

Life Events:
Objective and Subjective Responses to the Business Cycle

An Honors Thesis for the Department of Economics

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ABSTRACT

This study analyzes the relationship between the business cycle and objective and subjective responses to four major life events: abortion, crime, health and suicide. We measure the impact of the business cycle on objective responses by using quantitative data on abortion and live birth rates, crime rates, mortality rates, and suicide rates. We measure the impact of the business cycle on subjective responses by using survey data about attitudes towards abortion, fear of crime, self-assessed health condition, and attitudes about suicide. We find that abortion rates and live birth rates, violent crimes, and mortality are pro-cyclical, property crimes are counter-cyclical, and there is no significant relationship between the business cycle and suicide rates. We find that newspaper readership is a significant determinant in subjective responses. Agreement with abortion, fear of crime, and positive health assessments are pro-cyclical for individuals who do not read the newspaper, while all of these effects are negated for individuals who read the newspaper. Agreement with suicide, however, is pro-cyclical regardless of newspaper readership.

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I. INTRODUCTION

This study uses objective and subjective data to analyze the impact of a change in GDP and the unemployment rate, or the “business cycle”, on four major life events: abortion, crime, mortality, and suicide. Each life event is studied in two parts. The first part examines the influence of changes in the economic climate on objective changes; namely, abortion and live birth rates, various types of crime rates, mortality rates, and suicide rates. The second part examines the relationship between changes in the economy and changes in people’s perceptions or attitudes about major life events, or subjective variables. These perceptions and attitudes constitute subjective responses to the business cycle. I observe these relationships over the period of 1972 to 2006 – the time period for which consistent subjective data was available. The goal is to contrast the subjective and perceptual effects of a business cycle with the corresponding objective measures and to compare the magnitudes of these effects, so to determine if consumers correctly perceive the effect of the business cycle, and which are its biggest impacts.

Motivation for Research

Throughout the time I conducted this study, from 2008 to 2009, the state of the national economy has been at its worst, some say, since the Great Depression. One cannot open a newspaper or turn on the television without being bombarded with horribly depressing news about job losses, housing foreclosures, bankruptcies, and other social catastrophes. When not reporting actual facts and figures, journalists and reporters have been paying special attention to the effects of the struggling economy on people’s everyday lives. After reading and listening to enough of these stories, one cannot help but wonder if these stories perpetuate a cycle of panic or

misperception. For most people who are not directly impacted by the economic times, such as losing a job or having a house foreclosed on, why should they be so worried about the down economy? What do they have to fear? The media appears to be reporting that the state of the economy dictates our lives. If this is true, then to what degree does it do so? How much of what is reported is motivated by fact and how much is motivated by fear? For this reason it is relevant to look at the objective and subjective responses to changes in the economy; one is compelled to question if our society is, in fact, overreacting.

The Role of the Media

If people are at all affected by what they are exposed to on a daily basis, then articles in local and national newspapers would be sufficient in propelling people's concerns about their mental and physical condition. Since the financial crisis began in 2007, articles in newspapers, magazines, and news sites have surfaced to warn us of the potential effects of a weak economy. It is legitimate to question whether articles like these could inflate public concern or perhaps create some version of a "moral panic" for people even peripherally affected by the economy.

In May 2008, *Time* published a two-page article on how a failing economy predicts worse health. The article explained that with more people filing for unemployment, more people (with children in particular) will go uninsured. Moreover, these uninsured families are not getting access to public insurance due to budget cuts. In a poll conducted by the Kaiser Family Foundation, 7% of people stated:

"One member of their household got married to a health-insured person within the past year just to get a piece of the benefits. More commonly, however, families went without medical attention. Twenty-nine percent of people said they'd put off necessary care, 24% had delayed a medical test or treatment and 23% said a prescription had gone unfilled." (Kingsbury, 2008)

In an article from an October edition of *USA Today*, readers are warned: “Don’t let the economy kill you...As stress spreads in the wake of this financial storm, Americans risk paying with their health.” The reporter, Marc Siegel, speaks with a nurse who delivers an ominous message, despite providing no evidence to match her claims: “She told me that despite the financial crisis and roller-coaster stock market, the number of patients with chest pain or heart attacks was not yet increasing. ‘Nothing’s different,” she said, ‘except the feeling that something’s about to happen.’” The article continues to state the following with utmost certainty:

A survey by the American Psychological Association indicated that financial concerns “topped the list of stressors for at least 80% of those surveyed,” according to last week’s front-page story in this newspaper. More than half reported the most common symptoms of stress being anger, fatigue and an inability to sleep. Close to half responded by overeating or eating poorly, a trend that will definitely lead to killer diseases that include heart attacks and strokes. (Siegel, 2008)

Similarly, some articles report an *expectation* for an impending crime wave in the wake of a recession. From *The New York Times*: “It is the question on the minds of New Yorkers, once they stop pondering the fate of their 401(k)’s: If the city’s economy sinks to depths not seen in decades, will crime return with a vengeance?” (Hauser & Baker, 2008) Other stories directly attribute increasing crime trends to the failing economy. (Weir & Snow, 2008)¹

Before or even without being directly affected by a recession, readers are made to feel powerless in the face of the wrath of the economy. Reports that infer that our livelihood and general well-being are at risk whenever the economy is at risk exacerbate the existing gloominess caused by constant media coverage and everyday chatter about the economic crisis.

¹ Additional examples of articles like these are: “Crime up in a down economy: Police see rising tide of larcenies,” from *The Boston Globe*, Feb 5, 2009; “Economy leads to fears, security companies say,” from *The Charleston Gazette*, Feb 1, 2009; “Focus: Recession in America: New York fears return to dark days of Seventies as financial crisis bites,” from *The Observer*, Nov 23, 2008; “Health takes a hit as economy creates more stress,” from *USA TODAY*, Oct 7 2008; “Are you suffering from 'Recession Flu'? The credit crunch is already having an effect on our health,” from *The Daily Telegraph*, Jan 26 2009; “Economy prompts more calls to suicide hotlines; People despair over lost jobs,” from *USA TODAY*, Jan 12, 2009; “Warning on Suicides during Economic Downturn,” from *The Sunday Independent*, Nov 23 2008.

Surely, the heavy negativity constantly surrounding us must impact our perceptions and attitudes about our current situation – positively or negatively, one would suspect that an impact must exist.

Relevance to Housing Foreclosures

During good and bad economic times, a “life event” is considered to be a significant catalyst for an individual or family to default on their mortgage. (Gerardi, Shapiro, & Willen, 2008) A life event could be the loss of a job, a serious illness or injury, or a divorce. If the likelihood of experiencing such an event is related to the economy, housing foreclosures in particular areas may be indirectly prompted by the economy. Furthermore, if the economy causes people to change their perceptions or attitudes about the likelihood of their experiencing a life event, they may respond and alter their mortgage situation preemptively. These questions provide an opportunity and relevant necessity for research on this subject.

Findings and Structure

The results of this study provide evidence for a relationship between the business cycle and people’s perceptions and attitudes, and a frequent disjunction between the attitudes of individuals who read the newspaper and those who do not. My findings show that newspaper readership negates the impact of the business cycle in the case of abortion attitudes, fear of crime, and self-assessed health condition. Attitudes of those who do not read the newspaper reflect the relationship between the business cycle and the objective measures for abortion and crime, while objective measures for health and suicide trends are not reflected by people’s perceptions and attitudes.

This paper is organized as follows. Section II discusses existing research for each subsection and the implications for this study. Section III discusses the model used to conduct the study, the justification for the empirical approach, and the potential problems with it. Section IV lists the data used for each test. Section V lists the main results, while Section VI examines and discusses them. Section VII concludes.

II. EXISTING RESEARCH

The relationship between the business cycle and various individual outcomes has been widely explored by economists, sociologists, medical researchers, and psychologists. The existing literature is extensive, though at times inconclusive. The literature on the impact of the business cycle on attitudinal responses is sparser, as it seems most effort has focused on the impact on general happiness or life satisfaction rather than on changes in attitudes about particular issues. Aside from Plunkett's (1994) study on the impact of unemployment on social and political attitudes, I found few other studies that specifically explored the relationship between the economy and personal perspectives about non-business cycle related issues. Therefore, with respect to existing research on personal attitudes toward abortion, crime, health and suicide, I cite literature that explores general socioeconomic characteristics that may influence or predict attitudes.

Abortion Demand and Attitudes towards Abortion

Medoff (1997) estimates the demand for abortion in the United States using state data pooled over the years 1982-1992. Among the many variables he used to determine demand, he found the unemployment rate of women aged 16 and older to be a significantly negative impact.

This suggests that a woman's demand for abortion is coincident with the business cycle; economic booms will increase demand, while busts will decrease it. Medoff's results also shows that abortion demand is price inelastic and a normal good relative to income. He also found that demand is positively related to women's labor force participation, unmarried women, western region states, state Medicaid funding, Catholicism, and the populace's acceptance of abortion. Yet, a multitude of existing literature shows that birth rates are pro-cyclical, increasing with a growing economy and vice-versa. (Becker, 1960; Galbraith & Thomas, 1941)

Plunkett's dissertation (1994) studies the impact of varying degrees of unemployment on social and political attitudes. He assumes that the unemployed lack many of the benefits associated with employment that go beyond income. He draws upon the ideas of Jahoda (1982, 1986), that having a job implies status, autonomy, the opportunity to meet people, and control over our world. His research explores the consequences of lacking such rewards that impact individuals' sentiments about their place in society.

Plunkett determines that any experience with unemployment will result in any changes in attitude. This includes the attitudes of friends and family of the unemployed; those who interact with an unemployed individual are forced to redefine their social structure as said individual redefines his/her own.

He reanalyzes Schlozman and Verba's 1979 study that employment status has no effect on social ideology. This study makes use of an original dataset. Then, using data from the General Social Survey, Plunkett uses scales to determine if experience with unemployment influences scales' scores. Once he draws conclusions about those issues, he examines if other statuses such as race and gender interact with the unemployment experience.

Plunkett finds that having experience with unemployment is correlated with more willingness to allow abortion for all, and that having been unemployed for as much as a month in the last ten years is correlated with higher levels of anomie. He also finds that those with unemployment experience have less faith in economic self-determination, lower levels of confidence in institutions, and are more disillusioned with the government. Furthermore, these changes in sentiments are not limited to those who are currently unemployed, but are also experienced by those who have had experience with unemployment in the past and continue to feel its influence.

Crime Rates and Fear of Crime

In Conklin's textbook *Criminology* (2010), he discusses the complex relationship between crime rates and economic opportunity. While there are correlations between the economy and crime patterns, it is difficult to isolate the direct influence of the economy on these patterns due to time lags and other variable effects that are specific to local regions and are thus difficult to account for on a national or state level. Property crime rates, for example, particularly increase during times of economic prosperity due to the growth in opportunities for theft, i.e., they are pro-cyclical. Meanwhile, property crimes are closely related to unemployment rates more so than violent crimes, a trend that is found when allowing for a time lag most likely since "accumulated deprivation is needed to produce criminal motivation." (p. 143)

The relationship between crime and employment depends on the motivation of the individual. Some criminals consistently depend on crime as their source of income regardless of the availability of jobs – their criminal activity is not affected by a higher unemployment rate –

while young people may alternate between employment and crime, committing crimes when unemployed. (Conklin, p. 145) The complexity continues, however. For example, research has found that criminal activity committed by young people does not just depend on general employment, but the *type* of employment. “Delinquency is reduced by jobs that support academic roles rather than divert attention from them, subject young workers to social control, and provide opportunities to learn useful things; delinquency is increased by jobs that offer adolescents autonomy, social status, and high wages.” (Conklin, p. 146) Therefore, the situation may arise that unemployment may be high but job availability of the supportive type is unaffected, thus keeping teenagers from committing crimes.

Conklin mentions an important factor affecting crime: people’s relative standard of living. Inequality causes resentment, which is more common among the poor in wealthy nations than among those with a generally lower absolute living standard in poor nations. The difference between a person’s expectations and his capabilities is called his relative deprivation, which can cause him to violate the law when the difference is large. Negative self-feelings associated with the perception of being worse-off than other people increases not only violent and property crimes (Stiles, Liu, & Kaplan, 2000) but political actions, social movements, suicide and alcoholism. (Conklin, p. 147)

Conklin’s textbook also discusses fear of crime, its origins and its relationship with crime rates. “Fear of crime is associated with weak ties to a community, a sense among residents that they cannot control what is happening in their neighborhood, a lack of powerful local organizations, the absence of knowledge about effective ways to prevent crime, and a perception of disorder or incivility (‘signs of crime’) in the area.” (Conklin, p. 304)

According to Skogan (1986), the four leading factors that affect neighborhood stability are disinvestment, demolition and construction, demagoguery, and deindustrialization. External economic forces will influence the likelihood of these triggers, particularly disinvestment and deindustrialization.

Disinvestment occurs when an area is no longer considered a viable place to conduct business. Landlords and homeowners' decisions to maintain an attractive neighborhood will reflect the value and demand for housing in that neighborhood, the depreciation of the buildings, and their profitability. "When mortgaging institutions and insurance companies refuse to make reasonable purchase or construction loans or to issue policies in certain neighborhoods, this effectively 'writes off' those areas." (Skogan, p. 206) Goodwin (1979) explains, "It is a sign for all that the neighborhood is 'going.' Powerful and influential interests have lost faith in it, and that stands as a warning to any home-seekers or commercial investors to look elsewhere if they have the means to do so." (Goodwin, p. 60)

Deindustrialization is a result of factory closings, the movement of jobs from urban to suburban locations, a decline in the number of jobs at a particular skill or wage level, and other economic trends that weaken the advantages of particular neighborhoods and the well-being of the people who live there.

It should be clear that the triggering events discussed above all stem from conscious, often corporate decisions by persons in positions of power. They reflect the interests of banks, manufacturing firms, government agencies, and others with large economic and political stakes in what they can do. None is individually 'sociologically inexorable,' although they obviously may be driven by still larger economic and demographic forces. (Skogan, p. 207)

In Feldman's book *The Psychology of Crime* (1993), he explains "Once the cycle of decline begins, feedback processes increase the level of fear, and other problems add to those of crime, including physical deterioration, social disorder, and group conflict." (p. 241) These

neighborhood incivilities will elevate residents' perception of risk, which will, according to Randy LaGrange's 1992 study, affect their fear of crime. According to Hunter (1978), incivilities induce fear because people associate "negative" neighborhood conditions with criminal activity.

LaGrange's study on the impact of social and physical incivilities on perceived risk and fear of crime found that incivilities (social more so than physical) had a greater impact on people's perception of risk (their level of safety) rather than on their fear of crime (their emotional response). His measure of social incivilities is a summative index of four variables reflecting "untended people," and the index of physical incivilities is a summation of four variables reflecting "untended property."² While his findings do not show a strong direct link between incivility and fear, "social and physical incivility do have an important direct effect on perception of risk; risk, in turn, has a powerful effect on fear of crime." (LaGrange, p. 326) Therefore, there is an indirect effect of incivilities on fear of crime when those incivilities elevate the perceptions of risk.

Fluctuations of the crime rate are not always reflected by changes in people's fear of crime, as Conklin's graph charting the two from 1965 to 2005 depicts (Figure 2.1). The percentage of people afraid to walk alone at night, the variable chosen to represent the fear of crime, increased from 31% to 45% over the period of 1967 to 1975, a time in which violent crime rates almost doubled.

Between 1975 and 1992, violent crime rates nearly doubled once again, but fear of crime remained relatively constant. After 1992, crime rates fell and fear followed. By 2006, crime

² Untended, meaning lack of care or attention.

rates were at their 1977 levels, but the level of fear (37%) after a decade of declining rates was ultimately much lower than it was after a decade of rising crime (45%). (Conklin, p. 305)

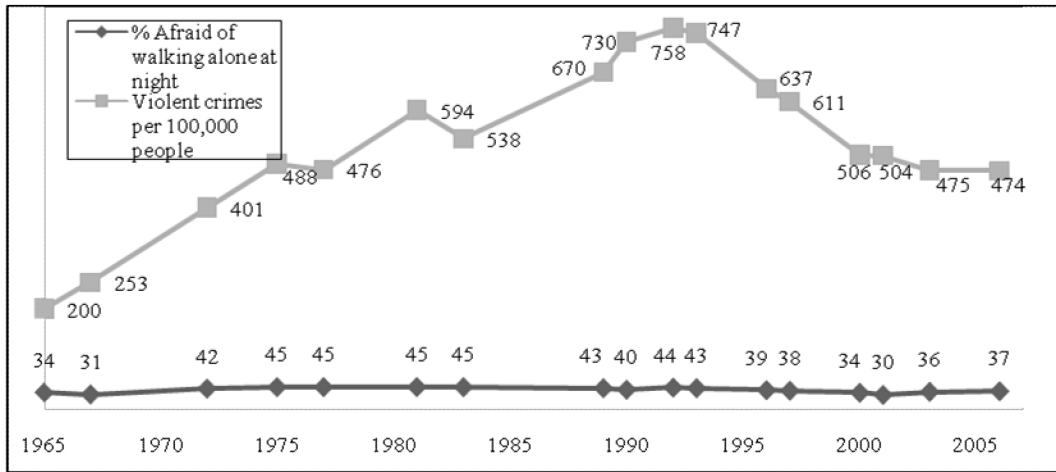


Figure 2.1: Fear of Walking Alone at Night and Rates of Violent Crime, 1965-2006. (Conklin, p. 304)

Mortality Rates and Self-Assessed Health

Gerdtham and Ruhm’s 2002 study examines information from 23 nations of the OECD from 1960-1997 to determine whether fatalities rose when labor market conditions improved. Their results show that deaths from several common causes do indeed increase when labor markets strengthen; namely, that mortality rates are pro-cyclical. After controlling for year effects, location fixed effects, country-specific time trends and demographic traits, they found that a one percentage point decrease in the national unemployment rate corresponds with a 0.4 percent rise in total mortality and 0.4, 1.1, 1.8, 2.1 and 0.8 percent increases in deaths from cardiovascular disease, influenza/pneumonia, liver disease, motor vehicle fatalities and other accidents, respectively.

Mortality may increase during positive economic times for three primary reasons. First, leisure time decreases during a stable economy, making it more difficult for individuals to take

the time to exercise and involve themselves in other healthy activities. Ruhm (2000) finds that lower unemployment is linked with higher smoking and obesity levels, a decrease in physical activity, and poor diet. A decrease in income would decrease consumption of normal goods, and therefore decrease the consumption of health-damaging goods such as cigarettes and alcohol. Of course, the ultimate effects of changes in health-related behavior may not be concurrent with the bad economic times. Second, physical health is abused during the production of goods and services, such as exposure to hazardous working conditions, through physical exertion, and through job-related stress. Some cyclical sectors like construction that are fueled by economic growth have high accident rates or produce negative externalities (ex, pollution) which can become dangerous to peoples' health. Third, income may increase risk-taking and participation in perilous activities which can result in fatalities from external causes. (Gerdtham & Ruhm, 2002)

Despite these outcomes, an analysis of data from the nationally representative US Health and Retirement Survey (HRS) showed that workers' risk for stroke and myocardial infarction (MI) doubled after experiencing involuntary job loss. The analysis was conducted to estimate the effects of involuntary unemployment on workers' risk for stroke and MI over a ten-year period from 1992 to 2002. Over the decade, 582 individuals out of the 4301 people in the sample (13.5%) experienced involuntary job loss. After controlling for established predictors of the outcomes (such as socio-demographic status, socioeconomic status, smoking and drinking status, prevalence of co-morbid conditions, depressive symptomatology and physical functionality), the risk of subsequent MI and strokes more than doubled for displaced workers relative to individuals who remained employed. (Bradley, Falba, Gallo, Kasl, Krumholz, & Teng, 2006)

Dehejia and Lleras-Muney (2004) study the effect of the unemployment rate on the time of a baby's conception and parental characteristics, parental behaviors, and infants' health. Their results show that quality of babies' health is counter-cyclical; during times of high unemployment, incidence of low and very low birth weight decreases, as do congenital malformations and post-neonatal mortality. Dehejia and Lleras-Muney find this could be due to changes in the types of mothers who become pregnant during recessions. Specifically, less-educated single Black mothers are less likely to have babies during recessions, while less-educated White mothers are more likely to have babies during recessions. Their findings also show that health-related behavior improves during times of recessions; the mean number of prenatal care visits increases, the proportion of mothers with inadequate prenatal care decreases, and the proportion of mothers who use prenatal care in the first trimester increases. They also find a decrease in the proportion of Black women who smoke and drink during pregnancy, while the proportion of white women who do so significantly increases during recessions.

Bockerman and Ilmakunnas' 2007 study analyzes the relationship between unemployment status and self-assessed health using household panel data from Finland over the years 1996-2001. Their study shows that the event of becoming unemployed does not affect self-assessed health, but that the health status of those becoming unemployed is lower than those who continue to be employed. Therefore, it is those with poor self-assessments who are more likely to become unemployed. (Bockerman & Ilmakunnas, 2007)

Suicide Rates and Attitudes towards Suicide

Yang's 1992 study observed the effects of multiple economic and social variables on the US suicide rate from 1940-1984. He applies a single-equation regression for the total population

and four sex by race social groups (white and non-white; male and female). He explores three pre-existing contradictory sociological theories to arrive at his hypothesis that suicide is determined by a mixture of economic and social variables. The first theory is that economic prosperity and depression are both responsible for a decrease in social integration (socially assigned principles and ideals) and regulation (moderation of desires and aspirations), and therefore are both responsible for an increase in suicide rates. Therefore, this theory suggests that there is no cyclicity involved. (Durkheim, 1897) The second theory is that suicide is pro-cyclical, dropping in times of hardship and increasing in times of prosperity. (Ginsberg, 1966) The third theory is that suicide is counter-cyclical, rising with higher rates of unemployment (Eyer, 1977; Boor, 1980) or lower growth rates of GDP (Henry, 1954).

Yang used a combination of the following variables: per capita gross national product, the unemployment rate, the divorce rate, the proportion of Catholic population, and the female labor force participation rate. His results showed that contrary to Durkheim's assertions, suicides did not increase with booms and busts, and changes in suicide rates depended on the type of social group involved. He found that the unemployment rate had a significantly positive relationship only with the white male suicide rate, and that the female labor force participation rate had significantly negative effects on white and non-white female suicide rates. He also found that the divorce rate was the only variable to be consistently significant and positive for all groups' suicide rates and the overall suicide rate, and that Catholic affiliation had a positive impact on suicide rates. (Yang, 1992)

Sawyer and Sobal's 1987 study of public attitudes towards suicide used the NORC's General Social Survey to examine which socio-demographic characteristics best predicted said attitudes. Their results show that women, non-whites, widow/ers, and the elderly are all more

opposed to suicide. Respondents' socio-economic characteristics indicating opposition towards suicide are poor education, low income, and low-status.

Summary of Existing Literature

The results provided by the existing research on objective responses to the business cycle prove that a relationship between them does exist, though it may not be consistently positive or negative throughout all of the studies. It is much less clear whether or not a relationship exists between the business cycle and subjective responses to it.

Previous research studying abortion demand and birthrates show that both are pro-cyclical, increasing with economic expansion. (Medoff, 1997; Becker, 1960) Willingness to have an abortion, however, is found to be more closely associated with individuals who experience or have experienced unemployment. (Plunkett, 1994)

The cyclicity of crime is more dubious; while some crimes increase with economic growth (both because of the increase in wealth and an increase in inequality, which can breed resentment), other crimes increase when particular job opportunities disappear (those that support academic roles). (Conklin, 2010) Fear of crime is linked with individuals' perception of the general stability of their neighborhood and community. Neighborhood instability can be triggered by economic forces (Skogan, 1986; Goodwin, 1979), which can impact perceived risk, which in turn can create a heightened sense of fear (LaGrange, 1992).

Mortality rates and infants' health are pro-cyclical; deaths are found to increase when GDP increases or unemployment decreases (Gerdtham & Ruhm, 2002), and babies' health improves when unemployment increases (Dehejia & Lleras-Muney, 2004). Meanwhile, other research shows that involuntary job loss doubles the risk of heart attack and stroke for displaced

workers. (Bradley, Falba, Gallo, Kasl, Krumholz, & Teng, 2006) Research also shows that self-assessed health and employment status have a causal relationship in the opposite direction; namely, rather than the event of becoming unemployed influencing perceived health, perceived health is indicative of individuals' future employment status. (Bockerman & Ilmakunnas, 2007)

The relationship between the economy and suicide has been widely theorized and researched with varying results. However, one study that addresses and disproves previously existing theories finds that suicide does not fluctuate with booms and busts, but is closely linked with gender and race. Specifically, white male suicides are positively and significantly affected by the unemployment rate, and female suicides decrease as the female labor participation rate increases. (Yang, 1992) Interestingly, public attitudes against suicide are found to be more commonly held by the socio-economically disadvantaged (those with poor education, low income, and low status). (Sawyer & Sobal, 1987)

Implications for this Study

Based on these results, the relationships between the a growing economy and abortion rates, birth rates, crime rates and mortality rates should be positive, and negative with suicide rates. Meanwhile, the dearth of research on the relationship between the business cycle and individuals' subjective responses fails to provide significant proof of an existence between the two, though it does provide a sufficiently substantial foundation upon which to conduct further research. For this reason, I conduct a study measuring the impact of the economy on both objective and subjective responses, so as to provide the first comprehensive comparison between the two.

III. THE MODEL AND ECONOMETRIC SPECIFICATION

Dependent Variables

I selected four areas of interest to examine: abortion, crime, health, and suicide. Objective variables were taken at the annual state levels for the abortion percentage rate, eight types of crime rates (the general property crime and violent crime rates; specifically the robbery, larceny, aggravated assault, murder and rape rates)³, three types of mortality rates (heart attack, stroke, and cirrhosis), and suicide rates. Corresponding subjective variables taken from the GSS are narrowed down to the following binary variables: that a woman should be able to obtain an abortion for any reason, that a woman should be able to obtain an abortion if she cannot afford another child, that there is an area within neighborhood where respondent would be afraid to walk alone at night, that the condition of respondent's health is good or excellent, that suicide is acceptable if the person has gone bankrupt, and that suicide is acceptable if the person is tired of living and ready to die. See Table 3.1 for full list of left-hand side variables.

Independent Variables

With the exception of the health-focused tests, all dependent variables are regressed on the annual change in state/region GDP per capita rather than the unemployment rate. Using GDP data afforded more observations, as there were limitations in coverage for the state/region unemployment data. Both the subjective health variable and mortality rates regressed on the change in unemployment rate provided clearer results than when regressed on the GDP data. Furthermore, existing literature focuses on the relationship between health and unemployment

³ The general property crime rate includes the following offenses: Burglary, larceny-theft and motor vehicle theft. The violent crime rate includes the following offenses: Murder and non-negligent manslaughter, forcible rape, robbery and aggravated assault. With the exception of motor vehicle theft, all specific rates are also included for examination.

more so than GDP. For these reasons, the health models are regressed on the change in the unemployment rate.

Control variables for subjective regressions include respondents' characteristics that are relevant for each specific test and do not cause multicollinearity. Such continuous variables include: age, respondent's highest level of education, respondent's father's and mother's highest levels of education, and real family income in constant dollars. Independent binary variables include: whether or not the respondent is male, white, Catholic, reads the newspaper more than once a week, and whether or not the respondent has been forcefully robbed within the past year. The inclusion of this last variable may result in multicollinearity, but because of its potentially high explanatory power it will remain in the crime model. An interaction term of reading the newspaper and GDP or unemployment (depending on the regression) is also included to demonstrate the difference in the effect of an increase in GDP/unemployment for a person who reads the newspaper more than once a week versus a person who does not. Yang's study would suggest the inclusion of a marital status variable (indicating whether or not the respondent is divorced) would be valuable, but because of the potentially high correlation between divorce and GDP, income, and Catholicism, such a variable is omitted.

Right-hand side variables for objective regressions are limited to GDP/unemployment rate, though the population growth rate is included as a control in the crime rate regression. In addition, lagged GDP/unemployment rates are included as controls for crime rates and mortality rates; existing literature indicates that it may take some time to feel the effects of a slowed economy or rising unemployment rate. The economic-factor variable is lagged by one year since the other data could not be spliced into quarters. Other relevant data for objective regressions were unavailable or difficult to obtain at the state level for the necessary period of time, such as

marriage and divorce rates. For a complete list of right-hand side variables, please refer to Table 3.2.

Regression Analysis

Multiple linear regression analysis is applied for all dependent variables regardless of their being binary or continuous. Shortcomings from using a linear probability model rather than a probit or logit regression model include heteroskedasticity (alleviated by using robust standard errors) and predicted values that can lie outside of the [0,1] interval. However, given our interest in the marginal effects of the predictive variables, the linear probability model and alternatives such as logit and probit should give similar results. Table 3-3 shows two sample regressions for the binary dependent variable concerning fear of walking alone at night, one using LPM and the other using a probit marginal effects regression; it is clear from the results that the difference is negligible. Thus for simplicity and consistency, all regressions were run using the linear probability model. Furthermore, LPM facilitates the use of year and state or region fixed effects.

All regressions are run using combined year and state or region fixed effects rather than their respective trends. This specification captures the effects of changes in state/region GDP per capita and unemployment rate within states over time, ignoring permanent differences between state and national fluctuations. National fluctuations are likely to be correlated with other national trends, such as abortion legalization and female labor force participation. Due to the large number of right-hand side variables the inclusion of fixed effects causes, the coefficients on the time and entity binary variables are not reported because they are not of primary interest (with the exception of Table 3-3, the preliminary table with LPM and probit results).

The question of whether the model is indeed causal prompts the discussion of two threats to the internal validity of the objective regressions: omitted variable bias and endogeneity. The exclusion of other explanatory variables may result in the correlation between the changes in GDP per capita/the unemployment rate and the error term. Namely, the economic variable could capture the effects of a coincidental shock or excluded variable. The use of panel data and the inclusion of year and state/region fixed effects helps reduce omitted variable bias caused by variables that may be constant over time but vary across entities, or likewise may be constant across entities but vary over time. Endogeneity may also result in simultaneous causation in the cases of the crime and health models. High crime rates could deter businesses from entering or cause them to leave an area, and high mortality rates may be correlated with people leaving their jobs due to the severity of their illnesses prior to their deaths, subsequently influencing the unemployment rate. One method of addressing the problem of endogeneity is using an Instrumental Variable regression. IV regressions are run for the crime and mortality tests in addition to LPM regressions, where the lagged economic indicator variable is used as the instrumental variable. These results are not presented in the main results section, as they do not suggest significantly different results and are difficult to interpret, but are included in the appendix.

TABLE 3-1
DEPENDENT VARIABLE DESCRIPTIONS

Focus	Objective Variables	Subjective Variables
Abortion	<ul style="list-style-type: none"> • Δ Abortion Rate • Abortion Level • Δ Live Birth Rate • Live Birth Level 	<ul style="list-style-type: none"> • A woman should be able to obtain an abortion for any reason. (<i>1=Yes, 0=Otherwise</i>) • A woman should be able to obtain an abortion if she cannot afford another child. (<i>1=Yes, 0=Otherwise</i>)
Crime	<ul style="list-style-type: none"> • Δ Property Crime Rate • Δ Burglary Rate • Δ Larceny Rate • Δ Violent Crime Rate • Δ Robbery Rate • Δ Aggravated Assault Rate • Δ Murder Rate • Δ Rape Rate 	<ul style="list-style-type: none"> • There is an area within neighborhood where respondent would be afraid to walk alone at night. (<i>1=Yes, 0=Otherwise</i>)
Health	<ul style="list-style-type: none"> • Δ Heart Attack Rate • Δ Stroke Rate • Δ Cirrhosis Rate 	<ul style="list-style-type: none"> • Condition of respondent's health is good or excellent. (<i>1=Yes, 0=Otherwise</i>)
Suicide	<ul style="list-style-type: none"> • Δ Suicide Rate 	<ul style="list-style-type: none"> • Suicide is acceptable if the person has gone bankrupt. (<i>1=Yes, 0=Otherwise</i>) • Suicide is acceptable if the person is tired of living and ready to die. (<i>1=Yes, 0=Otherwise</i>)

TABLE 3-2
INDEPENDENT VARIABLE DESCRIPTIONS

Focus	Objective Regressions	Subjective Regressions
Economic Indicator	<ul style="list-style-type: none"> • Δ State GDP Per Capita • Δ State Unemployment Rate • Δ State GDP Per Capita -- Lagged by 1 Year • Δ State Unemployment Rate -- Lagged by 1 Year 	<ul style="list-style-type: none"> • Δ Regional GDP Per Capita • Δ Regional Unemployment Rate
Characteristics	<ul style="list-style-type: none"> • Δ State Population 	<ul style="list-style-type: none"> • Age • Highest Level of Education • Highest Level of Father's Education • Highest Level of Mother's Education • Real Income • Respondent is Male (<i>1=Yes, 0=Otherwise</i>) • Respondent is White (<i>1=Yes, 0=Otherwise</i>) • Respondent Reads the Newspaper more than Once a Week (<i>1=Yes, 0=Otherwise</i>) • Respondent is Catholic (<i>1=Yes, 0=Otherwise</i>) • Respondent was Robbed within the Past Year (<i>1=Yes, 0=Otherwise</i>)
Interaction Terms		<ul style="list-style-type: none"> • News*Regional GDP Per Capita • News*Regional Unemployment Rate
Fixed-effects	<ul style="list-style-type: none"> • Year • State 	<ul style="list-style-type: none"> • Year • Region

TABLE 3-3
LINEAR PROBABILITY MODEL VS. PROBIT MODEL

Dependent Variable	Linear Probability Model				Probit Model - Marginal Effects			
	There is an area within neighborhood where respondent would be afraid to walk alone at night.				There is an area within neighborhood where respondent would be afraid to walk alone at night.			
Δ GDP per capita	0.101 (0.430)	1.379* (0.730)	0.0817 (0.410)	1.564** (0.710)	0.176 (0.490)	1.657** (0.840)	0.158 (0.470)	1.867** (0.820)
Age	0.00212*** (0.000)	0.00209*** (0.000)	0.00206*** (0.000)	0.00204*** (0.000)	0.00243*** (0.000)	0.00240*** (0.000)	0.00237*** (0.000)	0.00235*** (0.000)
Highest level of Education	0.00430* (0.002)	0.00428* (0.002)	0.00157 (0.002)	0.00154 (0.002)	0.00496* (0.003)	0.00491* (0.003)	0.00165 (0.003)	0.00159 (0.003)
Highest level of Father's Education	0.00388** (0.002)	0.00381** (0.002)	0.00326* (0.002)	0.00321* (0.002)	0.00453** (0.002)	0.00449** (0.002)	0.00388* (0.002)	0.00387* (0.002)
Highest level of Mother's Education	-0.00124 (0.002)	-0.00122 (0.002)	-0.00204 (0.002)	-0.00202 (0.002)	-0.00135 (0.003)	-0.00133 (0.003)	-0.00229 (0.003)	-0.00227 (0.003)
Reads newspaper > once a week	-0.00553 (0.020)	0.00377 (0.020)	-0.0133 (0.019)	-0.00197 (0.019)	-0.00673 (0.022)	0.00456 (0.023)	-0.0155 (0.021)	-0.0017 (0.022)
Respondent is Male	-0.356*** (0.011)	-0.356*** (0.011)	-0.359*** (0.011)	-0.359*** (0.011)	-0.369*** (0.012)	-0.369*** (0.012)	-0.372*** (0.011)	-0.372*** (0.011)
Respondent is White	-0.136*** (0.018)	-0.135*** (0.018)	-0.140*** (0.017)	-0.139*** (0.017)	-0.154*** (0.020)	-0.153*** (0.020)	-0.159*** (0.019)	-0.158*** (0.019)
Respondent was Robbed within past year	0.128*** (0.041)	0.128*** (0.041)	0.148*** (0.040)	0.148*** (0.040)	0.151*** (0.047)	0.151*** (0.048)	0.174*** (0.045)	0.174*** (0.046)
Real Income	-0.000000972*** (0.000)	-0.000000967*** (0.000)			-0.00000115*** (0.000)	-0.00000115*** (0.000)		
News*GDP		-1.449** (0.670)		-1.676*** (0.650)		-1.683** (0.770)		-1.936*** (0.750)
Year = 1977	0.0267 (0.030)	0.0262 (0.030)	0.0493 (0.031)	0.0494 (0.031)	0.0307 (0.035)	0.0302 (0.035)	0.0276 (0.034)	0.0272 (0.034)
Year = 1982	0.0382 (0.040)	0.0366 (0.040)	0.0602* (0.031)	0.0591* (0.031)	0.0488 (0.047)	0.0465 (0.047)	0.0454 (0.045)	0.0431 (0.045)
Year = 1985	-0.0148	-0.0156	0.00338	0.00317	-0.0184	-0.0193	-0.0254	-0.0263

	(0.030)	(0.030)	(0.028)	(0.028)	(0.034)	(0.034)	(0.033)	(0.033)
Year = 1987	-0.044 (0.029)	-0.0442 (0.029)	-0.0298 (0.028)	-0.0296 (0.028)	-0.0506 (0.033)	-0.051 (0.033)	-0.0628** (0.032)	-0.0633** (0.032)
Year = 1989	-0.0213 (0.036)	-0.0219 (0.036)	-0.00864 (0.034)	-0.00877 (0.034)	-0.0249 (0.042)	-0.0257 (0.042)	-0.0389 (0.039)	-0.0397 (0.039)
Year = 1990	-0.0194 (0.037)	-0.0201 (0.037)			-0.0249 (0.043)	-0.0258 (0.043)	-0.0319 (0.042)	-0.0325 (0.042)
Year = 1991	-0.0225 (0.044)	-0.0234 (0.044)	-0.000165 (0.036)	-0.000975 (0.036)	-0.0222 (0.050)	-0.0237 (0.050)	-0.0256 (0.048)	-0.0275 (0.048)
Year = 1993	0.0221 (0.037)	0.0211 (0.037)	0.0407 (0.034)	0.0402 (0.034)	0.0295 (0.043)	0.0282 (0.044)	0.0216 (0.042)	0.0202 (0.042)
Year = 1994	0.0542* (0.032)	0.0531 (0.032)	0.0839*** (0.032)	0.0832*** (0.032)	0.0625* (0.038)	0.0609 (0.038)	0.0676* (0.036)	0.0661* (0.036)
Region = 2	-0.0356 (0.031)	-0.0373 (0.031)	-0.028 (0.030)	-0.0297 (0.030)	-0.0374 (0.034)	-0.0393 (0.034)	-0.0295 (0.033)	-0.0311 (0.033)
Region = 3	-0.0578* (0.030)	-0.0608** (0.030)	-0.0471 (0.029)	-0.0501* (0.029)	-0.0649* (0.033)	-0.0683** (0.033)	-0.0527 (0.032)	-0.0560* (0.032)
Region = 4	-0.104*** (0.033)	-0.107*** (0.033)	-0.105*** (0.032)	-0.108*** (0.032)	-0.118*** (0.035)	-0.121*** (0.035)	-0.119*** (0.034)	-0.122*** (0.034)
Region = 5	0.0266 (0.030)	0.0241 (0.030)	0.0307 (0.029)	0.0281 (0.029)	0.0315 (0.034)	0.0286 (0.034)	0.0357 (0.033)	0.0329 (0.033)
Region = 6	-0.00455 (0.035)	-0.00641 (0.035)	0.0107 (0.034)	0.00879 (0.034)	-0.00442 (0.040)	-0.00619 (0.040)	0.0123 (0.038)	0.0107 (0.038)
Region = 7	0.0586* (0.034)	0.0563 (0.034)	0.0582* (0.033)	0.0561* (0.033)	0.0698* (0.040)	0.0674* (0.040)	0.0685* (0.039)	0.0666* (0.039)
Region = 8	-0.103*** (0.035)	-0.105*** (0.035)	-0.0856** (0.034)	-0.0872** (0.034)	-0.117*** (0.037)	-0.119*** (0.037)	-0.0984*** (0.037)	-0.0998*** (0.037)
Region = 9	0.0840*** (0.032)	0.0823*** (0.032)	0.0918*** (0.031)	0.0901*** (0.031)	0.0980*** (0.037)	0.0959*** (0.037)	0.106*** (0.036)	0.105*** (0.036)
Constant	0.561*** (0.058)	0.557*** (0.058)	0.565*** (0.054)	0.558*** (0.053)				
Observations	6204	6204	6654	6654	6204	6204	6654	6654
Adjusted R-squared	0.17	0.17	0.17	0.17				

Robust standard errors in parentheses. *** Significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.

IV. DATA

Economic Data

State GDP data is taken from the US Bureau of Economic Analysis, and deflated by the Consumer Price Index from the Bureau of Labor Statistics, where 1982-1984=100. This data is SIC-based for the years 1963-1997, and NAICS-based from 1997-2007, which creates a consistency problem that is resolved by using the annual growth rate rather than GDP level. State unemployment rates were taken from the BLS, though the data was only available from 1976 onward. These rates are collapsed by their means⁴ into regions to be used in subjective regressions since the General Social Survey only provides respondents' regions rather than states. State annual population data is taken from the US Bureau of the Census.

Abortion Data

I used the Johnston Archive as my source for abortion and live birth data. Because the integrity of the abortion data provided by the CDC is often disputed, the Alan Guttmacher Institute compiled its own dataset based on survey estimates. The Johnston Archive provides a dataset that compiles the CDC and Guttmacher datasets and covers more time. From this data I selected the in-state abortion percentages, or total number of abortions as a percentage of pregnancies (excluding fetal deaths and miscarriages). The Johnston Archive also served as my source for live birth data, from which I calculated a rate out of total annual state population. I used data from 1970 or 1971, depending on the availability for each state. Live birth data provided by the Johnston Archive is taken from the CDC and state health departments, and some older figures from 1970 or 1971 are estimates derived from reported data. The use of combined

⁴ Collapsing is a Stata function that creates one record per region and year with the average of the GDP per capita within each region.

data for both abortion and live birth rates may be controversial, but doing so was the only means of obtaining a robust set of observations.

Crime Data

State crime data was taken from the Bureau of Justice Statistics. This data is available from 1960 to 2007; I used data from 1970 to 2006. I selected rates by 100,000 people for the following types of crimes: total property offenses, burglary, larceny, total violent offenses, robbery, aggravated assault, murder, and rape.

Mortality Data

I used the Center for Disease Control's Compressed Mortality file for mortality data from influenza/pneumonia, stroke, heart attack, and cirrhosis. Data from 1968-1978 is classified with ICDA-8 codes⁵, 1979-1998 is classified with ICD-9 codes⁶, and 1999-2005 is classified with ICD-10 codes⁷. The change in coding reflects discrepancies in the classifications and terminology of causes of death; therefore, I selected the following classifications based on consistency throughout the datasets. Data for deaths from acute myocardial infarction are used to count deaths from heart attacks. Stroke deaths are represented by deaths from cerebrovascular diseases, specifically deaths from cerebral hemorrhaging, cerebral thrombosis, cerebral embolism, and all other cerebrovascular accidents. Cirrhosis is represented by "cirrhosis of the liver" by ICD-8, "chronic liver disease and cirrhosis" by ICD-9, and "alcoholic cirrhosis of the liver" by ICD-10. These discrepancies may be a point of error. Suicides throughout the datasets are counted by deaths classified as "suicide" or "intentional self-harm" – the classifications are

⁵ *Eighth Revision International Classification of Diseases, Adapted for Use in the United States*

⁶ *International Classification of Disease, Ninth Revision*

⁷ *International Classification of Disease, Tenth Revision*

interchangeable. The CDC provides the aforementioned data by state and year aggregate and by rate out of 100,000 people. I used data from 1970 to 2005.

Subjective Data

Subjective data was taken from the General Social Survey from 1972-2006. I selected questions that could be paralleled with objective datasets to provide objective and subjective perspectives to several different issues. After reviewing the available variables from the GSS, I was able to reduce this study to four areas of focus for which I felt the GSS provided sufficient subjective evidence and the respective objective data could be found. These four areas were abortion, crime, health/mortality, and suicide. The survey questions relevant to these topics are listed in the appendix.

The General Social Surveys were conducted during February, March, and April of 1972-1978, 1980, 1982-1994, 1996, 1998, 2000, 2002, 2004, and 2006. There are 46,510 completed interviews in total. Each survey from 1972 to 2004 was an independently drawn sample of English-speaking persons 18 years of age or older, living in non-institutional arrangements within the United States, and starting in 2006, Spanish-speakers were added to the target population. (National Opinion Research Center, 2007) Data is classified by individuals' regions, those being the following: New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, and Pacific.

Summary statistics for all data are located in the appendix.

V. MAIN RESULTS

Abortions and Live Births

Table 4-1 examines the effect of a change in GDP per capita on the annual change in abortion and live birth rates, as well as the effect of a change in GDP per capita on their respective annual rates. Controlling for year and state fixed effects, an increase in GDP per capita insignificantly decreases the growth in abortion rates, while it increases the abortion rate at a 5 percent level of significance. An increase in GDP per capita significantly increases the annual change in live birth rates at the 1 percent level, while insignificantly decreasing the annual birth rate levels. Given the concerns with data quality, it is difficult to consider these results robust, but they are consistent with results found in the literature – abortions and live births are pro-cyclical. (Medoff, 1997)

Attitudes towards Abortion

Table 4-2 examines the effect of a change in GDP per capita on people's attitudes towards abortion as measured by a question in the GSS which asks whether or not abortion should be possible for a woman to obtain for any reason (columns 1-3) or specifically if she cannot afford to have more children (columns 4-6). The former is included to obtain a perspective on general attitudes towards abortion; the latter is included to examine whether or not attitudes towards abortion in the case of poverty may be more heavily influenced by the economy, as respondents' struggles or successes with income may influence their level of sympathy. All regressions in both tables control for year and region fixed effects.

In column (1), which lacks controls for newspaper readership and Catholicism, the only controls significantly influencing attitudes toward abortion for any reason are the respondents' education, and that of their fathers' and their mothers', all of which positively influence the likelihood of agreeing with abortion. An increase in GDP per capita, age, being male, and being white all positively affect the likelihood of agreeing as well, though insignificantly. The addition of controls for newspaper readership and being Catholic in column (2) changes the impact of an increase in GDP per capita, age, and being male to negative relationships, though all continue to be insignificant. Respondents' education, their fathers' and mothers' education all continue to be positive and significant at the 1 percent level, as is reading the newspaper more than once a week. Being Catholic, as suspected, negatively impacts the likelihood of agreeing with abortion at a 1 percent level of significance.

Column (3) adds the interaction term between controlling for newspaper readership and GDP per capita, which is negative and significant at the 1 percent level. Under this specification, the direct effect of an increase in GDP will increase the likelihood of agreeing, significant at the 5 percent level. Thus the specification reveals that the insignificant effect of GDP in columns (1) and (2) was due to heterogeneity in the effect – the positive affect among those who do not read the newspaper is cancelled out by the negative effect among newspaper readers. The coefficients indicate that for non-newspaper readers there is an increase, whereas for newspaper readers the coefficient of the interaction term more than negates the positive coefficient of a change in GDP. The ultimate effect of an increase in GDP will *slightly decrease* the likelihood of an individual who reads the newspaper more than once a week agreeing with abortion.⁸ However, these

⁸ The sum of the coefficients, 1.137 and -1.416, is -.279, this being the ultimate effect for individuals who read the newspaper; -1.416 is the *difference* in effect of an increase in GDP per capita between those who do not read and those who do read.

outcomes are tested to see if the coefficients for GDP per capita growth and the interaction term sum to zero, and we find there are no significant differences between the coefficients. Thus, we can consider there to be no significant effect of GDP growth on the opinions of individuals. The p-values are reported at the bottom of the table.

The effect of age is negative, as are being male and being Catholic (Catholic remains significant at the 1 percent level); all controls for education remain positive and significant at the 1 percent level, as are reading the newspaper and being white, though being white is not significant.

Likewise, the following three columns show similar results, though age is consistently positive and significant. The other difference between column (6) and column (3) of the previous set of regressions is that the coefficient of the interaction term is exactly the negative coefficient for change in GDP per capita. Therefore, under this specification, an increase in GDP per capita has *no* effect for individuals who read the newspaper.⁹ Namely, their attitude towards the matter of abortion when the mother is poor does not change with the economy. Given our results from column (3), this may indicate that the opinions of those who are more informed on a consistent basis are less influenced by the business cycle when it comes to ethical issues such as abortion. These outcomes are also tested to see if the coefficients for GDP per capita growth and the interaction term sum to zero. The p-values are reported at the bottom of the table; we find no significant differences between the coefficients.

A change in GDP per capita is positive and significant at the 1 percent level for individuals who do not read the newspaper, as are education (respondents', their mothers' and fathers') and reading the newspaper. Being male and being white both positively affect the

⁹ The coefficient for change in GDP per capita, 1.497 + the coefficient for the interaction term, -1.497 = 0.

likelihood of agreement as well, though insignificantly. Being Catholic decreases the likelihood of agreeing with abortion significantly at the 1 percent level.

Crime Rates

Table 4-3 displays the effect of GDP per capita growth on eight crime rates, which allows us to distinguish the economic relationship with different types of crime (violent offenses and property offenses).¹⁰ All regressions control for state and year fixed effects. From these preliminary results we see a significant and negative relationship between GDP per capita growth and growth of non-violent crimes: all property crimes, burglary, and larceny. These are all significant at the 1 percent level. The relationship between economic growth and violent offenses is positive; as the economy expands the growths of the general violent crime rate, aggravated assault rate, and rape rate increase at significance levels of 5 percent, 5 percent, and 10 percent, respectively. The growths in murder and robbery rates are also positive, though insignificantly. We discuss the possible reasons for these effects in Section V. Interestingly, population growth negatively affects the growth of all crime rates, though only property crime rates, larceny rates, violent crime rate and robbery rates are significant.

Table 4-4 includes the lagged growth of GDP per capita holding the year's GDP growth constant; the intention is to capture a potentially stronger relationship with crime rates should they be slow to respond to a change in the economy. The results show, however, that there is a no effect between lagged GDP and crime rates under this specification (with the exception of the

¹⁰ There is a risk of endogeneity with this model because high crime rates may cause businesses to leave an area. This regression is also run using an instrumental variable test (IV Regression Model), using the prior year's GDP growth rate as the instrument, and the GDP growth rate as the instrumented variable. The results show a positive relationship between the business cycle and all types of crime; robbery, violent crime, and rape are significant. However, because of the nature of the instrumental variable, the results may be picking up dynamic effects and are therefore difficult to interpret. These results are included in the appendix.

burglary rate, which is significant only at the 10 percent level). With the exception of the change in the murder rate, the effect of the previous year's GDP growth rate is positive for all growth rates. Holding the previous year's GDP growth rate constant, the GDP growth rate has mainly the opposite effects, negatively affecting all crime rates but the rape rate. These relationships are also weak; only the robbery rate is significant at 5 percent, and the property crime and larceny rates are significant at ten percent. The impact of population growth is stronger in this specification; it negatively affects non-violent property crimes (all property crime, burglary, and larceny) at the 1 percent significance level, and positively affects violent crimes (all violent crime, aggravated assault, and rape) at the 10 percent level. The robbery rate and murder rate are also positively affected, but not significantly.

Fear of Crime

Table 4-5 shows the impact of GDP per capita growth on the fear of crime within the respondent's neighborhood. Columns (1) and (2) include real income, which is significant at the 1 percent level but is numerically minute per dollar increase of income.¹¹ Change in GDP per capita positively affects the likelihood of agreeing with the statement about crime, though relatively weakly (insignificant in column (1) and significant at the 10 percent level in column (2)). For both specifications, age, education, father's education, and having been robbed within the past year all positively and significantly impact the likelihood of agreement at the 1, 10, 5, and 1 percent levels, respectively. Being male and being white both decrease the likelihood of agreeing with the statement significantly at the 1 percent level, while mother's education and reading the newspaper also negatively impact, but insignificantly.

¹¹ A \$1 increase in real income results in a decrease in probability of agreeing by .0000972 of a percentage point.

Column (2) includes the previously-used interaction term between reading the news and GDP per capita growth; this variable is also negative and significant at the 5 percent level. The coefficient of the interaction term is the difference between the impact of an increase in GDP growth on those who do not read the newspaper and those who do; the ultimate effect of positive GDP growth on those who read the newspaper is negative¹², but close to zero. Thus, for those reading the newspaper, an increase in GDP would decrease or have no effect on their fear of crime. For those who do not read the newspaper, the effect is positive. These outcomes, as well as the outcomes from column (4), are tested to see if the coefficients for GDP per capita growth and the interaction term sum to zero. The p-values are reported at the bottom of the table; for both outcomes we find there are no significant differences between the coefficients. Columns (3) and (4) do not include real income because of its potential correlation with GDP growth. Aside from this, the results are nearly the same as in columns (1) and (2), with the exception that change in GDP per capita increases in significance to the 5 percent level, while father's education decreases in significance to the 10 percent level.

Mortality Rates

Table 4-6 shows the effect of a change in the unemployment rate on three specific mortality rates: heart attacks, strokes, and cirrhosis. The first three columns examine mortality rates regressed on the unemployment rate growth, while the following three columns examine them regressed on lagged unemployment growth.¹³ Holding state and year effects constant, an

¹² The sum of the coefficients = $1.379 + (-1.449) = -.07$, this being the ultimate effect for individuals who read the newspaper; -1.449 is the *difference* in effect of an increase in GDP per capita between those who do not read and those who do read.

¹³ As was mentioned earlier, there is a risk of endogeneity with this model. This regression is also run using an instrumental variable test (IV Regression Model), using the prior year's change in unemployment rate as the instrument, and the change in unemployment rate as the instrumented variable. The results are similar, though there

increase in the unemployment rate growth significantly decreases the changes in heart attack and stroke rates at the 5 percent and 1 percent levels, respectively. The effect on the change in the death rate from cirrhosis is positive, but not significant.

When the lagged change in unemployment rate is included as an independent variable, the effect of the change in unemployment rate remains the same; negative and slightly significant for heart attack death rate and stroke death rate, and positive and insignificant for cirrhosis. The impact of the lagged unemployment rate is overall insignificant; negative for heart attacks and positive for strokes and cirrhosis.

Self-Assessed Health Condition

Table 4-7 examines and compares the effect of a change in GDP per capita (columns 1-2) and a change in the unemployment rate (columns 3-4) on respondents' personal health assessment. All regressions are included to provide reasoning for having regressed mortality rates on the change in the unemployment rate. The table shows the results in column (3) and (4) are clearer and more robustly linked with the unemployment rate than GDP per capita. An increase in GDP per capita in growth in the first two columns positively affects people's health assessments, though not significantly. Including the interaction term in column (2) does not pick up heterogeneity, and the coefficient for GDP growth remains insignificant. An increase in the change in the unemployment rate in the last two columns decreases the likelihood of agreeing with a positive health assessment. Column (4) includes the interaction term, which does pick up heterogeneity; the coefficient for the change in unemployment rate becomes significant at the 10 percent level. Education, mother's education, being white and reading the newspaper positively

they are not significant, but because of the nature of the instrumental variable, the results may be picking up dynamic effects, and are therefore difficult to interpret. The results are included in the appendix.

affects the likelihood of agreeing with the assessment, significantly at the 1 percent level. Age negatively affects the likelihood of agreeing also at the significance level of 1 percent. Being male, though never significant, positively affects self-assessed health condition when controlling for change in GDP per capita, while it negatively affects it when controlling for change in the unemployment rate. Father's education positively affects the likelihood of agreement under both conditions, but also never significantly.

The coefficient for the interaction term negates the coefficient for GDP per capita growth, but not significantly. It nearly negates the coefficient for change in the unemployment rate, significantly at the 5 percent level. The ultimate effect is that an increase in the change in the unemployment rate will decrease the likelihood that a person who reads the newspaper will agree that their health is good or excellent, though the effect is close to zero.¹⁴ Likewise, a decrease in the unemployment rate will increase the likelihood that a person who reads the newspaper would positively assess their health. These outcomes are tested to see if the coefficients for unemployment growth and the interaction term sum to zero. The p-values are reported at the bottom of the table; for both outcomes we find there are no significant differences between the coefficients.

Suicide Rates

The effect of GDP per capita growth on suicide rates is examined in Table 4-8. Column (1) is run controlling for year and state fixed effects, and the impact of a change in GDP per capita is positive. A one-percentage point increase in GDP will increase the suicide rate by .87 of a percentage point, but not at a significant level. Column (2) is run with a control for a year

¹⁴ The sum of the coefficients = $-.212 + .203 = -.09$, this being the ultimate effect for individuals who read the newspaper; .203 is the *difference* in effect of an increase in the unemployment rate between those who do not read and those who do read.

trend rather than fixed effects for purposes of comparison. Without fixed effects, the impact of GDP per capita growth is negative; a one-percentage point increase in GDP decreases the suicide rate by 9 percentage points. This specification is also statistically insignificant.

Attitudes towards Suicide

Table 4-9 shows the relationship between attitudes towards suicide and a change in GDP per capita. As was done with the abortion models, I selected two dependent variables pertaining to opinions about suicide. The statement in columns (1) and (2) is that suicide is acceptable if the person is tired of living; it can be considered a control to examine the general attitude toward a non-specific suicide. The statement in column (3) and (4) is that suicide is acceptable if the individual has gone bankrupt, which alludes to a business cycle-related circumstance and therefore may evoke respondents' sympathy given their personal situation. Columns (2) and (4) include the interaction term between GDP and newspaper readership.

GDP per capita is not statistically significant in the regression in column (1). The addition of the interaction term in column (2) accounts for some heterogeneity; the coefficient for change in GDP becomes slightly significant at the 10 percent level. In the last two columns, change in GDP per capita impacts the likelihood of respondents' agreeing with the statements with significance at the 1 percent level. When the interaction term is included, a one-percentage point increase in GDP per capita will increase the probability of agreeing with the statement by approximately .5 of a percentage point for both statements. The difference in significance between the first set of regressions and the second set may be due to the business-cycle related nature of the question.

Age is positive and significant at the 5 percent level in the first two columns, while it is negative and insignificant in columns (3) and (4). The positive relationship with age in the first two columns, though economically trivial, may be because the statement of “being tired of living” is sufficiently vague to evoke sympathy with older respondents. Suicide because of bankruptcy, however, may be considered an “easy way out” by older respondents who have had and survived their own life battles, thus evoking an apathetic response.

Education and father’s education, being male, being white, and being Catholic positively and significantly affect all regressions at the 1 percent level. Mother’s education is positive and significant at the 1 percent level in columns (1) and (3), when the interaction term is excluded; the significance is lost in columns (2) and (4) when the interaction term is included. This indicates that newspaper readership is correlated with mother’s education and most likely other similar omitted variables. In these regressions, reading the newspaper does not significantly affect attitudes. The coefficient for newspaper readership is negative in column (2) and positive in column (4). The interaction term between reading the newspaper and GDP growth is also insignificant, though negative; therefore there is no statistical significant difference between the impact of the business cycle on attitudes towards suicide for those who read the newspaper more than once a week and those who do not.

A summary of all significant findings can be found in the appendix, chart 5.

VI. DISCUSSION

We can extrapolate from the results that a relationship does exist between the business cycle and people’s attitudes or perceptions, whether or not those attitudes are reflected in

objective data. Indeed, the relationship between the business cycle and objective quantifiers of the nation's "social health" is more difficult to isolate at an aggregate level without more controls. There are some patterns, however, upon which we can build an analysis.

The tests pertaining to abortion and live births reflected what the literature predicted; namely, that abortions and births are both pro-cyclical. Subjective tests reflected these sentiments for those with less newspaper readership: their probability of agreeing with or having sympathy for abortion increases with the change in GDP per capita. For those who do read the newspaper more than once a week, the positive effect of the business cycle is lost. An explanation for this is that reading the newspaper is often indicative of being well-informed and less fickle or weak in opinion or conviction. Neither a recession nor boom will influence their ethical opinions because these opinions have been formed relatively concretely.

Crime rate findings are less consistent in their significance but provide a relatively consistent pattern differentiating non-violent from violence-oriented crimes. In the first model (Table 4-3), there is a clear distinction between the movement of non-violent crimes and violent crimes; these types of crimes moved in opposite ways and at significant levels. Three out of five types of violent crimes are significantly pro-cyclical, and all non-violent crimes are significantly counter-cyclical. In the second model (Table 4-4), controlling for the previous year's crime rates, the trend is consistent for both types of offenses, though not significant for violent offenses. The results are contrary to what much of the literature suggests – that theft and other property crimes increase with general wealth.¹⁵ The results do reflect the violent aspect of the

¹⁵ Fraud and other types of white-collar crimes are omitted from crime rates because they are not reported to the FBI. These types of crimes should be considered types of property crimes, and would most likely increase in times of economic prosperity. Bernard Madoff was responsible for losing over \$50 Billion, a monetary sum that would outweigh all other theft crimes, according to Conklin. If crimes like these were included in property crimes and such crimes were weighed by theft dollar amount rather than number of offenses per state, results may be different.

relative deprivation theory (Conklin, 2010; Stiles, Liu, & Kaplan, 2000), however, implying that violent crimes come about when economic prosperity or inequality breed resentment or negative self-feelings.

Results also find that fear of crime is also pro-cyclical for those who do not read the newspaper. Unfortunately, there is no way to distinguish or control for what type of crime is feared, though we could run another regression holding crime rates constant. One possible explanation is that these individuals are unexposed to newspapers' reports of elevated crime rates during economic downturns, and instead derive their fear from their economic prosperity. Namely, these individuals fear that whatever wealth they accumulate during an economically fruitful period makes them a target for theft or burglary. A second possible explanation is that their fear corresponds with violent crimes that, according to my findings and the literature, are pro-cyclical. In this case, their fears are justified by reality.

Individuals who consistently read the newspaper, on the other hand, go unaffected by the business cycle. A possible explanation may be that individuals who always read the newspaper are aware that the media *always* reports crime regardless of the health of the economy; the difference is that in bad economic times the media will specifically attribute crime to the weak economy. Therefore, these individuals may or may not be fearful all the time – not just when the economy worsens. Another explanation may be that individuals who read the newspaper on a consistent basis may do so for work-related purposes and may be better off financially; therefore, while these individuals may fear crime, they do not fear it in their neighborhood because it is less affected by the business cycle. Even when real income is included as a control, the relationship

is the same because even if the income of a wealthy individual becomes zero, the *neighborhood* may remain safe.¹⁶

Tests on mortality rates provide results consistent with the existing literature; death from heart attacks and stroke decrease when the unemployment rate increases. As already mentioned, this pro-cyclicality could be due to several reasons, such as a decrease in pollution or exposure to hazardous conditions because of less economic output, a decrease in work-related stress, a decrease in consumption of health-damaging goods, etc. Positive health self-assessments are pro-cyclical, however, for those who do not read the newspaper. The results show that these individuals are less likely to agree that their health is good or excellent when the unemployment rate increases. For those who read the newspaper consistently, however, the effect of a change in the unemployment rate is close to zero.

This discrepancy may again be due to the difference in knowledge. Those who read the newspaper on a consistent basis may be more informed about the causes of disease in general; therefore, rather than reassessing their health along with the business cycle, they may always be conscientious of the condition of their health and the risks they take. Those who do not read the newspaper may be unaware of health risks and therefore unaware of the negative externalities of a booming economy. The loss of health insurance or the inability to pay for a medical procedure may cause these individuals to believe their conditions have worsened, rather than assessing their long-term risky behavior such as a poor diet, high stress level, or lack of physical activity.

¹⁶ *Personal Note:* This test would be interesting to repeat after data from the current recession is collected. The heavy lay-offs of white-collared workers in New York City in particular have detrimentally affected neighborhoods that are largely comprised of individuals in the financial industry. Writing from personal experience and not statistical evidence, there is an unusually large amount of “untended” properties on the Upper East Side where many stores have either been forced to relocate or go out of business. Walking from 86th Street and Madison Avenue down to 59th Street in December 2009 (a distance of approximately 1.5 miles), I counted 13 stores that had closed or were in the process of doing so. While I doubt unemployed investment bankers will turn to burglary or robbery to make ends meet, the general gloominess met with the increased number of neighborhood instabilities may result in a heightened sense of fear.

The results of the suicide tests provide no proof of a significant relationship between suicide rates and the business cycle, contrary to existing findings. One reason my results may be flawed is that some important variables were omitted, causing the results to be bias. Another reason may be that the test is heterogeneous, which could have been resolved by creating population subsets, as Yang did.

Results for tests measuring attitudes towards suicide are clearer and present insight into ethics and behavior. The relationship between the business cycle and approval of suicide is significant and pro-cyclical; when times are good, sympathy for suicide increases. The effect of the economy on acceptability of suicide because of bankruptcy is more significant than its effect on acceptance of suicide for a general reason. Could this imply that an individual who files for bankruptcy during a booming economy is considered a true failure, and therefore suicide is understandable to respondents who recognize this phenomenon as such? The pro-cyclical of acceptance lessens in significance when extended to the statement of approval for a rather general reason to commit suicide, though significance remains.

Both tests reflect what the literature suggests about the acceptance of suicide among lower-status individuals. Namely, those who have less – money, education, social status, etc – are those who most disapprove of suicide. (Yang, 1992) We can therefore infer that these individuals value that which they have – life, family, friends, etc. – and do not mourn the lack of something they never had. Wealthier individuals, on the other hand, may be more likely to lose touch with fundamental values and appreciate ephemeral material goods instead. My findings may reflect a similar attitude; when the economy is good and wealth is abundant, suicide is more accepted – perhaps because individuals adapt their values. Likewise, when the economy is weak people seek that which they cannot lose with the economy– family, friends, etc. Suicide

becomes less of a reconcilable solution to material loss because people recognize that material goods come and go.

It is unclear what other variables the interaction term serves to proxy or what omitted variables are correlated with reading the newspaper. Education is already controlled for in all regressions, though real income is not. However, the regression in which we controlled for real income display similar results (Table 4-5, column (2)). Moreover, reading the newspaper is not just a hobby for the elite, the conservative or the liberal. This variable accounts for reading any type of newspaper – not just the international, award-winning ones. Reading the paper may just signify having an interest in current affairs or a general interest in learning, and individuals who read have certain convictions about seemingly non-market related issues, and those convictions may be less susceptible to external trends (like the market). Reading the paper may also cause desensitization because individuals who read are always exposed to stories about crime and health, regardless of the economic climate. Therefore, an increase or decrease in stories about these issues may not affect readers in one way or another.

In Table 4-9, we see the significant impact of mother's education when the interaction term was omitted; this indicates that there are differences between readers and non-readers that are captured by other variables, or all together omitted. Running the newspaper readership variable on combinations of other variables from the GSS shows repeatedly significant and positive relationships with owning a home, age, real income, general happiness, confidence in the press, education, and financial satisfaction. Reading the newspaper is significantly negatively associated with confidence in the executive branch of the government and congress, and hours of watching television. Therefore, we can deduce that newspaper readers tend to be older, better educated, financially stable, home-owning, and generally happy. These individuals

also trust their sources, which may not necessarily indicate that they believe everything they read, but that they feel the press is relatively unbiased.

VII. CONCLUSION

This study examined the relationship between abortion, crime, health and suicide and the business cycle in addition to providing evidence of a relationship between the business cycle and personal attitudes about the aforementioned topics. My findings show that newspaper readership is a significant determinant in distinguishing how the business cycle affects attitudes about abortion, crime, and health condition. The change in abortion rates are pro-cyclical, as are attitudes in favor of abortion for individuals who do not read the newspaper more than once a week; attitudes about abortion go unaffected by the business cycle for individuals who read the newspaper consistently. The relationship between the business cycle and the change in crime rates is less consistent in my findings, though there appears to be a significant counter-cyclical trend in property (non-violent) offenses and a pro-cyclical trend in violent offenses. Fear of crime is pro-cyclical for non-newspaper readers, but is unaffected by the business cycle for newspaper readers. Change in death from heart attack and stroke rates is pro-cyclical, with death rates increasing along with economic prosperity; self-assessed health conditions, however, are counter-cyclical for those who do not read the newspaper, and go unaffected by the business cycle for those who do. Change in the suicide rate is not found to be significantly affected by the business cycle, while attitudes in favor of suicide are pro-cyclical.

My findings suggest that the role of the media is a powerful one, though not in the pejorative sense that I had hypothesized. Newspaper readership or being consistently well-informed lessens the likelihood of having one's attitudes impacted by the business cycle, though

this could be due to desensitization. By reading the newspaper consistently, individuals are exposed to formulaic stories that appear both in good and bad times, and therefore will be unaffected by the content of a story just because its cause is attributed to a boom or recession.

APPENDIX 1: SUMMARY STATISTICS FOR AGGREGATE GSS DATA

Variable	Observations	% Yes	Std. Error	Min	Max
A woman should be able to obtain an abortion for any reason.	28031	0.401	0.49	0	1
A woman should be able to obtain an abortion if she cannot afford another child.	35260	0.477	0.50	0	1
There is an area within neighborhood where respondent would be afraid to walk alone at night.	30370	0.418	0.49	0	1
Condition of respondent's health is good or excellent.	38491	0.758	0.43	0	1
Suicide is acceptable if the person has gone bankrupt.	25588	0.081	0.27	0	1
Suicide is acceptable if the person is tired of living and ready to die.	25269	0.153	0.36	0	1

APPENDIX 2: SUMMARY STATISTICS FOR AGGREGATE OBJECTIVE DATA

Variable	Observations	Mean	Std. Error	Min	Max
Δ State GDP per capita	1836	1.7%	4%	-32%	38%
Δ Region GDP per capita	51510	1.8%	3%	-8.7%	18%
Δ State Unemployment Rate	1581	-0.47%	15%	-46%	65%
Δ Region Unemployment Rate	43520	-1.9%	13%	-26%	44%
Δ Abortion Rate	1711	9.5%	92%	-100%	3000%
Abortion Rate	1769	21.2%	102%	0%	69%
Δ Live Birth Rate	1785	-0.5%	5%	-46%	104%
Live Birth Rate	1836	15.3%	0.3%	0.8%	3.6%
Δ Property Crime Rate	1887	2.4%	7%	-21%	41%
Δ Burglary Rate	1887	-0.5%	9%	-33%	35%
Δ Larceny Rate	1887	0.7%	8%	-22%	48%
Δ Violent Crime Rate	1887	1.8%	10%	-33%	90%
Δ Robbery Rate	1887	1.5%	15%	-53%	99%
Δ Aggravated Assault Rate	1887	2.4%	12%	-49%	169%
Δ Murder Rate	1887	2.2%	28%	-88%	467%
Δ Rape Rate	1887	2.8%	13%	-51%	82%
Δ Cirrhosis Rate	1734	6.8%	51%	-89%	642%
Δ Stroke Rate	1734	-1.8%	6%	-29%	25%
Δ Heart Attack Rate	1734	-3.4%	5%	-43%	33%

Δ Suicide Rate

1734

0.6%

11%

-42%

91%

APPENDIX 3: QUESTIONS FROM THE GENERAL SOCIAL SURVEY

Variable: ABANY – Abortion if woman wants for any reason

Please tell me whether or not you think it should be possible for a pregnant woman to obtain a legal abortion if:

g. The woman wants it for any reason?

0=NAP, 1=YES, 2=NO, 8=DK, 9=NA

Variable: ABPOOR – Low Income – Can't Afford More Children

Please tell me whether or not you think it should be possible for a pregnant woman to obtain a legal abortion if:

d. The family has a very low income and cannot afford any more children?

0=NAP, 1=YES, 2=NO, 8=DK, 9=NA

Variable: FEAR – Afraid to Walk at Night in the Neighborhood

Is there any area right around here - that is, within a mile - where you would be afraid to walk alone at night?

0=NAP, 1=YES, 2=NO, 8=DK, 9=NA

Variable: HEALTH – Condition of Health

Would you say your own health, in general, is excellent, good, fair, or poor?

0=NAP, 1=EXCELLENT, 2=GOOD, 3=FAIR, 4=POOR, 8=DK, 9=NA

Variable: SUICIDE4 – Suicide if Tired of Living

Do you think a person has the right to end his or her own life if this person:

d. Is tired of living and ready to die?

0=NAP, 1=YES, 2=NO, 8=DK, 9=NA

Variable: SUICIDE2 – Suicide if Bankrupt

Do you think a person has the right to end his or her own life if this person:

b. Has gone bankrupt?

0=NAP, 1=YES, 2=NO, 8=DK, 9=NA

APPENDIX 4-1:

THE EFFECT OF GDP PER CAPITA GROWTH ON ABORTION AND LIVE BIRTHS

Dependent Variable	(1) ΔAbortion Rate	(2) Abortion Rate	(3) ΔLive Birth Rate	(4) Live Birth Rate
Δ GDP per capita	-0.433 (0.69)	6.530** (3.06)	0.122*** (0.04)	-.0018 (0.0012)
Observations	1702	1743	1785	1836
Adjusted R ²	0.084	0.869	0.160	0.720

Abortion rates are abortions as a percentage of pregnancies (excluding fetal deaths and miscarriages) within each state, by state and year. Live Birth rate is the number of live births divided by the population by state and year. All regressions include state and year fixed effects. Robust standard errors are in parentheses. *** Significant at 1 percent; ** significant at 5 percent; * significant at 10 percent.

APPENDIX 4-2:

THE EFFECT OF GDP PER CAPITA GROWTH ON ATTITUDES TOWARDS ABORTION

Dependent Variable	THE EFFECT OF GDP PER CAPITA GROWTH ON ATTITUDES TOWARDS ABORTION					
	(1)	(2)	(3)	(4)	(5)	(6)
	It should be possible for a woman to obtain an abortion for any reason.			It should be possible for a woman to obtain an abortion if she cannot afford any more children.		
Δ GDP per capita	0.308 (0.210)	-0.0715 (0.290)	1.137** (0.520)	0.18 (0.170)	0.208 (0.250)	1.497*** (0.460)
Age	0.0000754 (0.000)	-0.00048 (0.000)	-0.000476 (0.000)	0.000721*** (0.000)	0.000605** (0.000)	0.000610** (0.000)
Highest level of Education	0.0213*** (0.001)	0.0216*** (0.002)	0.0216*** (0.002)	0.0216*** (0.001)	0.0217*** (0.002)	0.0217*** (0.002)
Highest level of Father's Education	0.00815*** (0.001)	0.00774*** (0.002)	0.00774*** (0.002)	0.00792*** (0.001)	0.00806*** (0.001)	0.00803*** (0.001)
Highest level of Mother's Education	0.00766*** (0.001)	0.00454*** (0.002)	0.00459*** (0.002)	0.00784*** (0.001)	0.00489*** (0.002)	0.00494*** (0.002)
Respondent is Male	0.00363 (0.007)	-0.000635 (0.009)	-0.00085 (0.009)	0.00931 (0.006)	0.0078 (0.008)	0.00746 (0.008)
Respondent is White	0.00567 (0.010)	0.0117 (0.013)	0.0125 (0.013)	-0.00137 (0.010)	0.00932 (0.013)	0.00982 (0.013)
Reads newspaper more than once a week		0.0378*** (0.013)	0.0608*** (0.015)		0.0515*** (0.013)	0.0778*** (0.015)
Respondent is Catholic		-0.0973*** (0.011)	-0.0973*** (0.011)		-0.120*** (0.010)	-0.120*** (0.010)
News*GDP			-1.416*** (0.500)			-1.497*** (0.460)
Observations	18847	11534	11534	23675	13460	13460
Adjusted R-squared	0.07	0.08	0.08	0.07	0.08	0.08
P-Value on difference of Δ GDP and News*GDP			0.3514			0.9998

All regressions include region and year fixed effects. Robust standard errors are in parenthesis. . ***Significance at 1 percent; **significance at 5 percent; * significance at 10 percent.

APPENDIX 4-3:
THE EFFECT OF CURRENT GDP PER CAPITA GROWTH ON CRIME RATES

Dependent Variable	(1) ΔProperty Crime Rate	(2) ΔBurglary Rate	(3) ΔLarceny Rate	(4) ΔViolent Crime Rate	(5) ΔRobbery Rate	(6) ΔAggravated Assault Rate	(7) ΔMurder Rate	(8) ΔRape Rate
Δ GDP per capita	-0.140*** (0.051)	-0.178*** (0.063)	-0.190*** (0.052)	0.227** (0.096)	0.154 (0.160)	0.268** (0.110)	0.434 (0.330)	0.269* (0.150)
Δ Population	-0.639*** (0.210)	-0.272 (0.280)	-0.545*** (0.210)	-0.755** (0.340)	-1.525*** (0.520)	-0.517 (0.430)	-1.036 (1.050)	-0.283 (0.550)
Observations	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836
Adjusted R-squared	0.52	0.47	0.51	0.22	0.23	0.12	0.04	0.14

All regressions include region and year fixed effects. Rates are calculated out of state populations, expressed out of 100,000. Robust standard errors are in parentheses. ***Significance at 1 percent; ** significance at 5 percent; * significance at 10 percent.

APPENDIX 4-4:

THE EFFECT OF CURRENT AND LAGGED GDP PER CAPITA GROWTH ON CRIME RATES

Dependent Variable	(9) ΔProperty Crime Rate	(10) ΔBurglary Rate	(11) ΔLarceny Rate	(12) ΔViolent Crime Rate	(13) ΔRobbery Rate	(14) ΔAggravated Assault Rate	(15) ΔMurder Rate	(16) ΔRape Rate
Δ GDP per capita: Lagged	0.0883 (0.063)	0.111* (0.066)	0.0577 (0.068)	0.154 (0.120)	0.163 (0.160)	0.197 (0.170)	-0.0319 (0.290)	0.182 (0.150)
Δ GDP per capita	-0.451* (0.230)	-0.010 (0.310)	-0.405* (0.230)	-0.532 (0.370)	-1.316** (0.590)	-0.250 (0.500)	-0.933 (1.120)	0.058 (0.580)
Δ Population	-0.164*** (0.051)	-0.214*** (0.064)	-0.199*** (0.052)	0.183* (0.097)	0.0996 (0.160)	0.217* (0.120)	0.493 (0.340)	0.235* (0.140)
Observations	1,785	1,785	1,785	1,785	1,785	1,785	1,785	1,785
Adjusted R-squared	0.53	0.48	0.52	0.23	0.24	0.12	0.04	0.14

All regressions include state and year fixed effects, which are not shown. Rates are calculated out of state populations, expressed out of 100,000. Robust standard errors are in parentheses. ***Significance at 1 percent; ** significance at 5 percent; * significance at 10 percent.

APPENDIX 4-5:

THE EFFECT OF GDP PER CAPITA GROWTH ON FEAR OF CRIME

Dependent Variable	(1)	(2)	(3)	(4)
	There is an area within neighborhood where respondent would be afraid to walk alone at night.			
Δ GDP per capita	0.101 (0.430)	1.379* (0.730)	0.0817 (0.410)	1.564** (0.710)
Age	0.00212*** (0.000)	0.00209*** (0.000)	0.00206*** (0.000)	0.00204*** (0.000)
Highest level of Education	0.00430* (0.002)	0.00428* (0.002)	0.00157 (0.002)	0.00154 (0.002)
Highest level of Father's Education	0.00388** (0.002)	0.00381** (0.002)	0.00326* (0.002)	0.00321* (0.002)
Highest level of Mother's Education	-0.00124 (0.002)	-0.00122 (0.002)	-0.00204 (0.002)	-0.00202 (0.002)
Reads newspaper more than once a week	-0.00553 (0.020)	0.00377 (0.020)	-0.0133 (0.019)	-0.00197 (0.019)
Respondent is Male	-0.356*** (0.011)	-0.356*** (0.011)	-0.359*** (0.011)	-0.359*** (0.011)
Respondent is White	-0.136*** (0.018)	-0.135*** (0.018)	-0.140*** (0.017)	-0.139*** (0.017)
Respondent was Robbed within past year	0.128*** (0.041)	0.128*** (0.041)	0.148*** (0.040)	0.148*** (0.040)
Real Income	-0.000000972*** (0.000)	-0.000000967*** (0.000)		
News*GDP		-1.449** (0.670)		-1.676*** (0.650)
Observations	6204	6204	6654	6654
Adjusted R-squared	0.17	0.17	0.17	0.17
P-Value on difference between Δ GDP and News*GDP		0.8727		0.7885

All regressions include region and year fixed effects, which are not shown. Robust standard errors are in parentheses.

***Significance at 1 percent; ** significance at 5 percent; * significance at 10 percent.

APPENDIX 4-6:

THE EFFECT OF CURRENT AND LAGGED GDP PER CAPITA GROWTH ON MORTALITY RATES

Dependent Variable	(1) ΔHeart Attack Rate	(2) ΔStroke Rate	(3) ΔCirrhosis Rate	(4) ΔHeart Attack Rate	(5) ΔStroke Rate	(6) ΔCirrhosis Rate
Δ Unemployment Rate	-0.0281** (0.014)	-0.0348*** (0.013)	0.038 (0.15)	-0.0256* (0.014)	-0.0367*** (0.014)	0.00897 (0.17)
Δ Unemployment Rate – Lagged by one year				-0.00846 (0.01)	0.00726 (0.01)	0.103 (0.18)
Observations	1479	1479	1479	1428	1428	1428
Adjusted R-squared	0.07	0.17	-0.01	0.07	0.17	-0.01

Mortality rates are taken at the annual state level, and calculated out of a population of 100,000. All regressions include state and year fixed effects. Robust standard errors are in parentheses. ***Significance at 1 percent; ** significance at 5 percent; * significance at 10 percent.

APPENDIX 4-7:

THE EFFECT OF THE A CHANGE IN THE BUSINESS CYCLE ON SELF-ASSESSED HEALTH

Dependent Variable	(1)	(2)	(3)	
	(4)	Condition of Health is Good or Excellent		
GDP per capita	0.00672 (0.082)	0.0608 (0.430)		
Δ Unemployment Rate			-0.302 (0.220)	-0.212* (0.120)
Age	-0.00502*** (0.000)	-0.00455 0.000	-0.00512*** (0.000)	-0.00449*** 0.000
Highest level of Education	0.0258*** (0.001)	0.0227*** 0.000	0.0260*** (0.001)	0.0229*** 0.000
Highest level of Father's Education	-0.00929 (0.009)	0.00083 0.000	-0.00604 (0.009)	0.00085 0.000
Highest level of Mother's Education	0.00989 (0.010)	0.00503*** 0.000	0.0101 (0.009)	0.00381*** 0.000
Reads newspaper more than once a week	0.0592*** (0.011)	0.0577*** (0.010)	0.0582*** (0.010)	0.0546*** (0.010)
Respondent is Male	-0.00037 (0.007)	0.00369 (0.010)	0.00638 (0.007)	-0.0031 (0.010)
Respondent is White	0.0694*** (0.010)	0.0600*** (0.010)	0.0688*** (0.010)	0.0625*** (0.010)
News*GDP		-0.407 (0.414)		
News*Unemployment				0.203** (0.095)
Observations	12070	13229	14240	11173
Adjusted R-squared	0.12	0.11	0.11	0.1
P-value on difference between Δ GDP and News*Unemployment				0.9194

All regressions include region and year fixed effects. Robust standard errors are in parentheses. ***Significance at 1 percent; ** significance at 5 percent; * significance at 10 percent.

APPENDIX 4-8:

THE EFFECT OF GDP PER CAPITA GROWTH ON SUICIDE RATES

Dependent Variable	(1) Δ Suicide Rate	(2) Δ Suicide Rate
Δ GDP per capita	0.00873 (0.17)	-0.0967 (0.11)
Year		-0.000470* (0.000)
Constant	0.0107 (0.02)	0.943* (0.53)
Observations	1734	1734
Adjusted R-squared	0.04	-0.02

Suicide rates are taken at the annual state level, and calculated out of a population of 100,000. Column (1) is run controlling for state and year fixed effects. Column (2) is run controlling for state fixed effects and a year trend. Robust standard errors are in parentheses. ***Significance at 1 percent; ** significance at 5 percent; * significance at 10 percent.

APPENDIX 4-9:
THE EFFECT OF GDP PER CAPITA GROWTH ON ATTITUDES TOWARDS SUICIDE

Dependent Variable	(1) Suicide is Acceptable if person is tired of living	(2)	(3) Suicide is Acceptable if person has gone Bankrupt	(4)
Δ GDP per capita	0.245 (0.160)	0.541* (0.28)	0.359*** (0.120)	0.589*** (0.20)
Age	0.000384** (0.000)	0.000379** (0.00)	-0.000063 (0.000)	-0.0000128 (0.00)
Highest level of Education	0.0108*** (0.001)	0.0117*** (0.00)	0.0102*** (0.001)	0.0108*** (0.00)
Highest level of Father's Education	0.0761*** (0.010)	0.00591*** (0.00)	0.0488*** (0.008)	0.00369*** (0.00)
Highest level of Mother's Education	0.0368*** (0.010)	0.000467 (0.00)	0.0247*** (0.009)	0.000884 (0.00)
Reads newspaper more than once a week	-0.00743 (0.007)	-0.000055 (0.01)	-0.0014 (0.006)	0.00656 (0.01)
Respondent is Male	0.0338*** (0.005)	0.0330*** (0.01)	0.0181*** (0.004)	0.0181*** (0.00)
Respondent is Catholic	-0.0517*** (0.006)	-0.0529*** (0.01)	-0.0344*** (0.004)	-0.0345*** (0.00)
Respondent is White	0.0241*** (0.0072)	0.0229*** (0.01)	0.0212*** -0.0053	0.0220*** (0.01)
News*GDP		-0.3 (0.28)		-0.296 (0.20)
Observations	18219	16847	18451	17068
Adjusted R-squared	0.04	0.04	0.04	0.04

All regressions include region and year fixed effects. Robust standard errors are in parentheses. ***Significance at 1 percent; ** significance at 5 percent; * significance at 10 percent.

APPENDIX 5: SUMMARY OF SIGNIFICANT FINDINGS

Dependent Variable	Finding
Abortion Rate	Pro-cyclical
Δ Live Birth Rate	Pro-cyclical
Δ Property Crime	Counter-cyclical
Δ Violent Crime	Pro-cyclical
Δ Heart Attack Rate	Pro-cyclical
Δ Stroke Rate	Pro-cyclical
Abortion if poor	Non-Readers: Pro-cyclical Readers: No Significant Effect
Fear of walking alone	Non-Readers: Pro-cyclical Readers: No Significant Effect
Good/Excellent Health condition	Non-Readers: Pro-cyclical Readers: No Significant Effect
Suicide if tired	Non-Readers: Pro-cyclical Readers: Pro-cyclical
Suicide if bankrupt	Non-Readers: Pro-cyclical Readers: Pro-cyclical

APPENDIX 6-1: THE EFFECT OF CURRENT GDP PER CAPITA GROWTH ON CRIME RATES
INSTRUMENTAL VARIABLE REGRESSION

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	Δ Property Crime Rate	Δ Burglary Rate	Δ Larceny Rate	Δ Violent Crime Rate	Δ Robbery Rate	Δ Murder Rate	Δ Aggravated Assault Rate	Δ Rape Rate
Δ GDP per capita	0.248 (0.190)	0.303 (0.240)	0.0697 (0.200)	0.901*** (0.320)	0.861* (0.470)	0.345 (1.030)	1.135*** (0.430)	1.084** (0.440)
Δ Population	-0.446** (0.180)	(0.003) (0.230)	-0.401** (0.190)	(0.523) (0.320)	-1.306*** (0.460)	(0.935) (1.010)	(0.238) (0.420)	0.070 (0.430)
Observations	1,785	1,785	1,785	1,785	1,785	1,785	1,785	1,785
Adjusted R-squared	0.5	0.44	0.51	0.17	0.21	0.04	0.06	0.09

Change in GDP per capita is the instrumented variable; prior year's change in GDP per capita is the instrument. All regressions are run controlling for state and year fixed effects, which are not shown. Rates are calculated out of state populations, expressed out of 100,000. Robust standard errors are in parentheses.

***Significance at 1 percent; ** significance at 5 percent; * significance at 10 percent.

APPENDIX 6-1: THE EFFECT OF CURRENT GDP PER CAPITA GROWTH ON MORTALITY RATES
INSTRUMENTAL VARIABLE REGRESSION

	(1)	(2)	(3)
Dependent Variable	Δ Heart Attack Rate	Δ Stroke Rate	Δ Cirrhosis Rate
Δ Unemployment Rate	-0.0585 (0.054)	-0.00842 (0.053)	0.411 (0.58)
Observations	1428	1428	1428
Adjusted R-squared	0.07	0.16	-0.02

Change in the unemployment rate is the instrumented variable; prior year's change in unemployment rate is the instrument. All regressions are run controlling for state and year fixed effects, which are not shown. Robust standard errors are in parentheses. ***Significance at 1 percent; ** significance at 5 percent; * significance at 10 percent.

APPENDIX 7-1: VARIABLES AFFECTING NEWSPAPER READERSHIP

Dependent Variable	(1)	(2)	(3)	(4)
	Reads the Newspaper More than Once per week			
Owns dwelling	0.0422*** (0.01)	0.0362*** (0.01)	0.0338*** (0.01)	0.0351*** (0.01)
Father's Education	0.00278 (0.00)	0.00136 (0.00)	0.00126 (0.00)	0.00128 (0.00)
Mother's Education	0.00333 (0.00)	0.00258 (0.00)	0.00253 (0.00)	0.00136 (0.00)
Respondent's Education	0.0183*** (0.00)	0.0145*** (0.00)	0.0144*** (0.00)	0.0123*** (0.00)
Respondent is White	0.0025 (0.02)	0.015 (0.01)	0.012 (0.01)	0.01 (0.01)
Respondent's Age	0.00279*** (0.00)	0.00294*** (0.00)	0.00294*** (0.00)	0.00260*** (0.00)
Confidence in the Press	0.0279** (0.01)	0.0598*** (0.01)	0.0603*** (0.01)	
Hours of TV watched per day				
Generally Happy			0.0631*** (0.02)	
Identifies as Conservative				-0.0133** (0.01)
Respondent Smokes	0.00216 -0.011			
Real Income		0.000000543*** (0.00000016)	0.000000493*** (0.00000016)	0.000000588*** (0.00000011)
Constant	0.421*** -0.039	0.411*** -0.032	0.362*** -0.035	0.492*** -0.023
Observations	3921	6856	6802	12540
Adjusted R-squared	0.05	0.04	0.04	0.03

Data taken from the General Social Survey. Robust standard errors in parentheses *** Significant at 1 percent; ** significant at 5 percent, * significant at 10 percent.

APPENDIX 7-2: VARIABLES AFFECTING NEWSPAPER READERSHIP

Dependent Variable	(6)	(7)	(8)	(9)
	Reads the Newspaper More than Once per Week			
Owens dwelling	0.0408*** (0.01)	0.0381*** (0.01)	0.0371*** (0.01)	0.0341*** (0.01)
Father's Education	0.00233** (0.00)	0.00238** (0.00)	0.00287*** (0.00)	0.00353*** (0.00)
Mother's Education	0.000807 (0.00)	0.000761 (0.00)		
Respondent's Education	0.0154*** (0.00)	0.0153*** (0.00)	0.0135*** (0.00)	0.0137*** (0.00)
Respondent is White	0.0138 (0.01)			
Respondent's Age	0.00284*** (0.00)	0.00291*** (0.00)	0.00280*** (0.00)	0.00297*** (0.00)
Confedence in Executive Branch				-0.0202*** (0.01)
Hours of TV watched per day	-0.00459** (0.00)	-0.00413** (0.00)	-0.00374** (0.00)	0.000808 (0.00)
Generally Happy		0.0581*** (0.01)	0.0598*** (0.01)	0.0692*** (0.02)
Identifies as Conservative			-0.0183*** (0.01)	-0.0203** (0.01)
Satisfied with Financial Situation	0.0183*** (0.01)	0.0150** (0.01)	0.0157** (0.01)	0.0240** (0.01)
Constant	0.436*** (0.03)	0.395*** (0.03)	0.435*** (0.03)	0.431*** (0.04)
Observations	12835	12774	13280	6481
Adjusted R-squared	0.04	0.04	0.04	0.04

Data taken from the General Social Survey. Robust standard errors in parentheses *** Significant at 1 percent; ** significant at 5 percent, * significant at 10 percent.

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