

Editorial

The Economy and Suicide

An Interaction of Societal and Intrapersonal Risk Factors

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The debate about the impact of the economy on suicide risk has progressed from untested theories to more complex epidemiological studies and much idiographic data in between. The subject illustrates the interaction of societal effects with the individual's personal risk profile and vulnerability. Early theorists proposed that economic recession could increase suicide rates because of the stress and hardship that poverty creates (Brenner, 1979; Stack, 1981) as well as the potential loss of social status and connectedness (Durkheim, 1897). Some attribute suicide to the interplay of economic and social factors (Lester, 2001), while others focus solely on the economic contribution such as higher income decreasing the opportunity cost of suicide (Hamermesh & Soss, 1974). Conversely, it has also been proposed that the suicide rate would decline during times of economic hardship, because individuals could blame the macro-economy for feeling miserable instead of themselves (Henry & Short, 1954). Much research has examined the relationship between personal income level, the macro-economy, and suicide rates, and a few studies have also examined the interaction of regional or national economic state with psychiatric illness.

How does an economic crisis affect suicide rates and which economic variables play a role? Does an economic downturn impact all social groups, regions within a nation, and different countries similarly? How does psychiatric illness and its treatment interact with economic variables and potentially affect suicide rates? An examination of the available literature answers some of these questions and illuminates the consideration of the best approaches for addressing the increased suicide rates seen during recent times of economic hardship as in the 2008 recession.

The initial literature involves idiographic studies that consist of case reports of suicide apparently related to eco-

nomic factors. In the 1997 financial crisis in South Korea (Watts, 1998) a woman indicated that she was going to kill herself because the devaluation of the Korean currency meant she could no longer afford her son's college tuition. This case and many other reports of so-called economic suicides lack a systematic review of the person's psychiatric condition and other factors that contribute to risk, meaning we do not know why this specific life stress was so deadly for this person.

Reports on groups at particularly high risk of suicide are sometimes more informative since more general factors can be identified. Suicide rates in Canadian Inuit people, which are three-to-four times higher than Canada's average suicide rates, have also been considered in the context of multiple socioeconomic factors (Leenaars, Anawak, & Taparti, 1998). The impact of the fur trade collapse and high unemployment rates are mentioned as potential contributing factors but are not studied systematically in this idiographic report. Increases in Australian farmer suicide rates – which are higher than those of the average rural population and male national rates – correspond with declines in trade over the same time period (Page & Fragar, 2002). An increase in male unemployment – among increases in violence, substance misuse, and alcohol consumption – was postulated as a potential psychosocial stressor to explain the increase in male suicide rates in England and Wales during 1975–1990 (McClure, 2000). Unemployment and worsening poverty associated with neoliberal structural adjustment following the 1998 economic crisis in South Korea were posited as contributing factors of the increased suicide rates observed (Khang, Lynch, & Kaplan, 2005). Similarly, benefits of economic growth – such as decreased unemployment – were proposed as explanatory factors of the observed decrease in suicide rates in China during 2009–2011 (Wang, Chan, & Yip, 2014). Unemployment, change in income, and household debt were posited as fac-

tors contributing to the immediate rise in suicide following the 2008 European financial crisis (Karanikolos et al., 2013). Studies of this sort can suggest links between factors and suicide, but cannot estimate the attributable risk of the suggested economic factors because other factors may be contributing to the higher suicide rates.

Analysis of suicide rates and economic variables at an epidemiological level may allow consideration of more variables like psychiatric disorder rates, treatment, regional income levels, unemployment rates, and demographics, but this analysis carries the risk of the ecological fallacy and does not permit conclusions to be drawn about causality. An examination of whether differences in the structure of agricultural production explained inter-state variation in suicide rates in India found positive relationships between the percentage of marginal farmers, cash crop production, and indebted farmers and suicide rates (Kennedy & King, 2014). Increased suicides in rural Japan led to the consideration of the effects of industrialization and urbanization as contributing factors; higher suicide rates were found in areas with a sparse population and a non-prosperous economy (Kurosu, 1991). Higher suicide rates and economic variables – unemployment and urbanization – have been studied in the context of other epidemiological studies, and relationships have been observed between negative economic impact and increasing suicide rates (Álvaro-Meca, Kneib, Gil-Prieto, & Gil de Miguel, 2013; Otsu, Araki, Sakai, Yokoyama, & Voorhees, 2004; Preti & Miotto, 1999; Thomas & Gunnell, 2010; Yip, Law, & Law, 2003). By contrast, an epidemiological study of Ontario farm suicides failed to find any associations between economic indicators – including number of farm bankruptcies, net farm income, and loan and unemployment rates – and farm suicide rates (Pickett, Davidson, & Brison, 1993). However, such studies cannot answer the question of whether there is a causal relationship nor do they provide any useful estimate of an economic factor's potential importance in terms of attributable risk for suicide as an outcome.

More helpful are time series studies and correlative studies of regional differences in suicide rates, per capita income, unemployment rates, and economic state. Time series studies have the advantage of examining the subsequent impact of changes in potentially relevant variables to seek a possible causal relationship. A causal change must precede an outcome attributable to that cause. The difficulty in concluding that such a relationship exists is due to the need to have measured all the relevant variables and interactions.

A decline in the economy at a national or regional level is generally associated with higher suicide rates in time series studies and cross-sectional regional correlative studies. Associations between suicide rates and economic

variables have been studied in many countries. National suicide rates in the United States during business cycles, 1928–2007, rose during economic recessions and fell during economic expansions (Luo, Florence, Quispe-Agnoli, Ouyang, & Crosby, 2011). Greater increases in suicide rates were observed in the countries most affected by the Asian economic crisis of 1997–1998, with higher unemployment being most strongly associated with suicide rate increase (Chang, Gunnell, Sterne, Lu, & Cheng, 2009). Similar findings have been reported in other time series studies (Andrés, 2005; Brenner, 1979; Ceccherini-Nelli & Priebe, 2011; Corcoran & Arensman, 2010; Corimer & Klerman, 1985; Kwon, Chun, & Cho, 2009; McKeown, Cuffe, & Schulz, 2006; Motohashi, 1991; Park, Lee, & Kim, 2003; Pompilii et al., 2014; Ruhm, 2000; Stuckler, Basu, Suhrcke, Coutts, & McKee, 2009; Tapia Granados, 2005; Vigderhous & Fishman, 1978; Zhang et al., 2010). A minority of studies found the opposite relationship (Neumayer, 2004) or no association between economic fluctuations and suicide rates (Hintikka, Saari-nen, & Viinamäki, 1999; Rancans, Salander Renberg, & Jacobsson, 2001).

Other perspectives have emerged from comparison of the effect of economic variables on suicide rates across different countries. The association between unemployment and suicide rates has been shown to be stronger in the United States compared with other countries, in which the effect of unemployment is weak or nonexistent (Yang & Lester, 1995). Economic factors were found to play a role in influencing US suicide rates but not Taiwan suicide rates in the period 1952–1984 (Yang, Lester, & Yang, 1992). The authors attribute this difference to the fact that being poor in Taiwan is not shameful, whereas in the United States being poor or becoming poor involves more of a loss of place in society and has a greater effect in a consumer-oriented society. Similarly, a lack of common socioeconomic predictors – unemployment rates, annual percentage change in gross national product, female labor force participation, and divorce rates – of suicide rates has been observed in the United States and Japan (Lester, Motohashi, & Yang, 1992). While a negative impact of unemployment on overall suicide rates was found in both Japan and the United States, the relationships between suicide and the other socioeconomic variables differed in the two countries. The correlation of GNP with suicide rates is negative in Japan and positive in United States. Female labor force participation correlation with suicide rates is negative in the United States and positive in Japan. The impact of employment conditions on suicide differed between Hong Kong and Taiwan: Suicide rates fell in Hong Kong but increased in Taiwan as employment conditions improved (Chen, Yip, Lee, Fan, & Fu, 2010). Such national differences have been attributed to national income

level: unemployment having a positive relationship with suicide rates in high-income countries, but a negative association in low-income countries (Noh, 2009). Annual growth rates for industry and health-care expenditures are additional economic factors that distinguished European countries with higher suicide rates (Ferretti & Coluccia, 2009). Countries belonging to the high suicide rate group had lower health-care expenditures, a lower at-risk-of-poverty rate, higher percent total unemployment, and higher annual growth rates compared with the countries belonging to the low suicide rate group.

How income level plays a role in affecting suicide rates during economic hardship is unclear. Some studies find that higher income is associated with higher suicide rates (Hamermesh, 1974; Jungeilges & Kirchgässner, 2002) while others find that higher income is associated with lower suicide rates (Brainerd, 2001; Chuang & Huang, 1997; Hamermesh & Soss, 1974; Neumayer, 2003). Others report suicide rates are insensitive to income levels (Andrés, 2005). Findings for unemployment as an economic predictor are similarly mixed. Some studies find that higher unemployment rates are associated with higher suicide mortality (Blakely, Collings, & Atkinson, 2003; Brainerd, 2001; Chuang & Huang, 1997; Hamermesh & Soss, 1974; Neumayer, 2003), while others find no impact of unemployment rates on suicide rates (Andrés, 2005; Hamermesh, 1974; Kunce & Anderson, 2002).

Noneconomic factors such as rates of psychiatric illness and their treatment levels should also be considered since untreated psychiatric illness is known to be present in most suicide decedents, and psychiatric illness can affect employment status and income. US county-level suicide rates are inversely related to median income with wealthier counties having lower suicide rates (Gibbons, Hur, Bhaumik, & Mann, 2005). Importantly, authors noted that higher suicide rates in rural areas were associated with fewer antidepressant prescriptions, lower income, and relatively more prescriptions for older antidepressants, tricyclic antidepressants, a possible index of how up to date doctors were in terms of medical education on new medications. The findings suggest an impact of access to affordable, adequate medical care of major depression on suicide rates. Lower per capita income reduces health-care resources available to people. Lower per capita income may also mean fewer and poorer health-care resources in a community. Higher-income areas may also have better emergency medical care, increasing the chance of survival after a suicide attempt (Neumayer, 2003). Higher suicide rates correlate with higher levels of rurality (Singh & Siahpush, 2002). Rural areas may be vulnerable owing to a smaller tax base as a result of both fewer people and lower per capita income, in addition to being less attractive to doctors as a place of work and living.

How demographic subgroups are differentially affected can reveal other factors that affect suicide rates such as social cohesion, religion, and the stigma of psychiatric illness. Until recently the main breadwinner in a household has been a male aged 25–65 years. Because the responsibility for supporting the family falls most heavily on this demographic subgroup, it is the group that may feel the most stress when an economic decline adversely affects their capacity to earn the same level of income as before the recession. Suicidal behavior of older people has been shown to be more sensitive to fluctuations in unemployment compared with the suicidal behavior of younger people (Hamermesh & Soss, 1974), perhaps because the chances of re-employment are lower for older people, and the loss of income and social status is greater. More broadly, an economic decline may force a change in the social group to which the family belongs and impact the family's housing, schooling for their children, vacations, automobile ownership, clothing, and many other social-defining characteristics. It is therefore of note that many studies identify spikes in suicide rates to be more pronounced in males (Aihara & Iki, 2002; Berk, Dodd, & Henry, 2006; Brainerd, 2001; Corcoran & Arensman, 2010; Huang, 1996; Inoue et al., 2007; Pompilii et al., 2014; Preti & Miotto, 1999; Rancans et al., 2001; Schapiro & Ahlburg, 1982; Yang, 1992), and recently particularly in middle-aged males (Andrés, 2005; Corcoran & Arensman, 2010; Jungeilges & Kirchgässner, 2002; Khang et al., 2005; Luo et al., 2011; Pompilii et al., 2014; Schapiro & Ahlburg, 1982).

Life stressors can trigger a major depressive episode or other psychiatric disorders in vulnerable individuals (Van Heeringen, 2012). An economic downturn may be such a stressor (Dooley, Catalano, & Wilson, 1994). Significant increases in the prevalence of major depression corresponding with economic hardship have been observed in cross-sectional studies (Economou, Madianos, Peppou, Patelakis, & Stefanis, 2013; Lee et al., 2010). Measures of low-economic status, such as low income and unemployment, have been found to be associated with a higher incidence of suicidal thoughts (Gunnell, Harbord, Singleton, Jenkins, & Lewis, 2004), increased risk of suicide (Gerdtham & Johannesson, 2003), and higher attempted suicide rates (Economou, Madianos, Peppou, Theleritis, et al., 2013; Ostamo, Lahelma, & Lonnqvist, 2001). Along with unemployment, fear of losing one's job has adverse effects on psychological health (Reichert & Tauchmann, 2011) and exacerbates depression and suicidal thinking (Gunnell, Platt, & Hawton, 2009). An economic recession can also trigger a review of workforce needs by companies, and individuals with impairment due to a psychiatric illness may be more likely to be laid off at such times. This process would be detected as a disease by economic

decline interaction. Some studies have examined such an effect. For example, about half of the association between unemployment and increased suicide risk was attributable to a confounding mental illness in a New Zealand sample (Blakely et al., 2003).

Evidence exists to support a complex relationship between economic conditions and suicide. Outcome depends on both (a) adverse economic factors that can reduce per capita income and (b) the reduced tax base that can degrade quality and quantity of health care that a community can offer its citizens. From the other perspective, individuals with psychiatric illness can find it more difficult to find and hold better-paid jobs or any job. Finally, an economic downturn can have a disproportionately adverse economic effect on certain demographics like males 25–65 years of age, who are the household's main income source, and on those with psychiatric illness, or older individuals, whose capacity to compete in the job market is not as good and who are also more vulnerable in terms of stress-triggered psychiatric or other medical disorders.

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