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Adapting to Adversity: Happiness and the 2009 Economic Crisis in the United States

A WIDE BODY OF RESEARCH IN THE FIELD OF HAPPINESS ECONOMICS shows that individuals adapt to both prosperity and to adversity and return to their natural levels of happiness.[1] There is also evidence that people are better able to adapt to unpleasant certainty than they are to uncertainty.[2] In this paper we used novel methods and data to further explore these questions through an assessment of the effects of the deep economic crisis of 2008 and 2009 on well-being in the United States.

The 2008–2009 global economic crisis affected the welfare of billions of individuals worldwide. Yet we know much less about the nature of those effects: how to accurately measure them, how wide and deep were their reach across income and nonincome domains, and how long they last. While we can measure the effects in terms of lost production or in the value of home foreclosures, it is much more difficult to quantify the effects on the well-being of individuals.[3] In this paper we take advantage of a new

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approach in economics—the economics of happiness—and a unique new data set from the Gallup organization to do precisely that.

Our objectives in the paper are twofold. The first is to better understand the welfare effects of the most extreme crisis in the U.S. economy since the Great Depression. The second is to explore if individuals adapt to both bad and good news as the novelty of first the crisis and then the potential recovery become more common features of daily life. Citizens in other countries, such as Russia and Argentina, where we have previously studied the welfare effects of crises, are much more accustomed to macroeconomic volatility than they are in the United States and in most other Organization for Economic Cooperation and Development (OECD) economies.[4] The U.S. experience allows us to explore how quickly people adapt to such phenomena when they are novel occurrences—if indeed they do.

We examine the effects of the crisis on the reported happiness of a nationally representative sample of approximately 1,000 Americans, surveyed daily from January 2008 to July 2009. In addition to individual happiness levels, we examine how the crisis affects individuals' assessments of their own living standards and of the country's economic situation, as well as how they assess prospects for the future—both for themselves and for the country.

We examine how those reports fluctuate with key indicators of both crisis and recovery, as well as how they are mediated by individual characteristics. These range from innate character traits, such as optimism and pessimism, to socioeconomic and demographic factors such as income, education, and gender, to health status and behaviors, such as obesity, smoking, and exercising. We examine how the crisis affects particular cohorts: the precariously employed, those working in firms that were firing (or not), and those at or near the retirement age, among others.

METHODS AND DATA

Methods

The project's empirical analysis will include the methods used in studying the economics of happiness. *Happiness economics* differs from

the more traditional approaches in empirical economics, which are based on the analysis of revealed preferences. Revealed preferences approaches begin from the presumption that what individuals say—for example, expressed preferences—cannot be trusted as an accurate signal of their actual behaviors since there are no consequences to the former. Thus, economists traditionally relied on the information gleaned from revealed preferences, such as actual observed consumption choices. While revealed preferences may be more accurate for measuring expenditure choices, it is less clear that those choices are better measures of welfare than are expressed preferences, at least in some instances. Consumption choices can be detrimental to welfare (excessive consumption of drugs or junk food, for example), or limited (the poor, for example, cannot always consume or act in ways that enhance their welfare, because they are resource and information constrained).

Expressed preferences provide a method for answering questions that revealed preferences do not answer very well. One set of questions includes the welfare effects of macro and institutional arrangements that individuals are powerless to change, such as weak public institutions and persistent inequality. Another entails the explanation of behaviors that are driven by norms (such as lack of trust or low expectations among discriminated groups), and addiction or self-control problems (such as cigarette smoking and obesity).[5] Survey data are also well suited for capturing variance in tolerance to a range of phenomenon, from poor health, crime, and corruption to inequality. Norms of what is acceptable differ a great deal across countries and cultures, in part due to how common or uncommon these phenomena are, and well-being surveys are one of the few tools that we have to measure this variance.[6]

Expressed preferences are best gauged through survey data—which, of course, have their own flaws and limitations. Indeed, economists shied away from the use of survey data/expressed preferences for decades. Yet they are increasingly applying survey data—and particularly well-being surveys—to a range of theoretical and empirical questions. One reason is the range of questions that remain unanswered

by revealed preferences. Another is that econometric innovations are increasingly helpful in correcting for the bias that unobservable personality traits introduce to survey data.

Data

We used economics data from multiple sources for this study. We collected information on market behavior and macroeconomic trends from news reports, official government notifications such as the Bureau of Labor Statistics press releases, the Survey of U.S. Consumer Sentiment by the University of Michigan, and other market data agencies such as the Dow Jones Industrial Average and NASDAQ. This data was collected for each day spanning our period of interest for the recent U.S. financial crisis: January 01, 2008 to June 30, 2009. Political data is based on presidential election results by counties for 2004 as well as 2008.

Our well-being data is from the Gallup Daily Poll, a unique data set that provides daily household-level data on individual perceptions. The dataset spans the same period: January 01, 2008 to June 30, 2009. This dataset is a stratified sample of an average of 1,000 households across the United States (all localities with landline phones and mobile cellphone connections), surveyed almost every day for the entire 18-month period.[7] It has about 534,000 individual observations. The questions in the survey include the demographic details of the respondents (age, race, ethnicity, household size, education level); economic conditions (employment status, job security, job mobility; respondents' perceptions about their standards of living and the state of the economy; access to services (such as health insurance, medical care, telephone, and Internet); geographic location (zip code, metropolitan statistical area [MSA] and federal information processing standard [FIPS] code), and personal health, emotional experiences, and emotional conditions, among others.

The Gallup Daily Poll is collation of cross-section surveys, one for each day in the period. The data is cross-section rather than panel; in other words, the survey covers a different representative set of people each day rather than following the same people over time. Thus, rather

than being able to take advantage of repeated observations of the same person to control for individual-specific traits, we have to rely on proxy measures of each individual's innate optimism or pessimism when assessing his or her other attitudes.[8] Regardless, the large size of the sample and the level of detail therein, combined with daily interviews, provides a unique dataset with which to analyze the effects of economic crisis on human well-being.

In addition to our macroeconomic market variables, we created a timeline of events, and then created dummy variables as event markers—for example, each event dummy variable appears in the data set coded as a 1 if it is the date of the event and as a 0 if it is not. These dummy variables ranged from events when there were significant changes in the stock market indices, to dates on which major policy interventions were initiated by the different agencies of the government, or when major announcements were made that could affect individuals' perceptions. We included these events in some of our regressions to establish a time line and trend in public reactions to the crisis, as well as to explore how that trend might vary depending on the cohort.

We relied on a variety of sources to choose the events that we identified as significant. Table 1/Figure 1 lists all of the 42 events our econometric analysis identified as significant. We created a dummy variable around each event, which included a one-day lag, under the assumption that most people needed a day to react to the specific events, and that reaction would only be reflected in an interview a day or two after the date of the actual event.

Our explanatory variables are a combination of person-specific characteristics such as age, gender, income, and employment status, and economy-wide signals and changes. This list of variables also includes a variable for those who self-report as minority (for example, nonwhite). As only 10 percent report as minorities, it suggests that whites are overrepresented in the sample (see Appendix A for person-specific variables and Appendix B for economy-wide signals and changes; these appendices are available on the *Social Research* website: <www.socres.org/772_graham-et-al.pdf>.

Table 1

No.	Date	Event	Variable name	Type of Shock
1	1/28/2008	Economic Stimulus Act, 2008 proposed	seconstpl1	Policy
2	2/13/2008	Economic Stimulus Act, 2008 signed into law	seconstsl1	Policy
3	3/13/2008	Bears Stearns reports $15b drop in liquid assets	sbearsrepl1	Market
4	3/14/2008	Bears Stearns receives emergency lending from the Fed via JPMorgan	sbearsbaill1	Policy
5	6/6/2008	S&P downgrades two largest monoline bond insurers	sbidgradel1	Market
6	6/16/2008	Lehman reports loss of $2.8b in Q2	slehloss1l1	Market
7	7/11/2008	FDIC takes over IndyMac	sindymacl1	Policy
8	7/15/2008	Treasury Secretary Paulson requests government funds to support F&F	sffbailreql1	Policy
9	9/7/2008	F&F placed in Federal conservatorship	sfffedcl1	Policy
10	9/10/2008	Lehman announces $3.9b loss in Q3	slehloss2l1	Market
11	9/12/2008	Moody's and S&P threaten to downgrade Lehman	slehdgradel1	Market
12	9/14/2008	10 banks create $70b liquidity fund	sliqfundl1	Market
13	9/14/2008	Collateral for TSLF and PDCF expanded	sfedtslfl1	Policy
14	9/15/2008	Lehman files for bankruptcy	slehbnkrptl1	Market
15	9/15/2008	AIG downgraded by all three major rating agencies	saigdgradel1	Market
16	9/15/2008	BoA purchases Merrill Lynch	smerrilll1	Market
17	9/16/2008	AIG loaned $85b	saigbaill1	Policy
18	9/19/2008	Treasury establishes money market guarantee program; Paulson calls for government plan to purchase troubled assets from financial institutions	strguarl1	Policy
19	9/19/2008	AMLF established	sfedamlfl1	Policy
20	9/19/2008	SEC bans short-selling on 799 financial stocks	ssecbanl1	Market
21	9/25/2008	WaMu and Wachovia closed/acquired by OTS and FDIC	swamul1	Policy
22	9/29/2008	Treasury bailout plan voted down in the House of Representatives	strplanfl1	Policy
23	10/3/2008	Revised Treasury bailout plan passes; FDIC insurance raised to $250K	strplansl1	Policy
24	10/6/2008	TAF increased to provide for $900b funding until year-end	sfedtafl1	Policy
25	10/7/2008	Commerical Paper Funding Facility (CPFF) established	sfedcpffl1	Policy
26	10/8/2008	Coordinated global lowering of central bank interest rates	sglintlowl1	Policy
27	10/14/2008	9 banks seek capital injection from the Treasury	sbankbaill1	Market
28	10/14/2008	Treasury announces $250b capital injection plan	strcapinjl1	Policy

Table 1 continued

29	10/14/2008	FDIC insures all senior debt of regulated institutions	sfdicinsl1	Policy
30	10/21/2008	Money Market Investor Funding Facility (MMIFF) established	sfedmmiffl1	Policy
31	10/23/2008	Greenspan testifies before House Committee of Government Oversight and Reform	sgrnspanl1	Other
32	10/28/2008	Lowest consumer confidence	sconsconfl1	Other
33	10/30/2008	US GDP decline by 0.3%	sgdpdec1l1	Other
34	11/5/2008	US Presidential election results	spresell1	Other
35	11/10/2008	AIG loan restructured	saiglresl1	Policy
36	11/10/2008	Chinese government announces Y4t fiscal stimulus package	schinastml1	Other
37	11/18/2008	Auto execs in TARP plea	sautopleal1	Market
38	11/23/2008	Citigroup receives government assistance	scitibaill1	Policy
39	12/1/2008	NBER declares that recession began in December 2007	snberrecl1	Other
40	12/17/2008	US consumer prices decline 1.7%	spdeflatl1	Other
41	12/19/2008	Auto bailout	sautotarpl1	Policy
42	12/20/2008	Eleven of world's largest banks are downgraded by S&P	sbdgradel1	Market
43	12/29/2008	Treasury injects $5b into GMAC	sgmacbaill1	Policy
44	1/10/2009	US unemployment rises to 7.2%	susunempl1	Other
45	1/16/2009	Fed, FDIC, Treasury jointly aid BoA	sboabaill1	Policy
46	1/20/2009	US Presidential inauguration	spresinl1	Other
47	1/26/2009	F&F need additional $51b to continue operations	sffaddl1	Market
48	2/4/2009	Treasury announces restrictions on executive pay on banks receiving assistance	sexecpayl1	Policy
49	2/10/2009	Fed proposes TALF expansion to $1t	stalfexpl1	Policy
50	2/10/2009	Geithner launches Financial Stability Plan	sfinstabl1	Policy
51	2/18/2009	Obama plans to aid homeowners	shomeaidl1	Policy
52	2/23/2009	US government organisations issue joint statement on stress-test related capital injections	sstressanl1	Policy
53	2/25/2009	Treasury announces terms of Capital Assistance Program	scapassl1	Policy
54	3/2/2009	AIG announces $61.7b Q4 loss	saiglossl1	Market
55	3/2/2009	Fed and Treasury announce joint restructuring of AIG	saigresl1	Policy
56	3/15/2009	Bernanke interview with CBS. "Green-shoots"	sgreenshl1	Other
57	4/2/2009	G20 summit in London	sg20lndl1	Other
58	4/9/2009	Wells Fargo announces record profits in Q1	swfprofitl1	Market
59	4/13/2009	Goldman Sachs raises $5b to pay back TARP	sgsrepayl1	Market

Table 1 continued

60	4/29/2009	$3.4t budget approved	sbudget09l1	Policy
61	5/7/2009	Stress-test results released	sstresstl1	Policy
62	5/29/2009	GDP drop by 5.7% in Q1	sgdpdec2l1	Other
63	6/1/2009	GM declares bankruptcy	sgmbnkrptl1	Market
64	6/10/2009	New monthly report on credit and liquidity released	scrliqrepl1	Policy
65	6/17/2009	Obama proposes conprehensive regulatory reform plan	sregrefl1	Policy
66	6/25/2009	Changes to many Fed liquidity facilities announced	sfedliqchl1	Policy
67	6/25/2009	Michael Jackson's death	smjackl1	Other
68	6/29/2009	Madoff sentenced to 150 prison term	smadoffl1	Other

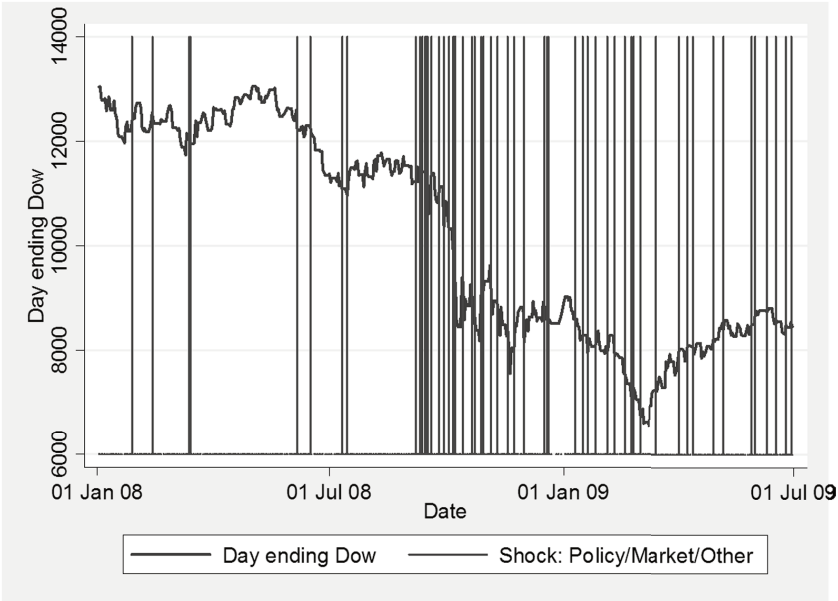
Note: Shaded cells highlight multiple events on the same calendar day

We then relied on five questions to provide a composite picture of individuals' well-being and perceptions of the economic conditions of the economy throughout the onset of the crisis, the corresponding free fall in the stock market and increase in the unemployment rate, and then the initial signs of recovery. The questions are: the best possible life question (which is used in the Gallup Poll as a gauge of happiness or reported well-being); individual satisfaction with standard of living; anticipated standard of living (for example, does the respondent feel his/her standard of living is getting better or worse); economic conditions in the country today; and anticipated economic conditions in the country (again, are conditions getting better or worse). (The exact phrasing for each question and the response scales are reported in Appendix C, which is also available at <www.socres.org/772_graham-et-al.pdf>.) While the five variables are correlated, the degree of co-movement among them is low, and analysis of each of the individual variables yields distinct and complementary results.

THE MODEL

Our regressions began with a standard, ordered logit happiness equation. Ordered logit regressions are distinct from linear regression models as the dependent variable (in this case happiness or life satisfaction) is categorical rather than linear in nature: respondents place

Figure 1: Events and Dow Timeline



themselves in categories that do not have cardinal values. Thus the equation measures the probability that an individual with particular traits will be in one category or another. The life satisfaction question—in this case the best possible life question in Gallup—is the dependent variable, and the usual socio-demographic variables such as age, age squared, income, education, gender, and marital and employment status as the explanatory variables. The best possible life question in Gallup asks respondents to use an 11-point ladder (0–10) to compare their life to the best possible life they can imagine, and is used widely as a gauge of well-being. It is slightly more framed than open-ended happiness or life satisfaction questions, and typically correlates more closely with income than less-framed questions do. Nevertheless, a number of scholars find that responses to this question track robustly with other indicators of well-being across a wide sample of countries.[9]

Income, meanwhile, is self-reported, with respondents asked to place themselves in one of 11 brackets, ranging from no monthly

income to $10,000 per month or higher as the highest income bracket. This likely truncates the distribution at the top, bunching up high and much higher income earners in the top bracket. Less than 1 percent of the sample report to have no income, roughly 25 percent report to earn under $3,000 per month, and 12 percent of the sample report to earn $10,000 or more per month.

We then repeated the standard happiness regressions, adding a series of dummies to capture health status and behaviors such as smoking, exercising, obesity, and depression, as well as dummies for the region that respondents reside in. In addition, as a means to compare the effects of events on different kinds of perceptions/attitudes, we also ran the same equation but with our other perceptions variables as the dependent variable: satisfaction with standard of living (SOL), anticipated standard of living (SOLatr), assessment of the country's current economic situation (CECON), and assessment of the country's future economic situation (CECONatr).

We split the sample into a series of cohorts, based on demographics, religion, having friends (or not), income levels, financial security, job security, and health behaviors (exercisers, smokers, the obese, the depressed, and the well rested—or not—in each case). Our hypothesis before the analysis was that some socioeconomic cohorts would feel disproportionate effects of the crisis compared to others. Some, such as those with healthier behaviors may navigate the crisis better and therefore suffer less well-being effects.

Our baseline happiness model has happiness as the dependent variable. Independent variables are a vector of the usual socio-demographic controls, such as age, gender, income, and education; dummy variables representing whether or not respondents smoke, exercise, are obese, or have reported depression in the past year; dummy variables representing the region that respondents live in; and an error term. We reran the basic model but added in dummy variables that capture whether or not respondents live in political districts that are dominated by either Republicans or Democrats. We then repeated the baseline model but added in dummy variables representing the particular

events that we isolated in our time line. Later, when we split the sample into various cohorts, we use the same model but removed the dummies for the cohort that we are splitting the sample by (for example, when we split the sample into exercisers and nonexercisers, we removed the exercise dummy from the equations).[10]

In addition to happiness, we explored the relationship of the same set of independent variables with respondents' assessments of their current standard of living, their assessments of their anticipated standard of living in the future, their assessment of the country's current economic situation, and their assessments of the country's anticipated economic situation in the future. In each instance, we ran essentially the same equations, but with each of these questions, respectively, as the dependent variable.

BASIC CORRELATES OF HAPPINESS IN THE UNITED STATES, 2008–2009

We first examined how particular traits and behaviors affected overall well-being during the crisis. Our findings on the correlates of well-being for the United States, based on the daily dataset, match with the work of many others based on different U.S. data sets. There is a U-shaped relationship with age, with the low point on the happiness curve being around the age of 47. This fits with a broader age-happiness pattern that holds in most places in the world where happiness has been studied.[11] Men are less happy than women, and married people are happier than unmarried people. People with higher levels of income are happier than those with lower levels, as are more educated people. Religious people are happier than nonreligious people, and minorities are less happy than nonminorities, although the latter finding is only significant at the 10 percent level (see table 2).

These findings are consistent with those from other studies of happiness in the United States based on other data sets, as well as with multiple studies of happiness in other countries and regions. It is not surprising that these very basic and consistent patterns are not affected by the crisis.

Table 2: Best Possible Life Assessment

		Model I		Model II		Model III	
		Coeffi-cient	Stat. Sig.	Coeffi-cient	Stat. Sig.	Coeffi-cient	Stat. Sig.
Age		-0.06832	***	-0.06816	***	-0.05618	***
Age (squared)		0.00076	***	0.00075	***	0.00062	***
Gender (dummy var)		-0.17128	***	-0.17113	***	-0.23103	***
Married (dummy vari-able)		0.22431	***	0.22300	***	0.18751	***
Household Income Group		0.19487	***	0.19465	***	0.17345	***
Education Level		0.11285	***	0.11198	***	0.08887	***
Minority (dummy vari-able)		-0.03452	***	-0.04881	***	-0.05897	***
Religiosity		0.20234	***	0.19965	***	0.17949	***
Smile		0.74551	***	0.74484	***	0.56262	***
Region (dummy vari-ables)[1]							
	Midwest			-0.01460	*		
	South			0.10377	***		
	West			0.10416	***		
Health condi-tions (dummy variables)							
	Exercise					0.15339	***
	Depressed					-0.49785	***
	Obese					-0.18067	***
	Smoker					-0.37475	***
	Well-rested					0.40534	***
Observations		397474		397474		395139	
Chi-square		54114.29		55571.46		68671.81	

[1]Control region: Northeast
*Statistically significant at 10%
**Statistically significant at 5%
***Statistically significant at 1%

We also find that, controlling for all of the above factors, respondents who live in counties that are dominated by Republican voters are happier than those that live in counties dominated by Democrats. (This was defined by how the majority of respondents in a county voted in the 2008 elections). This is in keeping with the findings of other studies that find that U.S. respondents that lean to the right are happier than those that lean to the left.[12] While we do not have a definitive explanation, it is likely that those that select into a political philosophy that sees success as primarily a result of individual effort are also fairly happy with the way things are, while those who focus more on the systemic advantages and disadvantages that individuals face are less happy with the way things are. The direction of causality is difficult to establish, however. Regardless, the difference between the two is significant; those that live in Republican dominated counties are over 10 percentage points happier than those that live in Democratic ones (table 2).

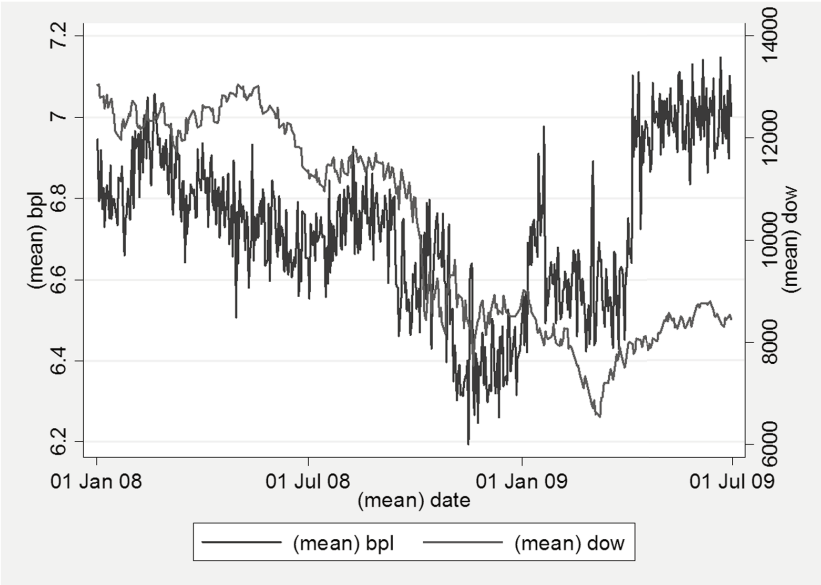
We also examined the happiness "effects" of various behaviors and health conditions. Not surprisingly, we found that those who exercised were happier than those who did not, and those that smoked were much less happy than nonsmokers. These findings on smoking resonate with those we found for Russia at the time of the 1998 ruble crisis.[13]

Not unsurprisingly, we find that those who spent social time with friends were happier than others. Respondents who reported having been diagnosed with depression in the last year were significantly less happy than others, as were the obese and those with high blood pressure.

HAPPINESS AND THE CRISIS

Looking across time during the crisis, our most simple and striking result is an overall trend, with mean daily happiness levels (as measured by the best possible life question, with the 1,000 observations of each day converted into daily averages for the sample) decreasing markedly with the onset of the crisis, bottoming out in early 2009, and then taking an equally marked trend upward after

Figure 2: Gallup Daily: Best Possible Life and Dow Jones Daily Averages



April 2009. While there are daily movements linked to specific events, the overarching trend is a cycle related to the overall patterns in the crisis. During the downward trends in the crisis and in well-being, happiness seems to lag spikes in the stock market by a few days. This makes intuitive sense, as people have to first internalize the news and then only report well-being levels a day later. On the upward trend, though, happiness trends lead the stock market and continue to trend upward above and beyond market trends. Most remarkably, mean happiness levels by July 2009 were above the mean levels in January 2008—at the beginning of the period of study and prior to the start of the crisis (see figure 2).

The Dow Jones Industrial Average Index (Dow) plummeted through most of 2008, hit its bottom on March 09, 2009 (6547.03), and then began a gradual rebound. The average Best Possible Life (bpl) and anticipated Standard of Living (solatr) mimicked the overall trend of the Dow, but their respective recoveries were much more pronounced than the Dow's. In fact, the average bpl measure was higher at the end of June 2009 than it was in January 2008, although the Dow index had

just made a nominal recovery and was still about 35 percent below the level in January 2008.

This is likely a reflection of latent optimism among individuals. At the same time that happiness levels were rising markedly, most respondents remained realistic—and pessimistic—in their assessments of their current standard of living and of the country's economic situation (see figures 3 and 4). It is likely that despite the reduction in wealth that most people experienced with the crisis, they saw the end of the market free fall as a sign of hope and a more positive outlook for the future, or at the least as the end of a period of deep uncertainty about where the crisis was headed.

Second, it seems that the influence of a change in market signals (here the Dow) is asymmetric, at least on average. When the economy is in on a downward cycle, the pace and proportional magnitude of effects on the average individual is markedly different than when the economy is on a recovery (or growth). Individuals' perceptions follow the market on the downward trend, but lead the market when optimism

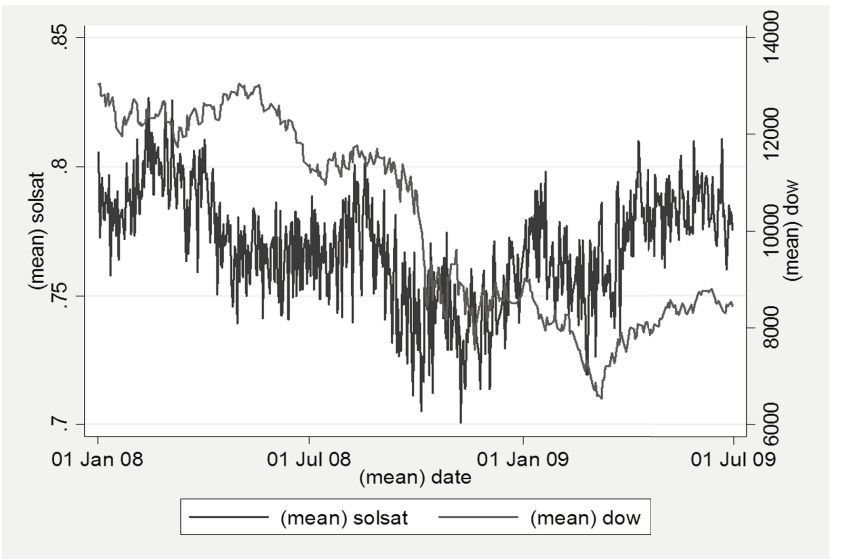
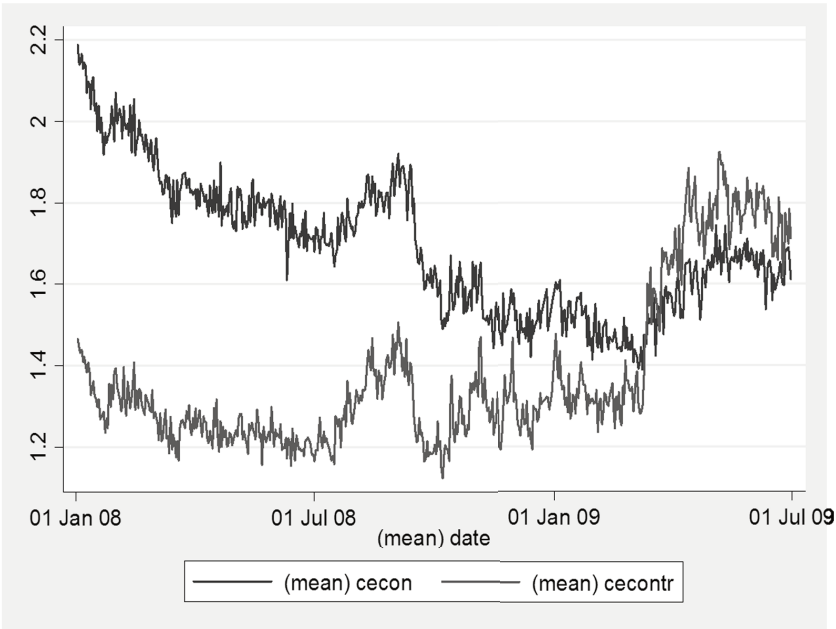


Figure 3: Satisfaction with Standard of Living and Dow Jones Daily Averages

Figure 4: Assessment of the Country Current and Expected Economic Situation



is recovering. In addition, when we compare respondents' perception of the country's economic condition today to what they anticipate for the future, assessments for the future are worse than those of the present when the economy is heading toward a recession. Conversely, the average perception of the future is brighter than those of the present situation when the economy is recovering.[14]

This suggests that the upward trend in well-being is driven by a general sense of optimism as much it is by actual events. It also suggests adaptation; prior to the crisis, happiness levels had stabilized amid rising levels of wealth and were indeed slightly lower in January 2008 than the average for the previous two years.[15] In contrast, people seem to adapt their expectations downward at a time of crisis, and then are happier with less overall wealth once a sense of hope about an end to the crisis has set in or, at minimum, that the uncertainty about the downward spiral in the markets/economy has abetted.

The coexistence of flat happiness levels and rising wealth is a phenomenon that has been at the core of the debate over happiness and income since the first studies of happiness by economists. Richard Easterlin first noted it in his famous paradox, in which he found that average country-income levels rose over time across a large set of developed economies, but average happiness levels did not.[16]

More recently, Graham and Lora have identified a "paradox of unhappy growth," in which individuals in faster growing countries report lower levels of well-being, controlling for average levels of gross domestic product (GDP). This is based on the Gallup World Poll and on the Latinobarometro (a Latin America-wide opinion poll). A similar effect has been found in studies by Angus Deaton and by Betsey Stevenson and Justin Wolfers, based on the Gallup World Poll.[17] Expectations likely rise as quickly as income at times of growth. In addition, there are phenomena related to rapid growth—such as insecurity due to changing rewards to skills and rising inequality—that can have negative effects on well-being. Finally, there are also strong regional effects, such as fast growth in Russia and Africa—both regions with lower than average happiness levels during the years of study.

RESULTS FROM INDIVIDUAL REGRESSIONS

We find that our more subjective variables—happiness as gauged by the best possible life question, future outlook for individual living standards, and future outlook for the country's economic situation—are more influenced by crisis-related events than are more objective assessments of the current situation, as gauged by current individual living standards assessments and by current assessments of the country's economic situation. Events we coded as positive (according to the criteria described above), meanwhile, seemed to have positive effects on the same three subjective variables, but were negatively correlated with the assessments of the current economic situation. This suggests that people's hope and optimism for the future is much more influenced by events, policy signals, and how the media covers them than are more objective assessments of particular situations. In other words, positive news seems to drive latent optimism and hope but not more

objective assessments, while all news seems to have negative effects on the assessments of the country's current economic situation.

We also find additional evidence of adaptation; the magnitude or strength of the negative coefficients on our event variables increase up to a certain point and then decrease, even though the overall signal from the events (to well-being) remains negative. The event date with the strongest negative effect (both in terms of coefficient—which assesses the effect—and value of the Z-statistic, which assesses the statistical significance) was the day of the Citigroup bailout announcement, on November 23, 2008, right before Thanksgiving that year. After that, the negative coefficients and Z-values consistently decrease until the signs begin to turn positive, in late March 2009. The effects of the first positive signals were the strongest, meanwhile, and then the strength of the coefficients on the positive events also decrease (see table 3). These results suggest that people adapt to both good and bad news.

Overall, individual happiness and individual optimism about the future tipped upward well before optimism about the country's future did. In contrast, evaluations of the country's current situation tipped upward with the March 15, the day Federal Reserve Chairman Ben Bernanke gave an interview—at least for the days surrounding the event—while individual optimism did not. Most of our optimism related variables, such as future living standards and the future country situation, tipped upward, above the stock market trends, in the April 2009 period and beyond, mirroring happiness trends to a large extent. The upward trend is marked by a positive event—Wells Fargo Bank declaring record profits on April 9. But it is not an event that would have likely attracted that much attention from the average respondent.[18]

It is notable that after this upward trend begins, reactions to events we expected to be negative, such as the declaration of bankruptcy by General Motors, turned out to have positive effects, suggesting that how people interpret market and policy signals depends to some extent on their overall mood as well as more general public attitudes at the time. Indeed, the second highest positive coefficient (and

highest Z-value) among the event dates was around the day that the decrease in GDP for the fourth quarter of 2008 was announced, which was hardly something that would have sent a positive signal when seen in isolation from the overall trend.

In an additional specification, we added the moving average of happiness levels for the week before the date the respondents reported their happiness levels. We find that in the time that happiness was falling, the prevailing (average) sentiment matters more, correlating significantly and positively with happiness responses, and perhaps reflecting risk aversion. In contrast, in the upturn, the average mood is insignificant, perhaps because individual optimism had recovered or adapted.[19]

In contrast, objective assessments of both individual living standards and of the country's economic situation remained much flatter than happiness levels, and do not display a similar upward trend after April 2009. This suggests that while the overall trend in optimism about the recovery had significant effects on our subjective variables, respondents remained much more sanguine and pessimistic as they assessed the current situation. Respondent's assessments of their living standards and the country's situation also seemed more sensitive to market signals, with much more sensitivity to negative events—and changes of signs on the coefficients from positive to negative—during the overall upward trends in optimism.[20] Once optimism begins to trend up, all news was good news in terms of happiness. This did not, however, affect more framed assessments about standards of living and the general economic situation.

In an additional exercise with the Gallup data, we looked at mean responses to a question about smiling the day before across the time period for which we have data. This question is typically used to gauge innate levels of positive affect. Unlike happiness and the other optimism variables, which display a distinct U-shape curve related to the crisis (and mimic the Dow to some extent), smiling yesterday was remarkably flat during the crisis period, spiking markedly at two points in time: the Christmas and New Year's holidays. There was also a short

spike about the time that overall optimism increased in April 2009, but then levels seem to stabilize for the most part.

This suggests that happiness and optimism variables are more sensitive to external and environmental events than is positive affect. While not surprising, the robustness of these differences at times of extreme economic crisis is rather remarkable. We also find (discussed below) that the depressed are remarkably unresponsive to crisis-related events. The stability in the negative mood of the depressed is somewhat analogous, and highlights the extent to which certain psychological factors are immune to exogenous influences.

ROBUSTNESS CHECKS

One possibility, of course, is that rather than being driven by the crisis, our results are driven by changes in the determinants of happiness in our sample, particularly given that the participants in the sample change daily, while remaining representative of the same population. As a robustness check, to make sure that the effects that we are attributing to time trends are not due to spurious changes in the sample, we ran our basic happiness (best possible life regressions, reported in table 2) on several separate dates throughout the sample time period, including some on event days and some not. Our standard determinants of happiness remain essentially unchanged, thus supporting our interpretation that the changes in happiness are due to the crisis-related time trends.[21]

We also ran our events regressions with weekly averages instead of the daily data in order to eliminate some of the random noise in the data. Our results were essentially unchanged. While the regressions reported in the paper are based on the daily events data, the figures are based on the weekly averages, again in an attempt to reduce random noise.

DO SOME ADAPT BETTER THAN OTHERS?

Our overall base finding relates to average happiness levels. Yet we also posited that different socioeconomic cohorts might feel the effects of the crisis differently, either because their situation was more precari-

ous or because they had more to lose. We also explored the hypothesis that individuals with different health behaviors and conditions are likely to navigate the crisis differently and therefore suffer different well-being effects. In order to do so, we split the sample according to various cohorts, and included the specific event dummies in our regressions as a means to explore how specific cohorts might depart from the overall U-shaped trend.

We split the sample into *age cohorts* (with the hypothesis that those at or near retirement age might suffer worse effects from the market drops); those who reported *having friends* and those who did not; those who reported having *religious faith* and not. We also created Democratic and Republican *political cohorts*, defined by how the majority in the respondent's congressional district voted in the 2008 elections, under the assumption that those respondents in districts that overwhelmingly voted for Democratic presidential candidate Barack Obama were more likely to be receptive to and optimistic about government policies to mitigate the crisis. We do not, unfortunately, have data on individual voting or political affiliation. We split the sample into those *above and below median income*; those who reported to be *financially precarious and not*; those working in firms that were *firing people* and those in firms that were not firing people; *exercisers, smokers, the obese, the depressed*, and those who reported having *rested well the night before* and not.[22]

Age and Demographic Cohorts

We used three different age cohorts: the young (19–35), the middle aged (36–55), and the old (55 and up). Our priors were that those who were closer to the retirement age likely had the most to lose, particularly if their retirement income was in the stock market. Rather surprisingly, the oldest cohort was the least reactive to negative events and much more responsive to positive events. The youngest cohort was the least reactive to all events, barely responding to the positive events at all. The middle aged—who are likely have the most to lose in terms of both jobs and wealth and are more likely to also have dependents to worry about—had the strongest and most consistent reactions to both nega-

tive and positive events. Their increased reasons for worry may also make them more aware of events in general. The elderly, who are typically happier in general, may have more experience with past episodes of adversity, such as recessions, and be more optimistic about longer-term trends. They are also not as likely to have dependents or to fear losing their jobs as the middle aged. The young, meanwhile, typically have more flexibility in the labor market, and may simply be more skeptical (or less aware) in the face of policy signals and positive signs than the other two groups.

With our religious cohorts, we find that the nonreligious were more reactive to negative events than the religious. The religious were probably more likely to turn to faith to retain their optimism in the face of adversity than were the nonreligious. In contrast, both groups reacted about the same way to positive events. We also looked at the role of friendships. Those who had friends or relatives that they could rely on at times of need were more affected by every event date, while those who did not report to have friends reacted much later in the crisis, and then to fewer events. Those without friends likely were less attuned to what was happening, not least because they were not interacting as much with peers who could relay news—both positive and negative—as were those with friends and, as a result, more social interaction and related exchange of information.

Socioeconomic Cohorts

We first looked across income levels, with the aforementioned above and below mean-income split. Those with incomes above the mean seemed to react more quickly and more strongly to the onset of the crisis than did those below the mean. Most of the negative events had sustained significant effects for the former group, while they were much more sporadic for those below the mean, at least for the first month of the crisis; those in this latter group barely reacted at all to these early events.

The above mean income group was likely more aware of the looming crisis and had more to lose, at least in the stock market drop,

than did the below mean income group. Along the same vein, the above mean group was more likely to react to positive market/political events, such as the announcement of regulatory reform, while the below mean group was likely more influenced by a newsworthy event, such as the conviction of Bernard Madoff (a private investor who swindled his clients out of billions of dollars). The latter may have also signaled an equalizing effect as one of the largest-scale market players was unable to escape justice.

Happiness levels for those workers that reported to be in firms that were firing people (about 20 percent of working respondents) were, not surprisingly, significantly lower than those in firms that were not firing people. The happiness levels of both fell with the crisis, but with the signs of recovery, the happiness levels of those that worked in firms that were not firing people rose more compared to their initial levels than did those in the firing firms, who displayed flatter trends in well-being, rather than the upward tick in happiness levels of both the average for the sample and those in nonfiring firms.

Finally, we examined differences in the responses to both our general events and to announcements about the unemployment rate according to the job category that individuals fell into. These were: having a job or not (sadly, this question was only asked until the end of 2008); being worried about a job or not (this question had a several month break in the data in early 2009); and being in the following categories: professional, business owner, or construction worker. The unemployment rate was on the increase for most of our sample, only decreasing in three months for which we have data. Positive announcements had a significant and positive effect on answers to the best possible life question, while negative events were insignificant. The latter finding is likely because the unemployment rate continued to drop steadily at a time that positive news and sentiments began to dominate the overall trends in attitudes. The positive effects of a decrease in the unemployment rate were higher for those who have a job and particularly for the professionals.[23] This is in keeping with findings from other studies of unemployment. The unemployed often report to be happier

when the unemployment rate is higher (less stigma, more company?), while the employed are less happy, perhaps because they fear becoming unemployed or they fear the negative externalities surrounding higher unemployment rates.[24]

Professionals react the most to specific events, generally following the broader average trends. Business owners react to very few events (9 out of 42), but when they do react, their coefficients are the highest across the subsamples. Construction workers, meanwhile, react to only 8 out of the 42 events, seven of them negative and only one of them positive. The job-insecure, meanwhile, for whom we only have data until December 2008, barely react to events in the crisis onset period, perhaps because their happiness levels are already low compared to other groups (their mean scores are 5.6 compared to 6.7 for the sample as a whole). In all instances, it seems that those with the most to lose are the most reactive to events, while the already vulnerable have either already internalized the negative effects or have less room for variance as their scores are already low.

Political Cohorts

We split our sample into political districts, based on our zip code data for respondents, and defined as living in a county dominated by Republicans or Democrats, based on the results of the 2008 elections. The basic determinants of happiness for the two groups, based on the entire samples of those living in Republican- or Democratic-dominated counties, was essentially identical except, as was mentioned above, the Republican counties were happier, on average, than Democratic ones. This general split is rather imprecise, however, as it mixes counties where the split between Obama and Republican presidential candidate John McCain was as close as 51 to 49—only a 2 percent difference—to those where the split was 85 to 15—with a 70 percent difference. We next focused on the extremes of the distribution: the top and bottom quartiles, which were primarily dominated by one type of vote or the other. With this more distinct political split, we found major and statistically significant differences between the two groups.

First, we found that the coefficient on income is higher for Republicans than it is for Democrats. In other words, income is more important to the reported happiness of the former than it is to the latter, which is in keeping with the expressed political philosophies of each group. Respondents in Republican-dominated counties were also slightly less likely to report to be worried about finances (a 6 percent difference) than were those in Democratic-dominated ones, which is also not a surprise.

More surprisingly, we found that minorities are less happy in staunchly Democratic counties than they are in Republican ones. Selection is likely at play, as minorities are likely in the majority in the former counties but also may be part of a generally less successful socioeconomic cohort, while those minorities living in staunchly Republican counties are more likely to have succeeded in moving out of a generalized, lower socioeconomic status minority cohort.

The two cohorts also differed in their reactions to different events. Our Democratic cohorts were more sensitive to the negative events as the crisis set in, with the Republicans responding later and to fewer negative events. Rather surprisingly, though, while both Democrats and Republicans responded roughly the same way to Treasury Secretary Hank Paulson's recovery plan in October 2008, Democrats had a strong negative reaction to Treasury Secretary Tim Geithner's bank bailout plan in February 2009, while Republicans had no significant response. It could be that the hardcore Democrats (a reminder: this sample split represents the extremes and not the average of the political distribution) felt that the Obama administration was "selling out" by bailing out the banks.

The Democrats also reacted positively to the signs of the recovery well before the Republicans did. Democrats reacted as early as March 2, 2009, a date that the major insurance company AIG announced major losses, while the Republicans only reacted positively in mid-April, when investment firm Goldman Sachs announced it was repaying its support funds from the government. For the most part, Democrats responded more positively and more often to the ensuing market and policy events

than did Republicans. Democrats were more positive about the Madoff jailing, for example, than were Republicans.

Health Cohorts

Our priors were that those with "positive" health behaviors, such as exercising and not smoking, would have an easier time navigating the crisis, as the behaviors they were likely to use as coping mechanisms are linked to higher levels of happiness in general. Those with unhealthy behaviors, such as high levels of obesity or already coping with health conditions such as depression, would have a more difficult time navigating the crisis.

Health trends changed during the crisis. The proportion of people reporting high blood pressure and high cholesterol increased monotonically throughout the time period for which we have data. Health trends did not improve along with happiness levels, suggesting that the stress induced in the early crisis period had lasting effects, as well as the lingering effects of negative cohort-specific trends, such as unemployment, which affected some cohorts much more than others. Interestingly, neither depression nor obesity conformed to this pattern, with both remaining fairly flat: reported depression increased slightly at the lowest point in the happiness curve and then went back to the average levels, while mean BMI (body mass index) actually fell slightly over the period.

We split the sample into those with health insurance and those without. Our results are similar to those for the worse and better off according to the socioeconomic measures. For those that are better off—for example, with insurance—the events or the time trend seem to be correlated with changes in happiness. They are less relevant for those who are worse off (for example, without health insurance). Those who are already worse off may simply feel they have less to lose with the crisis, or they may be more preoccupied with preexisting problems. Our results on two different but related cohorts—those that report health problems and those that do not—display an essentially identical pattern.

Our results on health behaviors are intuitive, but do not support our priors in all cases. The happiness levels of exercisers, nonsmokers, and those who have rested well the night before are more in tune with the time trend and with negative AND positive events than are those of those that do not exercise and those that smoke. Put differently, these cohorts felt the negative effects of the crisis more sharply than their counterpart cohorts, but then also reacted more positively to good news as the crisis ameliorated. It seems that those with healthier behaviors are more in tune and more reactive to events in general. Conversely, as the latter cohorts (smokers, nonexercisers, and those were not well rested) start from lower levels of happiness to begin with, there may be less variance in their responses. Rather remarkably, the proportion of respondents that reported smoking remained consistent across the crisis period. Thus nonsmokers or reformed smokers did not take up smoking as a coping mechanism. The only spikes in reported smoking were around the time of the holidays in late December 2008, which is unsurprising.

The obese were more reactive to negative events than the non-obese were, but equally responsive to positive events as the non-obese. Among other plausible reasons: the obese are more likely to spend time watching television and thus the news, which may help explain their being more tuned into the crisis.

The depressed were *much* less responsive to the crisis markers—both negative and positive—than the nondepressed. While most respondents display a U-shaped happiness curve that plots roughly with the crisis events—going down with bad news and then tipping up as events become more positive—the responses of those that report having had depression in the past year are virtually flat: neither going down with bad news or tipping up with good news. Reported depression remained fairly flat over time. The only slightly notable trend is that reports increased somewhat at the height of the crisis—in January 2009 or so—when happiness levels were at their lowest. As in the case of unhappy people more generally, there is less room for downward variance for those with already low levels. This may be because their happi-

ness levels are already unusually low or because their lack of responses to the usual external stimuli may underlie some of their depression. Our results on smiling, which highlight the stability of positive affect, are the mirror image or analogue to these results.

CONCLUSIONS

The economic crisis of 2008 to 2009 in the United States had profound effects on well-being. Those effects varied significantly depending on people's socioeconomic cohort, the industry that they were employed in, and their states of mental and physical health. Our most notable finding is a clear, U-shaped trend in reported happiness, as measured by the best possible life question, with levels falling sharply with the onset of the crisis in mid-2008. Levels continued their downward trend until late March 2009, around the time that stock markets stabilized and stopped their free fall. From that point onward, happiness levels increased monotonically and eventually surpassing the levels that they were in the precrisis period of early 2008.

Equally notable is the extent to which the overall trend dominates the effects of particular markers of the crisis. Even events we expected to have positive effects on well-being—such as Obama's inauguration and Geithner's financial stability plan—had a negative correlation during the downward trend. Once the well-being trend turned positive then public reactions remained positive, even to negative events.

Our main explanation for this finding—which has grounding in earlier work we have done on health and on crises in other countries—is the extent to which uncertainty is bad for well-being. Individuals seem better at adapting to unpleasant certainty than they are at dealing with uncertainty. To the extent that the abatement in the free fall of the markets in spring 2009 signaled an end to uncertainty—even if associated with significantly lower levels of income—is an important part of the explanation for the strong recovery of average well-being levels.

At the same time that happiness levels recovered, individuals remained pessimistic in their assessments of their own standards of living and of the country's economic situation. This gap between happi-

ness levels, which are higher than precrisis levels, and assessments of current economic situations, which are not, is suggestive of downward adaptation/expectations. As people adjust to lower standards of living—and assess them as such—well-being levels seem to adapt and recover.

There are significant differences across cohorts. Those cohorts with the most income—and thus the most to lose—are more reactive to all markers of the crisis, both positive and negative. Those at the lowest levels of income, meanwhile, barely react to negative events, but do react to positive ones. Supporting the "most to lose" interpretation, the middle aged, who are the most vested in the labor market and also have dependents to worry about, are the most reactive to the crisis markers compared to their younger and older cohorts. The mean happiness levels of those that report to work in firms that are firing people are, not surprisingly, lower than those that are in firms that are not firing, and do not trend upward as much with signs of recovery.

There were also differences across political cohorts, at least those at the two extremes of the distribution. While Republicans are, on average, happier than Democrats, the former were, for the most part, much less responsive to the negative events signaling the onset of the crisis, and then much slower to respond positively to the signs of recovery. Staunch Democrats, while generally more positive once the recovery began, were much more critical of the Obama administration's bank bailout plan, perhaps viewing it as a "selling out" and bailout of the wealthy individuals that had helped cause the crisis.

Health and health behaviors also matter. Those respondents who report to have had depression in the past year are not only much less happy on average, but their well-being trends seem immune to both positive and negative events. Exercisers, nonsmokers, and the well rested are more in tune with the pessimism marking the onset of the crisis and then with the optimism that accompanied the initial signs of recovery than were their less healthy counterparts, perhaps because they have a higher starting point to depart from and return to.

More generally, the better off (in terms of both health and income) react more to the crisis than the worse off. The former have the most

to lose and are likely more in tune with current events. The worse off may be too preoccupied with health problems or the daily challenges of surviving with economic adversity to pay equivalent amounts of attention to the events surrounding the crisis. These findings also suggest that vulnerable cohorts in general—and in particular in the mental health arena—are less able to adapt to adversity than are other groups.

Our findings provide an insight into the well-being effects of one of the most extreme economic crises in recent history on a population that is not accustomed to high levels of economic volatility. They suggest that, on average, most people are able to adapt to the negative economic effects of crisis, once uncertainty surrounding it has abated. This contributes to our understanding of the remarkable human capacity to deal with adversity. What we know less about, however, is if this capacity to preserve individual psychological welfare at times of adversity can also result in collective tolerance for bad equilibrium—for example, a preference for unpleasant certainty versus the uncertainty that surrounds change and reform. If the recovery in collective optimism, for example, results in less public pressure for essential financial sector and fiscal reforms, then it would support that latter and less "happy" interpretation.

NOTES

1. For a review as well as some new findings on the topic, see Graham (2009).
2. One recent paper, for example, based on a study in North Carolina, finds that layoffs related to the crisis result in lower test scores for children from lower socioeconomic (SES) families but not for children from higher SES families. The effects cannot be explained by school-level trends, since public expenditures per pupil increased at the same time, or to income trends, since they occurred during a period when unemployment benefits were in force. The authors posit that increases in parental stress and uncertainty may play a role but do not have data on individual well-being in order to test this proposition. See Ananat et al. (2009). Another recent paper, based on

historical data for U.S. recessions, finds that individuals experiencing recessions in the formative years (ages 18 to 25) believe that luck rather than effort is the most important driver of individual success, support more government redistribution, and have less confidence in institutions. See Giulano and Spilimbergo (2009).

3. See, for example, Graham and Chattopadhyay (2008) and Graham and Gaddy (2002).
4. For a reviews of the approach, see, among many others, Frey and Stutzer (2002), Di Tella and MacCulloch (2006), Clark, Frijters, and Shields (2008), and Graham (2008a).
5. See, for example, Graham (2008b and 2009).
6. One of the authors, Graham, is an academic adviser to the Gallup World Poll, and is granted access to the daily dataset in that capacity.
7. Panel data from longitudinal surveys—in which the same person is surveyed each day or at least some proportion of the respondents was surveyed repeatedly—would have been ideal, because it would allow us to capture over time trends in attitudes while at the same time controlling for unobservable characteristics that are specific to individual respondents. In the absence of panel data, this proxy measure of optimism—or derivations thereof—has become increasingly common in the analysis of well-being surveys. For a detailed description and examples of use across multiple domains, see Graham and Lora (2009).
8. See the introduction to Diener, Helliwell, and Kahneman (forthcoming) as well as the chapter on question framing and the Easterlin Paradox by Graham, Chattopadhyay, and Picon in that same volume.
9. The detailed equations are available from the authors at cgraham@brookings.edu.
10. For a review, see Graham (2009).
11. For a popular account of this and a review of the literature, see Brooks (2008).
12. In Russia, we had panel data and could look at changes in habits. We found that smokers were less happy and quitting made people happier, while drinkers were happier but increased drinking made

people less happy. Unfortunately, the variable for drinking in the Gallup data was truncated before the onset of the crisis. On Russia, see Graham, Eggers, and Sukhtankar (2004).

13. Detailed trend-line results are available from the authors.
14. It is difficult to compare mean happiness levels based on the daily dataset for 2008 and 2009 with those of previous years since those are based on annual surveys in the Gallup World Poll. That said, the mean for April 2009 was just below the mean response for 2006 and 2007, with a slightly higher standard deviation, which is not a surprise given the tumultuous economic times.
15. See Easterlin (1974 and 2003).
16. On "unhappy growth," see Graham and Lora (2009), Graham and Chattopadhyay (2008b), Deaton (2008), and Wolfers and Stevenson (2008).
17. Regression results are available from the authors.
18. Regression results are available from the authors.
19. Regression results are available from the authors.
20. Regression results are available from the authors.
21. The regression results for all of the split sample equations are available from the authors.
22. Regression results are available from the authors.
23. See Clark and Oswald (1994) and Eggers, Gaddy, and Graham (2006).

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