

Anchoring: Introducing a Behavioral Economic Topic in Principles of Economics Courses

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***Abstract:** This case is a teaching application for economics principles courses that can be used to introduce modern economic advances and global issues.*

INTRODUCTION

Inquiry within the discipline of economics has undergone a renaissance over the past few years. Areas such as nonlinear dynamical (chaotic) systems and behavioral/experimental economics have offered many advances in economic theory and application (e.g., Ariely 2008, Kagel and Roth 1995, Ormerod 1997 and 2005, and Skyttner 2008). Much new research has shown that traditional theory is often inadequate for analyzing economic data (e.g., Ormerod 1997 and 2005). With the exception of public choice economics, most new topics have been largely ignored in economics principles textbooks.

A topic that is covered in most principles texts is global economic issues (e.g., Mankiw 2007, Krugman and Wells 2006, or McConnell, Brue, and Flynn 2008). The general subject of global issues is of increasing interest on many university campuses. Students are often inundated with measures of national economic “success” such as gross domestic product (GDP) and the Gini coefficient without reference to the corresponding values for different countries. Exchange rates between the US dollar and other currencies often suffer a similar fate.

A third area in which opportunities for improvement exist with respect to principles of economics courses (and business curricula in general) is the integration of macroeconomic and microeconomic concepts. While the corpuses of the two areas are hardly independent, students frequently observe limited overlap in the presentation of the material. Having multiple exposures to certain concepts is essential for the development of a deeper foundational understanding of economics.

The purpose of the current piece is to simultaneously address the three crucial needs delineated above. The exercise discussed herein offers an opportunity to address these issues in principles of economics courses. This may be used in undergraduate principles of macroeconomics (where the given exercise was originally employed), principles of microeconomics, or in a single principles of economics course (if applicable).

BACKGROUND

Anchoring is a psychological phenomenon in which a cognitive bias is exhibited in decision-making. Specifically, it is a tendency to rely too heavily, or "anchor," on one piece of information (e.g., Tversky and Kahneman 1974). Such cognitive biases figure prominently in the area of behavioral (experimental) economics.

In economics, anchoring is obviously manifested in pricing decisions. Since people have a tendency not to quickly adjust to certain price expectations for specific products or services, traditional/classical treatment of price theory may be inadequate to predict consumer and producer behavior (e.g., Ariely 2008). Current examples of potential anchoring include the prices of gasoline and medical care.

Business and economics students are generally unaware of such biases due to a lack of coursework in psychology and the absence of coverage in undergraduate economics principles texts. Ormerod (1997) asserts that these biases (coupled with the behavior of nonlinear dynamic systems) can have drastic effects on the standard assumptions of equilibrium illustrated in economics textbooks. Nonlinear dynamic (chaotic) systems are clearly beyond the scope of an undergraduate principles course. Anchoring may be demonstrated and grasped much more easily with a simple exercise.

ANCHORING EXERCISE

To illustrate anchoring, a base value must be established. For example, if you believe (for whatever reason) that \$2.75/gallon is a "reasonable" price for gasoline, you are "anchored" to this price. Subsequent declines in the price of oil will not remove the anchor. A similar phenomenon was observed for the price of black pearls (Ariely 2008).

Establishing the base for some unknown value is accomplished using "suggestive" questions/statements. The statements used in the exercises (given in Appendix I and Appendix II) addressed the population of Vietnam and the exchange rate of the Icelandic krona (krona per dollar). Unbeknownst to the students, the true values (on April 13, 2008) were 83.5 million and 58.2 for the Vietnam population and the krona exchange rate, respectively. (Any students from Vietnam or Iceland were asked not to participate).

Fifty-eight students in two undergraduate macroeconomics classes completed a short set of four statements. Twenty-nine received the first set of items, which are shown in Appendix I. The other twenty-nine students received the second set of items, which are presented in Appendix II. The two sets were alternated within the class rows. If the first student completed the first set, the next student completed the second, the third student completed the first, etc.

In Appendix I, the "suggested" population of Vietnam was 100 million. This was accomplished by asking the student to guess whether the Vietnam population was higher or lower than 100 million. The student was then asked to estimate the population. Next, the student was asked to

guess whether the krona exchange rate was more than or less than twenty. Finally, he or she estimated the exchange rate.

In Appendix II, the same four statements were made, except for the changes in the suggested values. For this set, the suggested population was 10 million, while the suggested exchange rate was 200. Note that this suggested population is lower than the 100 in the first set, while the suggested exchange rate is higher. These values were selected so that each set of items had a “high” and a “low” suggested value.

RESULTS

The results of the student answers are given in Table 1. Note that “Vietnam 100” and “Vietnam 10” refer to the values suggested in the handouts, as do “Krona 200” and “Krona 20.” The differences are obvious. For students who were asked if the population of Vietnam was higher or lower than 100 million, the mean and median estimated population were 81.928 million and 65 million, respectively.

Table 1

	Vietnam 100	Vietnam 10	Krona 200	Krona 20
Mean	81.928	20.628	242.209	33.892
Median	65	12	125	26
Standard Deviation	74.913	25.123	397.558	40.847
Count	29	29	29	29

For the group asked if the population of Vietnam was higher or lower than 10 million, the mean and median estimated population were 20.628 million and 12 million, respectively. Not unexpectedly, the standard deviation was also much higher (74.913 million vs. 25.123 million) for the group with the suggested population of 100 million. The difference in means (using a 2-sample t-test with unequal variances) is statistically significant at the 0.01 level.

Similar results were obtained for the exchange rates. For students who indexed to 200, the mean and median were 242.209 and 125, respectively. For the group anchored to 20, the respective mean and median were 33.892 and 26. Again, the standard deviation was much larger (397.558 vs. 40.847) for the group anchored to the higher value. The difference in means (again using a 2-sample t-test with unequal variances) is significant at the 0.01 level.

These results are indicative of the anchoring phenomenon. Students tended to offer larger estimates when anchored to the larger values. While the sample sizes here are not overly large, they are more than sufficient for two-sample t-tests. However, such tests are not necessary to illustrate the concept of anchoring to the students. Moreover, many (if not most) of the students in economics principles courses have yet to complete any statistics classes, so such data analysis would not be applicable for them.

OTHER OPTIONS

The type of exercise presented here may be altered to use other economic measurements. Exchange rate is a commonly covered topic in macroeconomics. Other possibilities include gross domestic product (GDP) and Gini-coefficients. Students often encounter these concepts, but rarely have many reference values for world economies. The most recent available GDP and Gini values are available online at several sites, including Wikipedia.

It is imperative that no students who know the values of the measures in question complete the exercises. This is most easily guaranteed by carefully selecting the countries to be used. In the example shown here, Vietnam and Iceland were two countries for which our university has a very small number of students. Only one student in the two sections was from Vietnam, and none were from Iceland. For exchange rates, the European Union, The United Kingdom, and Mexico are examples of more likely known exchange rate values. GDP and Gini values are most likely unknown even to residents of the given countries selected.

Immediately following a relatively quick discussion of the results, some discussion of the effects of anchoring on pricing is necessary. Questions such as “What would you expect to pay for a gallon of gas?,” “Would you pay two-thousand dollars for a two-carat diamond ring?,” or “Suppose the price of rubber increased by 50%, how much would you expect to pay for a set of tires?” would be useful in motivating a discussion.

The given discussion may be as detailed as desired by the faculty member. The opinion here is that it is less important to try to fully expound upon anchoring than to illustrate that most introductory discussions on pricing ignore recent research results. Using student discussion as an integral component is important, and will often yield a much deeper comprehension than simply offering a lecture.

CONCLUSIONS

In the opinion of this author, the use of some new material on field advances in introductory economics courses should be incorporated. In a perfect world, textbooks would reflect this need. In the meantime, it is up to the faculty member to cover relevant material. This is not an easy task given the time constraints associated with the plethora of topics already covered in principles courses.

The anchoring exercise is a quick and relatively simple way to offer a brief introduction to the area of behavioral/experimental economics and its effect on pricing. The obvious inertia created by the anchor will tend to resonate with students. An added bonus is the typical concomitant discussion of the measures used in the study, such as Gini or GDP values. Many students will find the true values to be completely unexpected.

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Appendix I.

Snappy Quiz for no Credit

(But hey, we still like you!)

1. The population of Vietnam is _____ than one hundred million.
 - a. higher
 - b. lower
2. Estimate the population of Vietnam. _____
3. An American dollar is currently worth _____ 20 Icelandic krona.
 - a. more than
 - b. less than
4. Estimate the current exchange rate (i.e., krona per dollar). _____

Appendix II.

Snappy Quiz for no Credit

(But hey, we still like you!)

1. The population of Vietnam is _____ than ten million.
 - a. higher
 - b. lower
2. Estimate the population of Vietnam. _____
3. An American dollar is currently worth _____ 200 Icelandic krona.
 - a. more than
 - b. less than
4. Estimate the current exchange rate (i.e., krona per dollar). _____

Teaching Note/Instructor Manual available from the Journal of Business Cases and Applications.