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2-2018

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Student Preconceptions and Reality: A Survey Exercise to Teach Wealth Inequality

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Abstract:

This paper presents a way to enhance student interest and learning when teaching economic inequality. The approach draws on a well-known survey conducted by Norton and Ariely (2011). It involves surveying students, asking them to estimate the current level of wealth inequality in the US, and asking them to state their ideal level of wealth inequality. As in Norton and Ariely's survey of a representative sample of Americans, our students underestimated actual wealth inequality and preferred a distribution of wealth for the US that was more equal than any country's distribution. We suggest ways the student survey results can be presented and discussed. We also provide Stata code and an Excel workbook to ease effective classroom presentation of the survey results. This approach to beginning the study of inequality piqued our students' interest and helped them understand how inequality is measured.

JEL Classification: A22, D31

Keywords: Economic education, Pedagogy, Wealth distribution, Inequality

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1. Introduction

Public interest in income and wealth inequality has skyrocketed in recent years. In the past decade, Google Trends shows that "income inequality" and "wealth inequality" searches have roughly doubled, particularly in the US, the UK, and Canada.[b] In 2014, Thomas Piketty's treatise on wealth inequality, *Capital in the Twenty-First Century,* was an international bestseller (Yang 2014; Moore 2014). In 2015, Pope Francis published a popular encyclical highlighting the importance of rising economic inequality and its links to environmental degradation (Francis 2015). Recently, Bernie Sanders made increasing income and wealth inequality in the US a central theme of his 2016 presidential primate campaign (Bernie 2016; Stuart 2016).

This rising interest follows on a four-decade rise in income and wealth inequality in the US and Europe. In a recent overview, Piketty and Saez show that US and European income and wealth inequality both fell dramatically in mid-century, but then reversed and begin a steady rise by the 1970s (2014). For example, they show that between 1970 and 2010 the US income share going to the top decile rose from 34% to 48%, and the wealth share rose from 65% to 72%. In the case of Europe, the top decile share rose from 30% to 35% and the wealth share rose from 60% to 62%.

This inequality rise particularly affects young people. A recent Guardian article relying on data from the Luxembourg Income Study showed that growth in income for the millennial generation dramatically lags the growth in the national average in seven of the world's major industrialized countries, including the US, Britain, and Germany (Barr and Malik 2016). In the US, a ballooning of student loan debt has made matters worse, reducing young adults' ability to save and build wealth (Austin 2013).

Despite this dramatic backdrop, inequality facts can still be dry and confusing. As economics teachers, we wanted to try new ways to motivate student engagement and learning. The present article presents an active learning approach to beginning the study of economic inequality in economics classes. The centerpiece of this approach is an abbreviated version of a survey developed by Norton and Ariely (2011). We used this survey in our principles classes, which include a high proportion of non-majors taking the course to fulfill core curriculum requirements. The survey catches students' attention, engages them in active learning, and gets them thinking about quintiles and how to interpret them. Coupled with the rest of our exercise, including discussion questions, it has proven to be a thought provoking way to begin the study of inequality.

In the sections below, we first describe the survey and then discuss how it might promote learning. Next, we explain how we administered the survey in our (relatively small) classes and how our approach could be modified for large classes. We then discuss ways to present survey results and ideas about how to discuss them, first in principles classes and then in more advanced

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[b] These data resulted from comparing "wealth inequality" and "income inequality" in Google Trends on June 1, 2016. Replicate this search by visiting:
https://www.google.com/trends/explore#q=wealth%20inequality%2C%20income%20inequality&geo=US&cmpt=q&tz=Etc%2FGMT%2B7.

ones. We include, in this discussion, notes on our experiences presenting and discussing the results in our classes. We conclude by briefly evaluating the effectiveness of the exercise using informal indicators, including test results and student comments.

2. Norton and Ariely's survey

Norton and Ariely surveyed a representative sample of 5,522 American adults, asking questions about wealth inequality (2011). Their findings were provocative and their study has been cited over 500 times. Their study also led to a viral YouTube video, "Wealth Inequality in America," which has had over 20 million views (Luhby 2013; Klein 2013). Briefly, Norton and Ariely found two things. First, Americans believe there is much less wealth inequality than actually exists in the US. Second, Americans prefer far less wealth inequality than the US actually has; in fact, their ideal level of inequality is probably more equal than any country on earth. These results largely hold across political identities, income, and gender (Norton and Ariely 2011).

Our abbreviated version of Norton and Ariely's survey includes four questions. The first asks students to use a quintile framework to guess the actual US distribution of wealth. The second asks students to describe their ideal distribution, using that same framework. The final two questions ask students for their gender and political affiliation. The final questions allow discussion of differences and similarities in survey responses by gender and politics.

Our survey is included in the supplementary materials.[c] Supplementary materials also include Stata code, Excel spreadsheets to process raw survey data and create summary graphs, and a template for instructors wanting to administer the survey online.

3. Active learning enhances engagement and performance

Prior to using the survey, we began the study of inequality in our classes by lecturing on the crucial points made in our text. That meant presenting dry quintile tables describing the US income and wealth distributions and talking about how those distributions have changed over time. Although this material interested *us*, many students were not as enthusiastic and struggled with how quintile tables are constructed and interpreted. We wanted an effective way to grab first-year students' attention and increase their learning as we introduced and explored inequality in our classes.

We think our new approach improves on the old one, for six reasons.

First, active learning can increase student performance. In a well cited recent meta-analysis of 225 active learning vs. passive learning studies, Freeman et al. find that active learning increases academic performance in STEM disciplines and dramatically reduces failure rates (2014). In our exercise, students fill out a survey and are later led through a series of questions that draw from this direct student input. Rather than beginning by having students passively listen to a

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[c] The link (to http://tinyurl.com/WealthExerciseMaterials) leads to a public Google Doc. This document includes: a) a link to a .zip file containing the supplementary materials and b) a list of the Word, Excel, Stata, and Qualtrics files in the .zip archive. To download the archive, click on the link and then, once a new window opens, click on the download icon in the upper-right corner of the screen.

discussion of US data, we begin by having them create and interpret their own wealth distributions.

Second, our survey pretest exercise may increase learning because it gives students practice generating their own valid quintile shares, so they understand quintiles better. Valid quintile shares have two properties: each share exceeds the preceding one and all shares sum to 100%.

Third, our exercise can help students learn by getting them to reflect on what they already know as they think about the extent of wealth inequality. That reflection makes it more likely they will connect new learning with their prior knowledge, with some help from the instructor.

Fourth, students learn better if the instructor knows what they don't know (Simkins and Maier 2009). Having the results of the survey allows an instructor to consider student knowledge and plan teaching to address misconceptions early.

Fifth, asking students to guess the extent of inequality may increase their interest in its true level. In class, some students exhibit strong interest in how their guess compares to their classmates' guesses and in how their guess compares to the true extent of inequality. Little and Bjork found that taking a multiple-choice pretest increased what students learned from subsequent reading (2012). They compared the performance of the pretest-taking students to that of students who had additional time to read and to students who studied, but did not answer, the pretest questions. They speculated that answering questions increases learning because it gets students to engage material more deeply.

Finally, asking students about their ideal level of inequality after asking them to guess its extent may help them notice that inequality is of policy relevance. Asking students about their ideal level gives an instructor an effective place to begin a discussion of policy regarding wealth inequality. For example, he/she might ask what policies could move the actual wealth distribution towards the students' ideal distribution.

4. Administering the survey

We conducted this survey in three principles of economics classes in the Spring Semester of 2016 at the University of Portland, a moderately selective private university. A different instructor administered the survey in each of the three classes, yielding a total sample of 85 students (39 men and 46 women). Most of the students in these classes were taking principles to fulfill a core requirement for a degree in business and a large portion of them were in their first year of university study. Table 1 provides more details. While this is the only semester we used the survey with Internal Review Board approval, we used earlier versions instructionally in two prior semesters.

Table 1. Class data

Class	Enrolled	Percent first-year	Completed survey
A	29	69%	28
B	26	12%	16
C	44	50%	41
Total	99	45%	85

Though the survey instrument explains quintiles and quintile shares, we began the segment on inequality by introducing those concepts briefly in class. Each instructor used a different approach. One approach included examples of possible quintile distributions, while the other two were more hypothetical.[d] A large proportion of students understood the mechanics of quintiles after the "examples approach," which involved a two-step process. First, the instructor explained quintile boundaries and quintile shares. Second, he asked students to perform the following think-pair-share exercise (Cooper and Robinson 2000).

Figure 1. Think-Pair-Share Exercise

The three sets of quintile shares below [Row a), Row b), and Row c)] describe imaginary countries. Given the way quintiles are constructed and the logic of quintile shares, only one is a possible correct description.

1) Which one is possibly correct? [a), b), or c)]
2) How did you figure out the answer to 1)?

	1st Quintile	2nd Quintile	3rd Quintile	4th Quintile	5th Quintile
a)	5%	15%	25%	35%	60%
b)	30%	10%	15%	5%	40%
c)	5%	10%	15%	30%	40%

We found it ideal to begin the segment on inequality late in a class period. The instructor can administer the survey, pique student interest, and have the results ready to present at the beginning of the next class. Before distributing the survey, we emphasize that students should not provide their name. After students complete the survey, we collect it in a way that preserves anonymity. In a class of 40, this takes about 10 minutes.

For large classes, an instructor could introduce the study of inequality in one class period and ask students to complete an online version of the survey, rather than administering the survey in class. After the online survey closes, he/she could process the student data and prepare it for presentation. SurveyMonkey and Qualtrics are two good platforms for online surveys. The

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[d] We were cognizant that the "examples approach" might lead students to anchor on an example distribution. However, the survey results provided no evidence of this; results among the three classes were quite similar.

supplementary materials include a Qualtrics-format file containing the survey; they also include data processing aids.[e]

Table 2 illustrates one way to present them; we also present a graphical option in Section 5 below. The Table 2 presentation combines actual wealth shares with estimated shares and ideal shares from student surveys.[f] We calculated actual wealth shares using the Census Bureau's estimates of household net worth. [g] Their definition of wealth includes most assets and liabilities of households, but excludes pension and Social Security wealth. Including those forms of wealth would lead to a more equal wealth distribution.

Table 2. Student Survey Responses

	1st Quintile	2nd Quintile	3rd Quintile	4th Quintile	5th Quintile
Actual	-1.9%	0.6%	4.2%	12.7%	84.4%
Estimate	2.8%	5.1%	9.5%	16.8%	65.8%
Ideal	9.5%	12.9%	17.7%	23.9%	36.3%

The survey results can be presented at the beginning of the next class, as a prelude to discussing inequality facts and policies to respond to inequality. The next section provides some ideas for that presentation and discussion.

5. Presenting survey results

We discuss our students' responses in order of the four questions in the survey instrument: the responses to the actual wealth distribution question, the responses to the ideal distribution question, and then the answers for the ideal distribution broken out by gender and political affiliation. Throughout this discussion, we include observations on how one might use survey results in principles classes and possible discussion questions. We conclude the section with a list of more challenging questions, more suitable for upper-division classes.

5.1 Class estimate vs actual share of wealth

Comparing students' average estimates of quintile wealth shares with actual wealth shares is an effective way to begin the next class. After filling out the survey, students wonder about the true

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[e] The aids are Stata code to calculate average quintile shares and an Excel spreadsheet to generate the statistics and figures included in the article's text. An instructor enters his/her class's data in a spreadsheet, runs the Stata code, and pastes a single row of data into the spreadsheet. The spreadsheet automatically generates statistics and graphs for class use. Once the data are entered, the process takes five minutes.

[f] We calculated students' estimated wealth shares by averaging their estimates for each quintile, but we dropped 12 students' estimates (of 85). Ten were dropped because at least one quintile share was smaller than a previous quintile's share. Two were dropped because the sum of quintile shares differed substantially (by more than five percentage points) from 100%.

[g] The data are from the 2011 Survey of Income and Program Participation (SIPP), the most recent quintile-level US wealth data available when we conducted our survey. To calculate the shares in Figure 2, we used mean wealth for each quintile from the first row of Table 1. The 2011 summary tables, along with more recent SIPP tables, can be downloaded in Excel workbooks on this page: https://www.census.gov/topics/income-poverty/wealth.html

values. In addition, students' estimated shares are likely to be quite far from actual shares, which creates drama.

Figure 2 below shows our estimated quintile wealth shares, averaged across the students surveyed in our three sections, along with the actual quintile shares. The Excel spreadsheet in the supplementary materials contains tools to produce this graph, along with the other three figures presented later. We suggest an instructor present a similar graph for discussion, using their students' data.

Figure 2
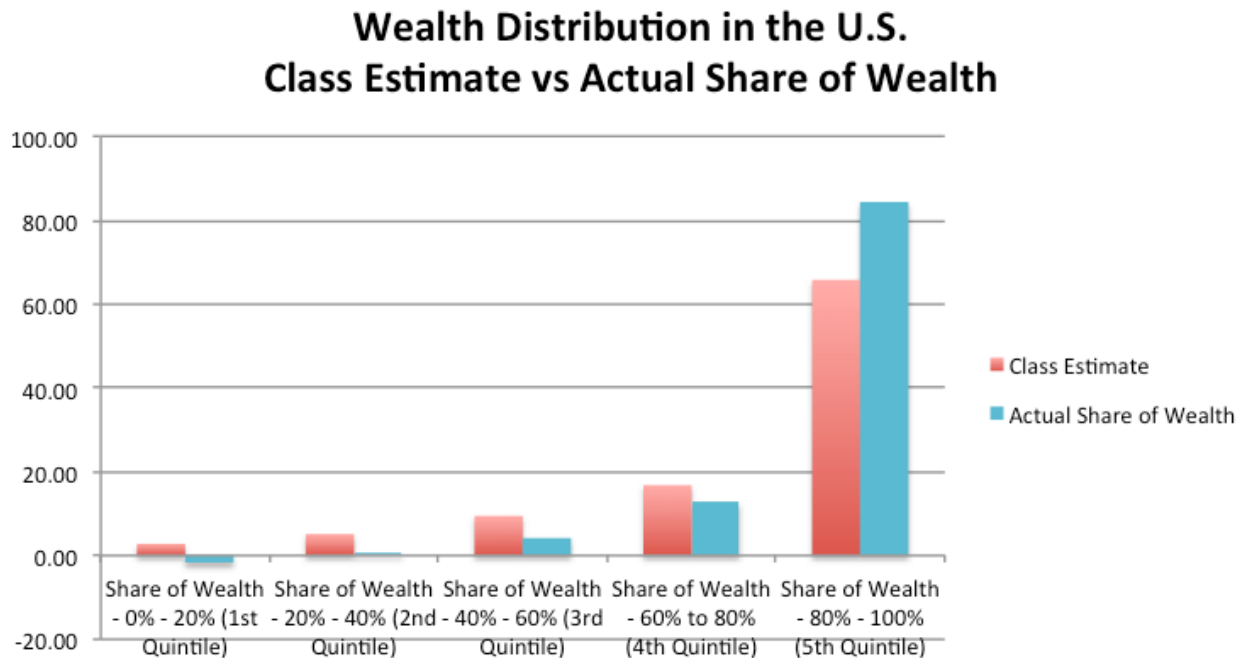
Students on average estimated that the bottom quintile of households had 2.8% of the wealth in the US, compared to the -1.9% it actually had. The students similarly overestimated the wealth shares of the next three quintiles (5.1% vs. 0.6% for the second, 9.5% vs. 4.2% for the third, and 16.8% vs. 12.7% for the fourth). On the other hand, they underestimated the wealth share of the fifth quintile, estimating 65.8%, when the actual share was 84.4%.

The distinctions illustrated by the graph are dramatic to a trained eye, but students may need some help interpreting them. As a result, it is useful to check if they can read the graph by asking a specific question, something along the lines of, "What is the actual share of wealth for the fifth quintile?"

Depending on time and context, instructors can pose a variety of questions based on these results. Initial questions might seek to improve students' understanding of actual wealth inequality:

- The actual average wealth share in the first quintile is -1.9%. That share is negative because average wealth in that quintile is (approximately) negative $30,000. Explain the meaning of that dollar amount.
- The blue bars in Figure 2 represent the actual distribution of wealth in the US. Think about the three possible changes below. Say which blue bars would get taller and which would get shorter in response to each change. In each case, also explain **how** the change would cause the heights to grow or shrink.
  1) Suppose incomes rise substantially for the top 1% of households.
  2) Suppose divorce rates for households in the first quintile rise.
  3) The US charges an inheritance tax to the very largest estates. For example, in 2011, estates paid tax on amounts over $5 million. Suppose the federal government eliminates this inheritance tax.

Additional questions might get at other issues. For example, if his/her class's estimates are similar to ours, the instructor can ask:

- Why do you think the class as a whole greatly underestimated the actual level of wealth inequality?

To get students thinking about public policy, he/she might ask:

- Should government seek to reduce wealth inequality? Why or why not?

**5.2 Overall class ideal vs actual share of wealth**

As Figure 3 shows, students said they wanted far more equality in the distribution of wealth than actually exists. For example, students on average stated that they wanted the bottom quintile of the population to have 9.5% of the wealth and the next quintile to have 12.9%. In actuality, those groups have -1.9% and 0.6% of the wealth, respectively.

To reinforce the point that this is an interesting result, we calculated a Gini coefficient for this ideal wealth distribution and compared it to Gini coefficients calculated for actual wealth distributions for 25 countries (from Davies et al. 2011). The highest Gini among the 25 countries was .801 (for the US); the lowest Gini was .547 (for Japan); the Gini for our students' ideal distribution was .256.[h]

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[h] See the Excel workbook for Gini figures and statistics in the supplementary materials. The first spreadsheet may be useful for instructors teaching the Gini Coefficient in upper-level classes.

Figure 3

Wealth Distribution in the U.S.
Class Ideal vs Actual Share of Wealth
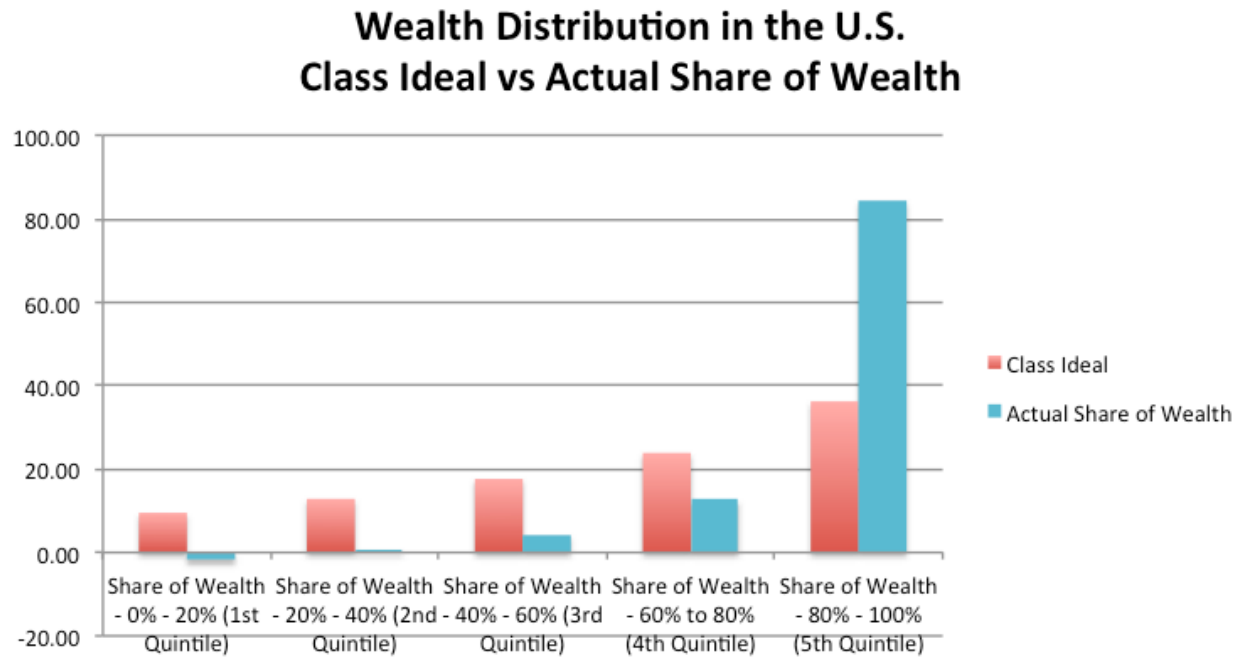
To promote discussion of Figure 3, an instructor might ask questions like the following:

- How did your ideal distribution compare to the class-average ideal distribution?
- No country on earth has a wealth distribution as even as the class-average ideal. Why might that be? [This question assumes the instructor's survey results are similar to ours.]

5.3 Ideal distribution by gender and political ideology

When we analyzed the ideal distribution by gender and political ideology, we obtained results that paralleled Norton and Ariely.

Women wanted a more equal distribution of wealth than men did (see Figure 4), though the divergence was not large. The average absolute difference between the women's ideal share for a quintile and the men's ideal was 3.4 percentage points. The largest difference was for the top quintile: women wanted the top quintile to have 32.9% of the wealth, while men wanted it to have 39.6%.
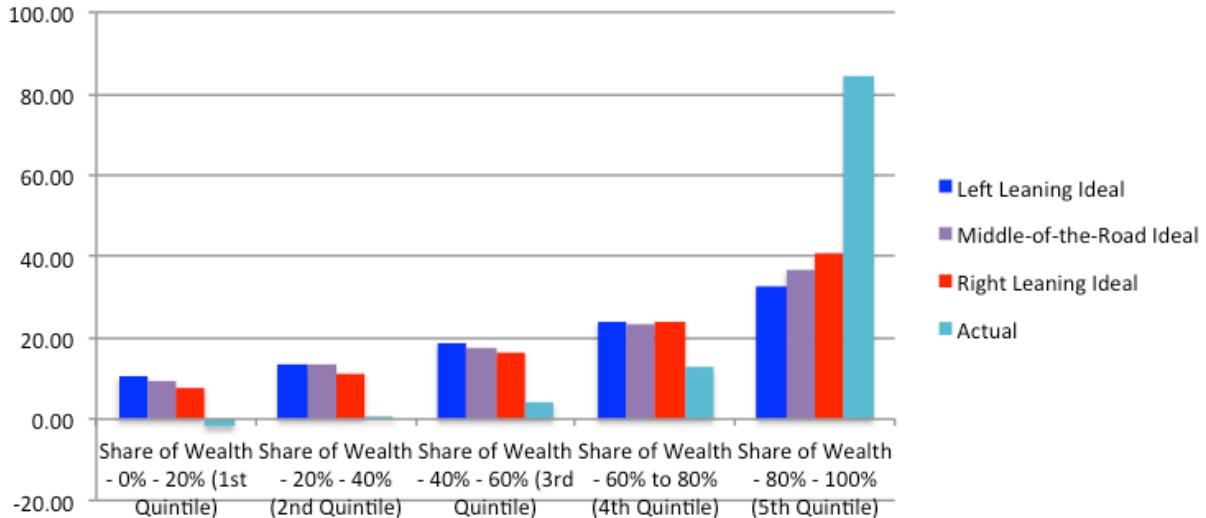
Figure 4

Wealth Distribution in the U.S.
Female Ideal vs Male Ideal
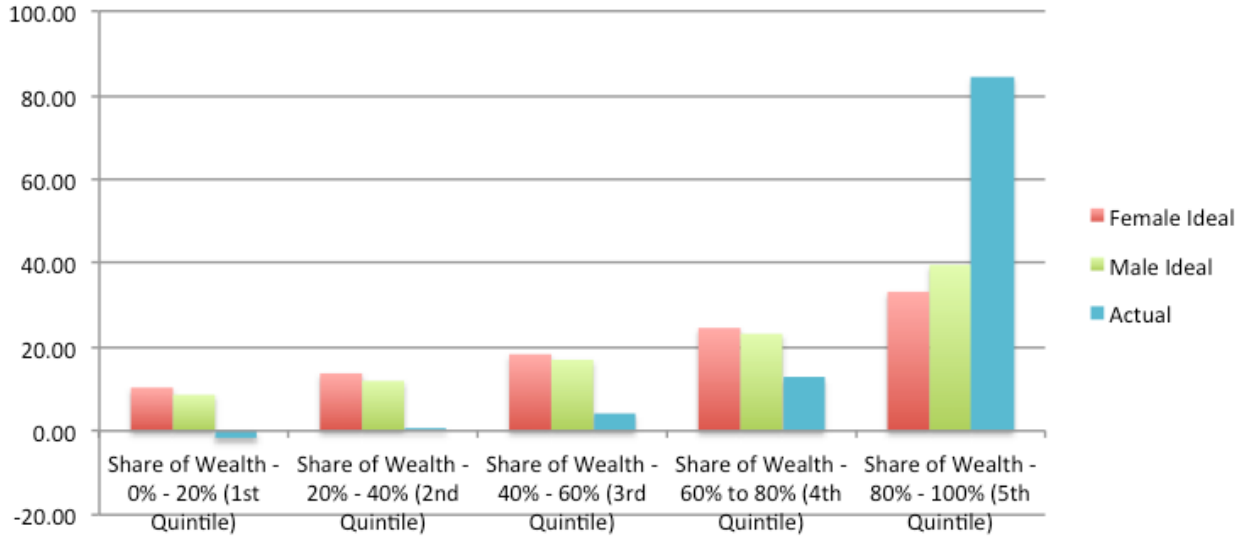
When we classified ideal wealth shares by political affiliation, the left-leaning students (those who categorized themselves as moderately to very liberal) said they wanted a more equal distribution of wealth than the right-leaning students (those who categorized themselves as moderately to very conservative). However, as for the gender differences, the political discrepancy was small. The average absolute difference in ideal shares between the left-leaning and right-leaning students was 3.1 percentage points.

Figure 5

Wealth Distribution in the U.S.
Ideal by Political Ideology

Taken together, Figure 3, Figure 4, and Figure 5 suggest that, regardless of gender or political affiliation, our students have very egalitarian preferences about the wealth distribution. Based on their survey, Norton and Ariely reach similar conclusions about Americans; they conclude that that their average ideal wealth distribution is much more equal than the actual US wealth distribution and that differences in preferences about the wealth distribution based on gender or political ideology are small (2011).

However, we urge caution in discussing these preferences and their implications. First, despite survey instructions explaining the distinction, respondents may not understand the difference between income and wealth; they may have answered how they want income—not wealth—distributed. Many students need time and practice to understand the difference. Second, the survey asks about preferences, without directing attention to the policies that could bring the actual wealth distribution closer to their ideal. As a result, it would be wrong to assume, for example, that the average respondent would favor a policy to reduce wealth inequality. A rational citizen would weigh the benefits of such a policy against the costs.

To promote discussion of Figure 4 and 5, an instructor might ask questions like the following:

- Were the results by gender and political affiliation similar, or were there important differences?
- What do you think the reasons were for these similarities or differences?

5.4 Further discussion options

The above sections include discussion questions for instructors teaching principles classes. They mainly ask about issues directly linked to the survey. The questions below are more suited to upper-division classes or to principles classes that include an extended treatment of inequality. They assume more background in the inequality literature and more understanding of the mechanisms generating wealth inequality.

- An unequal wealth distribution in a society adds to the inequality of the income distribution. Explain why.
- An unequal income distribution in a society may add to the inequality of the wealth distribution. Explain how that could happen.
- The distribution of wealth is more unequal than the distribution of income. Why might that be?
- Which should be a greater concern in the long run for a society, income inequality or wealth inequality? Why?
- Name two policy changes that would move us towards a more equal wealth distribution. Which of the two do you think would be better? Explain your answer.
- When a country adopts a policy, it should consider the costs as well as the benefits. What are the costs of your preferred policy?
- Wealth inequality in the US has mostly risen since 1978. What are possible root causes of that rise?
- Wealth inequality is higher in the US than in other rich countries. What might that be?

6. Assessment and conclusion

We have begun the process of evaluating this exercise formally and informally. Our initial results are encouraging, though none of them allow us to compare students exposed to the survey approach with students who were only lectured to. For example, we assessed how well students learned the basics of quintile analysis. We did that by counting how many students responded to the first two survey questions with valid distributions (their estimated actual wealth distribution and their ideal wealth distribution). The active learning "Think-Pair-Share" exercise described in Section 4 appears to have been effective at helping students do this. In that class, only 3 students out of 28 wrote down an invalid distribution.

We also designed two multiple-choice questions to test students' understanding of quintile analysis and knowledge of the actual US wealth distribution; they are in the supplementary materials. We included the questions in final exams. In Class B, 84% of students taking the final exam answered the empirical knowledge question correctly. In Class C, 86% answered the empirical knowledge question correctly and 77% answered the quintile analysis question correctly.

In addition, many students have responded positively to the survey and subsequent discussion, mentioning them in class, on course evaluations, and on a bonus, "what will you remember from this course" question on a final exam. Students were surprised at the degree of wealth inequality that exists in the US, and commented on how the survey helped them better understand inequality. Many found it interesting that the "ideal" wealth distribution that the class picked was so compressed relative to the distribution of any actual country, and that it was largely independent of gender and political differences. Students also seemed more interested, once we began using this approach, in how policy changes might affect inequality and social welfare.

Given our positive experiences, initial evidence of learning benefits, and the relatively small amount of time required, we encourage other educators to use this exercise in their classes.

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