

Mental health and economic conditions: how do economic fluctuations influence mental health?

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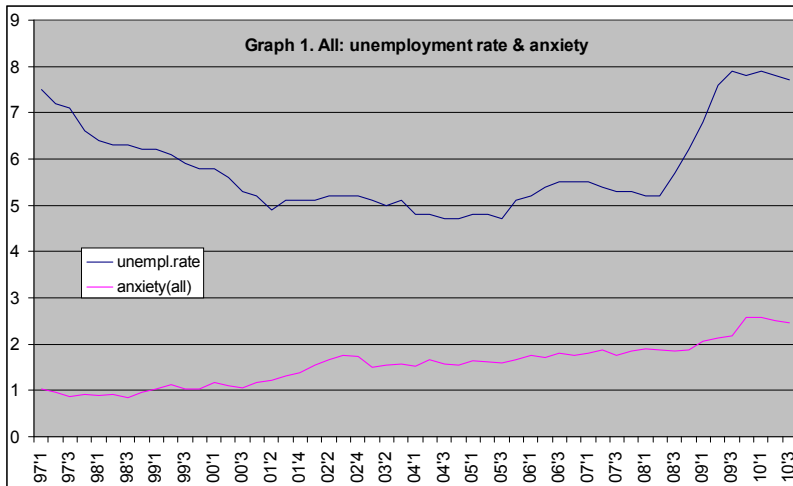
Motivation

- Human mortality is procyclical
 - Ruhm (2000): 1 percentage point fall in unemployment is associated with 0.5 percentage points increase in mortality from all causes.
- General health worsen when economy improves
 - Ruhm (2003): 1 percentage point drop in unemployment increases probability of at least one health problem by 0.61 percentage points
- One may ask which impact, if any, economic fluctuations have on mental health

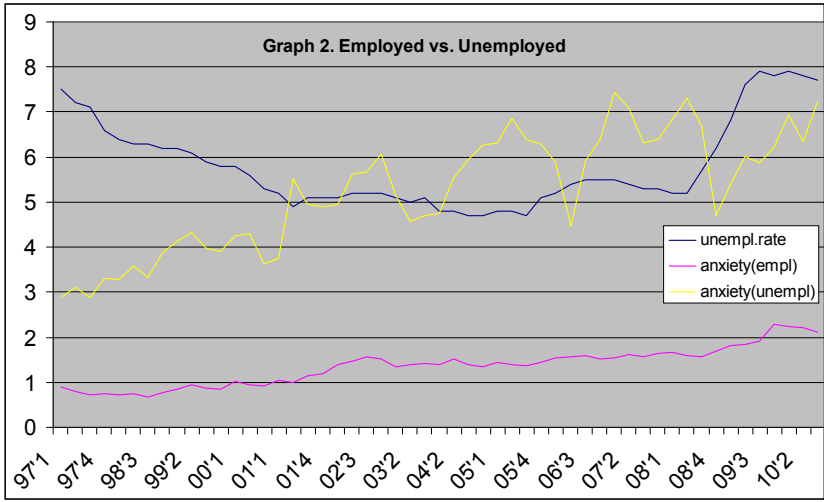
Unemployment rate

- Direct negative effect
 - for employed: increased anxiety because of risk to lose a job
 - for unemployed: probability to find a job decreases
- Indirect adverse effect
 - employment is a social standard
 - unemployment is an undesirable deviation
 - however when more people are unemployed, not following the norm becomes less suppressive and direct effect could be moderated
 - unemployed people might benefit from living in the higher-unemployment areas in terms of mental health compared to employed

Graph 1. All: unemployment rate & anxiety



Graph 2. Employed vs. Unemployed



Question of interest

- Study how economic conditions through changes in regional unemployment rate affect mental health of individuals who are currently active in the labor market:
 - whether increases in regional unemployment rate affect problems in terms of psychological distress
- Distinguish between direct and indirect effect
 - Disentangle the moderative "environmental" effect

Economic conditions and mental illness

- Ruhm (2003) used 1972 – 1981 US microdata to examine how different aspects of health fluctuate with state economic conditions.
- Clark (2003) with 1991 – 1997 UK data constructed an index of well-being (or life satisfaction).

Contribution

- Compared to Ruhm, we study the relationship between the economic conditions and mental-related health outcomes on the base of UK data accounting for an individual's employment status.
 - Taking into account employment status is also important, since these two groups might respond differently to economic conditions, hence require different labor and health policies.
- Compared to Clark, we aim to account for endogeneity of own employment status.
 - Failure to account for the endogeneity between mental health and employment will lead to biased estimates, hence will also affect the efficiency of policies designed to improve mental health.

Model

$$D_{ijt} = \alpha_t + Q_t + R_j + \gamma U_{ijt}^* + \rho U_{jt} + \delta U_{jt} \times U_{ijt}^* + X'_{ijt} \beta + u_{ijt}$$

D_{ijt} - index of mental distress

α_t - year-specific intercept

Q_t - quarter fixed-effect

R_j - region fixed-effect

U_{ijt}^* - dummy for unemployment status

U_{jt} - regional gender-specific unemployment rate

X_{ijt} - vector of personal characteristics (age, educ, marr, child)

u_{ijt} - disturbance term

Predictions

$$D_{ijt} = \alpha_t + Q_t + R_j + \gamma U_{ijt}^* + \rho U_{jt} + \delta U_{jt} \times U_{ijt}^* + X'_{ijt} \beta + u_{ijt}$$

- For employed the regional unemployment rate affects mental health through ρ .
 - $\rho > 0$
- For unemployed the effect is $\rho + \delta$.
 - Unemployed's mental distress could be moderated by the percentage of unemployed people around
 - $\delta < 0$
 - check whether the indirect effect compensates the direct effect, i. e. $\rho + \delta \neq 0$

Dealing with endogeneity

- Own unemployment status might be endogenous:
 - people with mental problems are more prone to become unemployed than those without.
- Ideally we would like to know who of the individuals became unemployed not due to mental health reasons
 - Compare the average mental health of those who became unemployed with average mental health of those who did not become unemployed.
- Unfortunately we do not have perfect information about unemployment not related to mental health outcomes.
 - Think about the situation where variation in the unemployment is not driven by individuals' mental health status.

Dealing with endogeneity

- Define a binary variable Z_{ijt} which equals 1 if individual is unemployed due to plant closure and 0 otherwise. Doing so we identify those who are unemployed due to exogenous reasons.
- Assumptions:
 - Plant closure is ignorable conditional on observed characteristics X_{ijt} .
 - Experience of a plant closure strongly disrupts a worker's employment career but workers' mental health is unlikely to cause a plant closure.
 - Exclusion restriction, i.e. an instrument does not have a direct effect on mental health.
 - Worker's mental health is not affected by plant closure, i.e. job-loss due to plant closure does not directly affect the mental health of a worker.
- Unemployed for less than 3 months vs Unemployed for less than a year

Data

- UK Labour Force Survey (LFS), 1997 – 2010
- 11 regions
- Age from 16 to 65
- Total 1,797,067 observations
 - 1,700,323 individuals are employed, 96,744 are unemployed
 - average unemployment rate 5.38%.
 - 830,391 males, 966,676 females.
- Proxy for depression/anxiety
 - "Do you have the health problem anxiety/depression/bad nerves?"
- Regional unemployment rate from published by the Office for National Statistics.

Results

	Table 2. Male					
	OLS (1)	IV(1)	OLS(2)	OLS(3)	IV(2)	OLS(4)
Regional unempl.rate	0.00032** (0.00015)	0.000307** (0.00015)	0.00035** (0.00015)	0.000327** (0.00015)	0.000352** (0.00015)	0.00032** (0.00015)
Unemployed	0.01780*** (0.00373)	0.00572 (0.00675)	0.00591 (0.00665)	0.02470*** (0.00341)	0.01430*** (0.00556)	0.01441*** (0.00544)
Interaction	-0.0013*** (0.0005)	-0.00026 (0.00094)	-0.00027 (0.00093)	-0.0017*** (0.00046)	-0.00155** (0.00072)	-0.00152** (0.00071)
$\rho + \delta = 0$	0.0561	0.9634	0.9382	0.0045	0.0938	0.0972
N	794,515	794,515	781,672	778,984	778,984	760,324

	Table 3. Female					
	OLS (1)	IV(1)	OLS(2)	OLS(3)	IV(2)	OLS(4)
Regional unempl.rate	0.00021 (0.00026)	0.00022 (0.00026)	0.00023 (0.00026)	0.00024 (0.00026)	0.00024 (0.00026)	0.00023 (0.00026)
Unemployed	0.01818*** (0.00635)	0.00494 (0.01601)	0.00504 (0.01583)	0.02702*** (0.00627)	0.005864 (0.01414)	0.00613 (0.01390)
Interaction	-0.00041 (0.00117)	-0.00060 (0.00295)	-0.00057 (0.00292)	-0.00125 (0.00107)	-0.00012 (0.00262)	-0.00010 (0.00257)
$\rho + \delta = 0$	0.8637	0.8966	0.9083	0.3571	0.9635	0.9619
N	933,893	933,893	923,644	912,333	912,333	897,707

Married and Single Individuals

Table 4. Married and Single

	Male				Female			
	Married		Single		Married		Single	
	OLS (2)	OLS (4)	OLS (2)	OLS (4)	OLS (2)	OLS (4)	OLS (2)	OLS (4)
Regional unempl.rate	0.00038** (0.00019)	0.000339* (0.00019)	0.00009 (0.00027)	0.00013 (0.00028)	0.00008 (0.00031)	0.00007 (0.00031)	0.00048 (0.00051)	0.00051 (0.00051)
Unemployed	0.00087 (0.00706)	0.01303* (0.00695)	0.00862 (0.01166)	0.01918** (0.00904)	-0.03525* (0.01991)	-0.01326 (0.01729)	0.03303 (0.02601)	0.03659 (0.02705)
Interaction	0.00006 (0.0010)	-0.00150* (0.00089)	-0.00043 (0.00159)	-0.00196* (0.00111)	0.00669 (0.00419)	0.00297 (0.00341)	-0.00533 (0.00442)	-0.00468 (0.00475)
$\boxed{\rho + \delta} = 0$	0.6575	0.2004	0.8317	0.1087	0.1078	0.3745	0.2750	0.3820
N	441,173	429,145	240,416	233,855	514,308	500,561	238,640	231,478

Conclusion

- The aim of the present work was to examine the relationship between economic conditions and individual's mental health, i.e. whether economic slumps have a measurable cost in terms of individual's experience of mental distress.
- We use 1997 – 2010 years of LFS in order to clarify whether increases in the regional unemployment rate affects depression.
- Since the unemployment rate might influence people differently depending on their employment status we control for own employment status and interact it with the regional unemployment rate.

Conclusion

- The estimated coefficients of the regional unemployment rate suggest that when economy performs not well people are more likely to have depression or anxiety.
- In accordance with previous research we confirmed that aggregate employment is beneficial for mental health.
- When designing labor and health policies, next findings should be taken into account:
 - employed vs unemployed disparities
 - short- vs longer unemployment spells
 - marital status

Thank you!

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