

Markets and morality: how markets shape our (dis)regard for others

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ABSTRACT

Scholars since Hume and Smith have debated possible causal connections between market experiences and moral beliefs. Here, we study the impact of market interactions on utilitarian versus deontological values, charitable donations, and whether individuals have differential in-group/out-group moral views. We randomly assign workers residing across several nations of varying income levels to different market conditions and found that, in low-income nations, tournament-based compensation increased deontological commitments, especially toward out-group members, and donations by productive workers, but decreased donations by less productive workers. In higher-income nations, the effect on deontological commitments reversed, while effects on out-group attitudes and donations became insignificant. These findings suggest that if utilitarian attitudes lead to more market-oriented policies, then multiple steady states arise wherein some countries sustain high levels of utilitarian attitudes and economic growth alongside progressively weakening deontological commitments and interpersonal regard for others, putting economic rationality and liberal moral development at odds.

1. INTRODUCTION

At least since Adam Smith and David Hume, scholars have offered hypotheses about the effect of a citizen's economic experience on their moral beliefs and behavior. It has been asserted that competition may bring a winner-take-all mentality and a lack of concern for others and that exposure to market values will lead us to abandon non-utilitarian forms of moral thought, treating every moral issue in terms of costs and benefits. Conversely, proponents of the so-called *doux commerce* thesis—a theory popularized by 18th century European political philosophers embedded within an historical period characterized by the ascent of European colonization of the non-European world—have proposed that a competitive market, with its disruptive effect on geographical and tribal isolation, will have salutary moral effects by increasing our care for and understanding of others. Using experimental methods, we continue this line of inquiry: How do markets affect morality?

This article estimates the causal impact of market interactions on utilitarian versus deontological values, charitable donations, and whether individuals have differential in-group/out-group moral views. Using a labor market intermediary, Amazon Mechanical Turk, we recruit workers to do transcriptions of historical texts. We randomly assign workers to different market conditions—individual-based versus tournament-based compensation that depends on transcription accuracy—in order to distinguish self-selection into market settings from the causal effect of market experiences on moral values. The experiment features a $2 \times 2 \times 2$ design that varies the form of compensation and four variations of the moral trolley problem.

The trolley problem is a classic philosophical thought experiment that examines ethical dilemmas and the principles that guide moral decisions. The bystander scenario of the trolley problem can be described as follows: *A trolley is on a track headed for five people. You are standing next to a lever that can divert the trolley onto a side track where there's only one person. If you pull the lever, the trolley will switch tracks and kill the one person. If you do nothing, the trolley will stay on its original track and kill the five people.* The decision to pull or not pull the lever can be analyzed using various ethical theories, including deontology and consequentialism. The consequentialist perspective says that the rightness of an action is determined by its consequences. The most right action is the one that produces the most overall good. From a strict utilitarian viewpoint, pulling the lever (thus killing one person to save five) would be the ethical choice because it minimizes the overall harm. The deontological perspective, by contrast, is based on rules, duties, or principles. In this ethical orientation, which is the basis of the liberal moral traditions inherited from Enlightenment philosophy, particularly that of Immanuel Kant, actions are inherently right or wrong based on their accordance with universal principles and regardless of their particular consequences. A deontologist might argue that it's morally wrong to actively intervene and harm an innocent person, even if it may ultimately result in a greater good in a given scenario. Thus, a deontologist might say that one should not pull the lever, as it would mean actively causing harm.

In the experiment, after workers finish data entry, we offer a donation opportunity and administer the moral trolley test. The trolley problem has many versions that measure various dimensions of moral decision-making. We use the standard modification to measure utilitarian versus deontological values and conceive of another modification to measure out-group moral views.¹ In the bystander scenario of the moral trolley problem, individuals are asked if they would divert a trolley to save five but kill one. In the footbridge scenario, individuals are asked if they would push someone in front of the trolley and kill him in order to save five. Subjects who choose the option to kill one rather than five, in either scenario, are considered utilitarian, while those who are not willing to do so are considered deontological. The moral trolley scenarios are described more fully below, including the text provided for each scenario.

Our first main finding is that workers who are assigned individual-based compensation become more utilitarian while workers who are assigned to tournament-based compensation become more deontological. Of the 90 workers assigned individual-based compensation, 63% made the utilitarian choice on average across all scenarios; of the 90 workers assigned the tournament condition, 49% made the utilitarian choice on average across all scenarios. The difference, however, comes entirely in the footbridge scenario, where 47% of non-tournament workers made the utilitarian choice but 13% of tournament workers made the

¹ In this study, the term “out-group” refers to people who have greater sympathy with individuals of a different skin tone. Studies have found that people become more willing to sacrifice in the moral trolley problem when non-group members such as non-human primates are presented as the objects of sacrifice (Petrinovich et al. 1993; Petrinovich and O'Neill 1996).

utilitarian choice, an almost fourfold difference; in the bystander scenario, 83% of both groups of workers made the utilitarian choice.

Our second main finding is that workers who are assigned to individual-based compensation become more utilitarian toward out-groups while workers who are assigned to tournament-based compensation become more deontological toward out-groups. To investigate whether subjects have differential in-group out-group moral views, and whether those views are shaped by their incentive treatment, in our modification of the moral trolley problem, we vary the race of the individuals in an illustration of the moral trolley problem. All workers see an illustration of the choice between saving one individual or five individuals in the path of an oncoming trolley, but half see an illustration with light-skinned individuals and half see an illustration with dark-skinned individuals. Subjects only see one trolley problem in order to avoid contrast effects. We present moral trolley problems with different races to investigate where people draw the line between in-groups and out-groups and whether competition makes them more utilitarian regarding out-group members. White workers are 38% more likely than non-white workers to make the utilitarian choice when presented the dark-skinned illustration than when presented the light-skinned illustration in the individual-based compensation condition, but white workers are 24% less likely than non-white workers to make the utilitarian choice when presented the dark-skinned illustration than when presented the light-skinned illustration in the tournament condition.

Our third main finding is that tournament winners are more likely to donate than tournament losers or non-tournament workers, though on average non-tournament workers donate more than tournament workers. 51% of non-tournament workers choose to donate and 41% of tournament workers choose to donate. Among the tournament workers, 54% of tournament winners donate while 32% of tournament losers donate. At first glance, the finding that tournament winners donate more than tournament losers contradicts an established literature in experimental economics that finds that individuals who feel they deserve their earnings are less generous (Hoffman et al. 1994), but in those studies, subjects know that they have earned additional income. Importantly, these results suggest that, in studying the effect of market experiences, the type of compensation needs to be distinguished.

An important distinction between the labor market intermediary in our study and the laboratories used in typical experimental economics studies is their differential relationship to the global labor supply. Our design allows for the exploration of heterogeneous treatment effects, and in this application, the evolution of the *doux commerce* thesis. Economists during the early stages of market development widely believed that commerce increased deontological commitments, but economists living in the later stages of economic development thought commerce decreased morality (Hirschman 1982). Consistent with Hirschman's recapitulation of the intellectual history of the *doux commerce* thesis, we find that the effect of competition on deontological commitments reverses with the income level of the worker's country, even though the transcription task is designed to be culturally neutral and the moral trolley problem has been found to be culturally neutral (Mikhail 2007).

As to why workers from countries at different stages of market development and corresponding income levels respond differently, an established literature documenting how the manipulation of the affective state of an individual alters moral judgment may offer an explanation. Prior studies have shown that negative affective experiences lead to more deontological decision-making while positive affective experiences tends to lead to utilitarian decision-making. In contexts with less developed markets and associated cultural attitudes, competition may be perceived as unfamiliar or unfair and thus provoke negative affective reactions that lead to more deontological reactions, while the opposite may occur in contexts with more developed market economies. The utilitarian decision in the trolley problem may

be more acceptable to participants in wealthy countries primed, by the tournament treatment, to think of the efficiency benefits from competition, which leads to multiple potential equilibria. For further elaboration of this argument and literature, see [Supplementary Appendix A.1](#) and [A.2](#).

The remainder of the article proceeds as follows. Section 2 briefly reviews the empirical literature and presents a conceptual framework for the *doux commerce* thesis. Section 3 describes the experimental design. Section 4 presents and discusses the results. Section 5 concludes.

2. LITERATURE

2.1 Markets and morality

Going back to Smith, Hume, J. S. Mill, and Montesquieu, a line of scholars theorized that market forces increase deontological morality. “Wherever there is commerce, manners are gentle” observed [Montesquieu \(1749\)](#). “Commerce operates to cordialize mankind,” wrote [Paine \(1792\)](#). And, “the economical advantages of commerce are surpassed in importance by those of its effects, which are intellectual and moral,” noted [Mill \(1848\)](#). Smith and Hume, too, wrote of virtues being enhanced by commerce ([Rosenberg 1964](#)). An equally distinguished line of economic thinkers, however, theorized the opposite: “Capitalism creates a critical frame of mind, which destroys moral authority” ([Schumpeter 1942](#)); markets make fewer demands on people’s elevated motivations ([Hayek 1948](#)); “the competitive instinct has a profoundly degrading effect on individual judgment and conduct” ([Veblen 1899](#)); “Capitalist society undermines its own moral foundations through alienation and exploitation in the capitalist production process” ([Marx 1867](#)); money has alienating properties though competition also fosters empathy not among the competitors but between competitors and third parties ([Simmel \(1955\)](#) as cited by [Hirschman \(1982\)](#)). Classical political economists focused on the ways that certain exchanges can influence the people we become. Markets influence individuals’ economic mentalities to behave more as neoclassical economic theory would predict, which—according to some—perpetuated the myth that humanity’s innate propensity is to barter and trade rather than reciprocate and redistribute ([Polanyi 1944](#)). Notably, the intellectual history of the *doux commerce* thesis seems to shift around 1850, when critiques of capitalism begin to gain momentum, marking a transition away from more optimistic view of the moral effects of markets.

One aspect of the debate concerns whether markets or morality come first. Smith, for example, suggested that if our preferences are endogenous to markets, then it is circular to appeal to a market’s ability to satisfy those preferences as its central justification. Market outcomes cannot be ranked unambiguously by preference rankings if the preference rankings themselves depend on markets. If market experiences generate utilitarian preferences, for instance, then it would be circular to use those utilitarian preferences to evaluate markets ([Satz 2010](#)).

Both economists and non-economists continue to contest the proper scope of market. Economists have tended to focus on the boundary between markets and government ([Hart et al. 1997](#)) whereas non-economists have tended to focus on the boundary between markets and what should not be subject to the market such as questions of surrogacy, organ transplants, or worker’s compensation for pain and suffering ([Posner 1999](#); [Friedman 2010](#)). Whereas economists have primarily focused on questions of efficiency, philosophers have focused on how markets leave their mark on social norms ([Sandel 2010](#)).² An oft-stated

² In public discourse, some worry about apathy in a society where a toddler was run over twice by a van because it cost less to pay a dead girl’s parents than to pay for hospital expenses ([Demick 2011](#)) or where a helper, who prevented a suicide instead of passively watching, received a monetary award for displaying traditional virtues ([Daily 2011](#)).

concern in this philosophical literature is whether people become morally corrupted or degraded when subject to constant processes of commodification (Radin 1987)³ and whether market competition ultimately augments what is regarded as immoral behavior (Shleifer 2004). Going further along this line of thoughts, Roth (2007) characterizes certain market transactions as repugnant and Mankiw and Weinzierl (2010) suggest that standard normative economic theory may need to be broadened to address why some normative arrangements (e.g., taxing height, which they model as being economically optimal) are perceived as repugnant. Relatedly, debate also persists regarding the ideal degree of market competition to introduce into the various domains of social service and exchange, such as in debates about pay-for-performance incentives for teachers and doctors (Lemieux et al. 2009).

2.2 The moral trolley problem

The moral trolley problem asks individuals whether they would kill one person in order to save five. The trolley problem has many versions that measure various dimensions of moral decision-making (Thomson 1985). This study uses the standard modification (*bystander* versus *footbridge* scenarios) to measure utilitarian versus deontological values.⁴ Everett et al. (2016) found that participants who make deontological judgments are perceived as more moral and trustworthy and preferred as social partners. A deontological perspective takes into consideration the Kantian categorical imperative to act in accordance with “the moral law within,” regardless of whether doing so appears to produce desirable consequences. The footbridge scenario emphasizes the deontological aspect of moral values because it emphasizes the act involved in pushing an individual to his death versus the duty not to do so (Greene et al. 2001).

The modification we introduce to the moral trolley problem varies the race of the individuals being saved or sacrificed in an illustration of the moral trolley problem. Researchers have presented the moral trolley scenario with names that are stereotypically white or black (Uhlmann et al. 2009), but have not varied the skintone. All workers see an illustration of the choice between saving one individual or five individuals in the path of an oncoming trolley, but half see an illustration with light-skinned individuals on the trolley tracks and footbridge and half see an illustration with dark-skinned individuals. There is also a decision-maker who has a question-mark for its face. We use the moral trolley illustration with different races to investigate where people draw the line between in-groups and out-groups and whether competition makes them more utilitarian regarding out-group members. Demographic information on the workers allows me to compare attitudes to saving or sacrificing people of the same or different race.

3. DESIGN OF EXPERIMENT

3.1 Setting

The experiment was run between May 4 and 12 of 2009. The average time spent was 34 min. The total payment to the 180 subjects was \$101. Workers were invited to complete

³ Regarding labor markets, Smith (1776) suggests that what a person can do and be, what he wants, and what he can hope for, are influenced by the structure and character of the market. More specifically, Smith’s assessment of labor markets suggests that markets would fail if it eroded workers’ sense of justice and public spirit (Smith 1761: 189–190; Satz 2010).

“The employment of the great body of the people comes to be confined to a few operations ... and generally becomes as stupid and ignorant as it is possible for a human creature to become ... [He is incapable] of forming any just judgment concerning many even of the ordinary duties of private life. Of the great and extensive interests of his country, he is altogether incapable of judging.” (Smith 1776: 781–782)

⁴ The experimental literature generally labels the non-utilitarian choice in the moral trolley problem as deontological, so we use deontological and non-utilitarian interchangeably.

six paragraphs where the payment for the first paragraph is 10 cents and potentially more in bonuses, including a 50-cent bonus for completing a short survey at the end. To implement the varying pay, we use features of Amazon Mechanical Turk (MTurk), a labor market intermediary. The timeline is summarized in [Figure 1](#): recruitment, a lock-in task to minimize attrition, treatment, trolley problem, donation decision, and exit survey.

We recruited workers through a labor market intermediary whose three key characteristics allow implementation of the experimental design. First, tasks are often done multiple times by different workers for quality-control purposes. Second, bonuses are useful for creating complex contracts, such as varying the treatment condition across workers and varying the pay depending on performance. Third, MTurk ensures the same person does not do the same task more than once by preventing unique worker IDs from accepting the same task and preventing users from generating multiple worker IDs by using e-mail addresses, IP addresses, and, in some cases, bank accounts. These measures prevent workers from entering the experiment more than once. Hundreds of thousands of jobs are posted each day. This allows me to present moral trolley problems with different races without subjects inferring that other subjects see different races in their trolley problem or seeing the race of the experimenter, which [Cilliers et al. \(2015\)](#) show can affect the response of subjects. MTurk has received attention for some of its weaknesses—[Goodman et al. \(2013\)](#) found that MTurk participants are less likely to pay attention—but [Goodman et al. \(2013\)](#) and [Snowberg and Yariv \(2018\)](#) conclude that MTurk subjects' behavior can be similar to other samples, such as those of university students or a representative population sample.

We post a single placeholder task containing a description of the work and a link for workers to follow if they want to participate ([Supplementary Appendix Figure A.1](#)). The subjects are then randomized, via stratification in the order in which they arrived at the job, to one of several treatment conditions. Treatment is not revealed at this early state. All workers see identical instructions ([Supplementary Appendix Figures A.2 and A.3](#)). This is important because attrition after treatment is revealed can affect causal estimates, while attrition before treatment is revealed does not. In all treatment conditions, workers face an identical “lock-in” task in order to minimize differential attrition before the treatment is revealed ([Supplementary Appendix Figures A.4a and A.4b](#)). As a lock-in task, subjects transcribe three paragraphs before treatment is revealed.

In both the lock-in and the actual task, workers transcribe paragraphs from a Tagalog translation of Adam Smith's *The Wealth of Nations*. This task is sufficiently tedious that no one is likely to do it “for fun,” and it is sufficiently simple that all market participants can do the task. The source text was machine-translated into Tagalog. Because the workers were not native-Tagalog speakers, this increased variance in the error rate of the transcriptions, thereby providing a more informative measure of work quality. Translating the text also prevented subjects from finding the text elsewhere on the Internet.

The placeholder request at MTurk asks workers to complete six paragraphs and states that the payment for the first paragraph is 10 cents and that workers can receive much more in bonuses, including a 50-cent bonus for completing a short survey at the end. The actual payment depends on the treatment condition. For workers assigned to the piece rate condition, the payment is 60 cents for transcription and a 50-cent bonus for the exit survey. For workers assigned to the tournament condition, the average pay is the same, but the amount varies according to whether they win or lose the tournament as described below. An example paragraph is displayed on the first page of the external hosting site so workers are aware of the high payment before entering the study.

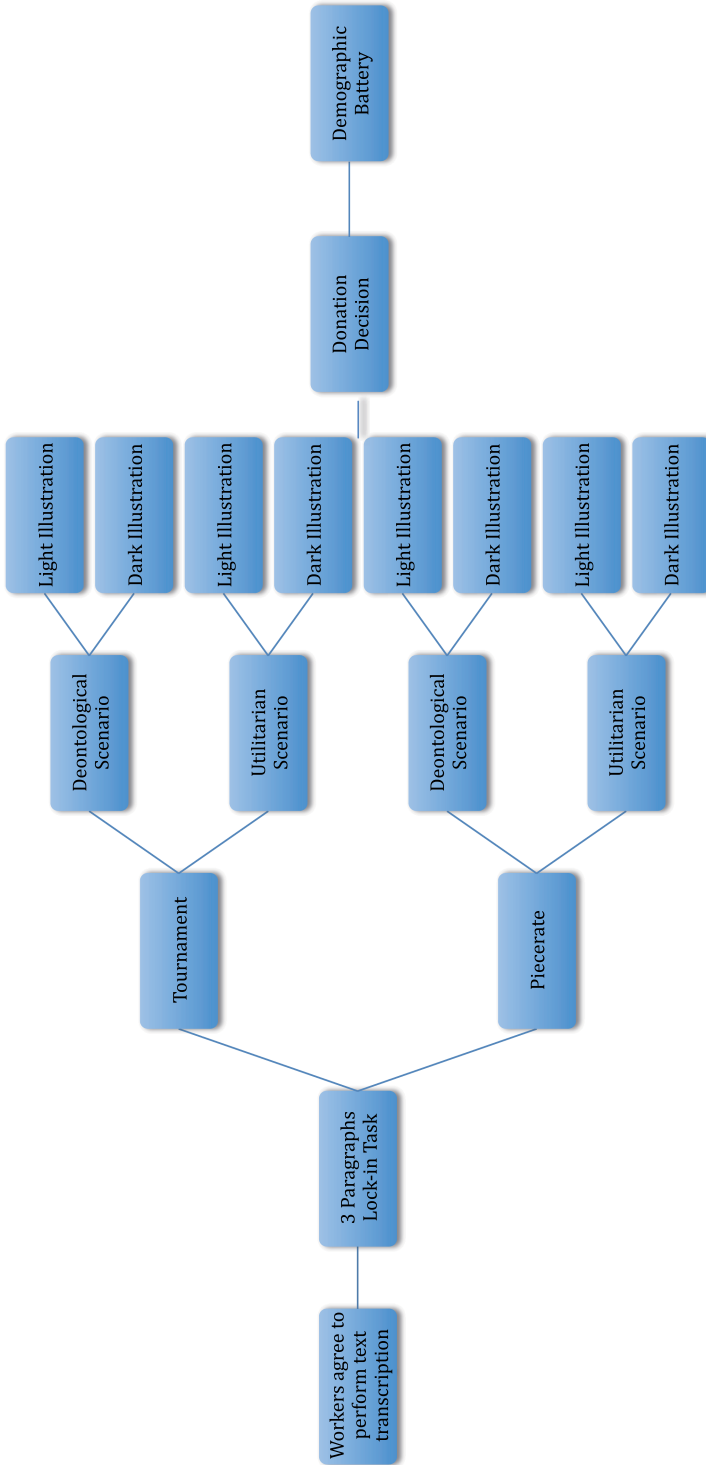


Figure 1. Experimental design.

3.2 Lock-in

Halfway through their task, that is, after a lock-in task of three paragraphs at 10 cents per paragraph, we reveal treatment. This lock-in successfully reduces attrition (defined as having over 500 errors out of a maximum of 507 characters for any paragraph). Of 274 subjects who agreed to start work, 201 completed the lock-in task of three paragraphs; of the 201 who saw the first treatment revelation, 180 continued working and answered the survey questions. The 21 attriters are evenly distributed across treatment interactions (there are three treatment groups, so there are eight treatment interactions) as shown in the lower half of [Table 1](#). Pre-treatment attrition in [Table 1](#) is attrition that occurs before workers see whether they are in the tournament-based or individual-based compensation. Pre-treatment attrition does not affect causal estimates. Pre-trolley attrition is attrition that occurs after workers see whether they are in the tournament-based or individual-based compensation but before answering the trolley problem. While the lock-in task may have independent effects, the lock-in task is identical across treatment groups and, in a separate study, does not have independent effects on the outcome ([Chen and Horton 2016](#)).

3.3 Treatments

Treatments are interacted with each other rendering a 2x2x2 experimental design ([Figure 1](#)). Each stratification yielded roughly 90 workers. Our main treatment condition is as follows. In one stratification, for paragraphs 4–6, workers either continue entering paragraphs for a piece-rate of 10 cents per paragraph or are placed in a tournament condition. In the tournament, workers are randomly matched with two other workers who were also assigned the tournament condition. Of the three, whoever submits the most accurate transcription receives 30 cents for each paragraph and the rest receive nothing. Thus the expected value of the task to the worker stays the same (30 cents for three paragraphs), but the competitiveness factor is raised. Accuracy is measured using the Levenshtein distance, a commonly used measure of difference in computer science. The Levenshtein distance is the minimum number of operations needed to transform one string into another: “operation” is defined as an insertion, deletion, or substitution of a single character ([Levenshtein 1966](#)).

After workers complete data entry, we administer the moral trolley problem. In our second stratification, we ask either the bystander version of the moral trolley problem (no italics are used in the experiment, and the language in the scenarios are standard):

A runaway trolley is hurtling down the tracks toward five people who will be killed if it proceeds on its present course. You can save these five people **by diverting the trolley onto a different set of tracks, one that has only one person on it**, but if you do this that person will be killed. Is it morally permissible to turn the trolley and thus prevent five deaths at the cost of one?

or the Footbridge version of the moral trolley problem:

A runaway trolley is hurtling down the tracks toward five people who will be killed if it proceeds on its present course. You are standing next to a large man on a footbridge spanning the tracks. The only way to save the five people is **to push the man off the footbridge and into the path of the trolley**, but if you do that, the large man will be killed. Is it morally permissible to push the man off the bridge?

Workers in our study respond to the moral trolley problem in roughly the same way people do in other studies. The basic pattern that the bystander scenario increases deontological

Table 1. Summary statistics.

Contract:	Competition				Piece-rate				
	Bystander		Footbridge		Bystander		Footbridge		Total (9)
Scenario:	Dark (1)	Light (2)	Dark (3)	Light (4)	Dark (5)	Light (6)	Dark (7)	Light (8)	
Utilitarian	0.880 (0.332)	0.762 (0.436)	0.174 (0.388)	0.0952 (0.301)	0.783 (0.422)	0.889 (0.323)	0.500 (0.509)	0.421 (0.507)	0.561 (0.498)
Donate	0.480 (0.510)	0.381 (0.498)	0.391 (0.499)	0.381 (0.498)	0.522 (0.511)	0.667 (0.485)	0.433 (0.504)	0.474 (0.513)	0.461 (0.500)
Male	0.400 (0.500)	0.333 (0.483)	0.435 (0.507)	0.333 (0.483)	0.304 (0.470)	0.444 (0.511)	0.500 (0.509)	0.526 (0.513)	0.411 (0.493)
Age	32.36 (12.81)	29.57 (10.63)	28.96 (8.839)	31.71 (11.47)	30.22 (11.30)	31.56 (12.67)	27.20 (7.063)	29.32 (8.512)	29.99 (10.40)
American	0.400 (0.500)	0.429 (0.507)	0.478 (0.511)	0.476 (0.512)	0.478 (0.511)	0.500 (0.514)	0.500 (0.509)	0.368 (0.496)	0.456 (0.499)
Indian	0.280 (0.458)	0.286 (0.463)	0.435 (0.507)	0.286 (0.463)	0.348 (0.487)	0.222 (0.428)	0.467 (0.507)	0.474 (0.513)	0.356 (0.480)
Christian	0.440 (0.507)	0.381 (0.498)	0.478 (0.511)	0.333 (0.483)	0.304 (0.470)	0.111 (0.323)	0.267 (0.450)	0.211 (0.419)	0.322 (0.469)
Hindu	0.240 (0.436)	0.190 (0.402)	0.304 (0.470)	0.190 (0.402)	0.348 (0.487)	0.167 (0.383)	0.433 (0.504)	0.474 (0.513)	0.300 (0.460)
Muslim	0.0400 (0.200)	0.0476 (0.218)	0.0435 (0.209)	0.0476 (0.218)	0 (0)	0.111 (0.323)	0.0333 (0.183)	0.0526 (0.229)	0.0444 (0.207)
Atheist	0.240 (0.436)	0.286 (0.463)	0.174 (0.388)	0.143 (0.359)	0.261 (0.449)	0.500 (0.514)	0.200 (0.407)	0.158 (0.375)	0.239 (0.428)
Religiousness	1.080 (0.997)	1.667 (1.426)	1.783 (1.242)	1.857 (1.389)	1.435 (1.532)	1.389 (1.461)	1.267 (1.337)	1.895 (1.449)	1.522 (1.356)
White	0.520 (0.510)	0.619 (0.498)	0.435 (0.507)	0.571 (0.507)	0.435 (0.507)	0.722 (0.461)	0.533 (0.507)	0.474 (0.513)	0.533 (0.500)
Black	0.0400 (0.200)	0.0476 (0.218)	0.0435 (0.209)	0.0476 (0.218)	0.0870 (0.288)	0.0556 (0.236)	0 (0)	0.105 (0.315)	0.0500 (0.219)
Hispanic	0.0400 (0.200)	0.0476 (0.218)	0 (0)	0.0476 (0.218)	0.0435 (0.209)	0.167 (0.383)	0.0667 (0.254)	0 (0)	0.0500 (0.219)
Asian	0.400 (0.500)	0.286 (0.463)	0.522 (0.511)	0.381 (0.498)	0.435 (0.507)	0.167 (0.383)	0.433 (0.504)	0.421 (0.507)	0.389 (0.489)
Log GDP PPP per capita	9.609 (1.275)	9.829 (1.241)	9.454 (1.370)	9.708 (1.257)	9.579 (1.341)	9.688 (1.239)	9.383 (1.382)	9.113 (1.402)	9.541 (1.308)
Observations	25	21	23	21	23	18	30	19	180
Pre-Treatment	0.212 (0.415)	0.226 (0.425)	0.289 (0.460)	0.242 (0.435)	0.278 (0.454)	0.312 (0.471)	0.244 (0.435)	0.333 (0.479)	0.266 (0.443)
Pre-Trolley	0.242 (0.435)	0.290 (0.461)	0.421 (0.500)	0.424 (0.502)	0.306 (0.467)	0.438 (0.504)	0.293 (0.461)	0.367 (0.490)	0.347 (0.477)
Attrition Observations	33	31	38	33	36	32	41	30	274

choices is found in our data as well: people are much less inclined to push someone to his death to save five others than divert the trolley to kill one to save five others. As shown in Table 1, the percentage of workers making the utilitarian choice is higher for the bystander scenario (80%) than for the footbridge scenario (31%). Among the 200,000 individuals who have taken the moral trolley problem (Miller 2008), 80% is also the percentage of subjects who make the utilitarian choice in the bystander scenario while 30% is the percentage of subjects who make the utilitarian choice in the footbridge scenario (Prinz 2007;

Appiah 2008; Copp 2010; Greene et al. 2010). Moreover, consistent with research on the universal moral grammar, demographic characteristics are not predictive of decisions in the moral trolley problem.

Our third stratification modifies the picture that accompanies the moral trolley problem. All the persons being saved or sacrificed are colored to appear light-skinned or dark-skinned (see [Supplementary Appendix Figure A.5](#) for the full set of illustrations that accompany the moral trolley problem). We vary skin color to investigate where people draw the line between in-groups and out-groups and whether competition makes them more utilitarian regarding out-group members.

Following the trolley problem, we ask workers whether they are willing to donate 10 cents of their earnings to the Red Cross or the Red Crescent ([Supplementary Appendix Figure A.6](#)). We then ask for demographic characteristics ([Supplementary Appendix Figure A.7](#)), including gender, age, country (the categories in the subsequent regressions are the United States and India, and the omitted category is other), religion (the categories in the subsequent regressions are: Christian, Hindu, Muslim, and Atheist, and the omitted category is other),⁵ frequency of religious attendance (never, once a year, once a month, once a week, or multiple times a week; these are coded as 0–4), and ethnicity (White, Black, Hispanic, Asian/Pacific Islander,⁶ or Native American).⁷

Using self-reported ethnic identity is imperfect. We explore the extent to which this is a problem for workers from India, where skin color varies dramatically and self-identification for skin color may be more accurate than coding “Asian/Pacific Islander” as non-White. For the small subset of workers whose IP addresses can be traced to a geographic location, we recode Asians as white or non-white depending on the predominant skin tone in the region. The results that follow strengthen slightly with this recoding. We also find that some workers in India self-identify as white or Black, so it is possible that workers are actually reporting their self-perceived skin color. To the extent individuals are categorized based on their self-reported identity, the experiment is actually capturing a sense of self for in-group versus out-group members. Moreover, if self-reports are leading to gross mis-measurements, all the results of the out-group moral views tests that follow would be underestimated. Furthermore, priming individuals with the skin tone of the illustration increased charitable donations when the skin tone matched their self-reported identity (For the remainder of the discussion we drop the adjective “self-reported.”).

In a control experiment, we measure the baseline. This control experiment asks workers to enter one paragraph and then immediately answer the moral trolley dilemma.

3.4 Balance

Demographic characteristics are balanced across treatment groups, consistent with the randomization of workers across treatment. [Table 1](#) displays summary statistics by treatment interaction. Males comprised 41% of the sample. 46% and 36% are from the United States and India respectively. About 32% are Christian, 30% are Hindu, 24% are atheist, and 4% are Muslim. The average age is 30. The average religious attendance is between once a year and once a month. 53% are White, 39% are Asian/Pacific Islander, 5% are Black, and 5% are Hispanic.⁸ After work has been completed, according to the original expiry date listed, bonuses are calculated and workers are notified of their earnings. Tournament winners and

⁵ These include Jewish, Buddhist, Sikh, Agnostic, Transcendentalism, and prefer not to answer.

⁶ The omitted race category is Asian in the analyses that include White, Black, and Hispanic.

⁷ There are no Native Americans in the study.

⁸ Most workers have a college education, and the income distribution of workers follows the income distribution in the United States (<http://behind-the-enemy-lines.blogspot.com/2008/03/mechanical-turk-demographics.html>).

losers *do not know their status as a winner or loser* at the time they are queried about their normative commitments to avoid the potential confound that self-knowledge may impart.

3.5 Specification

In the basic specification, we examine the effect of one treatment stratification at a time: *Tournament* versus *Individual-based* compensation, *Bystander* versus *Footbridge* scenario, and *Light* versus *Dark Illustration* of the moral trolley problem. Our 2x2x2 experimental design allows us to investigate heterogeneous treatment effects so we can interact treatments with each other (e.g., *Tournament* with *Footbridge* scenario or with *Dark Illustration*) in order to investigate the effect of tournament-based compensation on out-group moral views. Because of the random assignment of workers to treatment conditions, the treatment effects will be unbiased, but including demographic controls, will be more efficient and reduce the standard errors of the treatment effect being considered if the controls are significant predictors of the outcome variable. For instance, since the *Footbridge scenario* strongly negatively predicts the *Utilitarian* choice, *Footbridge scenario* will always be controlled for when predicting *Bystander* even when *Footbridge scenario* is not the treatment of interest in the analyses below. All results are presented in bar charts as well as regressions for ease of interpretation.

4. RESULTS

4.1 The effect of tournaments on utilitarian values

Tournament-based compensation increases deontological commitments, particularly in the footbridge scenario. This finding can be seen in [Figure 2](#), which displays for each treatment interaction the percentage of workers making utilitarian choices in the moral trolley problem (the red X's mark the baseline: how workers make utilitarian choices in the absence of treatment in the control experiment where workers enter one paragraph and then immediately answer the moral trolley dilemma).⁹

In the tournament setting, 38 out of 44 workers (86%) chose not to push someone to his death to save five others. With individual-based compensation, 26 out of 49 workers (53%) decided the same. Competition increases deontological commitments even when controlling for demographic characteristics. [Table 2](#) displays estimates of the specification:

$$\begin{aligned} \text{Utilitarian}_i = & \beta_0 + \beta_1 \text{Tournament}_i + \beta_2 \text{FootbridgeScenario}_i + \\ & \beta_3 \text{Tournament}_i \times \text{FootbridgeScenario}_i + \beta_4 X_i + \varepsilon_i \end{aligned} \quad (1)$$

where β_3 is the coefficient of interest. Marginal effects from probit regressions give similar results (compare Columns 5 with 7, and 6 with 8).¹⁰ Workers responding to the footbridge scenario are over 50% less likely to make the utilitarian choice than workers responding to the bystander scenario (Column 1). Overall, stratifying only by market experience, tournament workers are 14% less likely to make the utilitarian choice than non-tournament workers (Column 2). Controlling for the footbridge scenario, other treatments, and demographic

⁹ The sample size in the control experiment is 89. The summary statistics are as follows:

- 1) $\Pr\{\text{Util}|\text{Bystander}, \text{Dark}\} = 0.944$
- 2) $\Pr\{\text{Util}|\text{Bystander}, \text{Light}\} = 0.710$
- 3) $\Pr\{\text{Util}|\text{Footbridge}, \text{Dark}\} = 0.250$
- 4) $\Pr\{\text{Util}|\text{Footbridge}, \text{Light}\} = 0.211$

Only two workers did not answer the moral dilemma, conditional on seeing the moral trolley problem.

¹⁰ Marginal effects from probit regressions give quantitatively similar estimates in all subsequent models so we will not discuss them further.

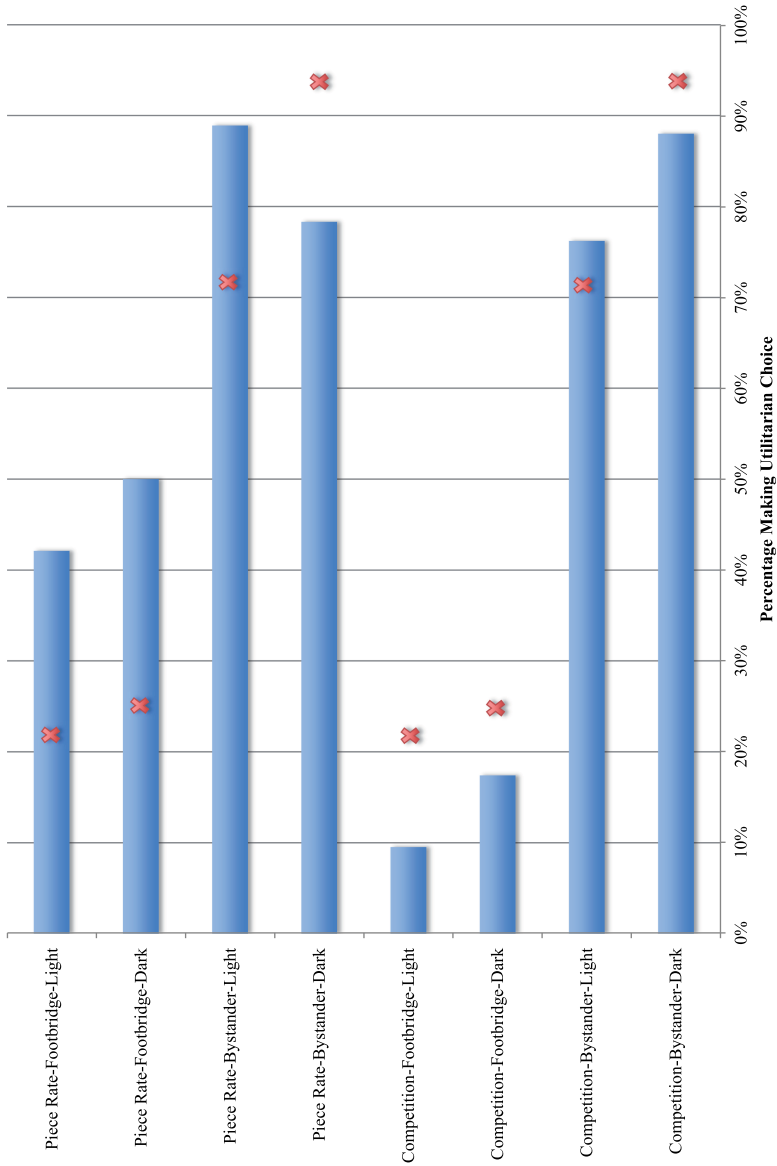


Figure 2. The effect of tournament-based compensation on deontological commitments.

Table 2. The effect of tournament-based compensation on utilitarian values.

	Ordinary least squares					Probit		
	(1) Utilitarian	(2) Utilitarian	(3) Utilitarian	(4) Utilitarian	(5) Utilitarian	(6) Utilitarian	(7) Utilitarian	(8) Utilitarian
Footbridge scenario	-0.516*** (0.0636)		-0.525*** (0.0625)	-0.360*** (0.0871)	-0.549*** (0.0642)	-0.387*** (0.0892)	-0.608*** (0.0660)	-0.464*** (0.106)
Tournament		-0.144* (0.0736)	-0.174*** (0.0625)	-0.00318 (0.0884)	-0.155** (0.0657)	0.00914 (0.0909)	-0.220** (0.0906)	-0.0105 (0.137)
Tournament *				-0.330*** (0.123)		-0.318** (0.124)		-0.379** (0.164)
Footbridge scenario					0.0880 (0.0669)	0.0890 (0.0658)	0.113 (0.0938)	0.118 (0.0954)
Dark illustration					Y	Y	Y	Y
Demographic controls	N	N	N	N	180	180	180	180
Observations	180	180	180	180	180	180	180	180
R-squared	0.021	0.270	0.300	0.328	0.373	0.398		

Notes: Standard errors in parentheses. The dependent variable is the utilitarian choice to sacrifice one individual to save five others. The independent variables of interest are the treatments, a dummy indicator for the footbridge as opposed to bystander scenario of the trolley problem, whether the subject had individual-based or tournament-based compensation that depends on the accuracy of data transcription, and whether the trolley scenario had light or dark-skinned individuals being sacrificed. Demographic controls are dummy indicators for gender (male versus female), race (White versus Black versus Hispanic versus Other), nationality (American versus Indian versus Other), religion (Christian versus Hindu versus Muslim versus Atheist versus Other), age, religiosity, and log GDP per capita.

* $p < 0.10$,

** $p < 0.05$,

*** $p < 0.01$.

characteristics strengthens the impact of tournament-based compensation on utilitarian values (Columns 3 and 5). Including an interaction between the tournament treatment and the footbridge scenario treatment (Column 8) indicates that workers are 46% less likely to choose the utilitarian option in the footbridge scenario than in the bystander scenario, but tournament workers are an additional 38% less likely to make the utilitarian choice in the footbridge scenario than non-tournament workers. Comparable estimates for β_3 are found in Columns 4 and 6 and they are statistically significant at the 5% or 1% level. This result highlights the central finding that tournament compensation increases deontological commitments, particularly in the footbridge scenario.

4.2 The effect of tournaments on differential in-group out-group moral preferences

We find some evidence that the kind of market experiences affects whether subjects have differential in-group, out-group moral views and whether those views are shaped by their incentive treatment. To investigate whether market experiences increase utilitarian commitments toward out-groups, we estimate the following specification:

$$\begin{aligned} \text{Utilitarian}_i = & \beta_0 + \beta_1 \text{White}_i + \beta_2 \text{DarkIllustration}_i + \beta_3 \text{Tournament}_i + \\ & \beta_4 \text{White}_i \times \text{DarkIllustration}_i + \beta_5 \text{White}_i \times \text{Tournament}_i + \\ & \beta_6 \text{DarkIllustration}_i \times \text{Tournament}_i + \beta_7 \text{White}_i \times \text{DarkIllustration}_i \times \\ & \text{Tournament}_i + \beta_8 X_i + \beta_9 \text{FootbridgeScenario}_i + \varepsilon_i \end{aligned} \quad (2)$$

One coefficient of interest is β_4 , which captures whether whites are more likely to make the utilitarian choice when presented with a dark-skinned illustration of the moral trolley problem (as compared to non-whites and as compared to being presented with the light-skinned illustration). The second coefficient of interest is β_7 , which captures whether tournament-based compensation increase utilitarian commitments toward out-groups. As [Table 3](#) illustrates, white workers in individual-based compensation are 38% more likely than non-white workers to make the utilitarian choice when presented a dark-skinned illustration, but white workers in the tournament setting are 24% less likely to make the utilitarian choice when presented a dark-skinned illustration (0.384–0.627 in Column 6).¹¹ Estimates for β_7 are statistically significant at the 1% or 10% level and comparable across Columns 2, 4, and 6. This effect is shown in [Figure 3](#) to come more strongly from non-whites (47% of the sample).¹² The fifth and seventh bar indicate that non-whites particularly become more deontological toward out-group members (light-skinned illustration) with tournament-based compensation. Note that the effects in the visual display of the raw data are not as strong as those in the table because the footbridge scenario, which is highly

¹¹ The estimated effects from Column 6 are as follows:

- 1) $\Pr\{\text{Util}|\text{White, Dark, PR}\} - \Pr\{\text{Util}|\text{White, Light, PR}\} = -.233 + .384 = .151$
- 2) $\Pr\{\text{Util}|\text{Non-White, Light, PR}\} - \Pr\{\text{Util}|\text{Non-White, Dark, PR}\} = .233$
- 3) $\Pr\{\text{Util}|\text{White, Dark, T}\} - \Pr\{\text{Util}|\text{White, Light, T}\} = -.233 + .384 + .515 - .627 = .039$
- 4) $\Pr\{\text{Util}|\text{Non-White, Light, T}\} - \Pr\{\text{Util}|\text{Non-White, Dark, T}\} = .233 - .515 = -.282$
 - $1 + 2 = 0.384$ and $3 + 4 = 0.384 - 0.627 = -0.243$ (DD: whites to non-whites)
 - $3 - 1 = -0.112$ and $4 - 2 = -0.515$ (DD: tournament versus individual-based compensation)

¹² The Red X's again indicate the baseline. They suggest that tournament-based compensation had a strong effect in increase deontological commitments toward out-groups for non-white workers. The summary statistics from the control experiment described in the previous section are as follows:

- 1) $\Pr\{\text{Util}|\text{Non-White, Dark}\} = 0.522$
- 2) $\Pr\{\text{Util}|\text{Non-White, Light}\} = 0.553$
- 3) $\Pr\{\text{Util}|\text{White, Dark}\} = 0.579$
- 4) $\Pr\{\text{Util}|\text{White, Light}\} = 0.417$

Table 3. The effect of tournament-based compensation on utilitarianism toward out-groups.

	Ordinary least squares				Probit	
	(1) Utilitarian	(2) Utilitarian	(3) Utilitarian	(4) Utilitarian	(5) Utilitarian	(6) Utilitarian
Footbridge scenario	-0.521*** (0.0641)	-0.539*** (0.0631)	-0.551*** (0.0657)	-0.568*** (0.0643)	-0.586*** (0.0657)	-0.639*** (0.0664)
White	-0.0759 (0.0985)	-0.281** (0.141)	0.0889 (0.123)	-0.185 (0.161)	0.115 (0.162)	-0.278 (0.217)
Dark illustration	0.0453 (0.0962)	-0.146 (0.135)	0.0756 (0.0971)	-0.142 (0.136)	0.0954 (0.128)	-0.233 (0.185)
White * Dark Illustration	0.0175 (0.130)	0.244 (0.182)	0.0155 (0.131)	0.276 (0.183)	0.0284 (0.172)	0.384** (0.190)
Tournament		-0.454*** (0.148)		-0.504*** (0.152)		-0.678*** (0.150)
White * Tournament		0.382** (0.192)		0.464** (0.198)		0.555*** (0.146)
Dark Illustration * Tournament		0.348* (0.188)		0.402** (0.190)		0.515*** (0.156)
Dark Illustration * Tournament * White		-0.428* (0.255)		-0.502* (0.257)		-0.627*** (0.144)
Demographic controls	N	N	Y	Y	Y	Y
Observations	180	180	180	180	180	180
R-squared	0.278	0.326	0.336	0.385		

Notes: Standard errors in parentheses. The dependent variable is the utilitarian choice to sacrifice one individual to save five others. The independent variables of interest are the treatments, a dummy indicator for the footbridge as opposed to bystander scenario of the trolley problem, whether the subject had individual-based or tournament-based compensation that depends on the accuracy of data transcription, and whether the trolley scenario had light or dark-skinned individuals being sacrificed. Demographic controls are dummy indicators for gender (male versus female), race (White versus Black versus Hispanic versus Other), nationality (American versus Indian versus Other), religion (Christian versus Hindu versus Muslim versus Atheist versus Other), age, religiosity, and log GDP per capita.

* $p < 0.10$,

** $p < 0.05$,

*** $p < 0.01$.

predictive of the *Utilitarian* choice, is not controlled for. Moreover, from both the visual display and the table, one can observe that workers are somewhat more utilitarian toward out-groups.¹³ Thus far, these results indicate that tournament workers display more deontological commitments and more deontological commitments toward out-groups than do non-tournament workers.

4.3 The effect of tournaments on charitable donations

The decision to donate is also affected by the market experience. Workers in the tournament setting are about 15% less likely to donate to the Red Cross or Red Crescent (Table 4), as can be seen from estimating:

$$Donate_i = \beta_0 + \beta_1 Tournament_i + \beta_2 X_i + \varepsilon_i \quad (3)$$

¹³ The coefficient on the interaction term between *White* and *Dark Illustration* displays this relationship in Table 3. From the previous discussion of Column 6 in footnote 15, 1 + 3 indicate how much more utilitarian whites are in the dark illustration and 2 + 4 indicate how much more utilitarian non-whites are in the light illustration.

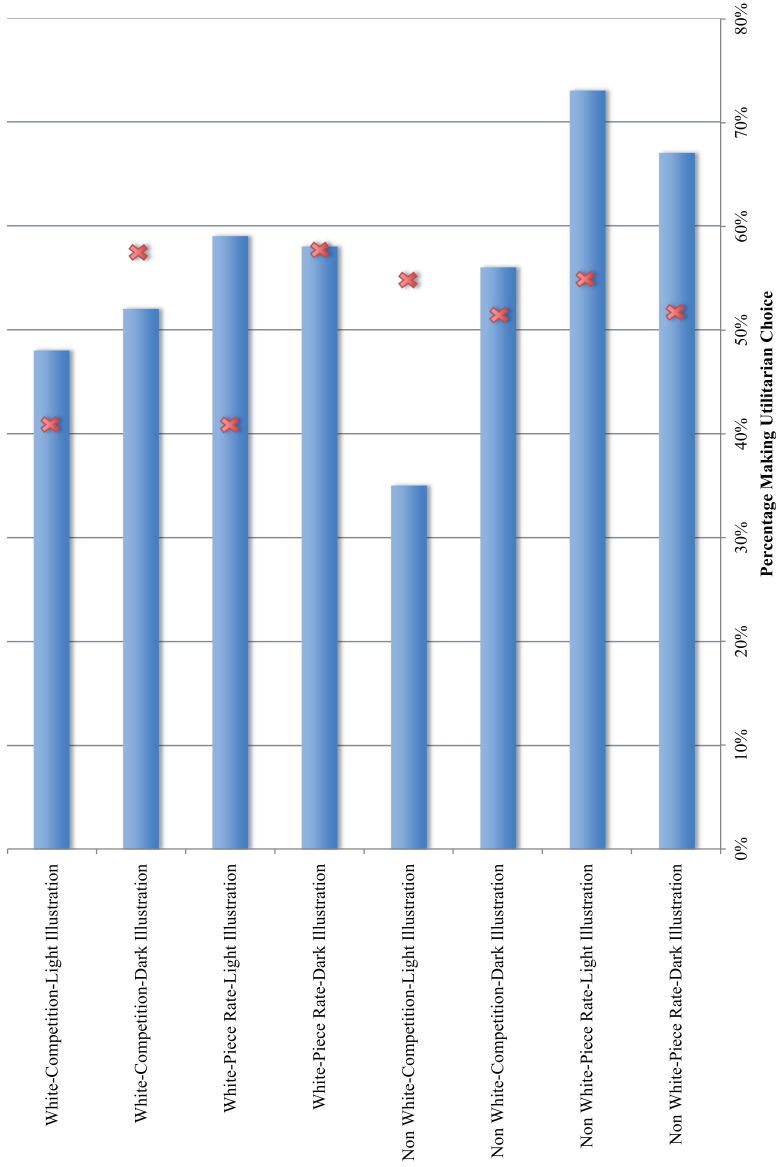


Figure 3. The effect of tournament-based compensation on out-group moral views.

Table 4. The effect of tournament-based compensation on charitable donations.

	Ordinary least squares		Probit
	(1) Donate	(2) Donate	(3) Donate
Tournament	-0.100 (0.0743)	-0.143* (0.0775)	-0.162** (0.0818)
Footbridge Scenario		-0.0664 (0.0757)	-0.0754 (0.0808)
Dark illustration		0.0101 (0.0789)	0.0125 (0.0845)
Demographic controls	N	Y	Y
Observations	180	180	180
R-squared	0.010	0.137	

Notes: Standard errors in parentheses. The dependent variable is donation in a charitable decision. The independent variables of interest are the treatments, a dummy indicator for the footbridge as opposed to bystander scenario of the trolley problem, whether the subject had individual-based or tournament-based compensation that depends on the accuracy of data transcription, and whether the trolley scenario had light or dark-skinned individuals being sacrificed. Demographic controls are dummy indicators for gender (male versus female), race (White versus Black versus Hispanic versus Other), nationality (American versus Indian versus Other), religion (Christian versus Hindu versus Muslim versus Atheist versus Other), age, religiosity, and log GDP per capita.

* $p < 0.10$,

** $p < 0.05$,

*** $p < 0.01$.

Table 5. The behavior of tournament winners.

	Ordinary least squares		Probit	Ordinary least squares		Probit
	(1) Donate	(2) Donate	(3) Donate	(4) Utilitarian	(5) Utilitarian	(6) Utilitarian
Winner	0.216** (0.104)	0.248** (0.116)	0.267** (0.119)	-0.0168 (0.0787)	-0.0354 (0.0891)	-0.0447 (0.147)
Footbridge scenario		-0.0951 (0.111)	-0.108 (0.114)	-0.689*** (0.0777)	-0.687*** (0.0855)	-0.723*** (0.0802)
Dark illustration		0.0452 (0.121)	0.0560 (0.124)		0.114 (0.0930)	0.188 (0.150)
Demographic controls	N	Y	Y	N	Y	Y
Observations	90	90	90	90	90	90
R-squared	0.047	0.159		0.476	0.515	

Notes: Standard errors in parentheses. The dependent variables are the utilitarian choice to sacrifice one individual to save five others and donation in a charitable decision. The independent variable of interest is whether the subject was the winner in tournament-based compensation that depends on the accuracy of data transcription. Controls include treatments, a dummy indicator for the footbridge as opposed to bystander scenario of the trolley problem and whether the trolley scenario had light or dark-skinned individuals being sacrificed. Demographic controls are dummy indicators for gender (male versus female), race (White versus Black versus Hispanic versus Other), nationality (American versus Indian versus Other), religion (Christian versus Hindu versus Muslim versus Atheist versus Other), age, religiosity, and log GDP per capita.

* $p < 0.10$,

** $p < 0.05$,

*** $p < 0.01$.

An important outcome to study in the effect of markets on morality, moreover, is the behavior of market winners, as their behavior may be more likely to persist in an efficient market. Tournament winners are more likely to donate to charity. Table 5 presents estimates of the specification:

Table 6. Falsification—behavior of “Placebo” winners in non-tournaments.

	Ordinary least squares		Probit	Ordinary least squares		Probit
	(1) Donate	(2) Donate	(3) Donate	(4) Utilitarian	(5) Utilitarian	(6) Utilitarian
“Placebo” winner	0.115 (0.116)	0.111 (0.123)	0.381 (0.364)	−0.136 (0.104)	−0.123 (0.113)	−0.317 (0.404)
Footbridge scenario		−0.0612 (0.108)	−0.184 (0.326)	−0.361*** (0.0954)	−0.383*** (0.0999)	−1.440*** (0.390)
Dark Illustration		−0.0761 (0.115)	−0.272 (0.337)		0.101 (0.106)	0.272 (0.374)
Demographic controls	N	Y	Y	N	Y	Y
Observations	90	90	90	90	90	85
R-squared	0.011	0.279		0.155	0.337	

Notes: Standard errors in parentheses. The dependent variables are the utilitarian choice to sacrifice one individual to save five others and donation in a charitable decision. The independent variable of interest is whether the subject assigned to individual-based compensation would have been the winner in tournament-based compensation that depends on the accuracy of data transcription. Controls include treatments, a dummy indicator for the footbridge as opposed to bystander scenario of the trolley problem and whether the trolley scenario had light or dark-skinned individuals being sacrificed. Demographic controls are dummy indicators for gender (male versus female), race (White versus Black versus Hispanic versus Other), nationality (American versus Indian versus Other), religion (Christian versus Hindu versus Muslim versus Atheist versus Other), age, religiosity, and log GDP per capita.

* $p < 0.10$,

** $p < 0.05$,

*** $p < 0.01$.

$$Donate_i = \beta_0 + \beta_1 Winner_i + \beta_2 X_i + \varepsilon_i \quad (4)$$

where β_1 is the coefficient of interest. We restrict to the sample of individuals in the tournament treatment. The average donation rate is 46% so the coefficient of 0.26 in Column 3 and comparable estimates of β_1 in Columns 1 and 2 represent about 50% of the overall donation rate and are statistically significant at the 5% level.¹⁴ These findings are consistent with the theory that competition fosters empathy, not among the competitors, but between competitors and third parties, since the beneficiary of donations in our study is the Red Cross/Red Crescent, not other participants in the experiment, at least for tournament winners.¹⁵

Do tournament winners donate more in the forgoing analysis because productive workers are more generous or because tournament-based compensation caused productive workers to become more generous? As falsification check, we examine the behavior of workers who would have been tournament winners but were assigned to the non-tournament condition. Table 6 repeats the analyses of Table 5 but compares these “placebo” winners and losers in the non-tournament condition. The winners and losers are calculated by comparing with other workers assigned to individual-based compensation. Columns 1–3 of Table 6 show that these “placebo” winners, when not told they are in a tournament, do not donate more in a statistically significant manner and the point estimates are half the size of those in Table 5. Figure 4 graphically displays the differences-in-differences analysis of the effect of tournament-based compensation on charitable donations by tournament winners. Moreover, in the control experiment, the relationship between log error rate and donation is small and slightly positive with a t-statistic of 0.87. Assuming that the tournament treatment does not

¹⁴ Another study also found that tournament winners donate more (Kidd et al. 2013).

¹⁵ Tournament winners are slightly more deontological but not significantly so (Columns 4–6 of Table 5).

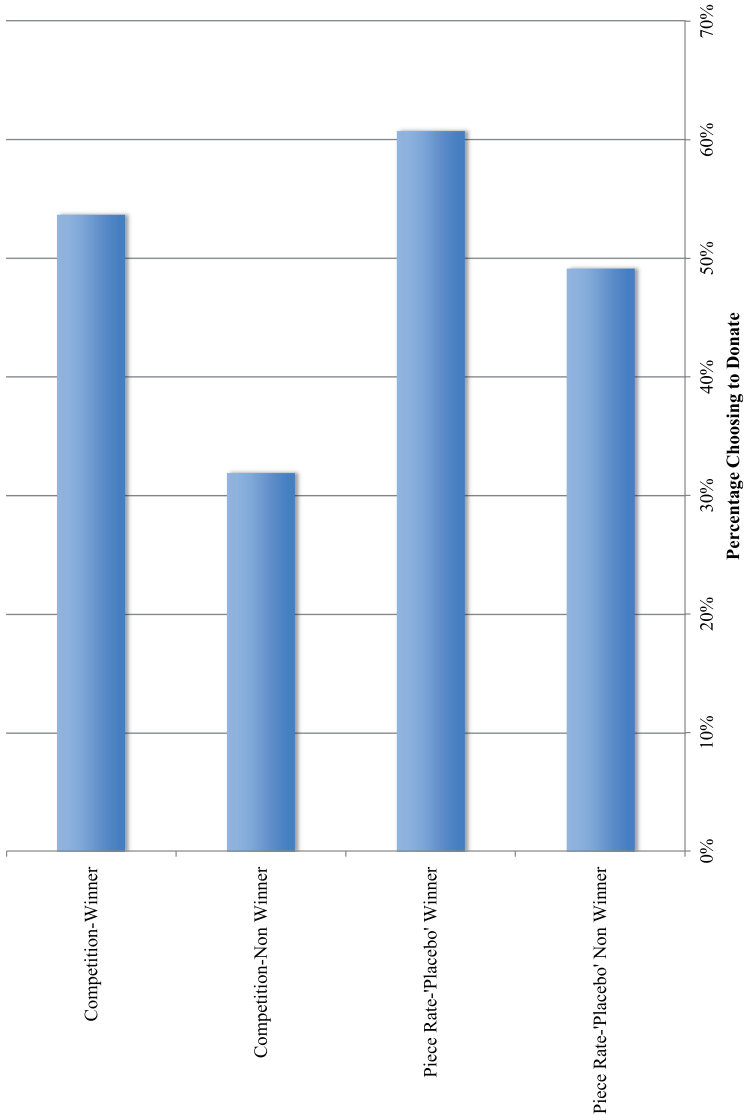


Figure 4. The effect of tournament-based compensation on charitable donations.

affect the order of productivity among workers, these results suggest that tournament-based compensation caused productive workers to become more generous. These results are consistent with the evidence that individuals in more market-oriented countries tend to be more charitable (Alesina and Glaeser 2004).

4.4 The effect of tournaments on utilitarian values over economic development

An important distinction between the labor market intermediary in our study and the laboratories in experimental economics studies is the global labor supply, allowing the exploration of heterogeneous treatment effects, in this application, the intellectual history of the *doux commerce* thesis. In the early stages of economic development, economists thought that commerce increased morality, but in the later stages of economic development, economists thought that commerce decreased morality (Hirschman 1982). To explore whether the effect of tournament-based compensation on utilitarian values changes for workers from high-income countries, Table 7 displays estimates of the specification:

$$Utilitarian_i = \beta_0 + \beta_1 Tournament_i + \beta_2 LnGDP_i + \beta_3 Tournament_i \times LnGDP_i + \beta_4 X_i + \beta_5 FootbridgeScenario_i + \varepsilon_i \quad (5)$$

where β_3 is the coefficient of interest. Income data are obtained from the World Economic Outlook Database (IMF 2009).¹⁶ As documented above, for the entire sample, exposure to individual-based compensation makes workers 17% more utilitarian (Column 1 of Table 3), but interacting market treatment with the income of the worker's country reveals that the effect of tournament-based compensation on increasing deontological values reverses with income. To interpret the estimates of β_3 in Columns 2–5, around the mean level of Ln GDP PPP per capita, 9.54 (shown in Table 1), the effect of tournament-based compensation on utilitarian commitments reverses. This reversal is statistically significant at the 5% or 10% level and robust to using a threshold measure of income, e.g., splitting the sample roughly in half where high income is defined as GDP PPP per capita above 30,000.¹⁷ The estimates of β_3 , however, should be considered cautiously. Although the moral trolley problem is culturally neutral (Mikhail 2007), and we designed the transcription task to be culturally neutral as well, correlates of income could explain this reversal and also explain Hirschman (1982)'s observations. The effect of tournament-based compensation on donations also reverses with income and becomes negative at the highest income levels (Columns 6–10). As to why workers from countries at different stages of economic development may respond differently, the distance between individual effort and pay is correlated with unhappiness (see, e.g., DeVoe and Pfeffer 2009), which can cause deontological responses to moral judgments (Wheatley and Haidt 2005; Schnall et al. 2008). As markets develop, however, markets become perceived as fair or, at least, unsurprising as a reference point (Kahneman et al. 1986). This perspective provides an economic rationale for the changing views toward the *doux commerce* thesis.

4.5 Limitations

In the experiment, tournament-based compensation increases deontological values, increases deontological values toward out-groups, and increases donations among productive workers

¹⁶ <http://www.imf.org/external/pubs/ft/weo/2009/01/weodata/index.aspx>

¹⁷ Bahrain, Canada, France, Germany, Netherlands, Switzerland, and the United States are High Income countries. Argentina, Bahamas, Bolivia, Bulgaria, Egypt, Honduras, India, Israel, Macedonia, Malaysia, Morocco, Philippines, Romania, Serbia, Turkey, and Zambia are Low Income countries.

Table 7. The effect of tournament-based compensation on utilitarian values over economic development.

	Ordinary least squares			Probit			Ordinary least squares			Probit		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)		
	Utilitarian	Utilitarian	Utilitarian	Utilitarian	Utilitarian	Donate	Donate	Donate	Donate	Donate		
Footbridge Scenario	-0.525*** (0.0625)	-0.544*** (0.0613)	-0.554*** (0.0639)	-0.572*** (0.0633)	-0.615*** (0.0658)			-0.0646 (0.0760)		-0.0740 (0.0809)		
Tournament	-0.174*** (0.0625)	-1.137*** (0.452)	-1.023*** (0.491)	-0.929*** (0.123)	-0.900*** (0.182)	-0.100 (0.0743)	0.455 (0.546)	0.121 (0.584)	0.432 (0.475)	0.0997 (0.630)		
Ln GDP PPP per capita		-0.106*** (0.0324)	-0.0270 (0.0851)	-0.136*** (0.0449)	-0.0171 (0.120)		0.0889*** (0.0390)	-0.0890 (0.101)	0.0899*** (0.0400)	-0.102 (0.115)		
Tournament * Ln GDP PPP per capita		0.102** (0.0469)	0.0903* (0.0506)	0.128** (0.0644)	0.113 (0.0721)		-0.0594 (0.0567)	-0.0275 (0.0602)	-0.0596 (0.0580)	-0.0273 (0.0651)		
Dark Illustration			0.0917 (0.0665)		0.120 (0.0942)			0.00895 (0.0791)		0.0110 (0.0846)		
Demographic Controls	N	N	Y	180	180	N	N	Y	N	Y		
Observations	180	180	180	180	180	180	180	180	180	180		
R-squared	0.021	0.049	0.395			0.010	0.034	0.130				

Notes: Standard errors in parentheses. The dependent variables are the utilitarian choice to sacrifice one individual to save five others and donation in a charitable decision. The independent variables of interest are the treatments, a dummy indicator for whether the subject had individual-based or tournament-based compensation that depends on the accuracy of data transcription, and the interaction between this treatment and log GDP per capita. Other control variables include the treatments, a dummy indicator whether the trolley scenario had light or dark-skinned individuals being sacrificed for the footbridge as opposed to bystander scenario of the trolley problem and whether the trolley scenario had light or dark-skinned individuals being sacrificed. Income data from World Economic Outlook Database (IMF 2009). Demographic controls are dummy indicators for gender (male versus female), race (White versus Black versus Hispanic versus Other), nationality (American versus Indian versus Other), religion (Christian versus Hindu versus Muslim versus Atheist versus Other), age, religiosity, and log GDP per capita.

* $p < 0.10$.

** $p < 0.05$,

*** $p < 0.01$

relative to non-productive workers. The [Supplementary Appendix](#) considers several limitations and alternative interpretations for these findings. The main limitation is that the brevity of the study makes it more akin to a priming experiment (see, e.g., [Benjamin et al. \(2010\)](#) arguing that the priming of social identity helps examine the causal effect of social identity on preferences). We do not know whether market experience has long-term effects on normative commitments once an individual is removed from that market environment. Also, the results on donations perhaps provide some information about selfishness versus altruism, which would be relevant to the *doux commerce* thesis, but it is not clear what to make of them because donations of tournament winners and losers are ranked in opposite ways relative to subjects in the non-tournament condition. Further limitations are discussed in the [Supplementary Appendix A.5](#).

5. CONCLUSION

This article experimentally evaluates the *doux commerce* thesis, which has heretofore been based on premises that have been difficult to test. We develop an approach for testing one specific premise of the *doux commerce* thesis: namely, that one's experience with market incentives can shape one's views of what constitutes a moral action. More research is required to assess the empirical validity of the *doux commerce* thesis in full.

Workers randomized to tournament-based compensation displayed greater deontological commitments compared to workers randomized to individual-based compensation. To the extent that legal theorists and moral philosophers skeptical of markets are concerned about negative effects of market interactions on moral character, as measured by deontological commitments, these results suggest that the relevance of such concerns vary based on the income level observed in a given national context. These results also suggest that, when studying the theoretical and empirical effects of market experiences, the basis for compensation needs to be distinguished.

The kind of market experience to which a worker is subjected to also affects differential in-group/out-group moral preferences and charitable donations. Workers who are assigned to individual-based compensation become more utilitarian toward out-groups, while workers who are assigned to tournament-based compensation become more deontological toward out-groups. Additionally, tournament-based compensation increases productivity and tournament winners donate more.

The effect of tournament-based compensation on deontological commitments reverses with income of the worker's country. This reversal suggests that the manner in which market forces shape normative commitments is contingent on one's broader economic context. This differential effect is consistent with the historical development of the *doux commerce* thesis. During the 1700s, as markets expanded, in part through European colonial extraction and coercion, European scholars theorized that markets had positive effects on moral virtue. Over the course of global market development, the ascent of a capitalist world system, and the increasing relative wealth of Europe and the United States, scholars situated in the Global North later came to argue that markets had generally negative effects on moral virtue.

Our results and this historical dissipation of optimism around the *doux commerce* thesis may be partially explained by psychological dynamics that mediate the relation between affect responses and moral ideas. Psychologists have documented that negative emotions drive deontological responses and positive emotions generate utilitarian responses. Tournaments may be viewed as unfair in early stages of market development and thereby trigger negative emotions that augment deontological commitments. As markets develop, competition may

come to be perceived as fair and triggers positive emotions along with attendant utilitarian commitments. The beneficial effects of market competition on moral values may thus be particularly strong in developing market contexts and then dissipate and even reverse in highly developed market economies.

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SUPPLEMENTARY MATERIAL

[Supplementary material](#) is available at *Journal of Law, Economics, & Organization* online.

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