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The business cycle and health behaviors

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ABSTRACT

While it is well documented that economic expansions provide widespread and immediate financial benefits, the evidence on how an economic downturn affects individual's health behaviors is surprisingly mixed. In this paper, we take a structural approach to investigate the effects of wages and working hours on health behaviors of low-educated persons using variations in wages and hours caused by changes in local economic activity. In the empirical analysis, we adopt a two-sample instrumental variables approach to combine the data on individual health behaviors from the Behavioral Risk Factor Surveillance System (BRFSS) and the National Health Interview Survey (NHIS) with the data on individual employment from the Current Population Survey (CPS). The total sample size of the combined CPS-BRFSS data for the time period of 1984–2005 is 967,594, while that of the combined CPS-NHIS data for the time period of 1976–2001 is 364,078. We find that increases in wages caused by economic expansions are associated with greater consumption of cigarettes in the United States. We also find that increases in hours of work caused by economic expansions are associated with more cigarette consumption, but less physical activity and physician visits. More importantly, the evidence suggests that most of such effects associated with changes in hours of work can be attributed to the changes at the extensive margin of employment, meaning the changes in employment status, rather than the changes at the intensive margin, meaning changes in hours of work conditional on being employed. These findings imply that changes in employment may have heterogeneous impacts on time-intensive and less time-intensive health behaviors and also provide additional evidence on the importance of time in health production, particularly for time-intensive activities.

Introduction

It is firmly established that sustained economic expansion can cure most economic problems. The expression "a rising tide lifts all boats" sums up the view that economic expansions provide greater opportunities for work, raise incomes and reduce poverty rates, especially for those socially and economically disadvantaged (Barrington, 2000; Davis & Bosley, 2005; Freeman, 2001, 2003; Pigeon & Wray, 1998; Reich, 1999; Wilson, 2000). While it is clear that economic expansions provide widespread and immediate financial benefits, it is less certain whether economic expansions improve health. Intuition suggests that health would improve during expansions and decline during recessions because of income changes. However, as a recent article in the New York Times concludes "…the data on how an economic downturn influences an individual's health are surprisingly mixed" (Parker-Pope, 2008).

The conclusion of the New York Times article accurately reflects findings from previous studies of how the business cycle affects health behaviors and health. For example, Ruhm (2000), Neumayer (2004) and Gerdtham and Ruhm (2006) found that mortality decreased during recessions, but Tapia Granados (2004), Economou, Nikolau, and Theodossiou (2007) and Halliday (2006) reported the opposite. Similarly in consistent evidence is found in the literature concerned with the effects of economic activity on other measures of health such as highway fatalities, heart disease and obesity (Bockerman et al., 2007; Economou et al., 2007; Gerdtham & Ruhm, 2006; Neumayer, 2004; Ruhm, 1995, 2000, 2005, 2007; Svensson, 2007; Tapia Granados, 2005). Finally, mixed evidence is also reported in studies of the effects of economic conditions on health behaviors (Dee, 2001; Ettner, 1997; Freeman, 1999; Ruhm, 1995; Ruhm & Black, 2002).

Lack of consensus as to the effects of economic activity on health and health behaviors warrants additional study. More importantly, additional studies that identify the causal mechanisms through which changes in economic activity may affect health and health behaviors are needed. Most previous studies have taken a reduced-form approach that relates health or health behaviors to measures of economic activity (e.g., unemployment rate). However, economic activity itself is not a cause of changes in health; unemployment

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rate itself does not affect health. Rather it is changes in time use, income (wage) and other determinants of health that are associated with changes in unemployment rates affect health or health behaviors. Therefore, greater insight into the issue can be gained from studying how economic activity affects these proximate causes of health (e.g., wage), and in turn, how these proximate causes affect health or health behaviors.

From both scientific and public policy perspective, it is of more interest to understand why economic activity affects health or health behaviors than whether economic activity affects health. For example, if binge drinking increases during economic expansions, is this because of an increase in income, or is it due to an increase in stress that comes from greater work intensity? The answer to this question matters because it is necessary to know the mechanism linking economic expansions to binge drinking if the goal is to design appropriate public and private interventions to offset potentially harmful consequence of expanded economic activity (e.g., adverse health outcomes associated with binge drinking).

While previous studies have discussed potential causal mechanisms linking economic activity to health such as changes in wages, hours of work (leisure-time availability), air pollution and vehicle miles traveled, none has tried to empirically identify the independent effects of these four proximate causes on health or health behaviors. This is the purpose of this study. Specifically, using national representative data from the United States, this paper examines the effects of changes in wage and working hours associated with changes in local economic activity, on health behaviors of low-educated persons. The low-educated is defined as those with some college education or less. We focus on low-educated persons because both economic theory and empirical evidence suggest that the business cycle has the greatest impact on their wage and working hours (Bartik, 1994, 1996; Becker, 1975; Bils, 1985; Blank, 1989, 1990; Bradbury, 2000; Charles & Decicca, 2008; Couch & Fairlie, 2005; Freeman, 1990, 2001; Hoynes, 1999; Keane, Robert, & Runkle, 1988; Messemer, 2004; Oi, 1962; Solon, Barsky, & Parker, 1994; Ziliak, Wilson, & Stone, 1999).

Estimates of the effects of wage and working hours on health behavior are obtained using a two-sample instrumental variables approach (TSIV). TSIV is an appealing approach because there are no large datasets that contain detailed information on wages, hours of work and health behaviors. The TSIV approach overcomes this data limitation. Further, the TSIV framework provides parameter estimates that are policy relevant. The TSIV procedure provides estimates of the effect of wage and hours worked on health behaviors for those whose wage and hours worked are altered by the business cycle.

Our results indicate that people are less likely to engage in time-intensive behaviors during economic expansions, namely physical activity, physician visits, and binge drinking, but more likely to involve in less time insensitive and unhealthy behaviors, cigarette smoking. More importantly, our evidence suggests that most of these effects are associated with the change at the extensive margin of labor supply—employment. These findings imply that labor supply rationing associated with business cycles may have substantial effects on health behaviors, at least in the short run, and these effects may be more important than business cycle induced income effect. They also provide additional evidence of the importance of time in producing health, particularly for time-intensive activities such as doctor visits and exercise.

Previous literature: economic activity and health behaviors

Recent studies have used local and regional variations in unemployment rates to examine the association between economic recessions and individual health behaviors. However, the literature has not produced a consensus as to the effect of the business cycle on these behaviors.

Ruhm (1995) provided one of the earliest and most widely cited studies. He used state-level, aggregate data to study the effect of economic recessions on alcohol consumption and found evidence that alcohol consumption was pro-cyclical; alcohol consumption declined during economic recessions and increased during economic expansions. Using similar data, but with a different empirical strategy, Freeman (1999) confirmed Ruhm's conclusion. Using individual-level data from the Behavioral Risk Factor Surveillance System (BRFSS) from 1987 to 1999, Ruhm and Black (2002) also found evidence for the pro-cyclical alcohol consumption, as did Ettner (1997) who used individual-level data from the 1988 National Health Interview Survey (NHIS). Johansson, Bockerman, Prattala, and Uutela (2006) examined the issue using individual-level data from Finland from 1982 to 2001 and found pro-cyclical variation in alcohol consumption. In contrast, Dee (2001), who used the BRFSS from 1984 to 1995, found evidence that binge drinking was strongly counter-cyclical. Furthermore, he argued that even among those who remained employed, binge drinking increased substantially during economic recessions. Finally, Charles and Decicca (2008) found little evidence of cyclical changes in binge drinking behaviors with the data from the NHIS from 1997 to 2001.

Studies on the association between aggregate economic activity and physical activity also yielded inconsistent evidence. Ruhm (2000, 2005) and Dustmann and Windeijer (2000) reported evidence of counter-cyclical variation in physical activity; meaning it increased during recessions and decreased during expansions. Charles and Decicca (2008), on the other hand, found that physical activity was independent of business cycles. They also investigated the effect of economic activity on both moderate and vigorous exercise by education, and none of these estimates became statistically significant.

There has been less study addressing the effect of economic activity on smoking. Ruhm (2000, 2005) found evidence that cigarette smoking was pro-cyclical and that declines in use during recessions were disproportionately concentrated among heavy smokers. Charles and Decicca (2008) also found evidence of pro-cyclical tobacco use. Novo, Hammarstrom, and Janlert (2000) examined cigarette use among young men and women during economic expansion in 1986 and recession in 1994 in Sweden. These authors also found pro-cyclical variation in daily tobacco use.

Ruhm also investigated the association between economic activity and use of health care services such as doctor visits. Using data from the NHIS from 1972 to 1981, Ruhm (2003) reported that use of health care services such as hospital episodes and doctor visits was pro-cyclical, but the estimates were not statistically significant. Several studies in public health found the opposite when they compared employed and unemployed persons, which ignored likely selection into employment. For example, Linn, Sandifer, and Stein (1986) found that unemployed US veterans were more likely than employed to visit the doctor.

In sum, there is a lack of consensus as to the impact of economic activity on health behaviors, which suggests that additional study is warranted. More importantly, additional studies that identify the causal mechanisms through which economic activity may affect health behaviors are particularly needed. Some efforts to estimate a more structural model have been made, but they are limited. Charles and Decicca (2008) examined the effect of local unemployment rate on health behaviors and allowed the effect of unemployment to differ by those more or less likely to be employed (propensity of employment). Ruhm (2005, 2007) included aggregate working hours per week and personal income per capita in his primary specifications to indirectly assess whether the changes in