A Classroom Experiment on Status Goods and Consumer Choice

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ABSTRACT

This paper presents a classroom experiment that illustrates the impact of socioeconomic concerns on consumer choice and welfare. Students allocate a budget across two goods: a non-positional (consumption) good and a status good. The amount invested in the status good determines each student's relative standing in the classroom. The utility of each student depends both on relative standing and absolute consumption of the non-positional good. The theoretical setting and the experiment illustrate how an increased income may not necessarily increase utility and well-being of consumers in the presence of positional goods and "catching up with the Joneses" concerns.

Introduction

The idea that status concerns can have an impact on economic behavior has a long tradition in economics and the social sciences. The notion that relative income matters can be traced back to the works of the classical economists, yet, the theoretical foundation of the relative income hypothesis and the premise that positional considerations impact consumption and savings decisions are due to Thorsten Veblen (1899) and James S. Duesenberry (1949).

Duesenberry's relative income theory has been almost completely overshadowed since the 1950s and 1960s by Friedman's (1957) permanent income model and subsequent life-cycle models of consumption and savings despite the fact that these models are less successful in explaining existing empirical evidence. The research on relative income and conspicuous consumption has grown considerably in recent years. Currently, Duesenberry's theory is virtually absent from economics textbooks, and students' first encounter with the relative income hypothesis is mostly through journal articles.

The contemporary empirical literature which started with Easterlin (1974) generated ample evidence that people evaluate their own consumption relative to that of others.[2] Recent laboratory experiments provide further evidence of the importance of status considerations. Charness and Grosskopf (2001) explore the link between self-reported happiness and behavior in distribution experiments. They find that subjects who report lower levels of happiness are more likely to act in a way that lowers the payoffs of their counterparts below their own. Charness and Rabin (2002) observe that welfare-reducing behaviors occur more often in the direction of increasing inequality than in the direction of decreasing inequality between subjects.

The distinction between absolute and relative aspects of utility has significant implications for an array of important public policy issues ranging from government taxation and expenditure (Abel 1990; Frank 1985a; Frank 1985b, Frank 2008; Ljungqvist and Uhlig 2000), to regulation of unions and the design of retirement savings and social security programs (Frank 1985a), and also to health care reform and the possible effects of socioeconomic status on health outcomes (Goodman, Slap and Huang 2003; Gravelle and Sutton 2009).

This research puts forth the idea that status spending races create negative externalities similar to the ones created by rent-seeking behavior or by advertisement wars. While in some market settings in which

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[2] See Oswald (1997) for a survey of the earlier literature; Luttmer (2005) and Solnick and Hemenway (2005) review the more recent empirical studies.

external effects are present government regulation appears to be necessary, the extent to which the government should get involved in the economy is not that clear-cut and is front and center in public policy debates. A recent case in point is the current debate on the healthcare reform in the US. Government interventions create additional market distortions and policymakers try to weigh the corrective effects of government policies against the undesired distortions which result from these policies.

Given the theoretical and practical significance of positional concerns on consumer choice, it is important that students of economics, business, public administration, and the social sciences in general become familiar with the behavioral and welfare aspects of relative income theories. Economics textbooks, for example, rarely discuss the effects of status concerns on consumption choices and well-being, and the topic, although important, is usually ignored in principles of economics courses.

To address this gap, this paper presents a classroom experiment that introduces status considerations into the classical consumer choice problem. The experiment is easily adaptable to classroom audiences of various sizes. It takes no longer than one class session (1 hour and 15 minutes)—including discussion—and allows every student to make choices and observe the outcome of his/her choice depending on the choices of the remaining classroom participants. For instructors who cannot devote an entire class session to the topic, we suggest ways of incorporating the concept of status goods in the classroom session that introduces the concepts of utility and optimal consumer choice.

This paper introduces the distinction between positional and non-positional goods and illustrates (a) how status considerations affect consumption choices; (b) how the choices of one's peers affect one's personal well-being; (c) how, in turn, these choices impact optimal personal behavior; and (d) why an increased income might not necessarily lead to a higher consumer welfare when "keeping up with the Joneses" considerations are present.

The proposed framework is similar in spirit to the theoretical models by Frank (1985a) and Hopkins and Kornienko (2004), and is able to illustrate most of their results. The setting is simple enough to permit an analysis that does not require any knowledge of mathematics beyond multiplying and comparing numbers. The simple theoretical framework and the experiment are able to illustrate the intuition behind the main conclusions of the leading theoretical models in a straightforward manner, and the overall design of the classroom exercise is suitable for students with diverse academic backgrounds.

The need to bring research findings on the relative income hypothesis to the classroom has recently been recognized in the literature on economic education. Sanders (2010) provides an exhaustive and well-organized summary of the recent developments in this field and presents an analytical framework based on indifference curves that is ideally suitable for a classroom session. The present paper complements these efforts in two ways. First, it explicitly models the positional externality by proposing a simple yet intuitive mechanism by which each student's behavior impacts the well-being of the rest of the group. Second, it allows students to interact in an experiment. That is, students are able to experience "firsthand" how considerations of relative position affect their behavior, the behavior of others, and ultimately, the well-being of everyone.

The model

Consider an economy with two goods: a purely positional (or status) good and a purely non-positional (or consumption) good.

Positional and consumption goods

A positional good is a good that is acquired solely for demonstration purposes. Its only role is to determine the relative standing of an individual in the community, but it has no value outside the societal context. The non-positional good, in contrast, has only consumption value, and cannot be used by an individual to gain status in the society. This distinction is purely conceptual, and it is clear that in reality many goods (e.g., a house, a car, or a vacation to an exotic locale) have both positional and non-positional aspects. Although these aspects coexist for most goods, often times it is easy to rank different types of consumption goods based on their positional characteristics. Most people would probably agree that children's education is more positional than leisure, or that real estate is more positional than health insurance coverage. While a house is not likely to be overlooked by friends and neighbors, people usually

are not aware of how much others spend on health insurance coverage.[3] Similarly, a $500,000 Mercedes Benz Roadster is much more of a positional good than a heart surgery, and a Christian Audigier or Ed Hardy shirt is more positional than an economics textbook (although these goods might cost the same).

The classical consumer choice problem

As a starting point for a classroom discussion consider a classical textbook consumer choice problem. Let all consumers in the society derive utility from the consumptions of two goods, ***c*** and ***s.*** Assume that the price of each good is $1, and let consumers have a budget of $400 and a Cobb-Douglas utility function which is the product of the quantities purchased of the two goods. Standard utility maximization or an indifference curve analysis reveals that each individual should split their budget equally between the two goods spending $200 on each of the goods.

Introducing a positional good

Now, let us introduce a positional element in the model by assuming that the good ***s*** is a status good. Each individual selects how much he/she wants to invest in the status good and in the consumption good. The available alternatives are given in the table below.

Table 1 – Available choices.

Your Choice	Consumption good	Status good
	$400	$0
	$300	$100
	$200	$200
	$100	$300
	$0	$400

Depending on their investment in the status goods, students are assigned to one of four possible classes in "society". Students who made the highest investment in the status good are called "upper class" citizens. If a student invested in status more than all other students (i.e., there are no ties) this student will be an "elite" citizen. If a student invested $100 less than the maximum amount invested by another citizen, this student will belong to the "middle class". If a student invested 200 or more dollars less than the highest amount invested by another student, this student will be a "lower class" citizen.

Observe that, with this definition of classes, it is possible for a society to emerge only with upper class and middle class citizens, or with one elite citizen and a middle class. This happens when the investments in the status good of all students differ by no more than $100. That is, according to the model the stratification of the society depends on the actual choices of its members (i.e. their investments in the status good). In other words, the composition of classes is endogenous, and depends on the choices of all members of society. This stylized property of the model recognizes that in reality there can be more stratified (unequal) societies and more homogeneous (or equitable) societies. The model views this stratification as a function of the individual decisions of society's members.

The satisfaction derived from a student's consumption choice depends on the amount of money a student spent on the consumption good and the student's social rank factor. The rank factors are given in the table below.

[3] See Frank (1985a) for a discussion and Hirsch (1976: Ch. 3) for a definition of status goods.

Table 2 – Rank factors.

Rank	Factor
Elite (unique highest amount)	10
Upper class (highest amount tied with other citizens)	4
Middle class ($100 less than highest amount)	2
Lower class ($200 or $200+ less than highest amount)	½

The utility of each student is the product of the rank factor and the spending on the consumption good.

Theoretical solution

The availability of a positional good creates behavioral interdependencies across individuals that are not present in the standard utility maximization problem. The optimal choice of a citizen clearly depends on the investments of his/her fellow citizens in the positional good. The more other citizens invest in the positional good, the lower will be the status of an individual citizen and, in turn, the stronger will be his/her incentive to spend more on the status good. This increase in the spending on the status good in turn affects negatively the status of the rest of the players. We will analyze this "catching up with the Joneses" effect by considering the best responses of the players and examining the Nash equilibrium outcome of this game. For audiences without exposure to game theory there is an informal way to rationalize the equilibrium solution by discussing which choices are "not good choices" and subsequently eliminating these choices until only the equilibrium choices remain as possible "good" choices.

Let us consider what will be the best choice from the perspective of a single individual (me), given the highest amount invested by another citizen in the status good.

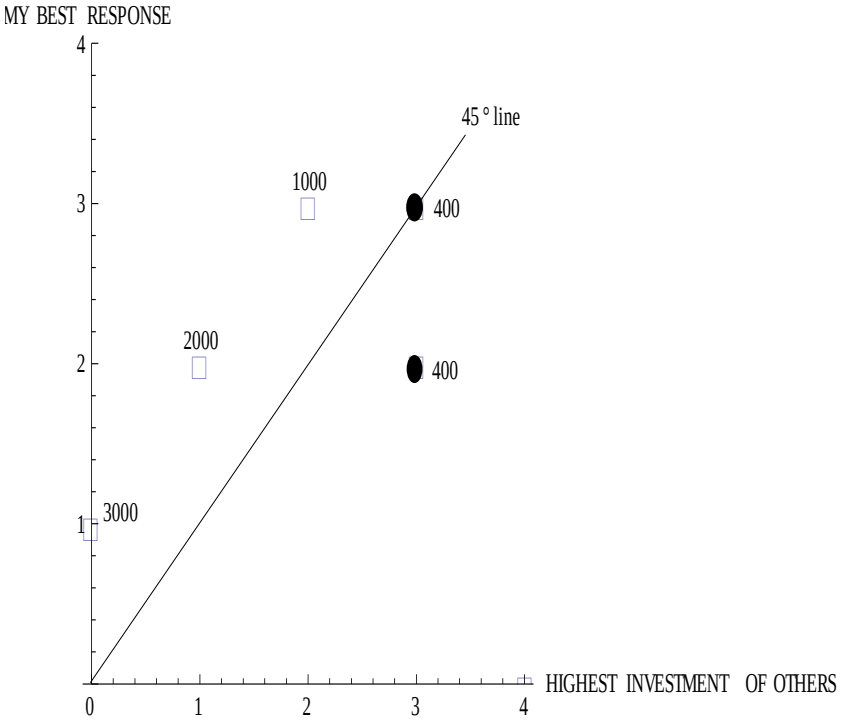
a) If all other citizens do not invest in the status good, then I will be an elite citizen by investing only $100 in this good. This is my optimal choice because I will belong to the elite and still keep as much as possible for personal consumption.
b) If the highest amount invested by my peers in the status good is $100, then I will be an elite citizen by investing $200 in the status good. This latter choice is optimal because the rank factor for elite citizens is substantially higher than the one for upper class citizens[4]
c) If the highest amount invested by my peers in the status good is $200, then I will be an elite citizen by investing $300 in the status good. Similarly to the previous case, this choice is optimal (i.e., it brings the highest utility).
d) Consider now the case in which the highest amount invested by my peers in the status good is $300. To be an elite citizen I need to invest the full amount of $400 in this same good, but then I will have no money for consumption (I will belong to the "elite" but I will have "nothing to eat"). This is clearly not optimal. If I invest $300 in status I will belong to the upper class, and my utility will be 4x100=400. Alternatively, if I invest $200 in the status good, then I will be a "middle class citizen" and my utility will be 2x200=400. In this case it is optimal to invest either $200 or $300 in the status good. Investing less is an inferior choice because the rank factor for the "lower class" is too low.
e) Let there exist a person who invested the entire budget in the status good. Such a behavior is clearly not optimal because there will be no budget left for consumption. The choice of investing $300 in the status good will put me in the "middle class" and my utility will be equal to 2x100=200. Alternatively, I can decide not to strive for status at all and consume the entire $400 monetary units. This choice generates the same utility. So, investing either $0 or $300 in the status good are my two optimal choices.

How do rational players behave in this social "quest for status" game? Clearly, investing the entire amount in the status good is not optimal because there will be no budget left for consumption. But then no one will choose to invest $0 in the status good (and be a lower class citizen) because this is optimal only if there is a person who invested $400. Investing $100 is not optimal because in these cases there will always

[4] Making this optimal choice I will push the ones who invested $100 to the "middle class" and the ones who invested $0 to the "lower class."

be someone who wishes to invest $100 more than you in order to become an elite citizen. Hence, the optimal choice for each citizen is to invest either $200 or $300. With this optimal behavior a two-class society emerges with upper class and middle class citizens, and all of them derive a utility of $400. The next figure presents the best response of an individual citizen given the highest amount invested in the status good by the other citizens.

Figure 1 – Best response of a player depending on the highest amount invested in the status good by another player. Budget is $400. Investments are measured in hundreds on the graph. The numbers next to the best responses indicate utility. The thick dots are the equilibrium investments in status.

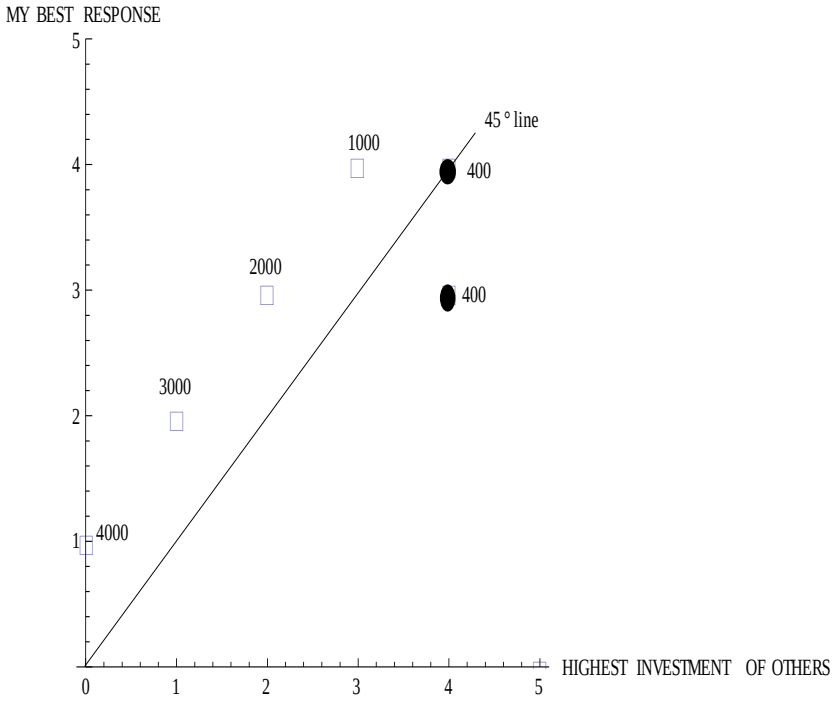


Increase in income

Let us assume now that income increases by 25% reaching a level of $500. Citizens decide how to split this budget between the two goods, whereby the expenditure on each good is constrained to be a multiple of $100 or zero. How will this increase impact people's well-being in a society where position matters? The effect of this income increase is quite predictable. The highest amount invested by a player will clearly be above $200 because otherwise there will always be a citizen who wants to invest more in status in the desire to become an elite citizen. As before, investing the entire amount of $500 is not optimal as it leaves no money for consumption. Thus, in equilibrium we will observe again a two-class society with upper class and middle class citizens and investments of $400 and $300 in the status good, respectively. The entire increase in income will be wastefully expended on the status good causing all individuals to "run in order to keep at the same place" in the social hierarchy.[5] As we will see later, in the experiment this effect is even more pronounced. Experimental subjects compete to an extent where a higher income indeed leads to a lower average utility.

[5] See Hopkins and Kornienko (2004) for more on this metaphor.

Figure 2 – Best response of a player depending on the highest amount invested in the status good by another player. Budget is $500. Investments are measured in hundreds on the graph. The numbers next to the best responses indicate utility. The thick dots are the equilibrium investments in status.



Consumer choice and status goods: a classroom discussion

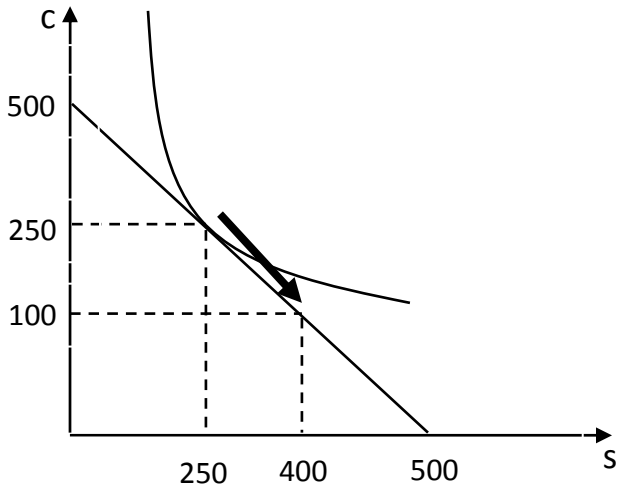
Instructors who do not have the time to devote one entire class session to the experiment might consider introducing the effects of positional consideration when they discuss the topic of consumer choice. In what follows we will illustrate how the impact of positional considerations can be discussed in the standard utility maximization problem. Absent positional considerations, the consumer optimally allocated his/her budget equally across the two goods. That is, when the budget is $500, the consumer purchases 250 units of each good as shown in Figure 3 below. As a standard exercise, the instructor might ask students to derive the utility of the consumption bundles:

(c, s) = (0,500), (100, 400), (200, 300), (250, 250), (300, 200), (400, 100), and (500, 0).

Students will discover the bundle with the highest utility. The instructor can now make it clear that at this point the indifference curve generating the highest utility is tangent to the budget constraint. That is, the marginal rate of substitution of the consumer equals the price ratio of 1 (the price of both goods is $1).

When one of the good is a status good, then the incentives of individuals change. If all other students purchase 250 units of the status good, each individual is willing to increase his or her consumption of the good ***s*** in the pursuit of a higher status. Conversely, if other students increase their spending on the positional good, each individual students has strong incentives to follow suit. As a result, the shape of the indifference curves changes, and the marginal rate of substitution of each individual changes as well. In particular, the marginal rate of substitution at the bundle (250, 250) increases for the positional good due to the status concerns. As a result, in the new equilibrium the consumer spends more on the positional good as illustrated by the arrow in Figure 3.

Figure 3 – Indifference curve and budget constraint.



Relation to Frank (1985a) and Hopkins and Kornienko (2004)

In an influential paper Frank (1985a) develops a theoretical model to explore the effects of income on the demand for non-positional goods and consumer welfare. As we will see, of the results derived in Frank (1985a, see Propositions 1, 2 and 3) can be discussed in the present setting.[6]

a) "Red Queen" effect: As income in society increases, the proportion of income spent on conspicuous consumption increases.[7] When income increases to $500, the additional $100 are expended on the status good. Thus, while with income of $400 the expenditures on status range between 50% and 75%, when income is $500 these levels range between 60% and 80%. Utility remains at the same level, and players "keep running at the same place". Hopkins and Kornienko (2004) allow for individuals to vary by income and demonstrate that as income in society increases the equilibrium utility falls at each level of income. This behavior will actually be observed in the classroom experiment.

b) Cooperatively determined demands will be higher for nonpositional goods and lower for positional goods than the corresponding demands determined noncooperatively (Frank 1985a, Proposition 1). How will students behave if they can come together and jointly negotiate the amounts they spend on the positional good to their best advantage? The cooperative solution is obviously to agree not to spend money on the purely status good.

c) Each individual's utility will be higher in the case of cooperatively determined demands than in the case of non-cooperatively determined demands (Frank 1985a, Proposition 2). If no citizen spends money on the status good, the society will consist of upper class citizens only with a utility of 4x400=1,600 (or 2,000 when income is $500). The non-cooperative equilibrium utility is 400.

d) Budget shares for non-positional goods grow more rapidly (or decline less rapidly) with income in the non-cooperative than in the cooperative case (Frank 1985a, Proposition 3). The cooperative solution dictates that players should not invest in the positional good as they incur a negative externality on their peers. Hence, expenditures on the consumption good remain constant at 100%

[6] The only exception is Proposition 3' which deals with individuals with different income, and this is an aspect not considered here. Similarly, all the results presented in Hopkins and Kornienko (2004) are derived for individuals who have different income.

[7] The "Red Queen" allegory comes from Lewis Carroll's (1871) book Through the Looking-Glass and refers to the dialogue between Alice and the Red Queen (a character representing a Queen in chess) in Chapter 2 of the book. Although Alice and the Red Queen run faster and faster, they remain in the same spot. The Red Queen explains to Alice: "Now, here, you see, it takes all the running you can do to keep in the same place." In evolutionary biology this term is used to describe the hypothesis that evolutionary change is necessary for the survival of species. In economics the "Red Queen" phenomenon is used as a metaphor for wasteful contests and competition.

for every level of income. In contrast, in the non-cooperative case, the share spent on the non-positional good declines in income. When the budget is $400 the share ranges between 25% and 50%, and when income is $500 this share is between 20% and 40%.

The experiment

In this section I describe how I conducted the experiment in the classroom. I also report the experimental results from two sections of a course in Principles of Microeconomics (let us call them Sections A and B) which I taught in the Spring semester of 2009. In Section A there were 57 students and in Section B there were 58 students who participated in the experiment. Some guidance is also provided on how instructors can introduce the topic to students and how to discuss the results from the experiment.

Conducting the experiment in the classroom

The experiment was conducted in the class session following the topic on utility and consumer choice. As an introduction to the topic I displayed the standard budget constraint and indifference curves figure and asked students to list the major determinants of the optimal consumption choice of the consumer. Student easily identify that the available budget, the prices of all goods as well as the preferences of the consumer play a role in this decision. When I asked whether the consumption choice of other consumers have an impact (according to the standard model), I get a mixed response. Some students answer this question to the negative and some argue that other consumers' decisions play a role by shaping the preferences (i.e. the indifference curves) of the consumer. I explain that the choices of other consumers might change the entire system of indifference curves in the figure, and I note that this will be the main question we will discuss today.

I explain that some goods might have not only consumption value, but be purchased for demonstration purposes. They allow a consumer to compare positively with others or gain a better standing within his/her comparison group (i.e. colleagues, neighbors, classmates, etc.). I explain that such goods are called "positional" or "demonstration" goods. Next, I show a slide with the following goods:

- Mercedes Benz Roadster
- Christian Audiger Shirt
- Health Insurance Policy
- Toilet paper
- Spacious house in an affluent neighborhood
- College Education in an Ivy League School

I ask students to divide these goods in two categories (positional and non-positional), and then rank the positional goods depending on their level of positionality. Students easily identify the Health Insurance Policy and the Toilet paper are the non-positional goods because they are not easily observable by peers, and they are necessities. Students did not reach a unanimous conclusion on the ranking of the positional goods.

Next, I distribute the experimental instructions to students (see the Appendix). After students answered the test questions, I explained the correct solution on the board. Then I conducted a trial session with a budget of $400 to make sure students understood the experimental setting and, thus, eliminating potential learning effects for the following two experimental sessions in which students allocate budgets of different sizes. For each possible investment in the status good ($0, $100, $200, $300, $400) I counted the number of students who made this particular choice by asking students to raise their hands, and I recorded these numbers on the board. I asked students to calculate the utility for each possible investment choice and wrote down the correct solution on the board. Those choices are summarized in the table below for the two sections of this course. The purpose of the trial session is not only to familiarize students with the rules of this social game but also to allow them to gain first impressions of how others behave in this experiment and what are the implications of this behavior for their utility.

Table 3 – Choices and utilities in trial session.

Investment (hundreds)	# of students Section A	# of students Section B	Social standing	Rank factor	Utility
4	1	1	elite	10	0
3	11	24	middle class	2	200
2	17	23	lower class	0.5	100
1	14	8	lower class	0.5	150
0	14	2	lower class	0.5	200

In the present setting a citizen cannot increase his utility by investing more in the status good unless he invests so much as to be able to move to a higher class. As Table 3 illustrates, the more members of the lower class invest in the status good, the lower utility they get.

Experimental results

In the next two sessions students allocated a budget of $400 and $500, respectively. The next table provides a breakdown of the students by investments in the status good in Sections A and B depending on their budgets.

Table 4 – Investment in status with budgets of 400 and 500.

	Class Section A (57 students)		Class Section B (58 students)	
Investments in status (hundreds)	Budget $400 # of students	Budget $500 # of students	Budget $400 # of students	Budget $500 # of students
0	13	1	1	2
1	14	11	11	7
2	9	16	16	17
3	20	16	30	18
4	1	11	0	14
5	0	2	0	0
Average investment in status (hundreds)	1.68	2.54	2.29	2.60

Table 4 reveals that subjects increase on average their investments in status when their budget increases. The next table reports the utilities in Sections A and B for each budget level. Utility tends to decrease with an increase in the budget. To test whether the difference in the average utility at the two budget levels is statistically significant, I used a paired samples t-test and a Wilcoxon signed rank sum test.[8] The two-tailed tests for class Section A indicate that the mean utility with a budget of $400 is not significantly different than the mean utility with a budget of $500. The null hypothesis that the means of the utility distributions under the two budget levels are the same cannot be rejected at the 5% level.

Observe that in Section A one student invested his/her entire budget in the status good with a budget of $400. When the budget was $500, two of the students invested their entire amount in the status good. If we eliminate these students from the sample as they obviously behaved irrationally, the average utility level of the group rises to 291.1 when the budget is $400 and to 284.4 when the budget is $500. The difference in

[8] These tests are used for data containing two related observations as in the current dataset (i.e., two observations per subject corresponding to the two budget levels). The Wilcoxon signed rank sum test, as a non-parametric alternative of the paired samples t-test, accounts for the fact that the difference between the utilities is not normally distributed.

the utility levels for the two budget levels is even smaller, and we cannot reject the hypothesis that the means of the utility distributions are the same.

Table 5 – Utility with budgets of $400 and $500.

	Class Section A (57 students)		Class Section B (58 students)	
Utility	Budget $400 # of students	Budget $500 # of students	Budget $400 # of students	Budget $500 # of students
0	1	2	0	0
50	0	0	0	0
100	9	16	0	0
150	14	16	11	17
200	33	22	1	7
250	0	1	0	2
400	0	0	46	32
Average Utility	168.4	151.8	349.1	297.4

The statistical tests for class Section B show significant differences in the means, suggesting that average utility is lower when budget is higher. The next two tables present the distribution of students across utilities attained with budgets of $400 and $500 for class Section A and class Section B, respectively.

Table 6 – Class Section A. Distribution of subjects according to utilities attained with a budget of $400 (utilities in first column) and a budget of $500 (utilities in first row). The last column gives the distribution of students for each possible level of utility for a budget of $500. The last row gives the distribution of utilities for a budget of $400.

B400\B500	0	50	100	150	200	250	400	B400 Total #
0	1	0	0	0	0	0	0	1
50	0	0	0	0	0	0	0	0
100	0	0	3	3	3	0	0	9
150	0	0	1	6	7	0	0	14
200	1	1	12	6	12	1	0	33
250	0	0	0	0	0	0	0	0
400	0	0	0	0	0	0	0	0
B500 Total #	2	1	16	15	22	1	0	57

Students with utilities on the main diagonal (the shaded cells) are the students who attained the same level of utility when having a budget of $400 and a budget of $500 (22 students for Section A and 36 for Section B). Students below the main diagonal lost utility as a result of the increase in their income. In total, 21 students from Section A and 15 students from Section B had a lower utility when they had a budget of $500. The number of students who gained utility as a result of the increased budget is above the main diagonal. This number is substantially lower: 14 for Section A and 7 for Section B (sum of the numbers above the diagonal).

Table 7 – Class Section B. Distribution of subjects according to utilities attained with a budget of $400 (utilities given in first column) and a budget of $500 (utilities given in first row). The last column gives the distribution of students for each possible level of utility for a budget of $500. The last row gives the distribution of utilities for a budget of $400.

B400\B500	0	50	100	150	200	250	400	B400 Total #
0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0
150	0	0	0	5	5	0	1	11
200	0	0	0	0	0	1	0	1
250	0	0	0	0	0	0	0	0
400	0	0	0	12	2	1	31	46
B500 Total #	0	0	0	17	7	2	32	58

These results let us conclude that in both sections students' behavior exhibits a considerable "Red Queen" effect. In their quest for status, students overinvest in the positional good when they have a higher budget so that eventually they attain a lower utility.

Discussion after the experiment

After the experiment I asked students to raise hands and counted the number of students who attained a higher utility, who attained a lower utility, and the students whose utility remained unchanged as their income increased from $400 to $500. I wrote down these numbers on the board. In both sections, the number of students who lost utility was significantly higher than the number of students who gained utility; yet there was also a substantial number of students whose utility remained unchanged (see the diagonals of tables 6 and 7). I asked students to explain the reasons behind this overall average reduction in utility. In the discussion students discover that those who lost utility were the ones who kept their spending on the positional good unchanged, yet saw a deterioration of their status which could not be compensated by the increased consumption of the non-positional good. The students who increased their spending on the positional good by $100 were able to keep their initial status and consumed the same amount of the non-positional good. Those were the students who maintained their level of utility. Students commented that the environment is such that it forces you to spend more on the positional good because otherwise you inevitably lose status and utility. I explained that this effect is sometimes called "the Red Queen phenomenon." The allegory comes from Lewis Carroll's (1871) book Through the Looking-Glass and refers to the dialogue between Alice (the same character as in the book Alice in Wonderland by the same author) and the Red Queen. Although Alice and the Red Queen run faster and faster, they remain in the same spot. The Red Queen explains to Alice: "Now, here, you see, it takes all the running you can do to keep in the same place." I tell students that in Economics the term is a description of situations that give rise to wasteful contests and competition, while in Evolutionary biology the expression embodies the idea that constant evolutionary change is necessary for the survival of species. Below are given some open-end discussion questions which can help the instructor to conclude the topic and the class session:

- Is competition always good? Could competition also be harmful to society?
- Give an example from your personal experience in which you have been involved in a wasteful status race.
- What are the consequences of status races?
- Do status races lead to economic growth?

- What can the government do to restrain wasteful status races? (here students can discuss optimal tax rates on positional goods, forced retirement savings programs, and mandates on purchasing health insurance –a measure included in the recent US healthcare reform bill).

Conclusion

The theoretical and empirical research on the relative income hypothesis has been steadily growing in the last three decades, and the modern literature on the topic generated a rich set of important behavioral and welfare results. The objective of this paper is to make the major theoretical results from this important literature in economics accessible to undergraduate students. The paper presents a simple analytical framework and a classroom experiment which demonstrate the effects of positional considerations on consumption choices.

The theoretical model shows that, in the presence of a positional good, the consumers' utility should remain constant even when the consumers' budget increases. In their quest for status, rational agents invest the entire increase in their budget in the positional good, effectively "remaining at the same place" in the social ranking. The experimental results suggest that the "keeping up with the Joneses" and "Red Queen" effects might be even more dramatic than theory predicts. In the experiment, higher income levels resulted in lower levels of utility.

The experiment is relatively straightforward to conduct in a classroom. Students are able to assess how considerations of their relative position in society affect their behavior as well as the behavior of their classmates. The experimental exercise is also easy to understand and can be implemented without the use of advanced mathematical concepts or the use of costly technology.

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