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CHAPTER 1

Trust, Reciprocity, and Fairness

This chapter uses two class experiments that will be set up by the instructor using the procedure described in the end-of-chapter notes and software suggestions.

The Trust Game is based on a reciprocal process where one person in a pair invests capital by passing it to a second person. Money passed gets tripled, with the second person deciding how much to pass back (return to the investor).

The Bargaining Game experiment involves either a single offer and response (the ultimatum game) or the possibility for the offer recipient to make a counteroffer.

These class interactions set the stage for a discussion of important behavioral motivations like trust, reciprocity, altruism, fairness, and inequity aversion. Links for admin setup and participant login are found on the Veconlab site:

<https://veconlab.econ.virginia.edu/>

INTRODUCTION AND MOTIVATION

Adam Smith's *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776) describes England as a thriving, interconnected market system with specialization in production and voluntary trade that benefitted both parties and thereby increased wealth. Even with extensive market opportunities, however, trade would not have flourished without good infrastructure such as roads, security, property rights, and trust. The same is true today; the infrastructure now includes the internet, the interstate highway system, wireless broadband communications, and so on. It is worth noting that reliable payment, shipping, and quality control systems are developed in the context of a network of mutually beneficial connections between buyers and sellers. Therefore, *trust* is a key component of the social and economic structure of a developed economy.

Adam Smith realized that people are not solely motivated by material goals but are constrained by the “laws of justice.” In an earlier book, *The Theory of Moral Sentiments* (TMS), Smith wrote not only about the “economic man” pursuing his own self-interest but also about how an individual learns to respond adaptively in ways that “humble the arrogance of his self-love, and bring it down to something which other men can get along with” (TMS, 1759, p. 75). Smith suggested that in dealings with friends and family, a person might step back, as if behind a veil, to consider the well-being of others. “How selfish soever man may be supposed, there

are some principles in his nature, which interest him in the fortune of others, and render their happiness necessary for him, though he derives nothing from it except the pleasure of seeing it” (TMS, 1759, p.1, the very first sentence of the book!). Being motivated only by “the pleasure of seeing it” is a fine definition of what we mean by *altruism* or, more precisely, **warm-glow altruism** stimulated by an action that benefits another person. In contrast, it is useful to distinguish warm glow altruism from **economic altruism**, which is motivated by an action taken because the ratio of another person’s benefit to one’s own cost is favorable. Another important distinction is between altruism and **reciprocity**, which is a process of taking an action that benefits another person because of a benefit received from the other person’s prior action. Think of altruism as a one-way street and reciprocity as a two-way street. Adam Smith links reciprocity with the notion of *trust*, which is the focus of this chapter:

“We trust the man who seems willing to trust us. We see clearly, we think, the road by which he means to conduct us, and we abandon ourselves with pleasure to his guidance and direction.” (TMS, VII.iv.27)

The two-world perspective of *Theory of Moral Sentiments* is developed in a recent philosophical book, *Humanomics* (2019), defined as “the very *human* problem of simultaneously living in these two worlds, the personal social and the impersonal economic.” The authors, Bart Wilson and Vernon Smith, are motivated by the contrast between the competitive behavior in impersonal laboratory market settings and the cooperative behavior that is often observed in laboratory “trust games.” Think of a **trust game** as a setting in which one person is an investor who can entrust some capital to another, the entrepreneur, who can use the capital to generate more wealth. The investor must trust the entrepreneur to share these gains and return the initial investment. The first experiment outlined below is a trust game with this type of interaction.

The second experiment is similar, except the amount passed by the first mover is framed as a proposed allocation of the initial endowment, and the second mover has the option to either accept or reject the proposed division, with rejection resulting zero earnings for both (the endowment is lost). This game is referred to as an **ultimatum game**, since the first mover makes a take-it-or-leave-it proposal, much like a firm can post a price on a take-it-or-leave-it basis with no subsequent negotiation permitted.

Finally, it can be helpful to distinguish an ultimatum game from a **dictator game**. In a dictator game, the first mover has the power to dictate the division that the other person is *required to accept*. Without the danger of rejection, dictator divisions tend to be more unequal.

TRUST GAME EXPERIMENT INSTRUCTIONS:

You will log into the first experiment using the **session name** (four letters and a number) provided by your instructor, using the link provided in the box below. That link will take you to a brief set of instructions, which are summarized as follows. You will be paired with another person, and the instructions that tell you whether you will be a “first mover,” who initiates the action, or a “second mover,” who will make a single response.

- **One Decision Only:** You are matched with another participant. This process will **not** be repeated; you will make only **one decision**.
- **Decisions:** The first mover begins with **\$3** and must decide how much (if any) to keep and how much (if any) to pass. What is passed gets **tripled** before being received by the second mover. The second mover in each pair then decides how much (if any) to keep and how much (if any) to pass back.

- **Earnings:** The first mover earns the amount kept initially plus the amount passed back. The second mover earns the amount kept in the second stage. In addition to what is earned (if any) from the pass/keep process, the first mover will receive the amount **\$0**, and the second mover will receive the amount **\$3**.

After the first round, you will be paired with a different person in another game that will last for several more rounds of alternating choices that allow people to pass or pass back money with their assigned partner. The results page displayed after the final round of the first experiment will contain a list of the decisions and outcomes for you in all previous rounds. You can photograph that page for later use in completing the lab report or, better, just minimize the browser window and open a new tab using the same login link provided in the shaded Begin experiment box.

Begin experiment for
Chapter 1: Trust Game
(<https://veconlab.econ.virginia.edu/login.php>)

BARGAINING GAME EXPERIMENT INSTRUCTIONS:

This second experiment requires a new session name provided by your instructor. In this simple bargaining game, you will be assigned the role of first or second mover, with each person making a single decision. The instructions summary page reviews the procedure:

- You are randomly matched with another participant. This process will not be repeated; you make only one decision.
- The first mover in each pair suggests a division of the **\$10**; this proposal is implemented if it is accepted. A rejection produces earnings of **\$0** for each person. If the proposal is rejected, earnings are **\$0** for both proposer and responder.

The first round is followed by a second round, with a two-stage bargaining game in which you will be matched with a different person. In this two-stage game, second movers who reject the initial division of \$10 will be able to make a counteroffer splitting a smaller \$3 pool. The results page at the end of the final round of this second experiment will show a list of decisions and outcomes, which you can photograph or minimize and refer to later when you get to the relevant part of the lab report.

Begin experiment for
Chapter 1: Bargaining Game
(<https://veconlab.econ.virginia.edu/login.php>)

Next, go to the tab with the results from the first experiment (passing and passing back money) and begin the lab report. If you mistakenly closed the tab for that experiment, you can return to that results tab by pressing the **Emergency Restart** button on the login page, using the session name for the first experiment and your ID number for that experiment.

CHAPTER 1 LAB REPORT

NAME: _____

Note: Students should work together and engage with the instructor as needed. When a problem presents a bold-faced list of options, please circle the appropriate answer.

EXPERIMENT 1 (TRUST GAME)

Questions 1 through 7 pertain to the one-shot version of the trust game in which you were paired with a partner for only one round.

1. Your role in the first experiment was that of a (**first mover, second mover**). In the first round, the amount passed was ____ and the amount passed back was ____, which was (**greater than, less than, about the same**) as the amount passed.
2. This game is called a “trust game” since the first mover may pass money to their partner, who has no obligation to pass back any of their tripled earnings. Explain why a first mover might pass a positive amount to a second mover:
3. If the first mover does pass a positive amount, explain the type of psychological motivation that might cause a second mover to pass back part of the tripled pass amount:
4. Suppose that a person cares only about their own earnings and is indifferent about what the other person earns. We can think of this as *own-regarding preferences*, whereas someone who cares about the other person’s earnings in a positive way will be said to have *other-regarding preferences*. In a trust game that is only played once, a second mover who receives some money from the first mover and passes some back can be said to have (**own-regarding, other-regarding**) preferences.
5. Other-regarding preferences that are unconditional (not triggered by the other’s “kind” actions) can be thought of as altruism. A person who gives money to a random stranger would exhibit altruism. In contrast, a person who gives a gift card to a friend who took care of their pets can be thought of as exhibiting reciprocity. The first mover in a trust game who passes money is exhibiting (**anticipated reciprocity, anticipated altruism**).
6. If you are a first mover in a trust game to be played once and if you are convinced that the other person has own-regarding preferences, then you would expect that they (**would, would not**) pass any part of a tripled amount back. Consider a selfish first mover who is rational and who expects the second mover to have own-regarding preferences. In this case, the first mover (**would, would not**) pass any money in the first stage.
7. Please confer with one of your neighbors in the class and discuss how the procedures for a single iteration of the standard trust game could be modified to make it possible to discern pure altruism from reciprocity on the part of a first or second mover.

Questions 8 through 12 pertain to the repeated version of the trust game in which you were paired with the same partner for multiple rounds.

8. Using the Veconlab Results page, fill in Table 1.1 with the initial pass and return amounts between you and your partner in the repeated version of the trust game.

Table 1.1. Results from Repeated Trust Game

Round	2	3	4	5	6	7	8	9	10
Pass Amount									
Return Amount									

9. When a trust game is repeated several times with the same pairing, would you expect initial pass amounts to be higher or lower than in a single-period trust game? Was this what you observed?
10. In your class experiment, pairings were exogenous and not subject to choice. In most personal and business interactions, people may choose who to interact with. *Competitive reciprocity* is a term that can be used to explain why a person may reciprocate another’s nice actions in order to be selected more often as *someone else’s* partner in the future. Please confer with one of your neighbors and devise a way to modify the trust game experiment procedures to harness the force of competitive reciprocity and stimulate more trustworthiness.
11. *Competitive altruism* is a phrase used to describe a situation in which someone does nice things for another person because third parties who observe such seemingly altruistic actions will be more willing to interact with them. In your class trust game experiment, each pair was isolated, and there was no observation by third parties. Please confer with one of your neighbors and explain how the experiment procedures could have been modified to make it possible to observe competitive altruism.
12. First movers who pass money in a trust game are said to be *trusting*, and second movers who return some of the initial pass amount (after tripling) are said to be *trustworthy*. How would you expect *social similarity* (similarity in gender, age, culture, etc.) to affect trust and trustworthiness in this game?

EXPERIMENT 2 (BARGAINING GAME)

Questions 13 through 16 pertain to the first version of the bargaining game, in which the first mover proposed a division of \$10 and the second mover chose whether to accept or reject the offer.

13. Explain why it makes sense to label the first bargaining game you did as an *ultimatum game*. (Hint: What is the key characteristic of an ultimatum?)
14. Suppose the first mover in the bargaining game could simply dictate the way the available endowment of cash would be divided, with no opportunity for a rejection by the second mover. This situation is called a **dictator game**. Intuition suggests that the first mover will earn more in a (**dictator, ultimatum**) game, because . . .
15. Consider a simple market with a single seller who proposes a price between \$0 and \$10 for a good that can be provided by the seller at no cost. The good, however, is worth \$11 to a single buyer. The seller posts a price, and the buyer must decide to purchase the good or not, with no chance to haggle. This is most like a (**dictator, ultimatum**) game because . . .
16. Consider an enriched ultimatum game in which the second mover can type a short comment in a chat box in addition to deciding whether to reject the first mover's proposal. Please confer with a neighbor and explain how you think this modification might affect the first mover offering (**go up, go down**).

With this chat option, a second mover might reject unfair offers (**more, less**) frequently because . . .

Questions 17 through 19 pertain to the two-stage version of the bargaining game in which the second mover can reject the initial division of \$10 and make a counteroffer in which \$3 are divided.

17. Using the Veconlab Results page, fill in Table 1.2 with the initial offer, acceptance status, and counteroffer between you and your partner in the two-stage bargaining game. Recall that the maximum initial offer is \$10, while the maximum counteroffer is \$3. Counteroffer entries for rounds with accepted initial offers can be left blank.

Table 1.2. Results from Two-Stage Bargaining Game

Round	2	3	4	5	6	7	8	9	10
Initial Offer									
Accepted?									
Counteroffer									

18. **Note: This question highlights one of the main points of this chapter.** A second mover will sometimes reject an initial offer even if the rejected offer would have provided them with more than the maximum possible earnings in the second stage (\$3). For example, the first mover may demand \$6 and offer \$4 to the second mover, who rejects and turns around and proposes to receive \$2 out of the \$3 remaining in the final stage. Did you

observe any such “disadvantageous counteroffers” in your data in Table 1.2? How would you explain a second mover’s motivation for such behavior? Please confer with a neighbor and provide an explanation. (Hint: You might consider several possible explanations, including one or more of the following: altruism, fairness, reciprocity, and so on.)

19. Recall that the first mover in the two-stage bargaining game received an “outside” payment of \$3 irrespective of what offer or counteroffer was accepted. Assuming this payment is public information, the effect of increasing the first-mover outside payment (e.g., to \$6) would likely (**increase, decrease, or not affect**) the amount the first mover offers the second mover in the first stage. Please confer with a neighbor and explain . . .

20. Much of the previous discussion of various behavioral motivations was based on changes in one’s own earnings or changes in another’s earnings, but not on interpersonal comparisons. When an offer in an ultimatum game is rejected, it reduces earnings for both people, which suggests that a simple focus on absolute levels of earnings is not appropriate, especially when each person is acutely aware of how much the other person is earning. Such awareness may be blurred in an impersonal market setting with many buyers and sellers and participants having no access to information about the other participants’ values or costs. In contrast, a consideration of relative earnings is more apparent in a small group. The notion of *inequity aversion* is used to capture such effects. One type of inequity aversion can be thought of as *envy*, which is experienced when the other person obtains more money than oneself. Please confer with a neighbor and name a different type of inequity aversion: _____. You would expect this inequality aversion to be (**stronger or weaker**) than envy for most people because . . .

TRUST IN THE LAB

Even though a perfectly selfish person “should” return nothing in the final stage of a trust game, observed behavior can be more cooperative. In many trust games, a significant fraction of first movers pass money, and the amounts passed back compensate the first mover for the amount passed, on average. Vernon Smith and Kevin McCabe decided to simplify the trust game to permit only two possible pass-back amounts. The motivation for this “discrete” trust game was to determine whether cooperative behavior vanished when the first mover is given a stark decision of passing the entire endowment or nothing at all. Similarly, the second mover is faced with a stark decision of whether to reciprocate or pass nothing back. The game is shown in Table 1.3, with payoffs that correspond to providing a \$10 initial endowment to each player. The top row shows the first mover’s decision of Pass Nothing (on the left), which results in earnings that equal the \$10 endowments for each. The Pass All option (on the right) implements a pass of the full \$10, which is tripled to \$30. This move results in a total “pie” of \$40 once the second mover’s endowment is included. As indicated by the choice percentages at the bottom of each box, about half of first movers (47%) chose the Pass All \$10 decision on the right. The responses by the second movers, shown in the bottom row, indicate that two thirds of the second movers returned half of the \$30 tripled amount, and only one third returned nothing.

Table 1.3. A Simplified Trust Game
(First-Mover Payoff, Second-Mover Payoff)
Observed Choice Percentage

First Mover Choice:	Pass Nothing (\$10, \$10) 53%	Pass All \$10 47%	
Second Mover Choice:		Return Nothing (\$0, \$40) 33%	Return Half (\$15, \$25) 67%

Notes: About half of the first movers passed the \$10 endowment (top row), and two-thirds of the second mover recipients reciprocated by returning half of the tripled amount (bottom right). Smith and Wilson, *Humanomics* (2019, p. 115).

Second-mover behavior might be motivated by reciprocity, since the first mover is observed to bypass the exit decision that would have provided the second player with a \$10 payoff, well below the \$25 and \$40 amounts in the bottom row. Alternatively, the second-mover tendency to return half in the bottom row could have been motivated by pure altruism or even inequity aversion to the unfairness of the extremely unequal payoffs in the (\$0, \$40) outcome. To determine whether pro-social intentions signaled by first moves matter in second-mover responses, a similar trust game in Table 1.4 was conducted. In one treatment, the first mover can choose to pass money. In a second treatment, first-mover passing is involuntary. To ensure that the effect of intention could be observed, the second mover was informed of the voluntary or involuntary nature of the first-mover choice. This treatment pair in Table 1.4 provides evidence that reciprocity and intentions inferred from context matter. Second-mover decisions for the same payoff options are more generous in the treatment following a first-mover decision to pass money forward.

Table 1.4. A Comparison of Voluntary and Involuntary Trust Games
(First-Mover Payoff, Second-Mover Payoff)
Observed Choice Percentage

Voluntary Trust Game			
First-Mover Choice:	First Mover Passes Nothing (\$20, \$20) 37%	First Mover Observed to Pass \$5 63%	
Second-Mover Choice:		Unequal Payoffs (\$15, \$30) 35%	Equal Payoffs (\$25, \$25) 65%
Involuntary Trust Game			
First-Mover Choice:		Endowments of \$20 Each 1st Mover Forced to Pass \$5 100%	
Second-Mover Choice:		Unequal Payoffs (\$15, \$30) 67%	Equal Payoffs (\$25, \$25) 33%

Notes: Only about a third of the second movers returned nothing in the Voluntary Trust Game at the top in which the first mover can signal a good intention by passing. The opposite pattern is observed in the Involuntary Trust Game at the bottom part, where only a third of second movers chose the more generous equal-payoff outcome on the right following the forced pass. Data and sources reported in Smith and Wilson (2019, pp. 119–20).

Of course, signals based on *prior interactions* with the same player (as in this chapter’s experiment) also inform current decisions. This repetition is interesting because most economic interactions, both personal and impersonal, are repeated over time. Others’ intentions can be inferred from a history of interactions and not just from one prior decision to forego an outside option. The lesson is clear: *history also matters*. Resisting the selfish temptation to secure short-term gains that harm others while preserving mutually profitable relationships is a good strategy in such interactions.

Another dimension of continued trusting interactions is the ability to choose with whom to partner or do business. Holt and Sprott (2024) reports on current research in which first movers are matched with up to four second movers, meeting one new potential partner in each subsequent round. First movers, however, are limited to having at most three active “links” in a round, and activation of a link requires mutual consent and a payment of \$1 by each party. The first mover is given an endowment of \$3 for each of the three potential links. Although the links are separate, a first mover can “scale up” trusting relationships by activating some of the links and not others and passing more to second movers who have returned more in prior rounds. In this multiple-partner setup, observed pass and pass-back rates are high until the (preannounced) final round. Trust and trustworthiness are even more prevalent in a second “cross-pass” treatment that allows the first mover to pass endowment money from one link to the second mover *in another link*. For example, a first mover with three potential links (and \$3 endowments for each) is permitted to concentrate all or part of the \$9 total in links with favored partners. Second movers in this “cross-pass” treatment often respond aggressively by passing back a high proportion of the tripled pass amounts in order to establish a profitable trusting connection. In other words, competitive reciprocity by trustworthy second movers generates more “trusting” behavior by first movers.

A typical data sequence is shown in Table 1.5, where “P” is a pass amount and “R” is a return amount. In the first round on the left, ID 2 passed \$3 to ID 10, who returned \$6, which

is two-thirds of the \$9 tripled amount. In the second round, ID 2 continues with ID 10 but also meets a new partner, ID 11, and passes \$2, but only half of the tripled amount is returned. By round five, ID 2 is passing their entire \$9 endowment (\$3 for each of 3 potential links) to a favored partner (ID 10, in the top row), who always returns a high proportion of the tripled amount. Here you see the strong effect of second movers competing to be chosen by returning generously in early rounds. This competition results in high-pass and high-pass-back amounts through the pre-announced final period.

Table 1.5. Results for a Trust Game with Choice of Partners and a Cross-Pass Structure

History for ID 2	Round 1	Round 2	Round 3	Round 4	Round 5	Round 6	Round 7	Round 8	Round 9	Round 10
with ID 10	(A, A)	(A, A)	(A, A)	(A, A)	(A, A)	(A, A)	(A, A)	(A, A)	(A, A)	(A, A)
	P=\$3	P=\$4	P=\$6	P=\$8	P=\$9	P=\$9	P=\$9	P=\$9	P=\$9	P=\$9
	R=\$6	R=\$8	R=\$12	R=\$16	R=\$18	R=\$17	R=\$16	R=\$15	R=\$14	R=\$14
with ID 11	*	(A, A)	(A, A)	(A, I)	(I, I)	(I, I)	(I, I)	(I, I)	(I, I)	(I, I)
		P=\$2	P=\$2							
		R=\$3	R=\$2							
with ID 12	*	*	(A, A)	(A, A)	(I, A)	(I, A)	(I, A)	(I, A)	(I, A)	(I, A)
			P=\$1	P=\$1						
			R=\$2	R=\$1						
with ID 8	*	*	*	(I, A)	(I, A)	(I, A)	(I, I)	(I, A)	(I, A)	(I, A)
Earnings for ID 2	\$5	\$9	\$13	\$15	\$17	\$16	\$15	\$14	\$13	\$13

Notes: Active links are denoted by “(A, A)” with ID 2 listed on the left; amounts passed by ID 2 and returned by the matched second mover are denoted by “P=” and “R=,” respectively. Each active link costs \$1 for each person in that link. By round 5, ID 2 (top row) passed the total \$9 endowment from all 3 links to a single person, ID 10. This “favored” partner returned a high proportion of the tripled amounts from the first round to the final round.

WHAT ECONOMISTS DO: TRUST AND BARGAINING

Economics is often said to be an imperial discipline, spreading its influence into other social sciences. However, the street goes both ways, as in Henrich et al. (2001), a team of seven anthropologists and economists. These researchers visited several primitive societies around the world and ran laboratory experiments in the field (e.g., trust game and bargaining), with parallel instructions in different languages. One focus of the experiments was on fair-mindedness, that is, proposing more equal splits and rejecting unequal splits. Fair-minded behavior was observed more often in societies where production had a large joint component, for example villages in which the heads of households go fishing together and divide the catch up equally afterwards. But in hunter-gatherer societies where gathering was largely individualized, less fair-minded behavior was observed. Interestingly, another feature of small societies associated with fair-mindedness is the extent of exposure to organized markets. Equal splits were more common with people who were used to bargaining with cash (over rents or prices), than in nomadic societies where cash was rarely used. Notice that fairness considerations are more salient for the division of a fixed and known amount of money, in contrast with cases involving uncertain seller’s cost for providing a good or service.

There are also a number of interesting studies of bargaining in lab settings. It is not surprising that people tend to reject offers in ultimatum games that are perceived to be unfair.

What is remarkable is that people also seem to avoid the appearance of being unfair to others. In particular, participants in experiments tend to behave in a more selfish (unfair) manner when there is uncertainty about the connection between their own actions and the payoffs for each person in a dictator game. This uncertainty seems to provide “moral wiggle room” that justifies taking a selfish action, as compared behavior observed in a simple dictator game in which the first mover’s actions are fully revealed.

The importance of emotions in the rejection of unfair offers is reinforced by the results of an experiment that permitted second movers in an ultimatum game to express their emotional reactions at the same time that the accept-or-reject decision was communicated to the first mover. The messages were conveyed on a card provided to the second movers. These handwritten messages had no effect on actual payoffs and hence were what economists consider to be “cheap talk.” The responder’s ability to communicate in this manner resulted in significantly fewer rejections of offers considered to be unfair (Xiao and Houser, 2005). This is a case where taking the social context out of the original ultimatum game experiments produced “perplexing” rejections of positive amounts of money. In contrast, putting some of the context back in led to data that were closer to theoretical predictions based on own-regarding preferences!

SUMMARY AND PREVIEW

The early seminal experiments used to evaluate the key motivating factors discussed in this chapter typically involved a single interaction. However, trust is especially important with repeated interactions and in settings like e-commerce, where orders are made online. The commonly used 5-star rating system effectively provides mass information on merchant behaviors, while also encouraging competition to secure good ratings. The trust engendered from these ratings helps facilitate wider geographic markets with more specialization in production, which is the topic of the next chapter. The broader perspective is the importance of creating and nurturing a network of trading partners that can be trusted. Effective networking skills are essential in both business and public service careers.

The bilateral trade considered in the next chapter will involve an element of trust that the trading partner will follow through on their part of the deal. Finally, the trust relationships that involve trade and economic interactions are part of a more general fabric of economic and social interdependence. The aversion to inequality implied by behavior in the bargaining game experiment suggests factors that may diminish trust, e.g., inequality, self-serving behavior, or corruption that causes harm to others. These connections will be discussed in Chapter 9, which also considers measures of “social trust” of others more generally, not necessarily involving trading partners.

Key Terms

(Fill in definitions based on the reading)

(Warm Glow) Altruism:

Economic Altruism:

Reciprocity:

Trusting vs. Trustworthy:

Inequity Aversion (two components):

Dictator Game:

Ultimatum Game:
Competitive Altruism:

NOTES AND SOFTWARE SUGGESTIONS

For a discussion of Adam Smith's ideas in the context of his times, see R. Heilbroner (1992), *The Worldly Philosophers* (New York: Simon & Schuster); and Vernon Smith and Bart Wilson (2019), *Humanomics: Moral Sentiments and the Wealth of Nations for the Twenty-First Century* (Cambridge: Cambridge University Press).

The involuntary trust game results were reported in K. McCabe, M. Rigdon, and V. Smith (2003), "Positive Reciprocity and Intentions in Trust Games," *Journal of Economic Behavior and Organization* 52, no. 2 (October): 267–75.

The cross-cultural comparison of trust and trustworthiness is found in J. Henrich et al. (2001), "In Search of Homo Economicus: Behavioral Experiments in Fifteen Small-Scale Societies," *American Economic Review* 91, no. 2: 73–78.

Choice of partners in trust games is studied in C. Holt and E. Sprott (2024), "Can Competition Promote Trusting Behavior? Reciprocity and Pro-Social Behavior in Repeated Interactions," presented at the North American Economic Science Association Meetings, October 2023. Other choice-of-partners games are studied in C. Holt, C. Johnson, and D. Schmitz (2015), "Prisoner's Dilemma Experiments," in *The Prisoner's Dilemma*, ed. M. Peterson (Cambridge: Cambridge University Press), 243–64.

A biological basis for pro-social behavior in trust games done with twins can be found in D. Cesarini et al. (2008), "Heritability of Cooperative Behavior in the Trust Game," *Proceedings of the National Academy of Sciences (US)* 105, no. 10: 3721–26.

"Disadvantageous counteroffers" and fairness implications are discussed in Jack Ochs and Alvin Roth (1989), "An Experimental Study of Sequential Bargaining," *American Economic Review* 79, no. 3: 355–84.

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An aversion to the appearance of being unfair is documented in J. Dana, R. Webber, and H. Quang (2007), "Exploiting Moral Wiggle Room: Experiments Demonstrating an Illusory Preference" *Economic Theory* 33, no. 1: 67–80.

The notion of inequity aversion is introduced in E. Fehr and K. Schmidt (1999), "A Theory of Fairness, Competition, and Cooperation," *Quarterly Journal of Economics*, 114, 769–816.

For an interesting experimental study of trust games in three-person networks with random matching, see A. Cassar and M. Rigdon (2011), "Trust and Trustworthiness in Networked Exchange," *Games and Economic Behavior* 71, no. 2 (March): 282–303. Their design includes treatments with one sender and two receivers and with two senders and one receiver. Their full-information treatment permits subjects to compare their own results with those obtained by another person in the same role in order to examine comparative trust or trustworthiness within a single period.

Software Suggestions: This chapter uses the "**Trust Game**" and "**Bargaining Game**" experiments that are listed for topic 1 in the top tabs of the Veconlab "**Experimenting with Economics**" menu. These are straightforward games with simple instructions and "go at your own pace" procedures, which are appropriate for students who have not participated in prior Veconlab experiments. The instructor should use the default settings and specify the number of participants in the class (reduced to ensure an even number). The instructor should practice before class by setting up a test with two participants, which can be logged in separate browser tabs. The "admin results" pages can be projected afterwards to provide data to be used in the lab report. There is also a **Graph** button on the admin results page that shows averages by round. The instructor should check these features in advance, but it is generally better not to project them until after the class experiment ends and students have started working on the lab report.

Software Suggestions on the Lab Report: These reports are the key to discovery and learning in each chapter. Students appreciate the chance to disengage from the experiment interaction and confer with their neighbors in the classroom as they start to answer the structured series of questions provided in the report. This report process has a momentum of its own, giving the instructor a chance to pause and circulate around the classroom. Students cannot fully appreciate graphs and definitions until they have used the grids and results tables to evaluate the experiment outcomes and to test their own understanding with the quizzes. Research in economic education has demonstrated that learning from an experiment occurs when students are required to complete follow-up exercises. See E. Cartwright and A. Stepanova (2012), "What Do Students Learn from a Classroom Experiment: Not Much, Unless They Write a Report on It," *Journal of Economic Education* 43, no. 1: 48–57.

QUIZ YOURSELF

NAME: _____

1. Consider an experiment in which contributions to a designated charity are made dollar for dollar in one treatment and are matched (two for one) in another. If higher contributions are observed in the matching treatment, this would be evidence for:
 - (a) reciprocity.
 - (b) economic altruism.
 - (c) inequity aversion.
2. Suppose that the first mover in a \$10 ultimatum game makes an offer of \$4 to the second mover, which is rejected. This rejection is evidence for:
 - (a) reciprocity.
 - (b) economic altruism.
 - (c) inequity aversion.
3. The first mover in a single-period trust game with a \$10 endowment passes \$5, which is tripled to \$15. The second mover passes back \$7.50. This pass-back amount is evidence for:
 - (a) reciprocity.
 - (b) self-interest motivations.
 - (c) risk aversion.
4. The final stage of a two-stage bargaining game is most akin to:
 - (a) a dictator game.
 - (b) an ultimatum game.
 - (c) a matching pennies game.
5. In *Theory of Moral Sentiments*, Smith writes that “nature, which formed men for that mutual kindness, so necessary for their happiness, renders every man the peculiar object of kindness, to the person to whom he himself has been kind” (VI, II.I). The emotions being described in this eighteenth-century prose work pertain most closely to:
 - (a) reciprocity.
 - (b) loss aversion.
 - (c) inequity aversion.
6. Consider the simplified trust game in Table 1.3. Which outcome maximizes the sum of players’ payoffs?
 - (a) First mover does not pass.
 - (b) First mover passes, second mover returns half.
 - (c) First mover passes, second mover returns nothing.
 - (d) If the first mover passes, both payoff outcomes that follow a pass have the same payoff sum.

7. The success of many online quality-rating procedures is most likely due to:
 - (a) altruism on the part of the seller.
 - (b) inequity aversion on the part of the buyer.
 - (c) competitive altruism between sellers.
8. The results of the ultimatum game experiment done in different small societies around the world:
 - (a) are not comparable due to language differences.
 - (b) are comparable due to the use of common instructions, and the results are similar in almost all cases.
 - (c) show differences based in the dramatic wealth differences across societies.
 - (d) show that concerns with fairness are more prominent in societies with cash-based economies.
9. Posted “tag” prices in retail markets are most closely related to the strategic setup in:
 - (a) an ultimatum game.
 - (b) a dictator game.
 - (c) a two-stage bargaining game.
10. Ultimatum game experiments are typically done with common information about the total amount of money available, i.e., about the size of the “pie.” In contrast, buyers and sellers in markets often do not know enough about each other’s costs or values to ascertain the earnings implications of a proposed transactions price. What is a reasonable conjecture about the effect of such imperfect information?
 - (a) Imperfect information will tend to enhance concerns about fairness and what is a fair or unfair price.
 - (b) Imperfect information will tend to diminish concerns about fairness and what is a fair or unfair price.

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