

Initial Misconceptions in a Macro Principles Class

William L. Goffe
Department of Economics
SUNY Oswego
416 Mahar Hall
Oswego, NY 13126
bill.goffe@oswego.edu

December, 2009

Abstract

To better understand student learning, other fields investigate misconceptions that students bring to the classroom. These fields have found that learning is hindered as students are remarkably resistant to giving up their misconceptions. Yet, formal studies on misconceptions are rare in economics. Using both questions developed for other purposes and questions developed here, some misconceptions are identified in a survey of one large macro principles class. Suggestions on how to find other misconceptions are offered.

1 Introduction

Many principles instructors are likely intuitively aware that their students bring a variety of misconceptions^a to the classroom that hinder their learning. These instructors have heard questions in class or read in exams ideas that stray far from the topics of the field or even facts about the world at large.^b Indeed, part of learning to teach economics is developing the expertise to deal with these questions and views.

While common, misconceptions have rarely been formally studied in economics education. While economics educators should not necessarily take their cues from other fields, the difference is notable. [STCSE \(2009\)](#) lists some 7,000 papers on “conceptions” in science education held by students and teachers. When one searches the physics education research literature at [PER-Central](#), “misconceptions” yields more than a 100 papers. EconLit yields just a handful. Thus, each instructor is at best left to rediscover what others might have learned and at worst, students are taught without even any intuition on the part of the instructor on information the student might bring to class that hinders their learning.

In other fields, there is solid evidence that misconceptions impede learning and are difficult to change. In physics, perhaps the most quoted example comes from Harvard professor Eric Mazur. In his introductory physics class, he gave the “Force Concept Inventory,” a conceptual assessment of the laws of motion; it is explicitly designed to ferret out well-known misconceptions. As he puts it, ([Mazur \(2009\)](#)),

I expected that the students would have no trouble tackling such questions, but much to my surprise, hardly a minute after the test began, one student asked, “How should I answer these questions? According to what you taught me or according to the way I usually think about these things?” To my dismay, students had great difficulty with the conceptual questions.

More formally, [Clement \(1982\)](#) finds student misconceptions on motion remarkably difficult to change while [Vinenot \(1985\)](#) finds this to be true in more general terms. Resistance to correcting misconceptions even appears to occur

^aThe term “misconception” is deliberately used here. In other fields, terms such as “preconceptions” or even “conceptions” are used, but here, the focus is on students’ incorrect beliefs.

^bRecently on exams, this author has read students describing how oil imports into the U.S. are conducted by the government.

with political debates Nyhan (2009).^c The only formal study on firmly held misconceptions in economics appears to be Christandl (2008), where he studies, in part, people's views about inflation resulting from the introduction of the euro. He finds them highly resistant to explanations from experts. In addition, perhaps firmly held misconceptions by students might be one reason why economics classes appear to have little long-term impact on students, as Walstad and Allgood (1999) demonstrated: college seniors who take an economics course know little more economics than those who do not.^d Perhaps by not confronting their misconceptions, their models remain a mix of their firmly-held misconceptions and the correct subject matter.

For economists, the first step in this process is to clearly identify misconceptions. Of course, textbooks discuss some that their authors have found and several authors, among them Wood (2006) and Madariaga (2005), have identified many fallacies. But, these are often substantially broader than "basic" (to professional economists) misconceptions that are the focus here. For the purposes of this paper, a basic misconception is an error on an isolated fact and not on a broader topic, such an economic model a student brings to class.

It may be sensible to base research on model misconceptions on findings from basic misconceptions. However, some interesting work has already been done in this area. Rubin (2003) used anthropological research on life in early societies to generate possible models that many still use today, such as the lump of labor fallacy and not understanding the utility-enhancing benefits of trade. He conducted no empirical analysis. Williamson and Wearing (1996) did conduct empirical analysis with both an open-ended survey and a multiple-choice survey of adults and students in Australia on their macro model. However, much of the focus was on the government budget and does not provide much insight for those who teach economics in the U.S.

More useful data with analysis comes from Blendon et al. (1997), (the data is from SAEE (1996), which contains additional questions and responses). It surveyed the general public as well as members of the AEA. The focus of Blendon et al. (1997) is the reason for different responses, but some of the questions and ideas are used below in a survey of principles students. Of course, the participants in SAEE are older and some have more education.

Caplan (2007a) (Caplan (2007b) is an on-line summary) uses SAEE to identify economic misconceptions of the general public. He identifies:

1. "anti-market bias:" "a tendency to underestimate the economic benefits of the market mechanism"
2. "anti-foreign bias:" "a tendency to underestimate the economic benefits of interaction with foreigners"
3. "make-work bias:" "a tendency to underestimate the economic benefits of conserving labor"
4. "pessimistic bias:" "a tendency to overestimate the severity of economic problems and underestimate the (recent) past, present, and future performance of the economy.

He provided a thorough and thought-provoking analysis of the SAEE data with this framework. Yet, a principles instructor might wonder if the above set is all-encompassing, if the results have changed in more than a decade since SAEE was given, how common these misconceptions are among principles students, and if the questions address the typical student's world view. Thus, SAEE, Caplan, Madariaga, and this author's experience are used to develop the following survey for principles classes.

2 Survey Instrument

The instrument is largely free-response to avoid "priming"—that is, suggesting possible answers that might inappropriately influence the student. A few questions offered multiple choice answers when the universe of answers is quite clear and not likely to prime the student. Some of the questions were topical, such as on the recession of 2007-09 and the rise in gas prices associated with Hurricane Katrina in 2005.

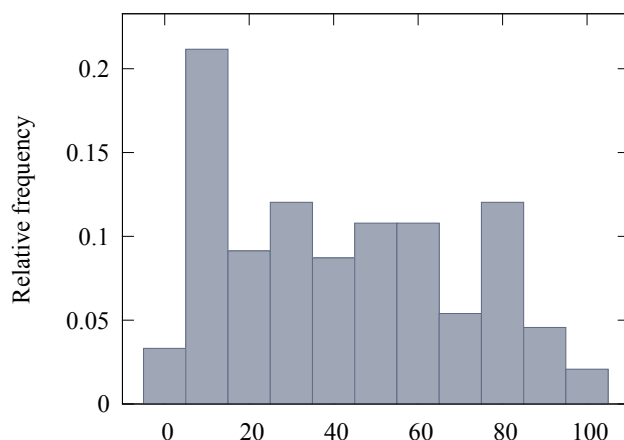
It was given the second day of class, January 22, 2009, in a macro principles class at SUNY Oswego. The class had some 275 students, and 255 took the survey. 31% of the respondents had take an economics course in high school, 84% had taken micro principles at Oswego, and 3% had taken micro elsewhere.

^cPart of this work even finds that attempts to correct a misconception may sometimes strengthen that very misconception.

^dIn one sample, seniors who took an economics course or courses scored 62% on a Gallup economic survey, while those who did not take a course scored 48%.

2.1 Micro

Of the prices of goods and services that you buy, about what percent are set or controlled by the government?^e
(free response; this chart and all the following ones show the distribution of student responses; in this case, approximately 10% of students feel that the government sets 80% of consumer prices)

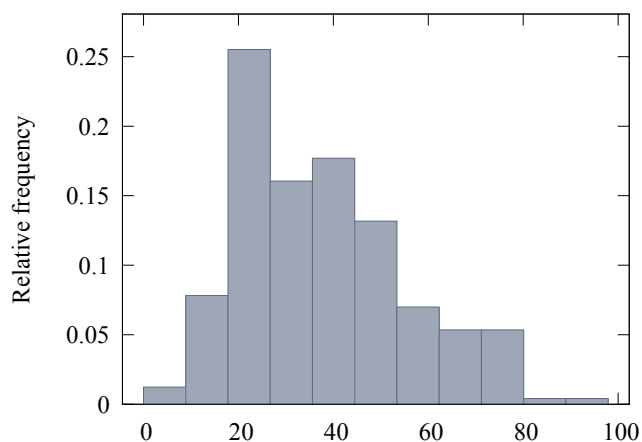


Source: Unknown – I have asked this question for some years, and its genesis is long forgotten.^f

Discussion: In this question (241 students responded), students were asked about their view of one type of government intervention in markets. The median student believes that the government sets or controls 40% of prices, and the upper quartile of students think that the government sets 63% or more. It is possible that students confused price regulation with other types of regulation.

Implications: Of course, considerable time in a micro principles course is spent discussing how prices are formed. Students who feel that the government sets or controls many prices are likely to be confused by this emphasis. Further, these students are likely to under-appreciate the role of prices in allocating resources.

About what percent of workers earn the minimum wage?



^eAs above, 87% of this class had previously taken micro, so these questions also investigate misconceptions that were retained after a course.

^fSometimes, the source of these questions is unfortunately poorly documented as I had been using them in the classroom years before this paper was considered. Commonly, the ideas came from media stories that caught my attention as an economist in which part of the story seemed amiss.

Source: Media reports on changes in the minimum wage occasionally portray increases in it as having a major impact on consumer prices, apparently due to cost-push inflation. This would seemingly imply that a considerable number of workers earn this wage. Also, students have sometimes asked about the inflationary impact of changes in the minimum wage.

Discussion: The median student (243 responded) believes that 35% of workers earn the minimum wage. According to the [Bureau of Labor Statistics](#), in 2008, 1.7% of all workers earned the federal minimum or less, and about 11% of teens earned the federal minimum or less. Of course, many states, including New York, have higher minimums, but it seems doubtful that this accounts for the difference. While some of it might be due to students using their own experience in the labor market, even then the median estimate appears far too high. This would seem to be an example of both Caplan's pessimistic bias (students see more workers than there actually are at the bottom end of the wage distribution) and anti-market bias (without government intervention in this market, wages would be even lower).

Implications: Similar to the previous question, a substantial number of students feel that a price is set by the government. They may well be puzzled that the only time that this may be discussed in class is with employment effects of the minimum wage.

Each year the U.S. government makes substantial payments to many farmers. Why? (free response)

- A. to keep farmers farming / incentive to farm / similar responses: 43%
- B. other: 46%
- C. no response: 10%

Source: [Caplan \(2007b\)](#) argues that many see price supports for agricultural products as necessary to keep food prices low; this is part of his "anti-market."

Discussion: Marking this question was fairly subjective. The goal was to identify responses where the student felt that without government support for farmers, insufficient food would be produced, and thus lead to higher prices.

Implications: These responses suggest that a fair number of students conformed to Caplan's anti-market bias.

Rewording: To more closely mirror Caplan's argument, it would be desirable to reword this question to more accurately inquire about food pricing.

As you likely know, gas prices rose after Hurricane Katrina struck in 2005. Why was this? (free response)

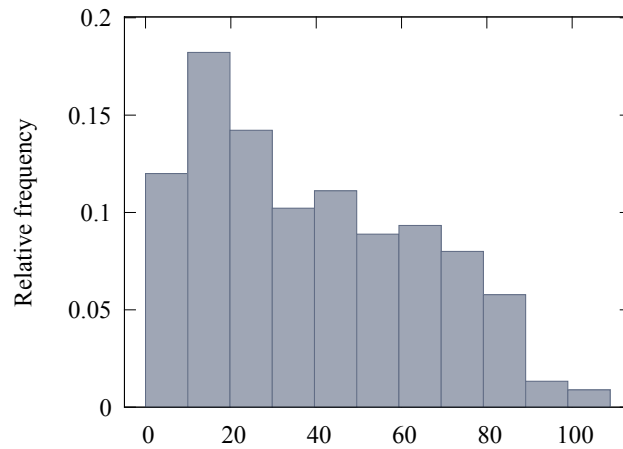
- A. gouging / greed / similar responses: 3%
- B. other: 86%
- C. no response: 11%

Source: When gasoline prices rose after Hurricane Katrina, there were many complaints in the media about price gouging. [Madariaga](#) lists the idea that oil companies gouge consumers as a common fallacy. [SAEE](#) asked about "the recent [1996] increase in gasoline prices," and 73% of that sample felt that corporate profits and not "the normal law of supply and demand" was driving prices up. It seemed sensible to ask about this concept with a recent event.

Discussion: It is surprising that so few students mentioned price gouging or greed as a reason for this event given the [SAEE](#) results. As the majority of the class had taken microeconomics, perhaps that class had an impact. However, such impact is not seen in other responses. As many of these students had micro, perhaps they understood this concept while they did not understand more technical concepts. The same phenomena occurred in [Walstad and Allgood \(1999\)](#). After taking a course, students had difficulty with technical questions, but they generally favored flexible prices. Also, while not coded, some students responded that the price rose to fund the hurricane cleanup, which is truly puzzling.

Implications: Using the response in the gasoline market to Hurricane Katrina might not be an effective teaching strategy as many already seem to have some economic understanding of the event (phrases such as "supply fell" were common).

For the average U.S. corporation, about how much are their profits as a percent of their sales? (free response; the chart below shows the distribution of student responses; four values greater than 100 were truncated)



Source: On occasion, there is talk in the media about corporate profits; examples include oil company profits during the rise in gasoline prices until the Summer of 2008 and the debate over health insurance company profits in 2009. [SAEE](#) asked “...what percentage of profit do you think major American corporations make?”

Discussion: 227 students responded to this question, and the median student felt that profits were 30%, and the upper quartile of students felt that they were greater than 60%. One dataset on corporate sales and profits is the Internal Revenue Services “SOI Tax Stats - Integrated Business Data” ([IRS](#)). The most recent available year is 2003, and it reports that total corporate receipts were \$20.7 trillion with a net income of \$.82 trillion, for a 4% net profit rate. While net income for tax purposes can be substantially different than accounting or economic profits, this does suggest that in this sample, many students over-estimate corporate profits. In [SAEE](#), the mean response of the public was 47%.

Implication: It would appear that a fair number of students feel that entry into most markets is difficult or do not understand this concept. This finding is consistent with Caplan’s anti-market bias.

Rewording: “For U.S. corporations, what percentage of their profits stem solely from sales?” is much more direct.

As you likely know, the price of oil rise [sic] a lot in the last few years until last summer. What happened to efforts to search for oil during this time of rising oil prices? (responses offered)

- A. it fall [sic]: 14%
- B. it stayed about the same: 25%
- C. it rose: 59%
- D. no response: 2%

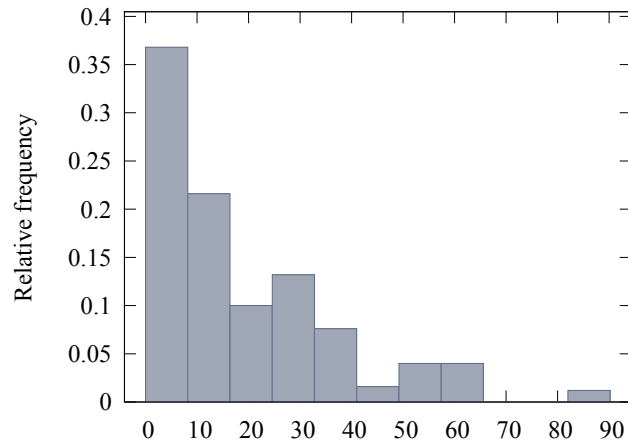
Source: When gasoline prices rose until the Summer of 2008, there was often talk in the media of market manipulation by oil companies. One type of manipulation would be supply reductions.

Discussion: While a majority of students believed that the oil supply curve is upward sloping, a substantial minority felt otherwise. However, at least in the author’s experience, students seem to have an easier time understanding the slope of the demand curve than the slope of the supply curve; perhaps this is due to the majority of their market transactions being on the demand side. It is unclear if this response stems from views of oil market manipulation or confusion over supply itself.

Rewording: Perhaps a question on a less controversial market could be substituted for this one as it queries two concepts.

2.2 Macro

Of those in the U.S. who are willing and able to work, about what percent are not working? (This is the “unemployment rate.”) (free response)

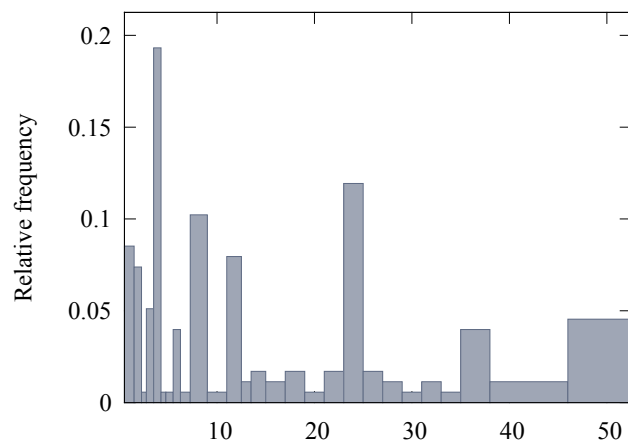


Source: The unemployment rate is a standard topic in macro principles. It is also in [SAEE](#).

Discussion: The median response of the 250 who answered here was 12%, and the upper quartile of students thought that the unemployment rate was 30% or greater. When the survey was given in January of 2009, the most recently reported U.S. unemployment rate was 7.2%.

Implications: It would appear that this sample of students overestimates the unemployment rate. The same occurred in [SAEE](#), where the mean estimate was 20.6%. These results are consistent with Caplan’s pessimistic bias.

If the typical unemployed worker started looking for a job today, about how long would it take him or her to find a one? (4 values of more than 52 weeks were dropped)



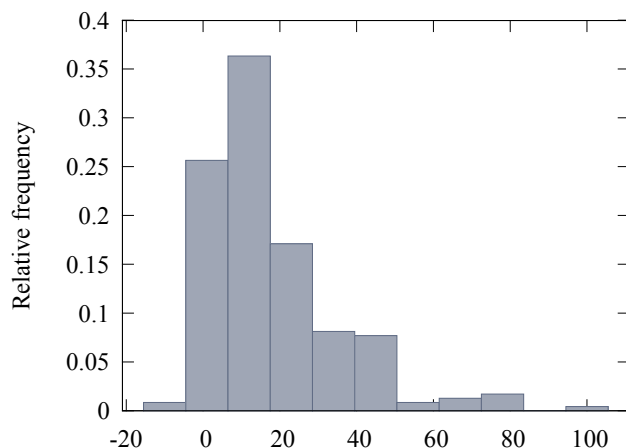
Source: Besides asking about the unemployment rate, it seemed sensible to ask about another measure of the health of the labor market.

Discussion: Only 180 students gave useful answers (many could not be translated into weeks, the units used here). The median student felt that this came to 8 weeks, while the BLS reports that for January of 2009, the median duration of unemployment was 19.8 weeks ([Bureau of Labor Statistics](#)). Also, student estimates were quite varied.

Implication: Perhaps students underestimated this value based on their experience with low-skill jobs, which might have a shorter time for matching employers and employees.

Rewording: It might be sensible to drop this question in future surveys given its secondary nature.

Over the last 12 months, by about what percent have consumer prices risen? (free response)



Source: Like the unemployment rate, the inflation rate is a staple of macro principles. [SAEE](#) queries for its value as well, but it directly asks for an estimate of the rate of inflation rather than defining inflation.

Discussion: The median student (234 responded) estimated that inflation was 11% over the previous year, and the upper quartile felt that that inflation was 25% or greater. Data from the BLS reports ([Bureau of Labor Statistics](#)) that from December 2007 to December 2008 the CPI rose by .09%. This response is puzzling given the most widely viewed price, gasoline, fell over the year prior to January 2009, and at an apparently casual level, prices barely budged. In [SAEE](#), the mean value was 13.5%, which like the unemployment rate, is an overestimate.

Implication: As with other key macro data that students might have heard of, it would appear that this sample of students has views that diverge fairly far from actuality. This suggests that some discussion of basic data is in order in this class. Also, this is consistent with Caplan's pessimistic bias.

There has been some talk about the U.S. economy in recent months. Can you please provide any details? (free response)

- A. a recession (or words to that effect, such as rising unemployment): 70%
- B. a financial crisis (or words to that effect, such as bank problems or falling stock prices): 10%
- C. other: 7%
- D. no response: 13%

Source: This survey was given on January 22, 2009, and I was curious how much they followed news of the economy.

Discussion: This question may well demonstrate the desirability of the free-response format. While many students do not follow the news, it seems somewhat startling that one-fifth either offered no response or an incorrect one to this question.

Implications: It would appear that some students have at best, only a vague sense of macroeconomic events. Thus, many of the events used to illustrate concepts may fail as the students are unfamiliar with the events.

This also implies that a typical macro course might well need to devote more time to basic macro data and events.

In 2001 the U.S. economy experienced a recession. What was the cause? (free response)

- A. 9/11 terror attacks: 40%
- B. other: 47%
- C. no response: 13%

Source: News reports sometimes describe how the 9/11 attacks harmed the economy, but the recession began in March and ended in November ([National Bureau of Economic Research](#)).

Discussion: Besides incorrect news reports, for this generation of students, 9/11 is a fairly distant event. One might wonder if they see mention of this year and make an incorrect inference.

Implication: While the 2001 recession has faded in importances given the 2007-09 recession, it maybe be sensible when discussing this recession to mention that it was not caused by the 9/11 attacks.

Consider the following countries: the U.S., Canada, Germany, Japan, France, China, and Great Britain. Which are the largest four and please place them in order from the largest exporter on down. (free response)

- A. the U.S. ranks first: 5%
- B. the U.S. ranks second: 22%
- C. the U.S. ranks third: 36%
- D. the U.S. ranks fourth: 17%
- E. the U.S. ranks fifth: 17%
- F. no response: 2%

Source: Media reports sometimes state that the U.S. is losing its international position.

Discussion: Very few students know that the U.S. is the largest exporter in the world ([World Trade Organization](#)). Perhaps their view is partly due to imports of consumer goods that students readily see coupled with stories in the media about the U.S. trade deficit.

Implication: Certainly comparative advantage is a more important concept, but it is useful for students to know that exports play an important role in the U.S. economy.

Rewording: Instead of “Which are the largest four and please place them in order from the largest exporter on down.” it should instead read “Which are the largest four exporters and please place them in order from the largest exporter on down.”

At the federal level in Washington, how are the nation’s spending and taxes decided upon? (free response)

- A. the President and Congress decide: 15%
- B. Congress (includes answers with just one house): 28%
- C. the President decides: 2%
- D. the Fed decides: 2%
- E. the state of the economy / misinterpreted (i.e. with answers such as “voting”): 36%
- F. don’t know: 2%
- G. no response: 15%

Source: When a new citizenship test was recently introduced, there were news reports that many existing citizens had difficulty with it. One of the challenging questions asked people to name the three branches of government, and I was curious how this might apply to students’ views of fiscal policymakers.

Discussion: While the wording of this question should be dramatically improved, even if one combines the correct answer with the plausible alternative where students directly answer “how,” barely half of students knew the answer.

Implication: Clearly, it is sensible for students to know the identity of fiscal policy makers. Yet, it appears that many do not.

Rewording: A better wording would be “At the federal level in Washington, who decides upon the nation’s spending and taxes?”

About how much influence does the President have over the economy? (responses offered)

- A. a lot: 30%
- B. some: 48%
- C. a little: 20%
- D. none: 2%
- E. no response: 0%

Source: Presidential campaigns are of course run on the premise that the President has considerable influence on the economy. Yet, power is of course divided in the U.S. Also, [SAEE](#) asked “Do you think improving the economy is something an effective president can do a lot about, do a little about, or is that mostly beyond any president’s control?” Finally, [Madariaga \(2005\)](#) lists the idea that the President should get credit or take blame for the economy as a common fallacy.

Discussion: It is puzzling why more than three-quarters of students think that the President has at least some power when in the previous question they rarely mentioned the office. In [SAEE](#), 31% of respondents felt that the President had “a lot.”

Implication: As with the previous question, it seems sensible to describe to students the roles and powers of fiscal policy makers. Given the results of the previous question, perhaps a follow-up question could ask why the President has considerable power to influence the economy.

Consider the following parts of federal spending: welfare, Social Security, defense, Medicare (health care for the retired), the space program, and foreign aid. What are the three largest? Please put these three in order from largest to smallest. (free response)

- A. none of welfare, the space program, or foreign aid was in the top three: 26%
- B. welfare is one of the top three: 43%
- C. foreign aid is one of the top three: 11%
- D. some combination of welfare, the space program, and foreign aid is one of the top three: 21%
- E. no response: 2%

Source: A news show I heard described a program that paired typical citizens with various experts. One citizen reported being surprised at the size of different components of the federal budget. In [KFF \(1995\)](#), respondents were asked to pick the largest two of these types of federal spending: foreign aid, welfare, interest on the federal debt, defense, Social Security, and health.

Discussion: It would appear that many students begin a macro principles course with a poor knowledge of the components of the federal budget.

Implication: It might be advisable to describe basic U.S. budget facts as part of a macro principles course.

On average, do those earning incomes higher than the middle class, pay a larger or smaller share of their income in federal taxes than the middle class? (responses offered)

- A. the wealthy pay a larger share: 46%
- B. the wealthy pay about the same share: 23%
- C. the wealthy pay a smaller share: 27%
- D. no response: 2%

Source: In a large national survey of college freshman ([Hoover \(2009\)](#)), some 60% favor raising taxes on the wealthy. However, this begs the question of how knowledgeable they are about taxes in general. Also, [Slemrod \(2006\)](#) found that significant support for a flat income tax stems from the misconception that the income tax system is not progressive. In his data, “... 51 percent of all respondents think that middle-income families currently pay a higher percentage of income in taxes than high-income families...”

Discussion: This sample of students were less incorrect than Slemrod’s sample. While not a direct part of macro, it may well be useful to know that the income tax system is progressive. Also, they may not be that clear on the difference between payroll and income taxes.

Rewording: Rather than saying “wealthy” it would be more accurate to use the term “high income.”

Can a country be in debt forever without it becoming a significant problem? (responses offered)

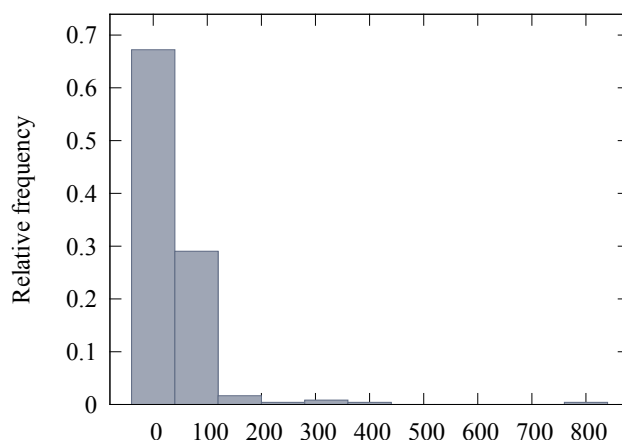
- A. yes: 26%
- B. no: 47%
- C. you can't say on [sic] way or another for sure: 25%
- D. no response: 1%

Source: In class, my students are often puzzled by the U.S. continuously being in debt.

Discussion: Given low levels of financial literacy, it might be the case that students feel unless debt is repaid it will balloon out of control.

Implication: A discussion of how governments manages their debt might be a useful addition to a macro principles course.

Since 1950, after adjusting for inflation, income per person in the U.S. has changed by about what percent? (free response)

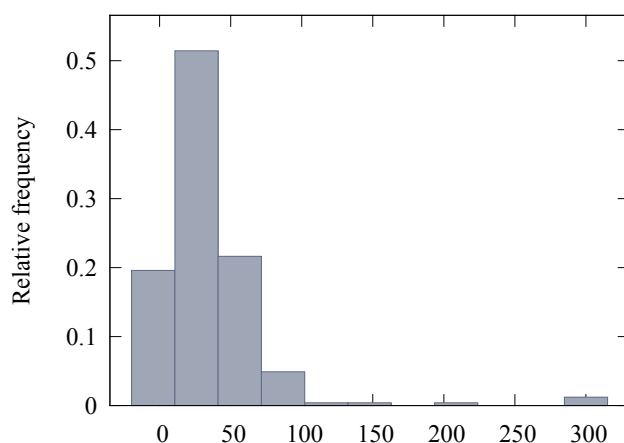


Source: Years ago, a *Wall Street Journal* article described a cocktail party conversation between an economist and a non-economist. The non-economist was convinced that on average people lead a better material life in the 1950s. The economist was truly puzzled. [SAEE](#) has several questions about growth over the last 20 years, but here I wanted to look at a longer span to more closely correspond to long-run growth.

Discussion: The median student (241 responded) believes that this measure has increased by 25%. Data from [Measuring Worth](#) shows that real per capita GDP rose by 231%, while a somewhat closer to the question variable, paid compensation of employees (BEA) deflated by the personal consumption expenditures index (BEA) and adjusted by population ([Measuring Worth](#)), rose by 248%.

Implication: Students dramatically underestimated economic growth. It is likely that they would be puzzled by the emphasis put on long-run growth of many of today's macro courses. These results are consistent with [Christandl \(2008\)](#), which finds that many do not understand exponential growth.

Since 1950, in the U.S., the number of people working has changed by about what percent? (free response)

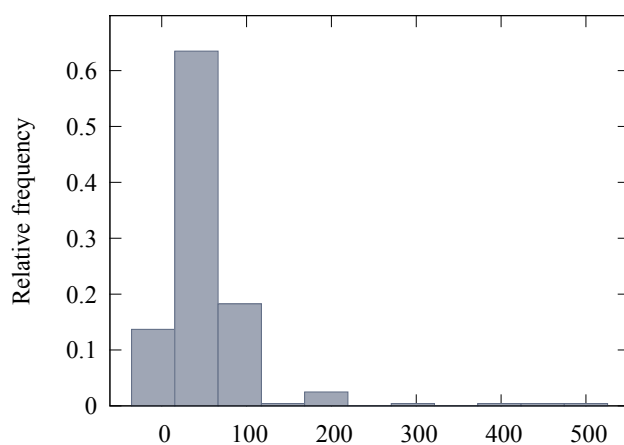


Source: Besides asking about changes in income over the last half-century, it seemed sensible to ask about changes in employment. This question might also bring out the lump of labor fallacy.

Discussion: The median student (245 responded) in this sample believes that employment rose by 30%, while the actual change in nonfarm payrolls over this period is 197%.⁸ It might be the case that part of this result is due to the survey being given in a slow-growth area: Upstate New York.

Implication: As with changes in income, this set of students appears to come to class with little knowledge of long-run growth.

Since 1950 or so, in the U.S. wealth (the value of what we own, such as houses, cars, stocks, bank accounts and so on) has changed by about what percentage? (free response)



Source: This is a another question that asks about economic growth.

Discussion: [Board of Governors of the Federal Reserve System](#) contains net financial assets, and by deflating them by the PCE ([BEA](#)), one finds an increase of 462%. The median student feels that the broader measure

⁸Specifically, "Total Nonfarm Payrolls: All Employees" was taken from the FRED data base at the Federal Reserve Bank of St. Louis. The median value in 1950 was compared to the January, 2009 value.

rose by 35%.

Implication: Again, this sample of students appears to underestimate growth.

Rewording: Drop “or so” to be consistent with the other growth questions. Also, it seems difficult to find data on real assets, so perhaps the question could be restricted to financial assets.

Why is the currency we carry in our wallets and purses valuable? (free response)

- A. money is backed by gold / backed by silver: 14%
- B. other: 87%
- C. no response: 13%

Source: In class, I am occasionally asked about what backs U.S. currency while [Madariaga \(2005\)](#), the idea that the U.S. dollar is backed by gold as a common fallacy.

Implication: It might be sensible to briefly mention that U.S. currency is not backed. The discussion might then lead to the desirability of low inflation policies by central banks and how a slowly advancing price level is an anchor for prices and wages.^h

Overall, does trade with foreign countries aid or harm the U.S.? (responses offered)

- A. mostly aid: 29%
- B. both aid and harm: 63%
- C. mostly harm: 2%
- D. not sure: 4%
- E. no response: 2%

Source: Given the importance of foreign trade and the coverage devoted to it in principles, it seemed sensible to ask a question along these lines. [SAEE](#) asks similar questions, but with substantially different wording.

Discussion: It would appear that many students have considerable qualms concerning international trade. This is consistent with Caplan’s anti-foreign bias.

Implication: Besides covering comparative advantage, it might be desirable to cover other arguments that economists use to describe trade’s benefits.

Rewording: Given the most common response, it might be desirable to develop other questions that investigate the reason for this response, such as job losses or environmental issues.

2.3 Perceptions

This section investigates student perceptions, rather than the above factual questions.

For the generation now in their 20s, their standard of living will likely be ___ their parents when they reach their parent’s age. (responses offered)

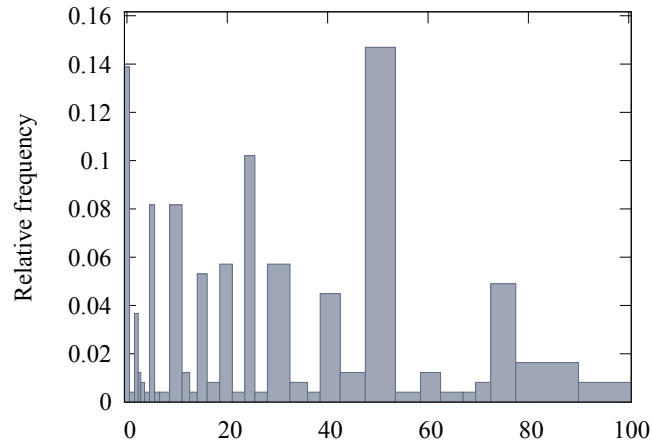
- A. higher than: 72%
- B. similar to: 11%
- C. lower than: 16%
- C. no response: 0%

Source: This question was designed to further investigate their views on economic growth. [SAEE](#) asks “Do you expect your children’s generation to enjoy a higher or lower standard of living than your generation, or do you think it will be about the same?”

Discussion: Given that many students feel that growth has been modest in the past, this result appears a bit inconsistent. It is also inconsistent with [SAEE](#) respondents, where 38% felt that the next generation would have a higher standard of living. One explanation is that in [SAEE](#) the question concerned the respondents’ children, while here the question is directly posed to the people in question.

^hTo address concerns about inflation under different monetary regimes, one might show long-term inflation data; it has been particularly stable since the early 1980s and was dramatically unstable under the gold standard.

If you're under the age of 25, what is the chance of getting, say, more than 50% of the Social Security you've been promised? Please put this in percentage terms (0% would be no chance and 100% would be that you certainly would). (free response)



Source: There seems to be common perception that Social Security is “going broke.”

Discussion: The median student (245 responded) reported a 20% chance. However, [Trustees of the Social Security and Medicare Trust Funds \(2009\)](#) estimate that after 2037, when the trust fund zeros out, current taxes will support Social Security benefits at about three-quarters of their current level.

Implication: It might be wise to describe the workings of this system.

What is the impact of immigrants on people working in the U.S.? (responses offered)

- A. mostly benefit: 11%
- B. neither benefit nor harm: 8%
- C. mostly harm: 64%
- D. not sure: 13%
- E. no response: 4%

Source: This topic has been an issue in the political realm in recent years. It is also mentioned in various ways in [SAEE](#) but with very different wordings.

Discussion: It would appear that students' views mirror the views of the public. It is also consistent with Caplan's anti-foreign bias.

Implication: While immigration is not often covered in principles, it might need to be addressed. Above, many students felt that employment gains had been very small for many years, so perhaps students came to class with something like the lump of labor fallacy.

2.4 Non-Economic Questions

These variables may influence classroom performance; some are rarely measured. It was not part of the above project, but some may find the results interesting and perhaps useful.

Which most accurately describes your study environment most of the time: (responses offered)

- A. a computer is on and you're multitasking (say using IM or visiting web sites): 20%
- B. music is playing in the background or on headphones: 24%
- C. a TV is on the background: 9%
- D. a TV or music is on and you're multitasking on a computer: 16%
- E. it is pretty quiet: 29%
- F. no response: 29%

Source: There is considerable discussion today of multitasking, and I was curious about the study environment of my students.

Discussion: While studies of multitasking are still in their infancy, some reports suggest that it is not beneficial to learning (Ophir et al. (2009)), and that even background music hinders cognition (Ransdell and Gilroy (2001) and Beaman (2005)).

Implication: While doubtless it is near impossible to change this student behavior, perhaps this research could be mentioned if study skills are discussed.

Rewording: It should include texting and phone use.

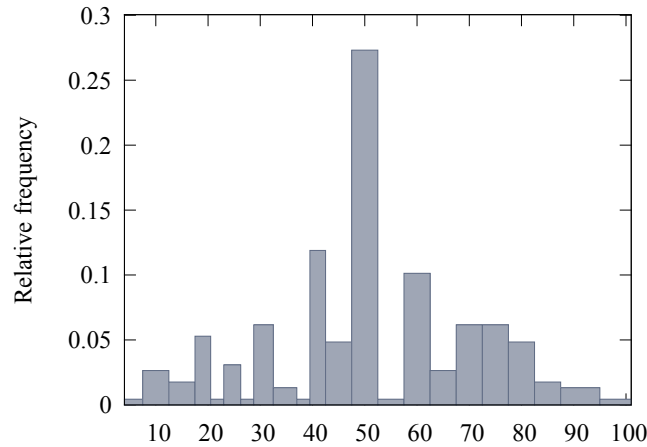
There are basically two views of intelligence. One view is called fixed mindset which says that throughout life you pretty much have the intelligence you were born with. The other view is called "flexible mindset" and it says that you can add to your intelligence as you learn. Which best describes your views? (responses offered)

- A. fixed mindset: 2%
- B. more fixed then flexible mindset: 16%
- C. more flexible than fixed mindset: 58%
- D. flexible mindset: 22%
- E. no response: 2%

Source: Blackwell et al. (2007) describes how different mindsets influence school achievement and how an intervention that changed mindsets to flexible improved classroom performance.

Rewording: Rather than asking students about their views, it might be better to use an assessment used in this literature that indirectly probes for views on this issue. Also, commas are needed after both occurrences of "mindset."

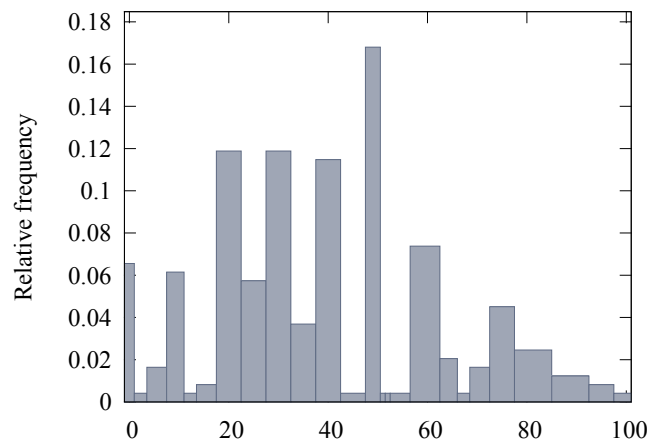
College itself and the college experience in general benefit graduates in many ways. About what percent of those benefits come from what happens in classes that you take (as opposed to other experiences, like extra-circular [sic] activities, what you do with friends, and jobs you might have while in college)? (free response)



Source: Nathan (2006), in which a field anthropologist studies students at her own university, describes how some students view classes as the “cost” of obtaining the real benefits of going to college, such as friendships and other activities. I have been puzzled by the low value of self-reported study hours by college students; in a large national survey of college students, NSSE (2009), they self-report an approximate median of 13 hours of weekly homework.

Discussion: The median student (227 replied) reported 50%, which suggests a partial explanation of seemingly low study hours.

Many students are in college today work to help pay for college. Consider both college classes and your work experience while in college to their benefit to your future work life. If you had 100 points to apportion between them to describe these benefits, how many points would work get? ___How many points would college classes get? ___ (free response)



Source: This question is partly designed to ferret out anticipated findings from the previous question and to help

explain a spirited class discussion. In class, I asked “What would be the opportunity cost of a college student working more and studying less?” I expected the answer “less income in the future due to lower human capital.” Instead, many students felt that they needed experience in the workplace, and that there would be no cost or a benefit to working more. Here, I wanted to quantify that idea.

Discussion: The median student (244 replied) reported 40% on the work scale (the college scale was a check), which again suggests a partial explanation of seemingly low study hours. It would appear that economists’ concept of acquiring human capital while in college would be met with some resistance by this sample of students. Of course, the type of work significantly matters, but if their work experience mirrors high-school only graduates, who have significantly lower lifetime earnings, this finding seems to be puzzling.

Rewording: The question should be reworked to make it clear that “work” does not include internships or co-ops. Also, “are” should be dropped.

Did you watch or listen to at least part of the Inauguration on Tuesday? (free response)

A. yes: 81%

B. no: 15%

C. no response: 2%

Source: I intended to use this as a marker of interest in the news, but in retrospect it likely also picked up political leanings.

3 Discussion and Conclusion

When questions similar to those in [SAEE \(1996\)](#) were posed to this sample of students, they responded much like the general public did in that survey (and quite unlike professional economists). As [Caplan \(2007b\)](#) would put it, these students often exhibited a bias against markets: the median student thought that the government controlled far more prices than it actually does (a question not in [SAEE](#)), that many workers earn the minimum wage (also not in [SAEE](#)), and that corporate profits are much higher than they actually are. Further, it appears that a substantial minority of students appeared to think that the government keeps farmers in business to make sure that food is available (also not in [SAEE](#), but suggested by [Caplan](#)). In addition, these students exhibited Caplan’s anti-foreign bias as they were equivocal on foreign trade and felt that immigrants mostly harmed native workers. When asked backward-looking questions about long-run growth that were similar to ones in [SAEE](#), these students too were unduly pessimistic.

Unlike public respondents in [SAEE](#), they were more optimistic regarding their generation’s economic future and more accepting of the market mechanism as an explanation for the rise in gasoline prices after Hurricane Katrina. Aside from these two exceptions, this sample of students generally conformed to the public’s views in [SAEE](#).

This overall consistency is interesting given that the survey introduced here was generally free-response, the audience was much younger, and that more than a decade had passed. This similarity raises the question of where and how these views are formed; it would appear that the points in [Rubin](#) are worth further investigation.

When asked questions on basic macro facts like inflation, the unemployment rate, and long-run growth, this sample of students were again too pessimistic. As in [Christandl \(2008\)](#), it appears that many do not understand the magnitude of long-run growth; put another way, they dramatically underestimated exponential growth.

On a very basic factual question such as how the Federal budget is determined, many if not most students were ignorant, yet many felt that the President has substantial influence over the economy. Even more did not know some basics about the components of the federal budget, how Social Security worked, or that the federal income tax is progressive. A surprising 20% did not describe the U.S. economy as being in a recession or financial difficulty in January 2009, during the depths of the worst recession since the 1930s. Thankfully, fewer than this felt that U.S. currency was backed by gold.

Many of the questions were derived from [SAEE](#), but some new ones were introduced, such as the ones on the percent of workers paid the minimum wage and the percent of prices controlled by the government. Doubtless other instructors have similar insights that only need to be tested against a body of students. By their nature, an insight or two like this does not merit a paper. Thus, it might be appropriate for a web site to be developed where instructors could share their survey questions, others could comment on and refine them, and yet others could report results when

answered by students. Thus, the Internet would mediate a different type of scholarly discourse.ⁱ If and when a core set of misconceptions is identified through this process, a more refined survey could be developed and given at many institutions to thoroughly investigate student misconceptions at the start of principles classes.

ⁱOne interesting example of how the Internet can be used for quick scholarly collaboration is described by [Gowers and Nielsen \(2009\)](#). A group of mathematicians used a blog and wikis to solve a difficult math problem.

References

- BEA, Bureau of Economic Analysis**, “National Income and Product Accounts Tables 1.10,” 2009. <<http://www.bea.gov/National/nipaweb/SelectTable.asp>>. 10
- , “National Income and Product Accounts Tables 1.1.4,” 2009. <<http://www.bea.gov/National/nipaweb/SelectTable.asp>>. 10, 11
- Beaman, C. Philip**, “Auditory Distraction from Low-Intensity Noise: a Review of the Consequences for Learning and Workplace Environments,” *Applied Cognitive Psychology*, 2005, pp. 1041–1064. <<http://dx.doi.org/10.1002/acp.1134>>. 14
- Blackwell, Lisa S., Kali H. Trzesniewski, and Carol Sorich Dweck**, “Implicit Theories of Intelligence Predict Achievement Across an Adolescent Transition: A Longitudinal Study and an Intervention,” *Child Development*, 2007, pp. 246–263. <<http://dx.doi.org/10.1111/j.1467-8624.2007.00995.x>>. 14
- Blendon, Robert J., John M. Benson, Mollyann Brodie, Richard Morin, Drew E. Altman, Daniel Gitterman, Mario Brossard, and Matt James**, “Bridging the Gap Between the Public’s and Economists’ Views of the Economy,” *The Journal of Economic Perspectives*, Summer 1997, 11 (3), 105–118. <<http://links.jstor.org/sici?sici=0895-3309%28199722%2911%3A3%3C105%3ABTGBTP%3E2.0.CO%3B2-0>>. 2
- Board of Governors of the Federal Reserve System**, “Flow of Funds, Table L.100.” <<http://www.federalreserve.gov/releases/z1/Current/data.htm>>. 11
- Bureau of Labor Statistics**, “Characteristics of Minimum Wage Workers: 2008.” <<http://www.bls.gov/cps/minwage2008.htm>>. 4
- , “Consumer Price Index.” <<ftp://ftp.bls.gov/pub/special.requests/cpi/cpi.ai.txt>>. 7
- , “Labor Force Statistics from the Current Population Survey, Series Id: LNS13008275.” <http://data.bls.gov/PDQ/servlet/SurveyOutputServlet?series_id=LNS13008275>. 7
- Caplan, Bryan**, *The Myth of the Rational Voter: Why Democracies Choose Bad Policies*, Princeton University Press, 2007. 2
- , “The Myth of the Rational Voter: Why Democracies Choose Bad Policies,” Cato Institute, Policy Analysis no. 594, May 29, 2007. <http://www.cato.org/pub_display.php?pub_id=8262>. 2, 4, 16
- Christandl, Kaufmann Fabian**, “How Economic Laypeople Perceive Economic Growth and Inflation,” 2008. <http://deposit.ddb.de/cgi-bin/dokserv?idn=990042847&dok_var=d1&dok_ext=pdf&filename=990042847.pdf>. 2, 10, 16
- Clement, John**, “Students’ Preconceptions in Introductory Mechanics,” *American Journal of Physics*, 1982, 50 (1), 66–71. <<http://link.aip.org/link/?AJP/50/66/1>>. 1
- Gowers, Timothy and Michael Nielsen**, “Massively Collaborative Mathematics,” *Nature*, October 15 2009, 461 (7266), 879–881. <<http://dx.doi.org/10.1038/461879a>>. 17
- Hoover, Eric**, “Freshmen’s Views: Politics, Admissions, and Marijuana,” *The Chronicle of Higher Education*, January 22, 2009. <<http://projects.ict.usc.edu/itw/gel/EricssonDeliberatePracticePR93.pdf>>. 9
- IRS, Internal Revenue Service SOI Tax Stats - Integrated Business Data**, “Table 3,” 2009. <<http://www.irs.gov/taxstats/bustaxstats/article/0,,id=152029,00.html>>. 5
- KFF, Kaiser Family Foundation**, Table 16: Americans’ Views of The Two Largest Areas of Federal Government Spending January 1995. 9
- Madariaga, Bruce**, *Economics For Life: 101 Lessons You Can Use Every Day!*, Houghton Mifflin, 2005. 2, 4, 9, 12

- Mazur, Eric**, “Education: Farewell, Lecture?,” *Science*, 2009, 323 (5910), 50–51. <<http://www.sciencemag.org/cgi/reprint/323/5910/50.pdf>>. 1
- Measuring Worth**. <<http://www.measuringworth.com/index.html>>. 10
- Nathan, Rebekah**, *My Freshman Year: What a Professor Learned by Becoming a Student*, Penguin, 2006. 15
- National Bureau of Economic Research**, “Business Cycle Expansions and Contractions.” <<http://www.nber.org/cycles/cyclesmain.html>>. 8
- NSSE, National Study of Student Engagement**, 2009. <http://nsse.iub.edu/NSSE_2009_Results/pdf/NSSE_AR_2009.pdf>. 15
- Nyhan, Brendan**, “When Corrections Fail: The Persistence of Political Misperceptions,” April 2009. <<http://www-personal.umich.edu/~bnyhan/nyhan-reifler.pdf>>. 2
- Ophir, Eyal, Clifford Nass, and Anthony D. Wagner**, “Cognitive Control in Media Multitaskers,” *Proceedings of the National Academy of Sciences*, 2009, 106 (37), 15583–15587. <<http://www.pnas.org/content/106/37/15583.abstract>>. 14
- Ransdell, S. E. and L. Gilroy**, “The Effects of Background Music on Word Processed Writing,” *Computers in Human Behavior*, March 2001, pp. 141–148. <[http://dx.doi.org/10.1016/S0747-5632\(00\)00043-1](http://dx.doi.org/10.1016/S0747-5632(00)00043-1)>. 14
- Rubin, Paul H.**, “Folk Economics,” *Southern Economic Journal*, July 2003, 70 (1), 157–171. 2, 16
- SAEE, The Washington Post/Harvard University/Kaiser Foundation**, “Survey of Americans and Economists on the Economy,” October 1996. <<http://www.kff.org/kaiserpolls/1199-econgen.cfm>>. 2, 4, 5, 6, 7, 9, 10, 12, 13, 16
- Slemrod, Joel**, “The Role of Misconceptions in Support for Regressive Tax Reform,” *National Tax Journal*, March 2006. <http://www.brookings.edu/comm/events/20031216_Slemrod.pdf>. 9
- STCSE, Students’ and Teachers’ Conceptions and Science Education**, March 2009. <<http://www-personal.umich.edu/~bnyhan/nyhan-reifler.pdf>>. 1
- Trustees of the Social Security and Medicare Trust Funds**, “Status of the Social Security and Medicare Programs,” 2009. <<http://www.ssa.gov/OACT/TRSUM/index.html>>. 13
- Viennot, Laurence**, “Analysing students Reasoning in Science: A Pragmatic View of Theoretical Problems,” *International Journal of Science Education*, 1985, pp. 151–162. <<http://www.informaworld.com/10.1080/0140528850070206>>. 1
- Walstad, William B. and Sam Allgood**, “What Do College Seniors Know about Economics?,” *The American Economic Review*, May 1999, 89 (2), 350–354. <<http://links.jstor.org/sici?sici=0002-8282%28199905%2989%3A2%3C350%3AWDCSKA%3E2.0.CO%3B2-T>>. 2, 4
- Williamson, Maureen R. and Alexander J. Wearing**, “Lay People’s Cognitive Models of the Economy,” *Journal of Economic Psychology*, 1996, pp. 3–38. <[http://dx.doi.org/10.1016/0167-4870\(95\)00033-X](http://dx.doi.org/10.1016/0167-4870(95)00033-X)>. 2
- Wood, Geoffrey E.**, “Fifty Economic Fallacies Exposed,” *SSRN eLibrary*, 2006. <<http://ssrn.com/paper=676634>>. 2
- World Trade Organization**, “World trade developments in 2008.” <http://www.wto.int/english/res_e/statis_e/its2009_e/its09_world_trade_dev_e.htm>. 8