnaire developed by the Health Services Research Center at the University of Miami, Florida
- High-risk areas within Miami Dade-County were designated based on above average scores for drug use, crime, and poverty levels

Sample & Data (Cont.)



- Subjects were recruited from 78 different zip codes at all times and days of the week
- Chronic drug users and non-drug users were recruited from the same zip codes to ensure significant representation of each group in the sample

Sample & Data (Cont.)



- Subjects were transported to a center to assess their eligibility and completed a 300-question survey with the help of an experienced survey administrator
- Individuals were excluded if they (1) were impaired, (2) had difficulty understanding the questions, (3) were violent, or (4) misreported their eligibility as revealed by laboratory reports of their specimens

Sample & Data (Cont.)



- Less than five percent were found to be study-ineligible or refused to participate in the study
- Total participant time was 1.5 to 2.5 hours
- Participants were paid \$25
- 1,570 individuals enrolled in the study

Sample & Data (Cont.)



- The final sample included for the study included 1,274 individuals, 384 depressed and 890 non-depressed
- Sub-samples by gender/ethnicity: 725 men, 549 women, 486 African-Americans, 386 Hispanics, and 403 non-Hispanic Whites

Empirical Models and Estimation Issues

➤ First objective: Analyze the determinants of depression and employment

➤ Two main estimation issues:

• 1. Exogenous Depression

• Health problems associated with depression will negatively affect employment

• Univariate probit Model :

$$\Pr(\text{Emp} = 1) = \Phi(\beta_1 \text{Dep} + \beta_2 X)$$

Empirical Models and Estimation Issues (Cont.)



2. Endogenous Depression

- On the other hand, stress associated with unemployment may, on the other hand, affect depression status
- Income Effect: Employed individuals have more disposable income to spend on mental health
- Depressed and non-depressed individuals may differ in unobserved ways that impact skills and ability and, thus, employment

Empirical Models and Estimation Issues (Cont.)

Simultaneous Bivariate Probit Model

$$\Pr(\text{Emp} = 1, \text{Dep} = 1) = \Phi_b(\beta_1 \text{Dep} + \beta_2 X, \delta Z, \rho)$$

- $\rho = \text{Cov}[\eta, \varepsilon]$, measuring the correlation between the unobserved or omitted factors that determine depression and employment
- If $\rho = 0$, univariate probit estimates are consistent
- If $\rho \neq 0$, univariate probit estimates are biased

Empirical Models and Estimation Issues (Cont.)



- Second objective: Estimate the effects of depression on the number of weeks worked in the past 12 months
 - An additional estimation issue: censoring (cluster of zeros for non-workers)
 - Exogenous Depression: Standard Tobit model
 - Endogenous Depression: IV Tobit Model developed by Nelson and Olsen (1978) and Newey (1987)

Empirical Models and Estimation Issues (Cont.)



- Third objective: Examine the stability of the model estimates to the comorbid effects of substance use
 - Control for substance use in the previous models
 - CDUs were defined by criteria from the Office of National Drug Control Policy (1996)
 - Problematic alcohol users (PAUs) were defined by criteria from the 10-item Michigan Alcoholism Screening Test (MAST-10)

Results



- Depression Equation (Table 2 – Upper part)
 - Depression was a concave function with age
 - Men were less likely to be depressed
 - Being Black, years of education, having children in the household, and foreign birth were negatively related to depression
 - Unearned income was positively related to depression

Results (Cont.)



- Employment Equation (Table 2 – Lower Part)
 - Depressed individuals were less likely to be employed relative to non-depressed individuals
 - Marginal effects of depression on employment estimated at 19 percentage points
 - Depression reduced the probability of employment by 19 percentage points in both models

Results (Cont.)



- Employment Equation (Table 2)
 - In both models, men were more likely to be employed than women, and Blacks were less likely to be employed relative to other ethnic groups
 - Being of Hispanic origin, education, foreign birth, and unearned income were related to employment in the univariate model only

Results (Cont.)



➤ Annual Weeks Worked Equation (Table 3)

- Depressed individuals worked an average of 7 (Standard Tobit) or 8 (IV Tobit) fewer weeks relative to non-depressed individuals
- Men worked more weeks than women
- Blacks worked fewer weeks
- Education was significant and positive
- Foreign birth and unearned income were significant in the Standard Tobit only

Sensitivity Analysis



- Separate models were estimated for men vs. women, Blacks vs. non-Blacks, Hispanics vs. non-Hispanics
- As expected, depression was negatively related to employment and annual weeks worked in these subsamples, except for the bivariate and IV Tobit models

Results (Cont.)



➤ Comorbid Effects of Substance Use

- When controlling for substance, depression was still significant in both the employment and annual weeks worked equations, but marginal effects of depression were lower
- Part of the estimated effects of depression reported earlier may have been due to the co-occurring and confounding effect of substance use

Conclusions



- Depression reduced the probability of employment and the number of weeks worked
- Comorbid substance use contributed to the effects of depression
- These findings support the expansion of mental health services as a means to promote economic benefits



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