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## Growing up in a Recession

**I**n **Growing up in a Recession: Beliefs and the Macroeconomy** (NBER Working Paper No. 15321), co-authors **Paola Giuliano** and **Antonio Spilimbergo** substantiate the importance of the historical economic environment in shaping economic attitudes, affecting individuals' views of the role of government, and influencing whether those beliefs change later in life. One of the key findings of their study is that individuals who grow up during recessions tend to form life-long beliefs, including that success in life depends more on luck than on effort.

Individuals who grow up during recessions also tend to support more government redistribution, but they have less confidence in public institutions. On the whole, the authors find, orientations formed during difficult economic times can help to determine the economic system, institutional outcomes, and the role of the government across countries, although this study focused on the United States.

One of the strongest results from this research is the long-lasting effect of recessions on individuals' confidence in government and its role in society. For example, individuals have a significantly lower level of confidence in Congress and the executive branch of the federal

government when they experience poor economic conditions while they are coming of age. But there are off-setting tendencies, too. "On the one hand, recession-hit individuals believe that the government

should intervene more, so they lean more to the left. On the other hand, these individuals distrust institutions, believing them to be ineffective, therefore leaning more to the right." And, while recessions substantially decrease the confidence in government institutions, they do not appear to have an effect on the individual's level of generalized trust—that is, his or her trust in others or other sectors of society.

The authors also report that individuals' propensity to distrust government institutions after macroeconomic shocks occur is highest when they are between the ages of 18 and 25. Although also possible between age 25 until roughly age 40, after that age people tend not to change their beliefs in response to negative economic shocks.

This research is based on data culled from self-reported individual answers collected by the General Social Survey (GSS) regarding individuals' socioeco-

nom ic beliefs. The GSS conducts basic scientific research on the structure and development of American society using a standard set of behavioral and attitudinal questions, many of which have remained unchanged since 1972.

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The researchers focus on the 18 to 25 age group who came of age in a recession. This age focus is based on social psychologists' findings that these are among the most impressionable years, during which time one's beliefs and values about how society and the economy work are formed. Giuliano and Spilimbergo match each generation's responses to yearly economic events, nationally and regionally, and refine them to include other economic factors such as volatility, booms, and regional GDP growth. The GSS data also contain background information on each individual, including religion, family income, parents' education, and location when the individual was 16, which the authors incorporate into their analysis of the respondents' answers in the survey.

— Frank Byrt

## Cognition and Economic Outcomes

In **Cognition and Economic Outcomes in the Health and Retirement Survey**, (NBER Working Paper No. 15266), co-authors **John McArdle, James Smith, and Robert Willis** show that the ability to answer three simple mathematical questions is a significant predictor of wealth, wealth growth, and wealth composition for people over 50 years of age.

Using data from the Health and Retirement Survey (HRS)—a nationally representative longitudinal survey for the United States, which combines comprehensive information on household wealth with “cognition variables” designed to measure memory, intactness of mental status, numerical reasoning, broad numeracy, and vocabulary—these authors find that household wealth is strongly associated with numeracy and memory recall.

To test memory recall, respondents listened to a list of ten simple nouns, answered other questions for five minutes, and then were asked to recall as many of the nouns as possible. Two-thirds of the HRS survey respondents were able to recall between three and seven of the words. Most respondents answered just one of the three numeric questions correctly.

Answering a numeric question correctly in the three-question sequence was associated with a \$20,000 increase in total household wealth and about a \$7,000 increase in total financial wealth. Wealth also tended to increase

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“Household wealth is strongly associated with numeracy and memory recall.”

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with a higher numeracy score for either spouse in a married couple—when neither spouse answered any numeric questions correctly, which was about 10 percent of the cases, household wealth was about \$200,000. When both spouses answered all questions correctly, household wealth was about \$1,700,000.

In households where one spouse, the financial respondent, was in charge of finances, household financial wealth was larger if the financial respondent had the higher numeracy score. Answering a question correctly was associated with a \$30,000 increase in household wealth if the financial respondent answered correctly and only a \$10,000 increase if the non-financial respondent answered correctly. Households with higher numeracy scores were also more likely to have higher fractions of their portfolios in stock.

In this sample, wealth was higher for couples than for single-person households, and lower for minorities than non-minorities. Wealth increased with age and family income, and rose steeply with education. In the HRS, median

household wealth was \$198,000, and 9 percent of that was held in stocks. Median total income was \$37,000, and the typical sample member was a high school graduate.

The authors point out that their exploratory analysis has only established that specific cognitive measures are useful predictors of accumulated wealth and that they have not established causal pathways. It is possible, for example, that a lifetime interest in investments and the stock market can improve numerical ability. However, they note that the fact that numeracy seems to predict total and financial wealth at lower wealth quartiles where people are less likely to be active investors does seem to weigh against a purely reverse pathway from investments to cognitive ability.

—Linda Gorman

## How Regressive is a Price on Carbon?

Under either a cap-and-trade program that limits carbon emissions or a carbon tax that imposes an outright tax on these emissions, the poor may be among the hardest hit. Because they spend a greater share of their income on energy than higher-income families, households in the lowest fifth of the income distribution could shoulder a relative burden that is 1.4 to 4 times higher than that of households in the top fifth of the income distribution, according to a study by **Corbett**

**Grainger and Charles Kolstad**. In **Who Pays a Price on Carbon?** (NBER Working Paper No. 15239), they show that the burden on the poorest house-

holds suggest that the burden as a percent of annual income is much higher among lower income groups than higher income groups,” the authors write.

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“A price on carbon could yield substantial government revenues, and careful recycling of these revenues could offset the regressive nature of a national GHG [greenhouse-gas] emissions policy.”

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holds doubles when a price on carbon is targeted narrowly on energy consumption (and not other energy uses) rather than broadly across all industries. “Our

Previous research already has suggested that a carbon tax would probably be regressive. This study furthers the analysis by making three key points.

First, by linking the amount of carbon emissions from each industry to consumer expenditures by income group, the authors show that consumption differences explain the regressivity of a carbon tax. Assuming a levy of \$15 per ton of carbon dioxide, which is in the range of current proposals in Congress, the authors calculate that the one-fifth of households at the bottom of the income distribution would spend an extra \$325 a year. That's less than a third of what the one-fifth of households at the top of the income distribution would pay annually. However, households in the low-income group earn only one-tenth as much as those in the high-income group on average, so their burden relative to income would be almost four times higher.

Some economists argue that annual income, which changes over time, may be less accurate as a measure of household well-being than income measured over a lifetime. On the basis of lifetime income, the burden on the low-income households would be 1.4 times higher than it would be on their higher-income counterparts, this study finds.

The second key point is that calculations by household understate how regressive a price on carbon would really be. That's because households in the highest income quintile are much

larger — averaging 3.1 persons — than those in the lowest quintile, which average only 1.8 persons. Accounting for those differences (and for economies of scale in household consumption), the authors calculate that the real impact of a carbon tax on a person in the lowest income quintile would be nearly five times more burdensome than for someone in the top income quintile. Using lifetime income in this calculation, the burden would be 2.2 times greater.

The third key point is that the regressivity of a tax on carbon depends on how broadly it's applied. If it's levied on all greenhouse-gas emissions, then the burden on the lowest-income fifth of households would be 3.25 times as high as the burden for the highest-income fifth (1.4 times as high based on lifetime income). Per capita, the burden would be about five times higher (over twice as high based on lifetime income). If the tax only applied to consumption of energy goods, then the burden on low-income households would climb to nearly four times that of their higher-income counterparts annually (1.6 times, using lifetime income). Per capita, it would soar to six times annually (2.6 times, based on lifetime income). The authors conclude "that the regressivity of the policy is driven largely by direct energy consumption."

They offer several caveats about their study, which assumes that all costs are passed on to the consumer and don't affect workers' wages or investors' returns. Consumption is held fixed, and no attempt is made to simulate how consumers' buying habits or companies' production practices would change if the price of carbon went up. Nor does this study consider whether the benefits of a carbon tax would affect households at different points in the income distribution disproportionately through an effect on climate change.

The authors calculate that a \$15 tax per ton of carbon dioxide would raise as much as \$79 billion a year. Congress could use some of those revenues to mitigate the regressive effects of the tax. For example, an income tax break of \$119, \$112, \$105, and \$76 to individuals in the first four income quintiles, respectively, would balance the burden to about 1 percent of net annual income for each group, and still leave nearly \$50 billion in government revenues, the authors calculate. Or, the revenue could alleviate the burden of other regressive taxes, such as the payroll tax. "A price on carbon could yield substantial government revenues, and careful recycling of these revenues could offset the regressive nature of a national GHG [greenhouse-gas] emissions policy."

—Laurent Belsie

## Non-Instructional Expenditures Affect Graduation Rates

In new research, **Douglas Webber** and **Ronald Ehrenberg** find that institutions of higher education serving low-income students with relatively lower entrance exam scores may be able to increase their six-year graduation rates by spending more on student services, including admissions, registrar activities, tutoring programs, intramurals, and student organizations. By comparison, spending more on instructional activities, research, or academic support activities is associated with a smaller effect on graduation rates, particularly at institutions where students have relatively low

graduation rates. As a result, at these institutions, a reallocation of some funds from instruction to student service may lead to an increase in graduation rates.

sand four-year colleges and universities in the United States, covering the academic years 2002–3 and 2005–6. In the sample, average instructional expendi-

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"An increase in spending on student services of \$500 per student was correlated with an increase in graduation rates of 1.7 percent."

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**In Do Expenditures Other than Instructional Expenditures Affect Graduation and Persistence Rates in American Higher Education?** (NBER Working Paper No. 15216), the researchers use data from the Delta Cost Project, a sample of over one thou-

tures were \$9,689 per full-time equivalent student (FTE); average academic support expenditures were \$2,456 per FTE; average student support expenditures were \$2,779 per FTE; and average research expenditures were \$2,682 per FTE. However, there were wide

variations in the sample: mean instructional spending at higher SAT schools was twice as high as at lower SAT schools, and mean research spending at higher SAT schools was almost six times the research spending at lower SAT schools.

At the lower SAT schools—those with a median SAT of 973 and six-year graduation rates of 55 percent—an increase in per-student spending on student services of \$500 was corre-

lated with an increase in graduation rates of 1.7 percent. At the higher SAT schools—where the median SAT was 1162 and the six-year graduation rate was 65 percent—an additional \$500 on student services was associated with an increase in graduation rates of only 0.3 percent.

The authors find similar results when they classify schools by the average dollars received per student through Pell Grants, a federal program that pro-

vides need-based grants to low-income students. At schools receiving Pell Grant expenditures averaging \$1,103 per student, an increase of \$500 in student services spending will increase graduation rates by 1.1 percent. At institutions whose average Pell Grants are only \$464 per student, higher spending on student services is associated with a much smaller effect—an increase in the six-year graduation rate of just 0.2 percent.

—Linda Gorman

## Grazing, Goods, and Girth

**I**n **Grazing, Goods, and Girth: Determinants and Effects** (NBER Working Paper No. 15277) NBER Research Associate **Daniel Hamermesh** uses a newly-created nationally representative dataset (the 2006–7 American Time Use Survey and its Eating and Health Module) to study eating patterns and how they relate to wage rates. He distinguishes between primary eating/drinking (which he refers to as “eating”) and secondary eating/drinking while engaged in another primary activity (he refers to this as “grazing”). One example of grazing is munching on a muffin while working at the computer—the primary activity is market work, and grazing occurs at the same time.

Hamermesh finds that over half of adult Americans report grazing on a typical day, and that grazing time almost equals primary eating/drinking

time. Economic models would predict that higher wage rates (that is, the price of time) will lead to the substitution of grazing for primary eating/drinking, especially by raising the number of grazing intervals relative to meals. The

time spent eating is an economic outcome: when time becomes more valuable (as proxied by the hourly wage), then people substitute grazing for eating, in essence multi-tasking this essential activity.

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“When time becomes more valuable (as proxied by the hourly wage), then people substitute grazing for eating, in essence multi-tasking this essential activity.”

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data used in this study confirm those predictions.

Hamermesh suggests that the most interesting finding here relates the frequency of eating to weight and health outcomes. Those who eat more meals, conditional on total time spent eating, weigh less and report better health and lower Body Mass Index (BMI) than their demographically-identical counterparts. Further, the distribution of

The general economic question throughout this paper is how the value of time, and time use, affect the process of eating and its impact on health and BMI. Hamermesh provides us with a glimpse into how economic considerations partly determine the timing and amount of eating, and how those choices about eating affect our health and weight.

—Lester Picker

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